OPERATING MANUAL

VENOM

PRODUO [DUAL POWER] CHARGER

AC 100V–240V | DC 11.0V–18.0V

BALANCE CHARGER/DISCHARGER FOR
Li-ion/LiPo/LiHV/LiFe/NiMH/NiCd/Pb BATTERIES



Thank you for purchasing the Venom Pro Duo Charger. This charger is comprised of two, multi-chemistry capable, rapid chargers / dischargers, cell balancers with built in microprocessors built into one component. Please read and understand the entire manual before operating this charger.

If you have read the entire manual and still are unclear regarding any of the functions, warnings, or safety precautions, please contact our customer service department **PRIOR** to using this product.

Notes:

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Dual Charge Circuitry

This charger features two individual charging circuits allowing you to charge 2 batteries simultaneously, regardless of battery chemistry or cell count.

High Power Charging Circuit

The Venom Pro Duo Charger features a powerful 80-Watt charging circuit. The charger can safely charge or discharge up to 15 cells of NiMH or NiCd batteries and up to 6S LiPo batteries.

Lithium Cell Voltage Monitoring

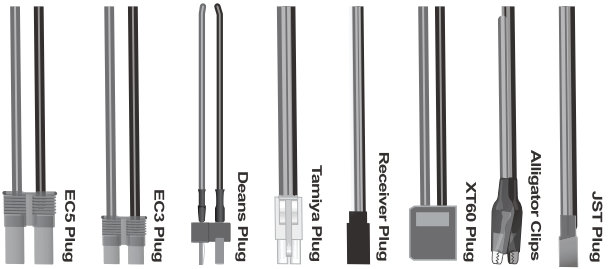
The Venom Pro Duo Charger can monitor and balance individual cells within a LiPo battery in either charge or discharge mode.

Multiple Chemistry Charging

The Venom Pro Duo Charger will charge LiIo, LiPo, NiMH, LiHV, NiCd, LiFe and Pb battery types.

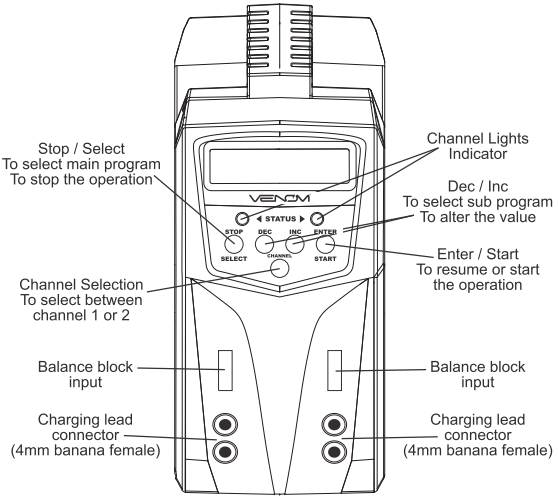
Multiple Charging Leads Included

The Venom Pro Duo comes with the following charge leads to include the most common connection types.



2. EXTERIOR OF THE UNIT

PRODUO



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3. WARNINGS AND SAFETY NOTES

- Never leave the charger unsupervised when it is connected to its power supply. If any malfunction is observed immediately terminate the process and refer to the operation manual.
- Keep the charger away from dust, water, heat, direct sunlight and vibration.
- The circuit of this unit can be powered by AC 100-240V or DC 11~18 volt power source.
- This unit and the battery to be charged or discharged should only be set upon a heat resistant, non-flammable and non-conductive surface. Never charge on a car seat, carpet or similar surface. Keep all flammable or volatile materials well away from operating area.
- Be sure to understand the specifications of the battery to be charged or discharged. If the program is set up incorrectly the battery can be severely damaged. Lithium batteries when improperly charged or discharged, can cause permanent damage or fire.
- To avoid short-circuits between the charge leads, always connect the charge cable to the unit first, and only then to the battery to be charged or discharged. Reverse the sequence when disconnecting.
- Do not attempt to disassemble battery packs.

