MEGA POWER

INFINITY-960SR

Operating Instructions
MEGA POWER INFINITY-960SR

Dear customer, Congratulations on your choice of the MEGA POWER INFINITY-960SR automatic charger. You are now the owner of a high-performance micro-processor controlled charger with battery management, for use with a 12 V power source.

The charger is simple to use, but the operation of a sophisticated automatic charger such as the MEGA POWER INFINITY-960SR does require some knowledge on the part of the user. Please BE SURE to read these instructions and safety notes before you use the unit for the first time. Mishandling batteries and battery chargers can be dangerous, as it involves a risk of bat-teries exploding and catching fire.We hope you are completely satisfied with your new charger, and that it gives you pleasure and reliable service for many years.

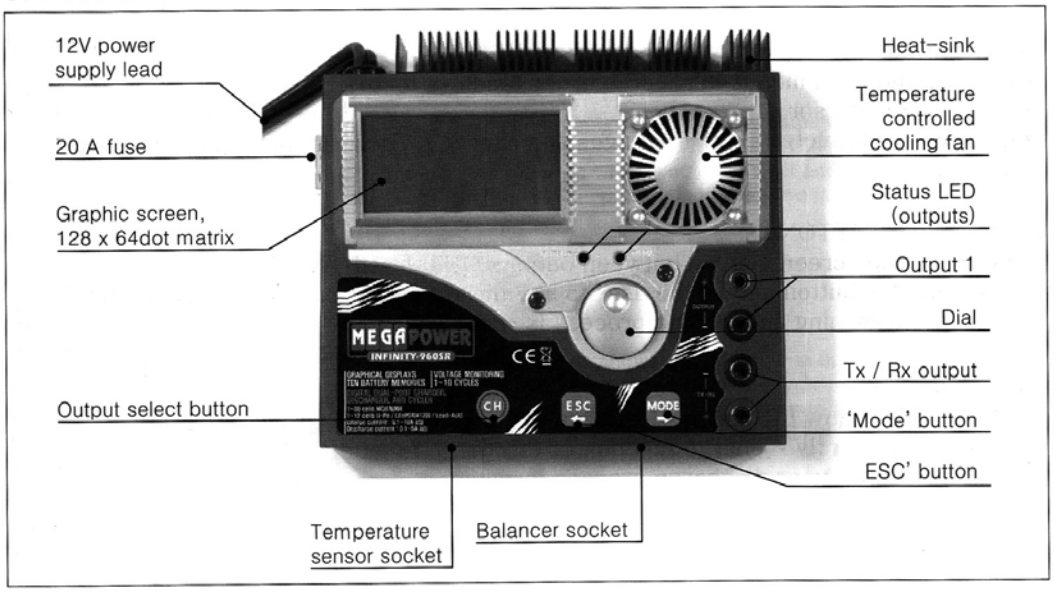
1. Set contents

The set contains the MEGA POWER INFINITY-960SR with connecting leads and 4 mm gold-contact connectors. It also includes two removable heavy-duty terminal clips, plus a temperaturesensor

2.SPECIFICATION

Operating voltage	11 V ... 15 V DC, (12 V lead-acid battery, or a high-performance mains PSU; do not use a car battery charger!
Cell count	1 ... 30 NiCd / NiMH cells 1... 12 Lithium-Polymer cells, 1... 12 LiFePO4(A123) 1... 6 and 12 Lead-acid cells Charge current: 0.1 ... 10 A (max. 180 Watts)
Discharge current	0.1 ... 5 A (max. 50 Watts)
Final discharge voltage	0.1 ... 1.1 V per cell (NiCd / NiMH batteries) 2.5 ... 3.7 V per cell (LiPo batteries) 2.9 ... 3.3 V per cell (LiFePO4-A123 batteries) 1.8 V per cell (Lead-acid batteries)
Trickle charge	0 ... 500 mA, variable in 50 mA increments for NiCd / NiMH batteries.
Charge termination	
NiCd / NiMH batteries	Automatic, digital Delta-Peak system
Cut-off sensitivity	5 ... 25 mV per cell, NiCd batteries 3... 15 mV per cell, NiMH batteries or ZERO peakLiPo /
Lead-acid batteries	Automatic, using CC-CV process
Temperature cut-off	10 ... 65°C, variable in 1°C increments
Capacity monitoring	10 ... 150%, variable in 10% increments (NiCd / NiMH batteries) 10 ... 120%, variable in 10% increments (LiPo / Lead-acid batteries)
Output 'Tx-Rx'	Charging of 4 - 8 NiCd / NiMH cells (automatic cell count detection)
Charge current	0.1 - 2.0 A in 0.1 A increments, optionally manual or automatic, with Delta-Peak cut-off
Dimensions	156 x 143 x 56 mmWeight:ca. 660 g

3.CONTROLS



3.1 USING THE CONTROLS

The three buttons and the 'dial' on the MEGA POWER INFINITY-960SR are multi-purpose controls, as indicated by the printed legends. Particular button-presses perform different actions depending on the selected mode of operation.

-Digital Dial-

The digital rotary control has three functions:

1. Turn clockwise
   The arrow symbol scrolls down line by line to mark the desired menu or menu line. Within the menus, turning the dial clockwise increases the charge or discharge parameter value by one increment.

2. Turn anti-clockwise
   The arrow symbol scrolls up line by line to mark the desired menu or menu line. Within the menus, turning the dial anti-clockwise decreases the charge or discharge parameter value by one increment.

