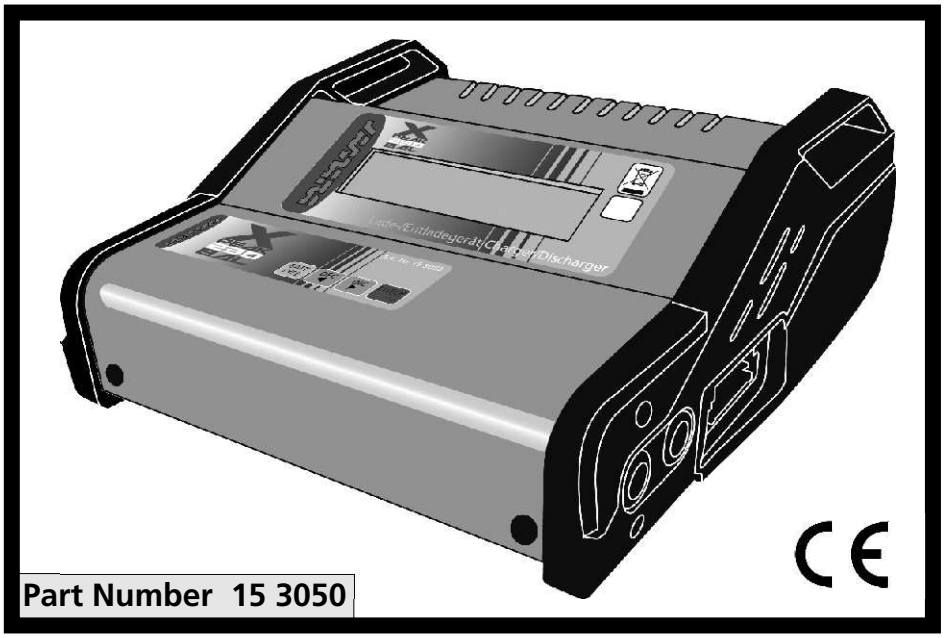
# Read These Instructions Carefully Before Use

X PEAK 230 BAL




Thank you for choosing the X-Peak 230 BAL from our range of chargers. In doing so you have purchased a product with outstanding features which thanks to its in-built balancer is perfect for handling high-capacity Lithium cells .

This charger has been designed to the highest standards, and is capable of safely charging or discharging not only the current generation of NiCad, NiHi, LiPo and LiLo cells, but also the newly developed LiFe batteries. Lead Acid packs can also be charged with the X-Peak 230 BAL.

We have taken great care to produce a unit which thanks to its logical and user friendly control panel is very simple to operate, however, an amount of knowledge is required to operate the unit safely. To this end, please read this instruction manual carefully before you begin, paying particular attention to the safety instructions.

We would like to wish you every success and hope that you enjoy the features of our latest addition to the X-Peak range..



JAMARA GERMANY

# Operating Your X-Peak 230 BAL Safely

Whenever you operate your X-Peak 230 BAL, the following safety instructions must be followed.

* The charger may get hot in use, position the unit so that the heat can dissipate.
* Never expose the charger to moisture or direct sun light.
* After use always disconnect the unit from the mains and unplug any batteries.
* Never leave the charger unattended when in use, and always place it on a fire proof surface.
* Avoid short circuits at all costs. Always observe the correct polarity.
* Batteries should always be allowed to cool down before you charge or discharge them.
* Only charge or discharge packs containing cells from the same manufacturer and of the same capacity.
* Do not connect packs in parallel to charge or discharge them.
* Always disconnect the pack from any electronic system (ESC etc.) before attempting to charge it.
* Connect the charging cable to the charger first and then to the battery.
* Never try to charge/discharge damaged packs or cells.
* Follow the directions given by the battery manufacturer.
* The X-Peak 230 BAL may only be used to charge/discharge the types of cells listed in the technical specifications.
* Do not open the unit. This will void the guarantee and may be dangerous. If the charger is damaged or faulty, return it our service department for repair.

# Indemnity Statement

The CE marking means that this products meets all current standards for safe operation. This includes testing the interference levels caused by and received from this unit. This unit will only cause interference in exceptional circumstances and to a degree that no damage will be caused. Despite the CE marking, this product must be operated correctly and in accordance with these instructions.