Li-Io	Voltage level: 3.6V/cell Max. charge voltage: 4.1V/cell Allowable fast charge current: 1C or less Min. discharge voltage cut off 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 cut off level: 3.0V/cell or higher
LiHV	Voltage level: 3.8V/cell Max. charge voltage: 4.35C/cell Allowable fast charge current: 1C or less Min. discharge voltage cut off level: 3.0V/cell
LiFe	Voltage level: 3.3V/cell Max. charge voltage: 3.6V/cell Allowable fast charge current: 4C or less(e.g. A123M1) Discharge voltage cut off level: 2.0V/cell or higher Voltage level: 2.0V/cell
NiCd/NiMH	Voltage level: 1.2V/cell Allowable fast charge current: 1C~2C depends on the performance of cell discharge voltage cut off level 0.85V/cell(NiCd), 1.0V/cell(NiMH)
Pb	(Lead-acid) max. charge voltage: 2.46V/cell Allowable fast charge current: 0.4C or less Discharge voltage cut off level: 1.50V/cell or higher

Pay close attention and verify the capacity and the voltage of the Lithium battery pack to be charged or discharged. It may be composed of parallel and series connection mixed. In parallel link, the capacity of the battery pack is multiplied by the number of cells but the voltage remains the same. Extreme voltage imbalance can cause a fire or explosion during the charge process. We recommend you configure the Lithium battery pack in series only.

Discharge

• The typical purpose of discharge is to determine the residual capacity of the battery, or to lower the voltage of battery to a defined level. Much like the process of charging, when you discharge batteries you must not leave the battery unattended. To avoid the battery becoming over discharged, set the final discharge voltage correctly. Lithium batteries should not be over discharged to lower than the minimum voltage, as this leads to a rapid loss of capacity or a total failure. Generally, you do not need to discharge a Lithium battery.

• Some rechargeable batteries are said to have a memory effect. If they are partly used and recharged before the whole charge is drawn out, they 'remember' this and next time will only use that part of their capacity. NiCd and NiMH batteries are said to suffer from memory effect. They prefer complete cycles; fully charge, then use until empty. Do not recharge before storage; allow them to self discharge during storage. NiMH batteries have less memory effect than NiCd.

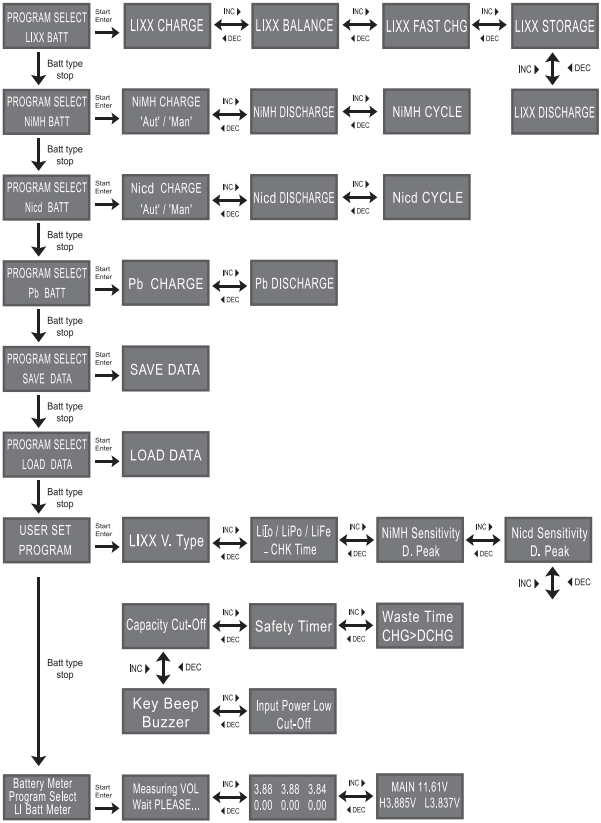
• Lithium batteries prefer a partial rather than a full discharge. Frequent full discharges should be avoided if possible. Instead, charge the battery more often or use a larger capacity pack.

• A brand-new NiCd battery pack will not reach peak performance until the pack has been cycled approximately 10 times. The cyclic process of charge and discharge will optimize the capacity of battery pack.