3. Press
   Activates or disables the marked menu (indicated by the cursor).

'MODE' BUTTON
This button is used to navigate through the main menus in the following order:
- Battery select and charge / discharge parameter programming ([0] MEMORY NAME)
- Basic settings (USER SETTINGS)
- Charge / discharge data for the current process (BATTERY DATA)
- Charge / discharge data for a battery revival process (CYCLE DATA)
- Display of individual cell voltages in a LiPo pack (BALANCER DATA)

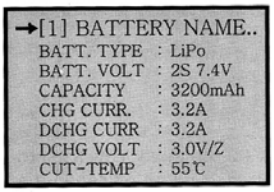
'ESC' button
- Calls up the main menus in reverse order (endless loop)
- Disables the cursor
- Confirms and deletes error messages and charge / discharge process termination messages

'CHANNEL' BUTTON
- Switches the screen display between outputs OUT 1 and TX-RX
- Pressing this button allows the user to see the values for each output separately when programming and when a process is running

STATUS LEDs
- These LEDs show the status of the outputs ? red = OUT 1, green = TX-RX
- Glowing constantly = charge function or discharge function active
- Flashing = charge or discharge process terminated; error message

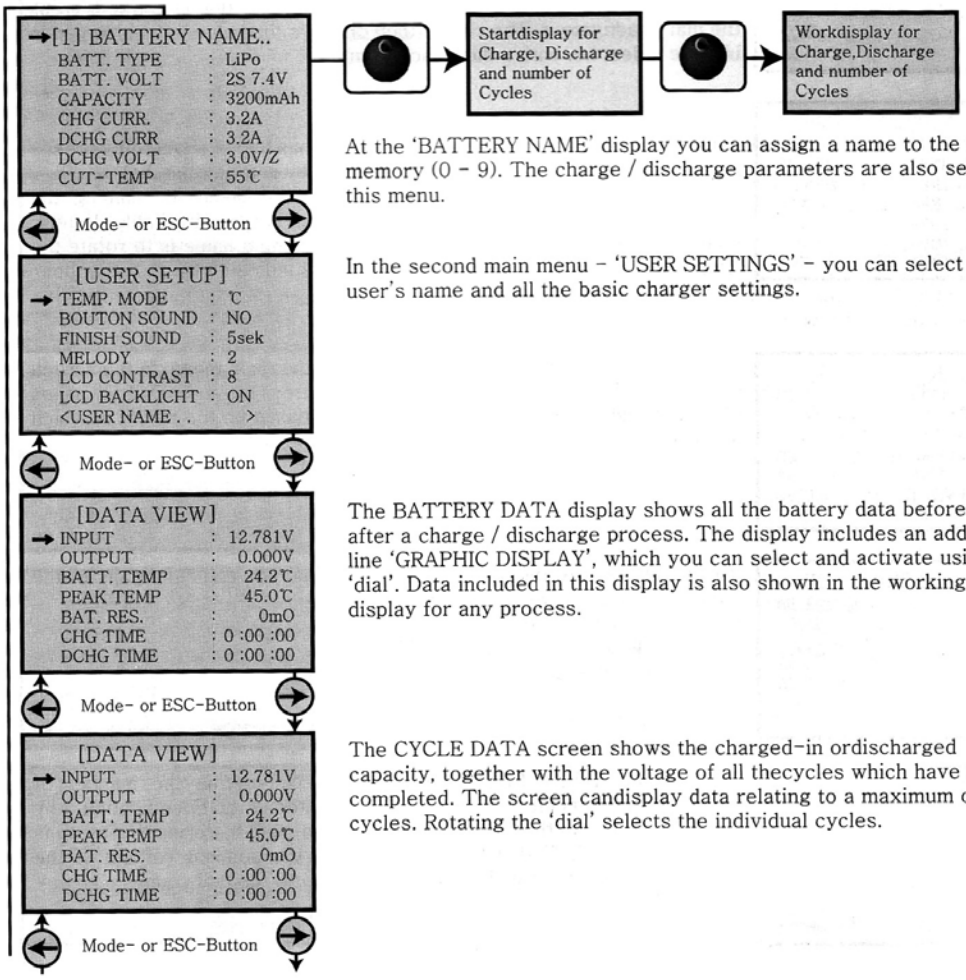
4. USING THE CHARGER FOR THE FIRST TIME

Locate the crocodile clips attached to the charger, and connect them to a suitable 12 V power source. The Start display appears, indicating that the power-on process is complete. The screen shows the company logo and the device name, as well as the installed software version and the user's name. The charger carries out a self-test which lasts a few moments.



The Start display now appears briefly, followed by the memory select menu where you can program the charge/ discharge parameters

4.1 MENU STRUCTURE, OUTPUT 1

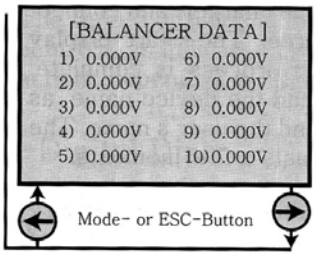


At the 'BATTERY NAME' display you can assign a name to the active memory (0 - 9). The charge / discharge parameters are also set in this menu.

In the second main menu - 'USER SETTINGS' - you can select the user's name and all the basic charger settings.

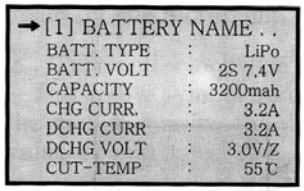
The BATTERY DATA display shows all the battery data before and after a charge / discharge process. The display includes an additional line 'GRAPHIC DISPLAY', which you can select and activate using the 'dial'. Data included in this display is also shown in the working display for any process.

The CYCLE DATA screen shows the charged-in ordischarged capacity, together with the voltage of all thecycles which have been completed. The screen candisplay data relating to a maximum of ten cycles. Rotating the 'dial' selects the individual cycles.

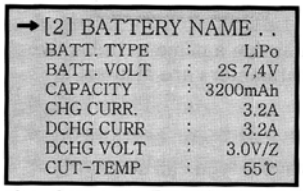


This display shows the voltages of the individual cells of a LiPo battery when a LiPo balancer is connected and inuse.