As the company JAMARA Modelltechnik has no influence over the use, maintenance or conditions under which this product will operate, we accept no responsibility for any damage caused be it of a physical, financial or theoretical nature. JAMARA Modelltechnik will accept no claim against it which results directly or indirectly from the operation or use of its products.

Any claim arising from our supplying of or the operation of our products will not be met. Any claim regarding our products will cover exclusively and solely our product. This will not apply if legal reasons dictate, or in a case where gross negligence on our part can be legally proved.

# General Description

The X-Peak Premium has been developed from our X-Peak 220 . Whilst keeping roughly the same external dimensions and weight we have improved this model by making it suitable for the new LiFe type cells and by incorporating a balancer. The new X-Peak can now charge up to 14 NiCad or NiMH cells, up to 6 Lithium (LiPo, LiLo or LiFe) cells or lead acid batteries with up to 6 cells (12 V). For the exact details, see the technical specifications.

This charger is particularly suitable for charging the currently popular range of high capacity Lithium cells. This type of cell is particularly susceptible to damage if they are not kept within the correct voltage range, and the Software incorporated into this charger has been especially developed to keep the cells within the correct range which will ensure that the cells will be charged safely to their full capacity. Selecting the correct number of cells will ensure that a full Constant Current/Constant Voltage charge will be achieved every time.

This charger has been developed for the future, and as such it is fully capable of handling the 'Next generation' Lithium-Iron-Phosphate cells (LiFePO4).

A particularly useful development is the integrated balancer which can handle up to 6 cells at a time, making charging or discharging a pack safe and easy. The balancer will keep the cells within 5 mV and can handle currents of 280 mA. A menu allows you to display all of the cell voltages simultaneously and to monitor the cells health.

The charging current can be set from 0.1 A to 6.0 A in 0.1 A steps. The X-Peak 230 BAL can also be used to safely discharge packs and the constant current discharge rate can be set in steps of 10 mA from 0.1 A to 1.0 A. The safe current for the pack will be calculated by the units micro processor preventing damage to the unit. In addition, a pack can be cycled up to 5 times using a pre-defined charge current making this a quick and easy way to format cells.

The charger is operated by 4 buttons in conjunction with a 2 row 16 character blue digital display. Whilst charging or discharging a pack various useful information will be show in clear text in the display, allowing you to monitor a packs health.

The charger is fitted with a high performance step-up/step-down transformer which allows you to charge 1-14 NiCad or NiMH cells with very little loss.

At the end of an operation a tone will be heard and the display will indicate that the operation is complete. Lithium and Lead batteries will be completely switched off, and NiCad/NiMH will switch to a trickle charge.

The unit will give a number of different warning messages to warn of a problem, and both the input and output circuits are protected against cross-polarity. However, do not rely on this, and always ensure that you make all connections correctly.

One of the X-Peak 230 BAL's excelling features is the dual power input, allowing you to connect the unit to either a 12 V DC (vehicle battery or stabilised power supply) or 220 V AC mains supply. Please note that the charger should never be connected to both.

# Warranty

Your X-Peak Premium has been subjected to testing during construction to ensure the highest standards and reliability. To this end we fully guarantee it for two years from the date of purchase. Proof of date of purchase, in the form of your receipt is required. Any repair carried out during the warranty period does not extend the two year period.

f the unit fails to operate due to component failure or a fault in the construction, the charger will be repaired free of charge. We will accept no responsibility for any subsequent damage which may be caused by such a failure.

# Certificate of Conformity

CE

**Certificate of Conformity in Accordance with EEC Directive 89/336/EEC**
AMARA hereby declare that the X-Peak Premium follows the appropriate and relevant EEC directives, in particular the Electromagnetic Compatibility (EMC) 89/336/EEC and has been constructed accordingly. Further details at www.jamara.de

**Disposal**
Please dispose of any part of this unit correctly, observing local regulation regarding the disposal of **electrical waste.**

# Contents

The charger comes with these instructions and a 220 V mains power supply cable and an attached 12 V power supply cable.