These warnings and safety notes are VERY important. Please follow the instructions for maximum safety; misuse can result in damage to the charger and battery. In extreme cases, improper use can result in bodily injury or property damage.

4. PROGRAM FLOW CHART

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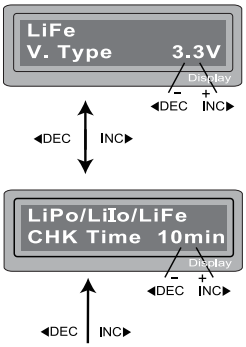


5. INITIAL USER PARAMETER SET UP

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The Charger will use the default values upon being powered up for the first time. The screen displays the following information in sequence, and the user can change the values of each parameter.

The Venom Pro Duo charger features two full-featured chargers within a single housing. To swap between channel 1 and channel 2, press the "CHANNEL" button on the front of the charger. The two red LED lights on the front face of the charger will indicate whether the left or right channel is currently selected.



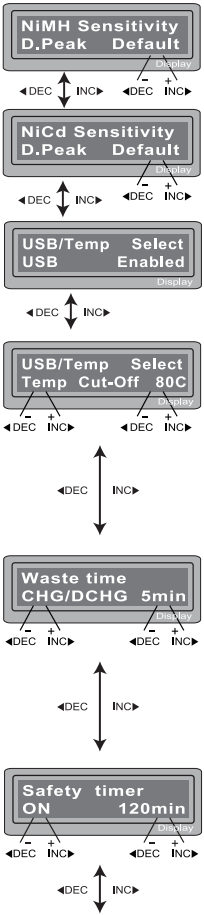
To change the default values, press the Start/ Enter key once. The value to be adjusted will blink indicating it can be edited. Use the Inc/Dec keys to adjust the value to the desired setting, then press the Start/Enter key once to save your changes for that value.

The screen will show the nominal voltage of the three types of Lithium batteries; LiFe (3.3V), Lilo (3.6V), and LiPo (3.7V). It is very important to make sure you choose the correct type of battery during set up. Refer to the battery's owner manual for reference if needed. Failure to choose the correct battery type can cause damage to the battery, charger, and will void all warranties.

The charger will recognize the cell count of lithium batteries automatically at the beginning of the charge or discharge cycle and compare it to the settings selected. If a voltage has been selected that is different from the voltage it detects, an alarm will sound.

⚠ WARNING ⚠

Over discharged batteries MAY be detected as a lower cell count pack. Always confirm your setting before starting a charge sequence. Using the "CHK TIME" parameter in your LiPo/Lilo/LiHV/LiFe settings can allow you to delay detection in an attempt to bring a dead battery back to life. YOU MUST USE EXTREME CAUTION WHEN DELAYING CELL DETECTION. A 10 minute delay is suggested for larger mAh packs, but small capacity batteries may finish charging/discharging before the 10 minute mark which could result in catastrophic failure of the battery. If there are any doubts on how to use this feature, please contact Venom directly.

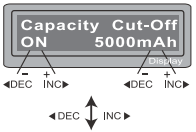


This shows the trigger voltage for automatic peak detection of NiMH and NiCd batteries. The effective value ranges from 5 to 20mV per cell. If the trigger voltage is set higher, there is a danger of overcharging the battery; if it is set lower, there is a possibility of premature termination. Please refer the technical specification of the battery. (NiCd default:12mV, NiMH default: 7mV)

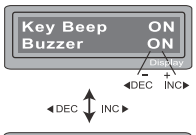
You can select the function of the 3-pin port on the left side of the unit. It can be used as a temperature sensor port selected at this screen. If the port is assigned as a temp. port, an optional temperature probe contacting the surface of the battery can be used. You can set the maximum temperature at which the charger should allow the battery to reach during charge. Once a battery reaches this temperature during charge, the process will be terminated to protect the battery. This charger does not connect to your PC.