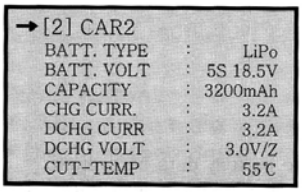
4.2 PROGRAMMING BATTERY DATA



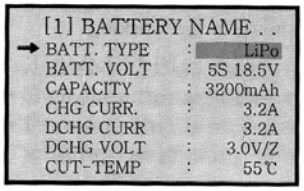
At the 'BATTERY NAME' display you can select the memory you wish to use from the ten available. At this point you can also name or rename a memory. All the charge parameters can also be programmed in this menu. To start a programming process, mark the appropriate line by rotating the 'dial' to move the arrow to it. Once the desired function is marked, press the dial to activate it. The cursor then displays the value to be changed in inverse video, i.e. with a dark background.



In the screen shot printed here, the memory has been activated by pressing the 'dial', and the 2nd memory called up by rotating the dial.
Pressing the 'MODE' button takes you to the menu for naming the memory. A frame now appears containing all the available letters, numbers and symbols. The first step in assigning a name is to rotate the 'dial' to mark the letter to be changed: this is indicated by an arrow below the character. Pressing the dial takes you to the Select frame, where you turn the dial to determine the desired character, and press it to activate that character.

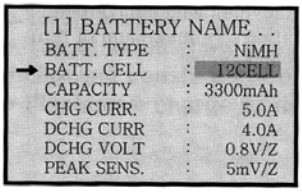


Pressing the 'ESC' button takes you back to the main menu. In the screen shot printed here, the user has named the battery for an 'CAR2'. It makes obvious sense to assign the battery a name based on the model in which it is used.

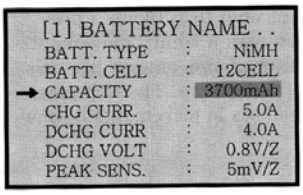


If you now activate the 'BATTERY TYPE' line, you can select any of the following battery types by turning the dial:

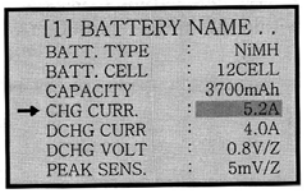
- Nickel-Cadmium battery (NiCd)
- Nickel-Metal Hydride battery (NiMH)
- Lithium or Lithium-Polymer battery (LiPo)
- LiFePO4(A123)
- Lead-acid battery (Pb)



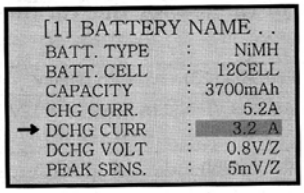
Activate the 'BATT CELL' line, and you can define the number of series-connected cells - within the limits stated in the Specification - by rotating the dial. In the case of LiPo and Lead-acid batteries this menu is named 'BATT-VLT' (battery voltage), and the nominal voltage of the battery is displayed, e.g. 5S18.5V, in addition to the cell count.



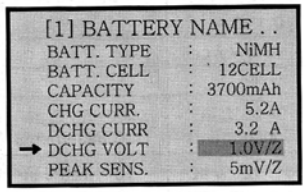
Activate the 'CAPACITY' line, and you can define the battery capacity in increments of 100 mAh by rotating the dial. For example, the range for a NiMH battery is 100 mAh to 9900 mAh.



Activate the 'CHARGE CURRENT' line, and you can define the charge current in increments of 100 mA, within the range 100 mA to 10 A. If you have selected a LiPo battery, the charge current is automatically set to 1C relative to the pack's capacity, but it is also possible to increase this value to 2C. Do not under any circumstances change the LiPo charge rate from 1C unless you have read the battery manufacturer's instructions beforehand.

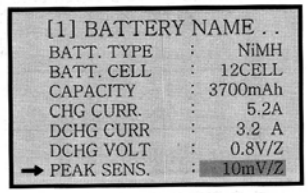


Activate the 'DISCHARGE CURRENT' line, and you can define the discharge current in increments of 100 mA by rotating the dial. The available range is 100 mA to 5.0A.



Activate the 'DISCHARGE VOLTAGE' line, and you can define the final discharge voltage to suit the battery type by rotating the dial. Changes are made in increments of 0.1V.

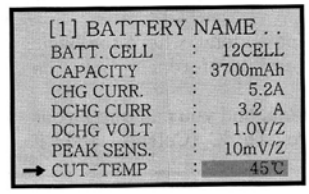
- Nickel-Cadmium battery (NiCd) : 0.1 - 1.1 V / cell
- Nickel-Metal Hydride battery (NiMH) : 0.1 - 1.1 V / cell
- Lithium or Lithium-Polymer battery (LiPo) : 2.5 - 3.7 V / cell
- LiFePO4(A123) : 2.9 - 3.3 V / cell
- Lead-acid battery (Pb) : fixed, 1.8 V / cell



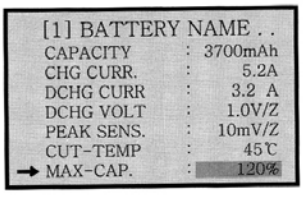
Activate the 'PEAK SENSITIVITY' line, and you can program the sensitivity of the automatic charge cut-off circuit for NiCd and NiMH batteries by rotating the dial.

- Nickel-Cadmium battery (NiCd) : 5 - 25 mV / cell
- Nickel-Metal Hydride battery (NiMH) : 3 - 15 mV / cell

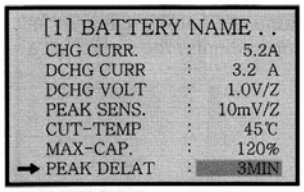
In the case of NiMH batteries it is also possible to select ZEROpk (Zero peak); in this mode a very low peak sensitivity of 2 mV / cell is used.



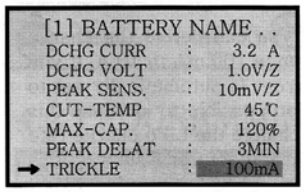
Activate the 'CUT-OFF TEMPERATURE' line, and you can rotate the dial to set the maximum battery temperature at which a process is to be terminated. If you wish to use this facility, you must attach the temperature sensor (supplied) to the battery. The available temperature range is 10°C to 65°C in increments of 1°C.