# Technical Specifications

| | |
|---|---|
| Input voltage: | 11.0-15.0 V DC or<br>220 V AC 50-60 Hz |
| Battery types: | 1-4 NiCad/NiMH cells/<br>1-6 LiPo/LiFe cells /<br>1-6 Lead acid cells |
| Charging current: | 0.1 A to max 6.0 A (0.1 A steps) |
| Discharge current: | 0.1 A to max 1.0 A (0.01 A steps) |
| Trickle charge: | 0-200 mA (Nickel cells) |
| Balancer current: | 0-280 mA |
| Charge current cut-off: | Delta Peak for Ni Cells,<br>Constant Current for LI and Lead Cells |
| Graphic display: | 2 Rows of 16 characters illuminated blue |
| Information: | Charge/Discharge current, time, voltage, capacity, trickle current, Delta Peak voltage, cell voltage (Li cells), error messages. |
| Size: | 158 x 138 x 63 mm. |
| Weight: | App. 650gramms. |

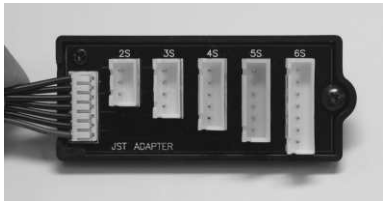
# Connections and Controls


**Charge cable sockets**
red = plus(+) black = minus (-)

**Balancer socket**

**220 V AC input**

**12 V DC connection**




**Balancer adapter:**
Connect the balancer adapter to the balancer socket shown above and connect the pack to the correct port (2-6 cells).


**BATT TYPE Button:** To choose the battery type


**DEC:** Scroll down/decrease the value


**INC:** Scroll up/increase the value


**ENTER-Start/Stop:** To confirm settings or to stop/start an operation

# Using Your X-Peak For The First Time

The X-Peak 230 BAL is fitted with 2 power inputs which gives you the choice of powering the unit from the household mains supply (220 V AC) or via 12 V DC. The 12 V DC can be either a vehicle battery or a stabilised transformer.

Connect the charger to an input of your choice, if using 12 V pay particular attention to the polarity. The red crocodile clip must be connected to the plus pole (+) and the black clip to the minus pole (-).

After connection the charger will display the manufacturers name whilst a self test is conducted. If an error is encountered, for example if the input voltage is outside the allowed range of 11-15 V, a message will be displayed and the buzzer will sound. Disconnect the power supply and rectify the fault.

**WARNING!**
**Never connect both power inputs simultaneously as this will destroy the charger!**

Battery packs to be charged or discharged are attached to the charger via 2 colour coded banana sockets using a good quality charging cable. Make sure that the plus (+) pole of the battery is connected to the red socket on the charger and that the minus (-) pole of the battery is connected to the black socket of the charger.

When a battery pack is connected and the charger encounters a problem, one of the following error messages will be displayed:

*** No battery:** Start has been pressed with no battery connected.
* **Open circuit:** The charge or discharge current has been interrupted.
*** Reverse polarity:** The battery has been connected with reversed polarity, correct immediately.

When charging or discharging Lithium packs, always use the balancer function of the X-Peak 230 BAL. This will not only provide protection for your cells, but also ensure maximum efficiency and long life.

To do so, you must connect both the charging cable and the balancer plug/socket. Not doing this will result in the individual cells not being protected and you will not be able to monitor the individual cell voltage in the display.

# Menu Structures

Having connected the charger to the power supply of your choice, the last option used will be displayed. If you are going to charge/discharge the same pack, no settings need to be changed. The last used mode will be displayed.

If a different pack is to be charged/discharged the setting must be changed, starting with the battery type. To do this, press the BATT TYPE button until the correct battery type flashes in the display. This menu option is an endless loop and the battery types are presented in the following order: NiCad, NiMH, Lixx. Pb followed by NiCad again.

The battery type will be selected and the display will stop flashing when the BATT TYPE button is not pressed for 3 seconds or when another button is pressed. To see the details of the previous operation press the BATT TYPE button for 3 seconds and the relevant information will be displayed for 3 seconds.

Pressing the ENTER button allows the user to access the various parameters which can be changed, for example the charging current. The INC and DEC buttons are used to change the values and if a button is not pressed for 3 seconds the value will be set. Each button press will be noted with an bleep.

Once a battery pack has been connected, the selected operation can be started by pressing the ENTER button for 3 seconds. Providing that the battery is not damaged and correctly connected, the selected operation will begin. If a problem is encountered, a warning bleep will sound and a warning message displayed. When operationing the charger will display the relevant information.