When performing a charge/discharge or discharge/charge cycle, your battery can often become warm after the charge or discharge period. The “waste time” setting will insert a time delay to occur after each charge and discharge process to allow the battery adequate time to cool down before starting the next process. The value ranges from 1 to 60 minutes.

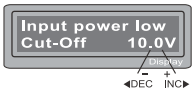
Every charge is monitored by a safety timer. The default setting is 120 minutes or 2 hours. Once this time limit is reached the charger will stop charging regardless if the charge is complete. This is programmed to prevent accidental overcharging of the battery, or if the termination circuit cannot detect the battery is full. The value for the safety timer should be long enough to allow a full charge of the battery. When your charge completes, if the charger says “TIME” in the upper right corner of the screen, your charge was terminated due to the safety timer.



This setting allows you to change the maximum capacity that will be supplied to the battery during charge. If the nominal pack voltage is not detected and the safety timer does not expire for any reason, this feature will automatically stop the process at the selected capacity value.



The Key Beep/Buzzer settings allow you to turn off the individual button "beep" as well as the musical tone that is used to alert different mode changes.

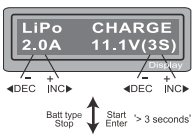


When connecting the charger to a 12 volt power source (lead acid battery) in the field, this setting will allow you to monitor the incoming voltage. Should the voltage drop below the value selected, the charger will terminate operation to protect the input battery.

6. CHARGING A LITHIUM BATTERY PRODUO

(LiIo/LiPo/LiHV/ LiFe) program

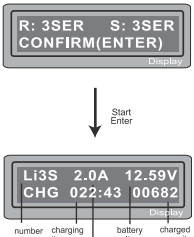
Use these programs only when charging a lithium battery (LiIo/LiPo/LiHV/LiFe) with a nominal voltage of 3.6V, 3.7V, 3.8V or 3.3V per cell, respectively. The charge current going into the battery will vary depending on the chemistry type so it is VERY IMPORTANT that you select the correct type for your battery. The ending voltage of the charge is also important as it varies for all four types: 4.1V for LiIo, 4.2V for LiPo, 4.35V for LiHV and 3.6V for LiFe. The charge current (how many Amps you are putting into the pack) and nominal voltage (Proper voltage for the cell count of the battery you are charging) must be correct for the battery to be charged. To change these settings, press the START/ENTER key to make the selected value blink. Using the increase and decrease buttons, set your desired amperage, then press START/ENTER to save the setting. You will then be asked to select your nominal voltage/cell count. Again, use the increase/decrease buttons to reach your desired setting and Press the START/ENTER button to confirm and save.



Now, double check the charge settings. The upper left corner of the screen should read the specific battery chemistry you are trying to charge. In the case of the example, LiPo. The value underneath the chemistry type is the charge current. Check your batteries specifications for proper charge rating, but with all Venom batteries, we recommend a 1C charge rate. If your battery is a 5000mAh, your charge current should be 5.0A. If using a 2200mAh pack, the charge rate would be 2.2A. Simply placing a decimal point after the first number in your capacity rating will give the correct 1C charge rating. To further elaborate, a 2C charge rate on a 5000mAh pack would be 10.0A.

The information on the right side of the screen will tell you which type of charge you are using and the voltage and cell count you are attempting to charge. Remember, THIS VALUE MUST BE SET TO PROPERLY CHARGE YOUR BATTERY.

When you are ready to charge, press and HOLD the START/ENTER button for 3 seconds.



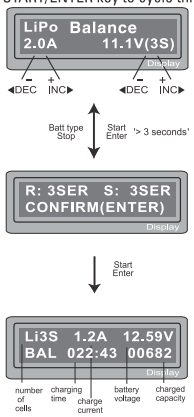
The next screen will ask to confirm the settings after the charger examines the battery, giving a cell count. The "R:" value shows the number of cells detected by the charger. The "S:" value shows the number of cells you selected in the previous menu screen. If the "R:" value does not match the "S:" value, the charger is seeing a different cell count than you have selected. If this happens, press the Batt Type/Stop button to check the number of cells you have selected. If this is correct compared to the battery, you may have a problem with your battery. If the values are the same, it is safe to charge at this point. Press and hold START/ENTER to start the Charge sequence.