In the 'MAX CAPACITY' line you can define the maximum capacity which can be charged in or discharged, in the form of a percentage value relating to the set battery capacity. The adjustment range is 10 ··· 150% for NiCd and NiMH batteries, and 10 ··· 120% for Lithium and Lead-acid batteries. Entering a value at this point limits the quantity of energy which can be charged into a pack, and this feature can also be used as a means of avoiding overcharging. The charger simply terminates the process as soon as the preset value is reached.



If you activate the 'PEAK DELAY' line, it is possible to activate a pre-peak suppression for NiCd and NiMH batteries with a rotary movement. This prevents a premature cut-off at the start of the charge process when dealing with batteries with high internal resistance. The delay can be set to any value within the range 1 ··· 20 minutes in increments of one minute.

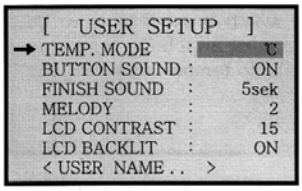


Activate the 'TRICKLE CURRENT' line, and you can define a trickle charge current for NiCd and NiMH batteries within the range 0 to 500 mA

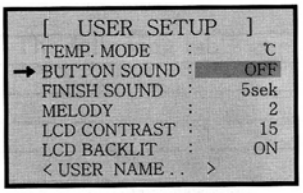
The following table shows all the parameters and their adjustment ranges for the various battery types in a clear form.

Parameter	NiCd battery	NiMH battery	LiPo battery	LiFePO4(A123)	Pb battery
Cell count / battery voltage	1~30 cells	1~30 cells	1S (3.7 V) ~ 12S (44.4 V)	1S (3.3 V) ~ 12S (39.6 V)	1S ~ 6S (2 ~ 12V) and 12S (24 V)
Capacity	0.1~9.9 Ah	0.1~9.9 Ah	0.1 – 20Ah	0.1 – 20Ah	0.5~50Ah
Charge current	0.1~10 A	0.1~10 A	0.1~10 A (2C)	0.1~10 A (2C)	0.1~10 A
Discharge current	0.1~5 A	0.1~5 A	0.1~5 A	0.1~5 A	0.1~5 A
Discharge voltage	0.1~1.1 V / cell	0.1~1.1 V / cell	2.5~3.7 V / cell	2.9~3.3 V / cell	fixed, 1.8 V / cell
Peak sensitivity	5~25 mV/ élément	3~15 mV / cell or ZEROpk	–	–	–
Cutoff temperature	10~65°C in 1°C increments	10~65°C in 1°C increments	10~65°C in 1°C increments	10~65°C in 1°C increments	10~65°C in 1°C increments
Maximum capacity	10 – 150% in 10% increments	10 – 150% in 10% increments	10 – 120% in 10% increments	10 – 120% in 10% increments	10 – 120% in 10% increments
Pre-peak suppression	1 – 20 min, in 1 min. increments	1 – 20 min, in 1 min. increments	–	–	–
Trickle charge current	0 – 500 mA in 50mA increments	0 – 500 mA in 50mA increments	–	–	–

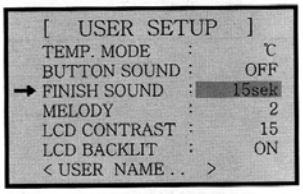
4.3 ENTERING USER SETTINGS



Pressing the 'MODE' button takes you to the main menu, where the basic data is entered. At this point your general preferences can be programmed.
Activate the 'TEMP. UNIT' line in this main menu, and you can enter your preferred temperature unit: the options here are °C (Celsius) and °F (Fahrenheit)

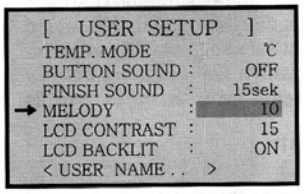


Activate 'BUTTON SOUND' in the second line, and you can define whether an audible signal is to sound each time you press a button or the 'dial'. There are two options here: the sound can be switched on or off.

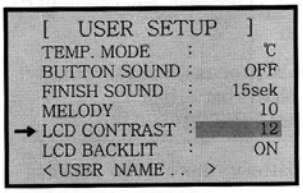


Activate the third line – 'FINISH SOUND' – and you can define how long the melody is played when a charge or discharge process is completed.

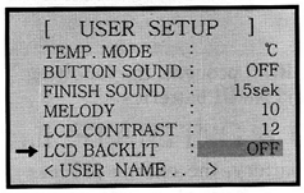
The following options are available:
– Off – 5 sec. – 15 sec. – 1 min. – On



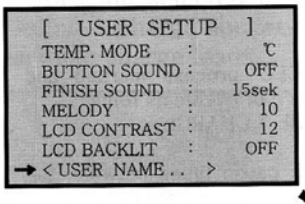
Activate the fourth line – 'MELODY' – and you can select any of ten different sound sequences as the melody to be played when a process is complete. When you select a new sound sequence, it is played continuously until you able it by pressing the 'dial'.



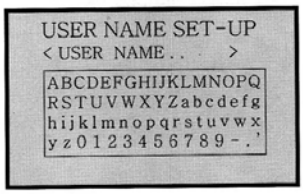
Activate the fifth line – 'LCD CONTRAST' – and you can adjust the contrast of the screen in sixteen increments (settings 0 to 15): the higher the value, the greater the contrast. This facility enables you to adjust the screen display to meet your individual requirements. The default value is '10'.



Activate 'LCD BACKLIT' in the sixth line, and you can switch the blue screen backlighting on or off.

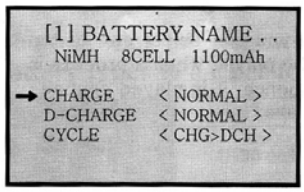


Activate the seventh line – 'USER NAME' – and the screen switches to the menu for entering your own name: a maximum of sixteen characters can be selected. A frame now appears showing all the available letters, numbers and symbols, as when entering a battery name.
The user's name is entered using exactly the same procedure as described on page 7.
The table printed here shows all the parameters again in a succinct form.