# Menu Structures

**Nickel-Cadmium (NiCad) Mode**

Nickel-Cadmium packs are charged with a constant current and 0.1-0.2C is the normal charge current and at 0.1C the pack will fully charge in 14 hours. At this current, a pack will only be damaged if it is left charging for over 100 hours, when a chemical process may begin which could reduce the packs useful life.

Packs can be fast charged by using currents above 1C. In this case, the charging current must be switched off when the pack is full to prevent damage. This is best achieved using the 'Delta Peak' method, where a slight voltage drop which happens when the pack is full is detected and used as the switch off point.

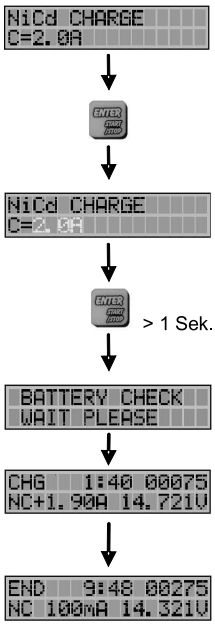
Ni-Cad packs self-discharge at a rate of up to 1% per day, which means that in 100 days a pack may be fully discharged. For this reason packs should be freshly charged before you use them.

The lowest safe maximum discharge voltage is 0.85 V per cell under load. Below this level cells within a pack may even be charged in reverse which will damage them. If a pack is discharged below 0.84 V per cell it should be re-charged at 0.1C for 14 hours.

If a NiCad pack is to stored, it should first be discharged and kept in a cool dry place. Dependant on use, NiCad cells have a useful life of up-to 1000 cycles. When the cells fail to hold a charge, they must be disposed of correctly.

# Menu Structures

## Charging a NiCad pack (CHARGE)




**Select NiCad CHARGE -** Scroll through the options (DISCHARGE CYCLE etc.) By pressing the INC and DEC buttons.

Press ENTER if you wish to change the charge current

**The charge current flashes -** Value can be changed by pressing the INC or DEC button

Press the ENTER button for longer than 1 second to begin the charge

**Checking the battery**

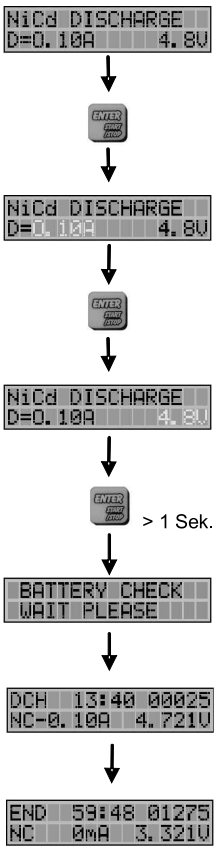
**Charging -** The display shows the time, capacity, current and voltage.

**Charge complete (END) -** 'Delta Peak' voltage detected

The X-Peak 230 BAL has detected that the pack is full**..**A bleep will be heard and the display will alternate between END and CHG. To prevent the pack from self-discarging the charge will switch over to a trickle charge. The display will show the Total charge time, the capacity charged, trickle charge current and the pack voltage.

The charge can be stopped at any time by pressing the ENTER button, and the display will return to the NiCad CHARGE screen. If the current is interrupted by unplugging the battery, the charger will bleep and a warning message will be displayed. If the charge current is changed and stored by pressing ENTER the value will be retained until it is changed again.

## Discharging a pack (DISCHARGE)




**Select NiCad DISCHARGE**
Scroll through the options CHARGE, CYCLE etc.) By pressing the INC and DEC buttons.

Press ENTER if you wish to change the discharge current

**The discharge current flashes**
Value can be changed by pressing the INC or DEC button

Press ENTER if you wish to change the discharge cut-off voltage

**The discharge cut-off voltage flashes**
Value can be changed by pressing the INC or DEC button

Press the ENTER button for longer than 1 second to begin discharging

**Checking the battery**

**Discharging**
The display shows the time, capacity, current and voltage.

**Discharge complete (END)**
Cut-off voltage detected

The X-Peak 230 BAL has detected that the pack is empty. A bleep will be heard and the display will alternate between END and DCH. The display will show the total charge time, the capacity charged, trickle charge current and the pack voltage.

The charge can be stopped at any time by pressing the ENTER button, and the display will return to the NiCad DISCHARGE screen. If the current is interrupted by unplugging the battery, the charger will bleep and a warning message will be displayed.