When charging, the screen provides useful information like the charge rate, number of cells being charged, battery voltage and the amount of mAh, or capacity that the charger has put into the pack being currently charged. Press Batt type/Stop to stop the charging process at any time.

6.1 CHARGING LITHIUM BATTERIES IN BALANCE MODE

Lithium batteries comprised of more than one cell will need to be balanced occasionally to ensure the best possible performance. When balancing you MUST connect the balance plug of your battery to the balance board that should be plugged in to the front of the charger. The red and black positive and negative charge leads will still need to be connected to the battery. The "balance" lead simply allows the charger to monitor each individual cell. When "balance" charging, the charger will monitor each individual cell attempting to bring them all to the same nominal voltage.

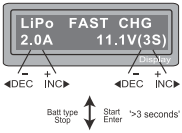
Like a standard charge sequence, the value in the lower left corner of the screen is the selected charge current, in the lower right, the voltage of the pack that will be charged. To change these values, press the START/ENTER key to cycle through the adjustable settings. Use the increase/decrease buttons to change the values and use the START/ENTER button to confirm the values are set. When ready to BALANCE charge, press and hold the START/ENTER button for 3 seconds to start the process.



The next screen will ask to confirm the settings after the charger examines the battery by giving a cell count. The "R:" value shows the number of cells detected by the charger. The "S:" value shows the number of cells selected in the previous menu screen. If the "R:" value does not match the "S:" value, the charger is seeing a different cell count than what has been selected. If this happens, press the Batt Type/Stop button to check the number of cells selected. If this is correct compared to the battery, there may be a problem with the battery. If the values are the same, it is safe to charge at this point. Press and hold START/ENTER to start the charge sequence.

When charging, the screen provides useful information like the charge rate, number of cells being charged, battery voltage and the amount of mAh, or capacity that the charger has put into the pack being currently charged. When the balance plug is connected to the charger, you can press the "increase" button to view the individual cell voltages. Pressing the "increase button" a second time will return you to the previous screen. Press Batt type/Stop to stop the charging process at any time.

6.2 “FAST’ CHARGING A LITHIUM BATTERY

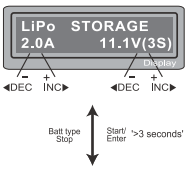


When charging a Lithium battery, the charging current will begin to drop as the battery reaches nominal voltage. By using the FAST charge option, the reduction of power will not be as great as it is with a standard charge. The benefit of this is a reduced charge time. The drawback is that the pack will most likely not charge to its full capacity.

Like a standard charge sequence, the value in the lower left corner of the screen is the selected charge current, in the lower right, the voltage of the pack that will be charged. To change these values, press the START/ENTER key to cycle through the adjustable settings. Use the increase/decrease buttons to change the values and use the START/ENTER button to confirm the values set. When ready to FAST charge, press and hold the START/ENTER button for 3 seconds to start the process. Note, when FAST charging, the lower left corner of the screen will show “FAS” and not the selected charge current.

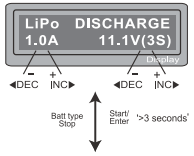
6.3 “STORAGE” CHARGING A LITHIUM BATTERY

When a lithium battery sits unused, for long periods of time, it is best to give that pack a STORAGE charge. This will charge the battery to a nominal storage voltage (3.75V for LiPo, 3.75V for Lilo, 3.80V for LiHV and 3.3V for LiFe per cell). Storage mode will automatically determine if the battery needs to be charged or discharged to reach this level. The balance plug of the battery must be plugged into the charger for a proper storage charge to take place. Set the charge current and the battery voltage/cell count as you would any other charge mode by pressing the START/ENTER button to select the parameter you wish to change, and use the INCREASE/DECREASE buttons to adjust the value. When you wish to confirm your setting, press the START/ENTER button. To initiate the storage charge, press and hold START/ENTER for 3 seconds, confirm the cell count selected is the same that the charger is indicating and press the START/ENTER button to begin charging.