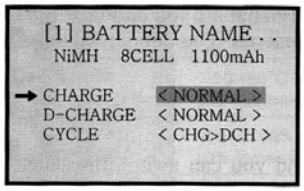
Parameter	Settings
Temperature unit	°F / °C
Button beep	On / Off
End melody	Off – 5 sec. – 15 sec. – 1 min. – On
Melody	Sound sequence 1 to 10
LCD contrast	16 increments (settings 0 to 15)
LCD light	On / Off
Change user name	max. 16 characters

5. MODE SELECT (CHARGE / DISCHARGE)



Once you have set all the charge / discharge parameters, the next step is to select the basic operating mode: charge or discharge. This is carried out by holding the 'dial' pressed in for at least two seconds. The display changes to show the Mode Select menu, in which the essential battery data alternates in the first line. The process you wish to use is determined in the central area of the display.

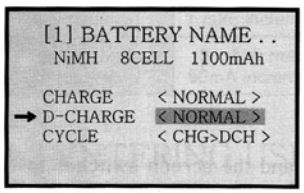
Use the 'dial' to move the arrow and mark your selected process. If you now press the dial, you can define the sequence of events for the mode you have selected.



If you have marked and activated the 'CHARGE' process, the following charge processes are available for NiCd and NiMH batteries:

• AUTOMATIC • REFLEX • NORMAL • LINEAR

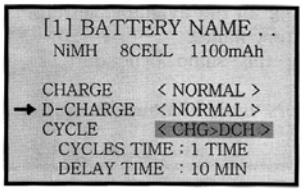
If you are handling a Lithium or Lead-acid battery, the charge process available is CV-CC.



If you have marked and activated the 'DISCHARGE' process, the following discharge processes are available for NiCd and NiMH batteries:

• AUTOMATIC • LINEAR • NORMAL

If you are handling a Lithium or Lead-acid battery, the charge process available is CC-CV.



The screen shot printed shows the 'CYCLE' process marked and activated; you can now determine the sequence of events as follows:

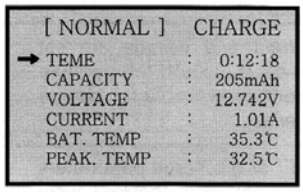
• CHARGE > DISCHARGE • DISCHARGE > CHARGE

together with the number of cycles and the pause times between the individual cycles:

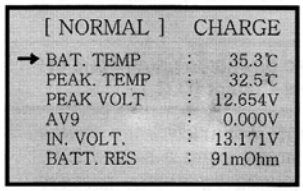
• CYCLE TIME • DELAY TIME

6. SCREEN DISPLAYS DURING A PROCESS

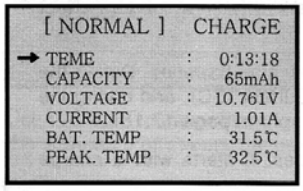
6.1 DISPLAYS DURING CHARGE AND DISCHARGE PROCESSES



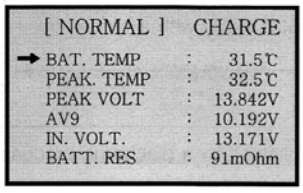
Once the selected process has started, the screen swit-ches to the working display, which shows all the essential values for the process currently in hand; the red Status LED also lights up. The screen shot printed here shows a working display for a charge process in normal mode.



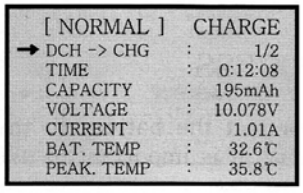
The working display is divided into two screen pages; tur-ning the 'dial' clockwise calls up the second page, where you can read off the values shown in this screen shot. The displayed value for internal resistance is calculated automatically by the MEGA POWER INFINITY-960SR.



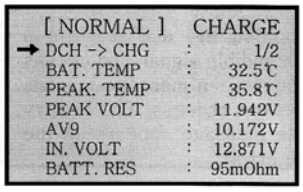
The discharge process takes place in a similar way: when the charger checks the battery, the screen displays the message 'DISCHARGE'. The screen shots printed here show the first and second pages of the working display during a discharge process.



Note:
The charge current can be altered while a charge or discharge process is actually in progress, but any change you make at that point only applies to the current process, i.e. it is not stored.

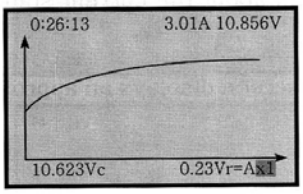


If you select a charge / discharge cycle, the working display looks similar to the previous example: the screen displays the message 'CYCLE' while the charger checks the battery. The screen shots printed here show the top and bottom pages of the screen display during a cycle process; in this case while the battery is being discharged.



As well as all the parameters for the current process, the screen displays the mode of operation for the current phase, the cycle sequence and the cycle number. During the charge phase of a cycle, and when the sequence of events is reversed, the screen displays the appropriate information.
It is also possible to display the individual processes on the screen in graphic form; you can switch between the two types of display by press-ing the 'MODE' or 'ESC' button.

This screen shot shows the charge curve for a NiMH battery which is currently being charged in linear mode. The top line of the screen displays the current charge parameters for the process in hand, i.e.:

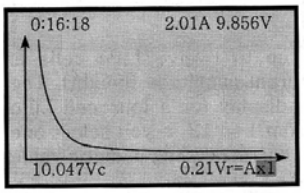


- Process time (hours, minutes and seconds)
- Actual charge current (A)
- Actual charge voltage (V)

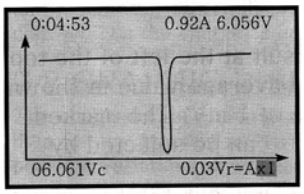
The bottom line shows special voltage values which are used by the charger to display voltage values more accurately.