If the discharge current or the cut-off voltage is changed and stored by pressing ENTER the value will be retained until it is changed again.

# Menu Structures

## Formating NiCad packs (CYCLE)


**Select NiCad CYCLE**
Select NiCad CYCLE by pressing the INC or DEC button

Press ENTER if you wish to change the order


**C->D Flashes**
The order can be changed with the INC or DEC button

Press ENTER if you wish to change the number of cycles


**Number of cycles flashes**
1-5 Cycles may be selected by pressing the INC or DEC button

Press ENTER if you wish to change the charging current


**Charging current flashes**
use the INC or DEC button to change the value

Press ENTER if you wish to change the discharge current


**Discharge current flashes**
use the INC or DEC button to change the value


Connect a battery pack and press ENTER for longer than 1 second to start formatting.


**Checking the battery**


**Charging has begun**
Time, capacity, charge current and voltage will be shown


**Discharging has begun**
Time, capacity, discharge current and voltage will be shown


**The cycle is complete**
The display will flash END

The X-Peak 230 BAL can be used to format packs.
The user can choose up to 5 cycles and the charge/discharge current can be set. Furthermore, the choice is given to begin with either a charge or a discharge. Between each cycle, the charger will pause for 3 minutes. To select CYCLE press the INC button twice from the start display until the illustration shown on the left appears.

When the cycles (formatting) are finished, the charger will bleep and the display will flash END/C->D. The display will also show the following details: Discharged capacity, current and pack voltage. All values used will be stored for the next time that you use this function. In addition to the values listed above, the universal setting for the Delta Peak cut-off value can be set. This value can be set between 5-25 mV per cell, a larger value will give a fuller charge but at a reduced battery life.

## Nickel Metal Hydride (NiMH) mode

Nickel Metal Hydride cells have proved to be an excellent substitute for NiCad cells as they have app. 1 ½ times the capacity for the same weight without using highly poisonous Cadmium. The same charging methods are used as with NiCad, but to achieve the same cell lifespan (app. 1000 cycles) a lower current should be used, it is not recommended to exceed 2C. Please observe the manufactures recommendations. Cells should not be discharged below 0.8 V per cell, doing so may damage the cells. If a pack is allowed to fully discharge, it should be charged for 14 hours at 0.1C.

NiMH cells can self-discharge at a rate of 1.5% per day, which means that a full pack could empty in 75 days. In light of this packs must always be freshly charged before using. If a pack is to be stored, it should be half charged and kept cool and dry.

If you wish to use a NiMH pack, NiMH must be selected by pressing the BATT TYP button until NiMH is displayed. All of the operations are as shown above and all of the values which you set for NiCad packs will be active with the exception of a more sensitive Delta Peak cut-off value. All values can be changed as explained above, and in the universal settings, the Delta Peak value can be set between 3 mV and 25 mV per cell.

# Menu Structures

## Lithium mode (LiXX)

Three types of Lithium cells are currently used in the modelling world, Lithium-Lonen (LiLo), Lithium-Polymer (LiPo) and Lithium-Iron-Phosphate (LiFe). LiLo cells have liquid electrolyte and are enclosed in a metal case. The electrolyte in LiPo cells is a jelly which does not create gas (pressure) when charging and has a plastic foil case. The high capacity LiFe cells have a metal case and a pressure vent.

The technical details of each cell type is shown in this table.

The X/Peak 230 BAL is capable of charging all types of lithium packs with up to 6 cells and uses 2 different charging methods, constant current and constant voltage. The pack is first charged with a constant current until the pack voltage reaches just below the cut-off voltage, at which point it will be app. 90% charged. Using the correct charge rate of 1C, this phase will take around 60 minutes.

| Cell Type | Nominal Voltage | Max. Charge Voltage | Discharged Voltage |
|---|---|---|---|
| LiIo-cells | 3,6 V/cell | 4,1 V/cell | 3,0 V/cell |
| LiPo-cells | 3,7 V/cell | 4,2 V/cell | 3,1 V/cell |
| LiFe-cells | 3,3 V/cell | 3,7 V/cell | 2,5 V/cell |

The charger then switches over to a constant voltage and the current will reduce as the pack reaches a full state of charge until it falls to 10% of the original current, at which time it will switch off. This phase will take app. 30 minutes.