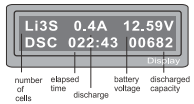


When charging, the screen provides useful information like the charge rate, number of cells being charged, battery voltage and the amount of mAh, or capacity that the charger has put into the pack being currently charged. Press Batt type/Stop to stop the charging process at any time.

6.4 DISCHARGING A LITHIUM BATTERY



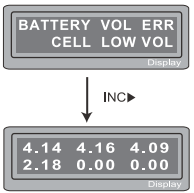
Use this setting to discharge a Lithium pack. The charge current and pack voltage are adjustable using the methods shown previously in the charge and balance instructions. Never exceed 1C for the discharge rate and never use a final voltage lower than what is recommended by the battery manufacturer. The balance plug of the battery must be plugged into the charger for a proper discharge to take place. Press and hold the START/ ENTER button to confirm cell count, then press the button again a second time to start the discharge process.



When discharging, the screen provides useful information like the discharge rate, number of cells being discharged, battery voltage and the amount of mAh, or capacity that the charger has removed from the pack being currently discharged. Press Batt type/Stop to stop the discharging process at any time.

6.5 VOLTAGE BALANCING AND MONITORING DURING THE DISCHARGE

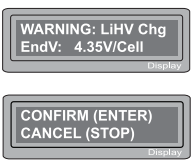
The processor monitors the voltage of individual cells during 'storage-mode' and 'discharge' of a Lithium battery pack. It tries to regulate the voltages to be equal. For this feature, the balance plug of the battery pack must be connected to the balance port of the charger. If the voltage of any one or more cells varies abnormally during the procedure, it terminates the process with an error message. If this happens, the battery pack contains a bad cell, or there is a bad connection at the balance plug. You can easily know which one cell is bad by pressing the increase button with the error message on screen to show the individual cell voltages. This method of viewing cell voltages can be used during any lithium battery charge, or discharge process provided the balance lead from the battery is plugged into the charger.



In this example, the charger found that the voltage of one of the cells in this 4S pack is too low.

By pressing the "increase" button when the error message is displayed, we can see that cell #4 is reading 2.18, which is below the minimum recommended 3.0 per cell. If all cells read 0.00, the balance lead from the battery may have come disconnected. Also check your balance port connection at the charger.

6.6 LIHV MODE INSTRUCTIONS



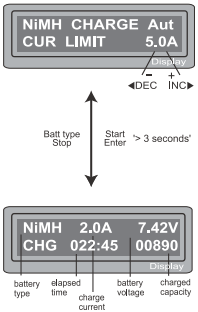
Select LiHV battery with standard Voltage 3.8V from setting program, double confirm the battery type when charging. If it's not LiHV battery, press Stop button to exit; if it's confirmed LiHV battery, then go to the program.

Warning: The LiHV mode only supports 4.35V LiHV batteries. **Do not use any other battery type in this mode.** Never charge a 4.20V LiPo battery under this mode as it may cause the battery to catch fire or explode.

7. NIMH/NICD BATTERY PROGRAM

Use these programs only when charging a NiMH (Nickel-Metal-Hydride) or NiCd (Nickel-Cadmium) battery. To alter the value on the display, press the START/ENTER key. The charge current can now be altered by using the increase/decrease buttons. The value will be saved by pressing Start/Enter key once. To start the process, press and hold the START/ENTER button for more than 3 seconds.

7.1 CHARGING NICD/NIMH BATTERIES

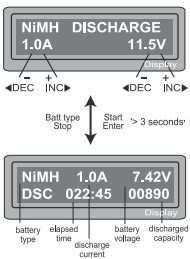


With NiMH and NiCD packs, you do not have to indicate to the charger how many cells are in the pack. In auto "AUT" mode, simply set your charge current (no more than a 1C rating), press START/ENTER for 3 seconds and the charge process will begin. In manual "MAN" mode, it will charge the battery with the charge current you set at the display.

NOTE: Each mode can be switched by pressing increase/decrease button simultaneously when the current field is blinking.

The screen will display the current state of charging. To stop the process, press the Batt type/Stop key once. An audible sound will indicate you have ended of process.