The charger's software includes the facility to zoom into any area of the graph which is of particular interest, as if you were viewing it under a magnifier; the selected area is then centred on the Y-axis. The bottom line shows the voltage values of the centreline in the form of the voltage 'Vc'. You can offset this in manual mode (M) by marking it using the 'dial'. The offset between the centreline and the X-axis is determined by the variable voltage 'Vr'. This facility is very useful, as it enables you to study important areas of the graph at high resolution.

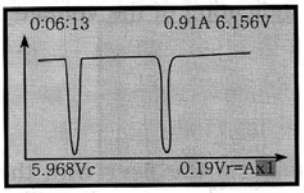
In the bottom line of the graphic display you can also select whether the process is to be manual (M) or automatic (A), and define the zoom factor (X1); the available range is once to five times (X1 - X5).



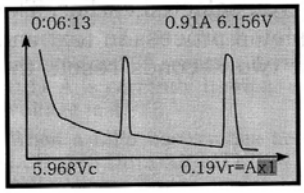
Discharge curves are also displayed on-screen when such a process is in progress, and they can be processed in the same way, i.e. as described above. The screen shoot printed here shows a linear discharge process which has been running for 16 minutes and 18 seconds; the discharge current is 2.01 A, and the actual voltage of the battery is currently 9.854 V.



The graphic display very clearly illustrates the differences between the individual processes. For example, the screen shot here shows the charge process for a four-cell receiver battery using the Reflex method.



When the process is set to normal charging, the charger checks the state of the battery at fixed intervals. During these periods no charge flows, and the voltage falls back - as shown in this screen shot.



This graphic display of a battery being discharged using the 'Normal' process clearly shows the periods during which the battery is being checked, i.e. it is not under load, and voltage rises briefly.

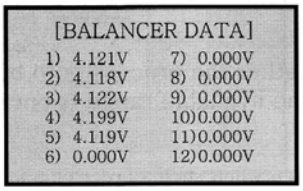
6.2 CYCLE DISPLAYS

As a charge / discharge cycle progresses, the graphic display changes according to the current phase. Additional information is provided, including the process currently under way, the current mode, such as 'CHARGE < REFLEX >', and the number of the cycle (e.g. 1/3). In this way the charger constantly keeps the user informed about the current state of the charge / discharge cycle.

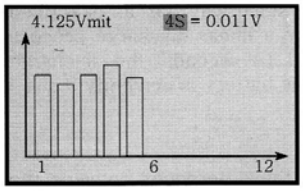
If a graphic display is not available for a particular process, the screen displays an appropriate message.

6.3 BALANCER DISPLAYS

When a LiPo battery is being charged or discharged in conjunction with LCB-6S PRO LIPOLY CELL BALANCER or LCB-12S DELUXE LITHIUM CELL BALANCER, the MEGA POWER INFINITY-960SR's screen is capable of displaying the voltage of the individual cells accurately. If you wish to make use of this facility, the balancer must be connected to the charger using the balancer sensor lead.



Pressing the 'MODE' button takes you from the graphic display to the display of individual cell voltages. The illustration printed here shows the display for a five-cell battery. The voltage differences are less than 5 mV, indicating that the individual cells of this pack are well balanced. The voltage of the individual cells can also be displayed in graphic form. Pressing the 'MODE' button takes you to



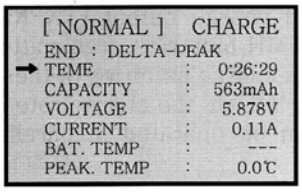
this display menu, where the voltage for up to twelve LiPo cells is displayed in the form of vertical bars of different amplitude (height). The screen shot printed here shows just such a display for a four-cell LiPo battery. The individual cells are numbered from 1 to 12. If you select one of these vertical bars, the screen displays the corresponding numeric value in the top line.

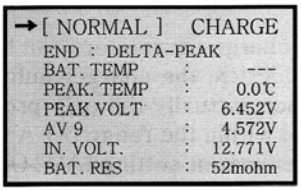
The charger calculates the average voltage, and displays the result at the left of the top line (4.125 Vav). The variation of the marked cell relative to the average value is shown on the right of the same line; these displays feature a resolution of 1 mV. The marked field is indicated in the cursor (inverse) field. The individual cells can be selected by rotating the 'dial'.
This form of graphic display very quickly provides an accurate indication of the voltage of the individual cells in a LiPo pack.

7. SCREEN DISPLAYS AFTER A PROCESS

When a charge or discharge process is complete, the charger alerts the user with the flashing red Status LED, and at the same time plays the melody you selected earlier. The screen now displays all the important data relating to the completed process in text and graphic form. Holding the 'ESC' button pressed in for at least two seconds resets the messages, and returns you to the main menu.

7.1 TEXT DISPLAYS

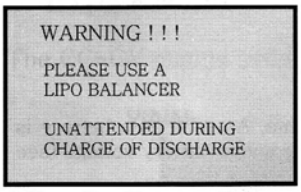




The screen displays all the relevant values. The first line states the completed process, while the second flashes the reason for its termination. The following messages will appear in flashing script, according to the programming you have carried out and the battery type you have selected:

- END: DELTA PEAK
- END: ZERO DELTA PEAK
- END: CC-CV COMPLETE
- END: TEMPERATURE
- END: MAX. CAPACITY
- END: NO DELTA-PEAK
- END: TIME LIMIT
- END: CUTOFF.DISCHARGE

(for a completed discharge process)
All the essential data of the process just completed is displayed on the screen. If the battery is a NiCd or NiMH type, the MEGA POWER INFINITY-960SR switches to a trickle charge when the process is terminated, and the screen then displays the level of the trickle charge current (0.11 A) alternating with 'Trk.' (Trickle). If the battery is a LiPo type, the charger maintains the pack voltage after the end of the process by feeding it a very small constant current; see the explanation of the CC-CV charge process on page 17,18.