The X-Peak 230 BAL is equipped with a balancer, and when charging Lithium packs this should always be used. To do so, connect the packs balancer plug to the balancer port on the charger.

As Lithium cells have no 'memory' effect, there is no need to format or cycle them which is why this option is not available for Lithium cells.

When charging/discharging Lithium packs, the nominal pack voltage is shown instead of the number of cells. The following table shows the nominal voltage for each type of pack and number of cells.

**Important!**
**When working with Lithium cells it is imperative that the correct cell type is selected. Failure to do so will result in the cells being destroyed!**

| Cells | LiIo | LiPo | LiFe |
|---|---|---|---|
| 1 | 3,6 V | 3,7 V | 3,3 V |
| 2 | 7,2 V | 7,4 V | 6,6 V |
| 3 | 10,8 V | 11,1 V | 9,9 V |
| 4 | 14,4 V | 14,8 V | 13,2 V |
| 5 | 18,0 V | 18,5 V | 16,5 V |
| 6 | 21,6 V | 22,2 V | 19,8 V |

## LiLo Cells
## Charging LiLo cells (CHARGE)


**Start Display LiPo Charge**
Use the INC button to select the mode and Lithium type


Press ENTER to change the charge current


**Capacity flashes**
Use the INC or DEC button to change the value


Press ENTER to change the number of cells


**Pack voltage flashes**
Use the INC or DEC button to change the value


> 1 Sek.

Connect a battery pack and press ENTER for longer than 1 second to start charging.


A warning message will flash if you have failed to connect the balancer, if the balancer is connected, it will flash to confirm.



**Checking the battery**


**Charging**
The display shows the time, capacity, current and voltage.


**Charge complete (END)**
The pack is full and the charger has switched off.

The X-Peak 230 BAL has detected that the pack is full.
A bleep will be heard and the display will alternate between END and CHG. The display will show the total charge time, the capacity charged, the cell type and the pack voltage.
The charge can be stopped at any time by pressing the ENTER button, and the display will return to the LiLo CHARGE screen. If the current is interrupted by unplugging the battery, the charger will bleep and a warning message will be displayed. If the charge current is changed and stored by pressing ENTER the value will be retained until it is changed again.

# Menu Structures

## Discharging LiLo cells (DISCHARGE)


**Start Display LiPo Disharge**
Use the INC button to select the mode and Lithium type


Press ENTER to change the disharge current


**Discharge current flashes**
Use the INC or DEC button to change the value


Press ENTER to change the number of cells


**Pack voltage flashes**
Use the INC or DEC button to change the value


> 1 Sek.

Connect a battery pack and press ENTER for longer than second to start discharging


A warning message will flash if you have failed to connect the balancer, if the balancer is connected, it will flash to confirm



**Checking the battery**


**Discharging**
The display shows the time, capacity, current and voltage


**Discharge complete (END)**
The pack is discharged and the charger has switched off

The X-Peak 230 BAL has detected that the pack is empty as the cut-off voltage was reached.

A bleep will be heard and the display will alternate between END and DCH. The display will show the total discharge time, the capacity discharged, the cell type and the pack voltage.

The discharge can be stopped at any time by pressing the ENTER button, and the display will return to the LiLo DISCHARGE screen. If the current is interrupted by unplugging the battery, the charger will bleep and a warning message will be displayed.

If the discharge current is changed and stored by pressing ENTER the value will be retained until it is changed again.

## LiPo Cells
## Charging LiLo cells (CHARGE)

To charge LiPo packs, the cell type (LiPo) must first be selected whilst in the start menu. Thereafter, the menus are identical.


**Start Menu LiLo CHARGE**
To change the cell type press the INC button.


2 x

Press the INC button twice to select enter the Li type menu


**Lithium cell type menu**


Press ENTER to change the cell type


**Cell type flashes**
Use the INC or DEC button to change


Press ENTER to confirm


**The cell type is changed (LiPo)**


2 x

Return by pressing the DEC button twice


**Start menu LiPo CHARGE**

All operations and options are exactly the same as the previously described LiLo menus

# Menu Structures

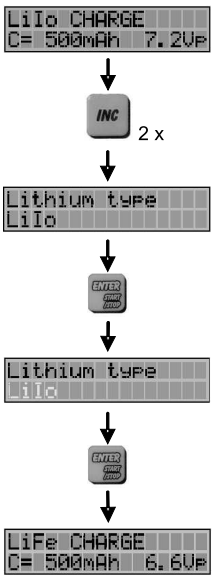
### Discharging LiPo cells (DISCHARGE)

To discharge LiPo packs, the cell type (LiPo) must first be selected whilst in the LiLo DISCHARGE menu as described in the section CHARGE LiPo. Thereafter the menus are identical.