7.2 DISCHARGING NICD/NIMH BATTERIES

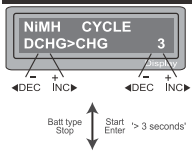


Set discharge current on the left and final voltage on the right. The discharge current ranges from 0.1 to 1.0A and the final voltage ranges from 0.1 to 25.0V. Refer to your battery's specifications to determine optimal discharge current and final voltage. To start the process, press START/ENTER key for more than 3 seconds.

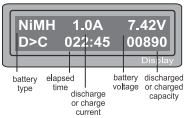
The screen will display the current state of discharge. You can alter the discharge current by pressing the START/ENTER key during the process. Once you change the current value, store it by pressing START/ENTER button again. To stop discharging press Batt type/Stop key once. An audible sound will indicate the process has ended.

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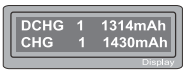
7.3 CHARGE/DISCHARGE DISCHARGE/CHARGE CYCLE OF NIMH/NICD BATTERIES



Select the sequence based on the current state of the battery. If the battery is fully charged, use the Discharge/Charge sequence. If the battery needs to be charged, use Charge/ Discharge. Press START/ENTER to confirm the setting, then choose how many times to cycle the battery (1-5). Press and hold START/ENTER to begin the process.



To stop the process, press the Batt/Stop button once. Change the discharge or charge current by pressing START/ENTER while charging. An audible sound will indicate when the process has ended.

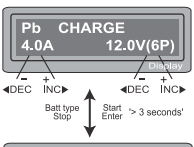


When the process is completed, use the increase/decrease buttons to see the amount of capacity that was charged/ discharged. By pressing increase/decrease again, the results of the next charge cycle will be shown.

8. PB (LEAD SULFURIC ACID) BATTERY PROGRAM PRODUO

This program is for charging Pb (lead-sulfuric acid) batteries with a nominal voltage from 2V to 20V. The optimal charge rate for a Pb battery is 1/10 of the capacity. Pb batteries must NOT be charged rapidly. Always follow the instructions supplied by the battery manufacturer.

When confident you have the correct settings for your Pb battery, press START/ENTER to begin editing the settings. Use the increase/decrease buttons to adjust the value and press START/ENTER to save the selected value.

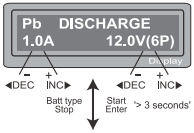


8.1 CHARGING PB BATTERIES

Set up the charge current on the left and the nominal voltage of the battery on the right. The charge current ranges from 0.1A to 6.0A and the voltage should be matched with the battery being charged. Start the charge process by pressing the START/ ENTER button for more than 3 seconds.

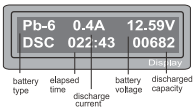
The screen will display the current state of charging. To stop the process, press the Batt type/Stop key once. An audible sound will indicate you have ended of process.

8.2 DISCHARGING A PB BATTERY



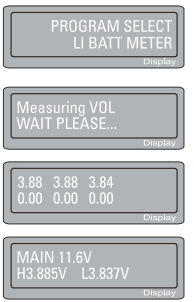
Set discharge current on the left and final voltage on the right. The discharge current ranges from 0.1A to 7.0A.

Start the discharge process by pressing the START/ENTER button for more than 3 seconds.



The screen will display the current state of discharge. Alter the discharge current by pressing the START/ENTER button during charging. Once you have changed the value, save it by pressing START/ENTER again. To stop the process, press the Batt type/Stop key once. An audible sound will indicate you have ended the process.

9. BATTERY METER TESTING PRODUO

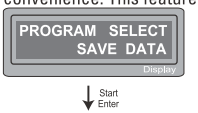


Battery Meter testing can be a very valuable tool for battery diagnostics. To properly use the battery meter, you must connect both the charge lead and the balance lead to the charger.