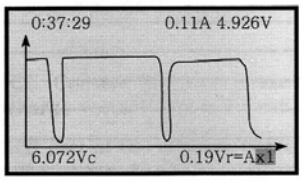


When you start a process with a LiPo battery, the screen informs you clearly that it is advisable to use a LiPo Balancer. In the interests of safety you should certainly heed this advice. We recommend our LCB-6S PRO LIPOLY CELL BALANCER or LCB-12S DELUXE LITHIUM CELL BALANCER, as they ensure that your batteries will always be properly balanced.
When a LiPo battery has been charged in conjunction with LCB-6S PRO LIPOLY CELL BALANCER or LCB-12S DELUXE LITHIUM CELL BALANCER, you can call up the numeric values for the individual LiPo cell voltages on the screen by pressing the 'MODE' button. The graphic display works in exactly the same way as that already described for the balancer data display.

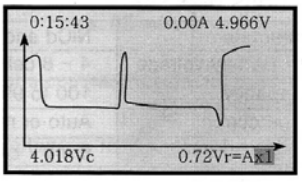
NOTE:
As already mentioned, at the conclusion of a charge or discharge process the screen display varies according to the selected battery type and the set charge cutoff method. Since it is by no means possible to print all the possible screen displays in these instructions, it is left up to you to analyse and interpret the texts displayed on the charger's integral screen.

7.2 GRAPHIC DISPLAYS

The conclusion of a charge or discharge process can be displayed on-screen in graphic form, as can the data for the process just completed. Press the 'MODE' button to display the graph. Please note that the possible variations in this display are very wide, and our screen shot is just one example: it shows two graphic displays, after one charge and one discharge process respectively.



The screen shot printed here shows the charge curve for a four-cell battery: the process lasted 37 minutes and 29 seconds, a trickle charge current of 0.11 A is currently flowing, and the actual battery voltage is 4.926 V.



This screen shot shows a discharge curve: the process lasted 15 minutes and 43 seconds, no current is now flowing, and the actual battery voltage is 4.966 V.

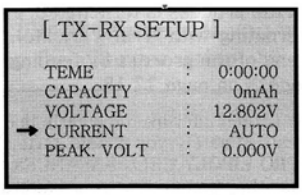
When a LiPo battery has been charged in conjunction with LCB-6S PRO LIPOLY CELL BALANCER or LCB-12S DELUXE LITHIUM CELL BALANCER, you can call up the numeric values for the individual LiPo cell voltages on the screen by pressing the 'MODE' button. The graphic display works in exactly the same way as that already described for the Balancer data display.

8.CHARGE TX-RX

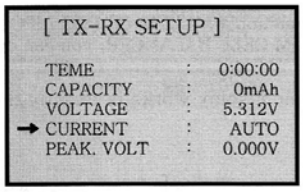
The MEGA POWER INFINITY-960SR also features a second charge output (TX-RX) which is designed to provide efficient charging of NiCd and NiMH batteries, transmitter and receiver packs and glowplug energizer batteries. TX-RX can charge batteries of these two types consisting of 4 ··· 8 cells and with a capacity of up to 9.9 Ah; the charge rate is variable, with a maximum of 2.0 A. Both charge outputs can be operated in parallel (simultaneously).

8.1 PROGRAMMING CHARGE TX-RX

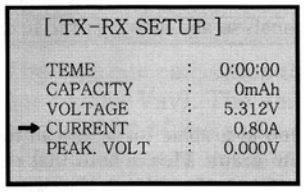
In contrast to the facilities for Output 1 (OUT 1), relatively few charge parameters can be varied for this charge output. When a battery is connected to TX-RX, the charger automatically calculates the cell count and the battery voltage. In fact, virtually the only programmable parameter is the charge current, which can be varied within the range 0.1 A to 2.0 A; alternatively you can set the charger to automatic charge current setting (AUTO).



You can switch between the two charge outputs using the 'channel' button. When you press the button, the display changes and looks as shown in the screen shot printed here. If no battery is connected, the voltage displayed at TX-RX is slightly below the input voltage.



This value is displayed in the appropriate line. As soon as a battery is connected, this line of the screen displays the actual battery voltage (see screen shot).

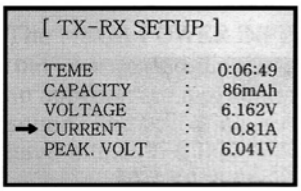


To program the charge current you wish to use, you must first rotate the 'dial' to mark the appropriate line, then activate it. The numeric value is now shown in inverse video (dark background), and you can vary it within the limits of 0.1 A to 2 A in increments of 0.1 A. If you select the 'AUTO' setting, the charger automatically calculates the optimum charge current.

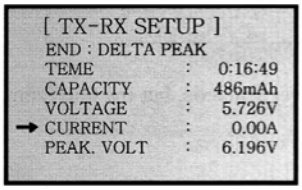
Data, functions of TX-RX

Parameter	NiCd and NiMH batteries
Cell count / Battery voltage	4 - 8 cells, automatic detection
Capacity	100 to 9900 mAh
Charge current	Auto or manual: 0.1 A to 2.0 A
Peak sensitivity	8 mV / cell, fixed
Pre-peak suppression	3 minutes, fixed

8.2 CHARGE PROCESS, TX-RX



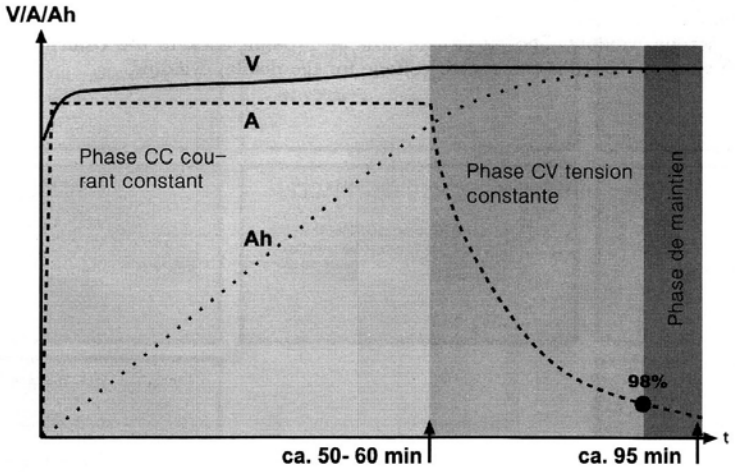
Once you have set the data correctly, and the 'TX-RX Setup' display is still on the screen, hold the 'dial' pressed in for two seconds. You will hear an audible signal to indicate that the charge process has started, and the green LED lights up. The illustration printed here shows such a charge process: it has been in progress for 6 minutes and 49 seconds at a current of 0.81 A.