### LiFe cells

The X-Peak 230 BAL is also capable of charging the new generation of Lithium-Iron-Phosphate (LiFe) cells.
Before a LiFe pack can be charged, the correct cell type must be selected.

### Charging LiFe cells (CHARGE)




**Start Menu LiLo CHARGE**
To change the cell type press the INC button

Press the INC button twice to select enter the Li type menu

**Lithium cell type menu**

Press ENTER to change the cell type

**Cell type flashes**
Use the INC or DEC button to change

Press ENTER to confirm

**The cell type is changed (LiFe)**

All operations and options are exactly the same as the previously described LiLo menus.

### Discharging LiFe cells (DISCHARGE)

To discharge LiFo packs, the cell type (LiFo) must first be selected whilst in the LiLo DISCHARGE menu as described in the section CHARGE LiFo. Thereafter the menus are identical.

**WARNING!**
**For safety reasons, a Balance should always be used when charging or discharging Lithium packs. The X-Peak 230 BAL is fitted with a Balancer and Lithium packs should always be connected to it via the balancer adapter. When a Balancer is connected, the individual cell voltage can be monitored.**

### Lead Acid (pb) mode

Lead Acid batteries can be easily and safely charged using the X-Peak 230 BAL charger. When charging or discharging Lead Acid batteries it is important to avoid overcharging which will result in the cells venting a gas which will dissipate the Electrolyte which in modern maintenance free packs cannot be replaced. Always observe the manufactures recommendations.

Lead Acid batteries are charged using the constant voltage method, and when a cell reaches 2.3V it is full, which means that a 12V pack will reach 13.8V. The microprocessor in the X-Peak 230 BAL constantly monitors the pack voltage, and as the cut-off point is neared, the current is gradually reduced to prevent over-charging.

As Lead Acid batteries have no 'memory effect' they do not need to be formatted or cycled, which is why this option is not available for this type of pack. To charge or discharge a Lead Acid battery, press the BATT TYP button until Pb is displayed. The following shows how to use the option Pb CHARGE.

# Menu Structures

## Charging Lead Acid cells (CHARGE)


**Start Display Pb Charge**
Use the INC button to select the mode

Press ENTER to change the charge current


**Charging current flashes**
Use the INC or DEC button to change the value

Press ENTER to change the pack voltage


**Pack voltage flashes**
Use the INC or DEC button to change the value


Connect a battery pack and press ENTER for longer than 1 second to start charging.


**Checking the battery**
.


**Charging**
The display shows the time, capacity, current and voltage.


**Charge complete (END)**
The pack is full and the charger has switched off.

The X-Peak 230 BAL has detected that the pack is full. A bleep will be heard and the display will alternate between END and CHG.

The display will show the total charge time, the capacity charged, the cell type and the pack voltage.

The charge can be stopped at any time by pressing the ENTER button, and the display will return to the Pb CHARGE screen. If the current is interrupted by unplugging the battery, the charger will bleep and a warning message will be displayed.

If the charge current is changed and stored by pressing ENTER the value will be retained until it is changed again.

## Discharging Lead Acid cells (DISCHARGE)

To discharge a Lead Acid battery (Pb) press the INC button when in the start menu and the display will change to display the following:


**Start Display pb Discharge**
Use the INC button to select the mode

Press ENTER to change the discharge current


**Discharge current flashes**
Use the INC or DEC button to change the value

Press ENTER to change the pack voltage


**Pack voltage flashes**
Use the INC or DEC button to change the value


Connect a battery pack and press ENTER for longer than 1 second to start discharging


**Checking the battery**
.


**Discharging**
The display shows the time, capacity, current and voltage


**Discharge complete (END)**
The pack is discharged and the charger has switched off

The X-Peak 230 BAL has detected that the pack is empty as the cut-off voltage was reached.