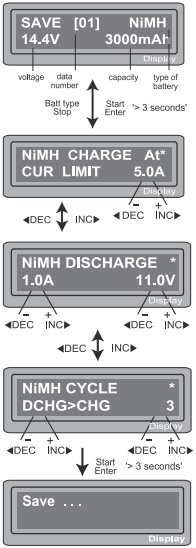
To begin, press START/ENTER. The charger will provide the results in the form of a voltage reading. Press increase to check the total results of the pack. Press increase again to return to the single cell data.

10. SAVE DATA PROGRAM PRODUO

The Venom Pro Duo Charger provides a data storage and load feature for your convenience. This feature can store information for up to 5 batteries to be called back for the process of charging or discharging without having to reprogram the charger. To alter the values, press START/ENTER, then change the blinking value using the increase/decrease buttons.



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The value settings in this feature do NOT affect the charge or discharge process, but rather allows you to store statistics for commonly charged batteries to speed up the charger setup time. To use this feature, you will want to change the parameters to the exact specifications of the batteries you wish to store. This example shows a 12 cell, NiMH battery with a capacity of 3000mAh.

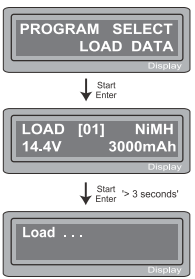
Set up the charge current for manual charge mode, or the current limit for automatic charge mode. Each mode can be changed by pressing the increase/decrease buttons at the same time when the "current" field is blinking.

Setting up discharge current and final voltage.

Setting up the sequence of charge and discharge as well as the amount of times to cycle.

Saving the data.

11. LOAD DATA PROGRAM PRODUO



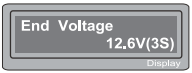
This program will call back the data that was stored during the "Save Data" program. To load the data, press START/ENTER once. Change the data number to the battery you wish to recall using the increase/decrease buttons, then press START/ENTER for 3 seconds.

Program select

Select the data number you wish to load. The data displayed on screen is matched with the number selected.

Loading the data.

12. VARIOUS INFORMATION DURING THE PROCESS PRODUO



Final voltage for selected cell type.

◂DEC ↓



Displayed capacity cut-off function is turned on and the current value the capacity is set to.

◂DEC ↓



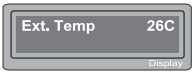
Displayed safety timer is turned on and the duration is set in minutes.

◂DEC ↓



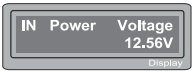
Displayed temperature cut-off function is turned on.

◂DEC ↓



The external temperature is displayed when the temp probe is used.

◂DEC ↓



Present input voltage.



The battery is connected using the balance lead and the voltages of the three individual cells is being displayed. The program will display the individual voltage of up to 6 cells. To view this screen when charging/discharging, press the increase button.

13. WARNING AND ERROR MESSAGES PRODUO

Here is a list of all warning and error messages the charger may display. Please refer to this list should you have any difficulty charging.

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Incorrect polarity detected.



Battery connection was interrupted.



Short-circuit of the output termination.



Input voltage is wrong.



The voltage is lower than the setting currently selected. Please check the number of cells in the battery pack.



The charger has an internal error. Please contact Venom customer service.



Voltage of the pack is too low to charge safely. Please check the voltages of each cell.



Voltage of the pack is too high to charge safely. Please check the voltages of each cell.



Connector error. Please check the connections at the battery and charger.



Internal temperature of the charger is too high. Allow time for the charger to cool.



The processor cannot control the input current. Contact Venom customer service.



The battery balance port or the power line to connect is incorrect.



A single cell in the connected battery is below safe voltage levels. Please check the voltage of each cell.



A single cell in the connected battery is too high. Please check the voltage of each cell.

14. SPECIFICATIONS (PER CHANNEL) PRODUO

Dual input power(AC/DC):	Input AC:100~240Volt Input DC: 11~18Volt
Circuit power:	max 80W for charging max 5W for discharging
Charge current range:	0.1~7.0A
Discharge current range:	0.1~1.0A
Current drain for balancing LiPo:	300mAh/cell
NiCd/ NiMH battery cell count:	1~15 cells
Lithium battery cell count:	1~6 Series
Pb battery voltage:	2 to 20V
Weight:	400g
Dimension:	136×127×56mm

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