The charge is terminated using the Delta-Peak process, which operates with a fixed sensitivity of 8 mV / cell. The second line of the screen shows the reason for the termination in flashing script. The end of the charge process is confirmed by the charger playing the programmed melody, and at the same time the green LED flashes. The screen now typically looks like the illustration printed here.

9. Explanation of the CC / CV charge process for Li batteries

The CC-CV charge process can be divided into three phases:

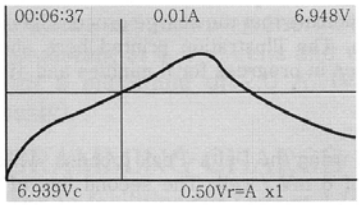


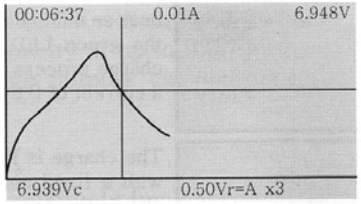
1. In the CC (Constant Current) phase the current is maintained at a constant level until the battery reaches the final charge voltage of 4.2 V / cell.

2. The next part of the process is the CV phase, in which the voltage is maintained at a constant level; at this point the battery is alreadsy about 85~90% full, and the charge current is allowed to decline.

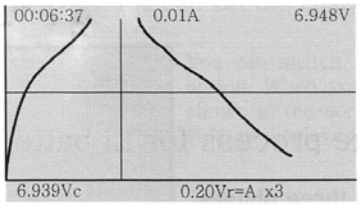
3. At around 98% (=0.05 of Charge current remaining) the cutoff melody sounds, and the termination display appears on the screen. At this point the battery is virtually fully charged, and can be disconnected from the charger. However, if the battery is left connected to the charger, the charge process continues with a minimal trickle current. Final termination occurs when the residual current falls to around 30 - 40 mA.

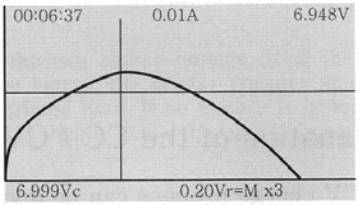
10. EXPLANATION AND USE OF THE ZOOM FUNCTION





In the automatic mode Vr=A, the curve is automatically scaled to match the vertical axis, but the hori-zontal axis can be scaled manually by x 1 ··· x 5.
The meaning of the numbers: x 1 = maximum overall display; x 5 = reduced to 1/5 size.





The amplification of the vertical display Vr = M (zoom) can also be adjusted manually in order to obtain a more accurate display when you wish to read off the values. If the resolution is too high, the curve will extend beyond the screen window. The curve can now be brought back to the centre of the screen by adjusting the centre voltage Vc; Vc is the centre voltage for the display window.

11. ERROR MESSAGES

The MEGA POWER INFINITY-960SR is equipped with a range of safety features to ensure that charge and discharge processes are completed reliably. As soon as an error occurs, an appropriate message appears on the screen, and the piezo buzzer emits a shrill warning sound. The following error messages can be erased by pressing the 'ESC' button once you have eliminated the cause of the problem.

[INPUT VOLTAGE]

- The present input vol tage is 10.86V
- Please check the input voltage
- The input voltage must be 11-15V

[SHORT - CIRCIUTED]

- Output short-circuited.
- Please check the output.

[BAT. TEMP TOO LOW]

- Battery temp is too low to be operated!

BAT. VOLT : 10.346V
BAT. TEMP. : 5.2℃

[NO BATTERY]

- A battery is not connacted to the output
-Please connect the battery to the output then restart!

[LOW OUTPUT VOLTAGE]

- Output voltage is lower than the selected cells or voltages
- Please select proper cells or Voltages.

[BAT. TEMP TOO HIGH]

- Battery temp is too high to be operated!

BAT. VOLT : 10.346V
BAT. TEMP : 5.2℃

[REVERSE POLARITY]

- Battery is connected to the output in revese!
- Please correctly connect the battery to the output

[HIGH OUTPUT VOLTAGE]

- Output voltage is higher than the selected cells or voltages
- Please select proper cells or voltages.

[LOADER IS TOO HOT]

- Loader is too hot!
- Please wait to the loaders cools down!

[OPEN CIRCUIT]

- A battery is disconnected during an operation.
-Please reconnect the battery and restart!

[TEMPERATURE SENSOR]

- A temperature sensor is connected inreverse or is defectice.

[INTERN TEMPERATURE]

- The internal temperature is too high!
- Contact the service, if this message often appears

[DATA COMMUNICATION]

- The internal circuit is defective.
- Contact the service.

[DATA NOT CORRECT]

- The selected values are inkorrekt or more than 5LiPo cells should not not without Balancer be loaded or unloaded.

[WARNING!!]

RECOMMEND A BALANCER WHICH SUPPORTS BOTH A123 AND LiPo BATTERIES!

In LiFe mode, if a balancer which does not support LiFe battery is connected to the charger, it might be OK to balance each cell of LiFe(A123) battery pack, but this balancer does not do over voltage protection for LiFe(A123) battery. Therefore, we would recommend that a balancer which supports LiFe(A123) battery is used when charging and balancing LiFe(A123) battery.