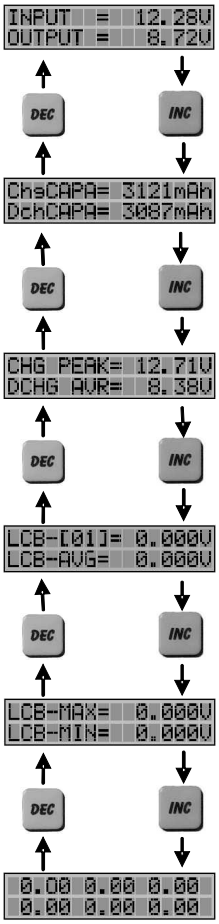
A bleep will be heard and the display will alternate between END and DCH. The display will show the total discharge time, the capacity discharged, the cell type and the pack voltage.

The discharge can be stopped at any time by pressing the ENTER button, and the display will return to the Pb DISCHARGE screen. If the current is interrupted by unplugging the battery, the charger will bleep and a warning message will be displayed.

Any values changed and stored by pressing ENTER the value will be retained until it is changed again.

# Information Recall

When the charger is in the start mode, pressing the BATT TYPE button for longer than 3 seconds will enter the information recall mode in which various information regarding the last operation carried out can be seen. The INC and DEC buttons are used to scroll through the screens and if no button is pressed for 3 seconds, the charger will return to start mode.




**Shows the current input and output voltage**

**Total capacity charged/discharged**

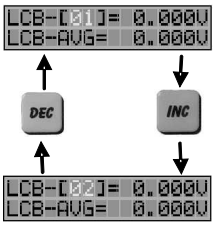
**Delta Peak voltage and average voltage**

**Individual Lithium cell voltage (if Balancer is used)**
**The voltage of Cell 1 (01)is shown (see below)**

**Balancer maximum and minimum values**

**Individual cell voltages for Lithium cells if the Balancer is connected**

The above screens are part of and endless loop which can be scrolled through using the DEC or INC buttons




When in the **Individual Lithium cell voltage** screen, the voltage of cell '01' will be shown. To monitor the voltage of the other cells, press ENTER and the '01' will flash. The INC or DEC button can be used to select the required cell (01-06).

# Error Messages

If the charger encounters a problem, it will warn you by displaying one of the following error messages accompanied by a loud acoustic signal.


If the charger is connected to a voltage outside of the allowed operating range of 11-15 V this message will be displayed and the charger will bleep. For safety reasons charging/discharging cannot take place. If the input voltage falls outside the allowed range whilst the charger is in operation, the charger will stop and this error message will be displayed.


Pressing the ENTER button with no battery connected will give this message and the charger will bleep. This error message will also show if the battery connections are faulty.


The battery is connected with reversed polarity. The battery must always be connected with the plus (red) pole to the plus (red) socket of the charger, and the minus (black) pole to the minus (black) socket of the charger. The charger is connected with a protection circuit, but you should not rely on this. Always check before you connect a battery.


If a fault arises other that those listed, this message will appear. For safety reasons the charge/discharge current will be stopped.


If the battery is disconnected without pressing STOP, or there is a loose connection this message will show


The number of cells has been set is too low and does not match the pack voltage. (Lithium or Lead Acid) Select the correct number of cells.


The number of cells has been set is too high and does not match the pack voltage. (Lithium or Lead Acid) Select the correct number of cells.


If the voltage of a cell rises above the allowed value when using the balancer this message will show. This may indicate that the wrong Lithium cell type is selected.


If the voltage of a cell falls bellow the allowed value when using the balancer this message will show. This may indicate that the wrong Lithium cell type is selected.


This message indicates that when in NiCad, NiMH or Lead Acid mode, a cable is connected to the balancer. Before proceeding, the cable must be disconnected.

# Service Details

For any guarantee claim or for repairs, the unit should be returned to the following address:

**JAMARA Modelltechnik**
**Am Lauerbühl 5**
**DE-88317 Aichstetten**
**Germany**

Tel. +49 (0) 75 65/94 12-0
Fax. +49 (0) 75 65/94 12-23
E-Mail: info@jamara.de

Proof of date of purchase (invoice) must be included, a written description of the fault, under what circumstances it occurred and what bearing it has. Postage must be paid by the sender, we will not accept any mail with no or insufficient postage. We accept no responsibility for loss or damage in transit.