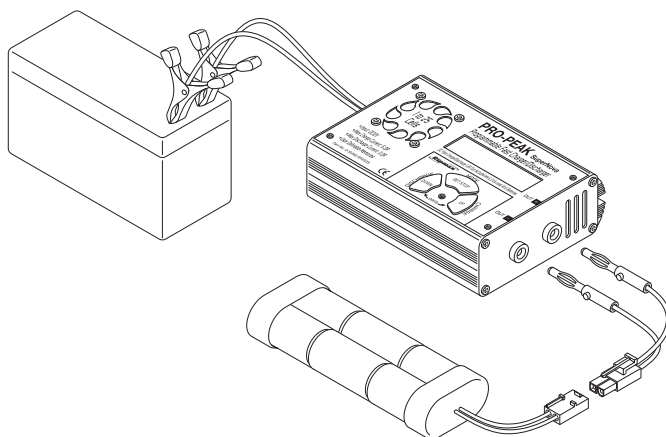


# SuperNova 250S Charger



Dear Customer

Item No. O-SUNG-RP250S

Thank you for purchasing the highly advanced, low cost, easy-to-use Ripmax Pro-Peak SuperNova charger. To obtain maximum performance from your new charger, please carefully read the following instruction manual.

The SuperNova 250S is an innovative multi-function charger far superior to existing conventional chargers. This unit is especially designed to maximize charge efficiency using SJ's own unique algorithm. The integral 2 line, 16 character LCD screen displays various information relating to the operating modes and adjustment parameters, as well as key functions such as battery charge state, which shows the percentage of capacity remaining. Furthermore, the SuperNova 250S is very user friendly, even for beginners, thanks to its 10 intelligent selectable 'battery parameter' memories. The 10 memories, containing factory pre-set battery parameters, can be re-programmed to store your own standard battery pack parameters so that you can obtain the same precise results whenever you charge.

## FEATURES

- Designed to fast charge/discharge 1~25 cell Nickel Cadmium (NiCd) & Nickel Metal Hydride (Ni-MH) packs, and to charge only 1~6 cell (2~12volt) Lead Acid (Pb) batteries.

- Uses either 12volt Lead Acid battery or 10~15volt DC power supply input (Not supplied).

- The most outstanding feature of the SuperNova 250S is its 10 intelligent battery memories, numbered 0 to 9. These enable individual cell or pack parameters to be memorised and stored, i.e. battery type, number of cells, battery capacity, charge current and discharge current. As a result of this, up to 10 different battery packs can have their individual charge/discharge requirements set.

*NOTE:* The SuperNova is supplied with the 10 memories already programmed. Unless these programs exactly match your requirements, it will be necessary to modify them to suit the battery packs being charged. How to carry this out is detailed under *Setting Battery Parameters*.

- To protect both the charger and batteries, the maximum charge and discharge currents are automatically limited.

- When discharging battery packs, the discharge cut off voltage level is set at 0.9 volt per cell to avoid damage to

the battery being discharged.

- Zero Current Voltage Check prevents incorrect delta peak auto cut-off caused by high connection resistance or high resistance/old/faulty battery packs.

- Low and over voltage input battery warning function-input voltages outside the range 9.5 to 15.5 volts causes a warning message 'Input Power' to be shown on the display, together with an audible warning.

- Automatic initial charge stage checks the condition of the battery being charged. If the battery is not in a condition suitable for charging, the display shows a warning message 'Output Battery Connector Error' along with an audible warning.

- In the event of the battery being charged becoming disconnected from the charger the display shows a warning message 'Output Battery Connector Error' along with an audible warning.

- Reverse polarity protection. The display will show 'Output Battery Reverse Polarity' if the battery being charged is connected in reverse along with an audible warning.

## TECHNICAL DATA

- **Input Voltage:** 12v Pb battery or 10~15v power supply
- **Charge Voltage:** 1~25 cells ( 1.2 to 30v )
- **Fast Charge Current:** 0.1 to 5.0A-dependant on battery being charged
- **Trickle Charge Current:**
  - Manual Mode only: Capacity/20 pulsed
  - Tx battery: 50mA
  - Ni-MH battery: 0mA
  - Pb battery: 100mA
- **Discharge Current:** 20W
- **Display:** 2 x 16 Two Line LCD
- **Cooling Fan**
- **Overload Protection**
- **Short Circuit Protection/Electronic Shut Off**
- **Reverse Polarity Protection on both Input and Output**
- **Pb battery charge function**
- **Size:** 145(W) x 92(L) x 40(H)mm
- **Weight:** 560g

## INPUT BUTTONS

There are three input buttons on the SuperNova 250s.

- SET/STOP:** This is used to enter and exit program mode and to stop charging and discharging procedure.
- CHARGE/UP:**
  - Starts charging procedure.
  - Increases figure/amount.
  - Moves the cursor to the right.
- DISCHARGE/DOWN:**
  - Starts discharging procedure.
  - Decrease figure/amount.
  - Moves the cursor to the right.



## EXTREMELY IMPORTANT - READ BEFORE USING CHARGER - SAFETY PRECAUTIONS

- Place the charger on a firm level surface for charging.
- **DO NOT** cover charger.
- Take great care over battery polarity, and observe the battery manufacturer's recommendations.
- NiCad/Nickel Metal Hydride cells become **WARM** to the touch when charged. If the pack feels **HOT** to the touch, disconnect it at once.
- Connect the input leads to the 12v supply first, then connect the battery to be charged.
- **ALWAYS** disconnect the NiCad/Ni-MH /Pb battery when **NOT** charging, as they may discharge themselves if left connected.
- **DO NOT** allow the input crocodile clips to touch each other or the case of the charger when the NiCad/Ni-MH/Pb battery is connected as this may cause a short circuit.
- Avoid short circuits.
- If NiCad/Ni-MH packs are severely overcharged they may become very **HOT**. For this reason it is always best to place the pack on an insulated heat resistant surface for charging.
- The charger must **ONLY** be used in completely dry conditions.
- **DO NOT** disassemble the charger.
- **NEVER** leave the charger unattended whilst charging.
- **DO NOT** fast charge batteries immediately after use while they are still warm, allow to cool to ambient temperature before charging.

## CONNECTION TO POWER SUPPLY

The SuperNova is designed to operate using either a 12 volt Lead Acid (Pb) battery or a suitable 10-15volt power supply.

Connect the **red wire** from the charger to the **+** terminal of the power source, the **black wire** to the **- terminal**. When correctly connected, the initial display will appear as follows, changing after a couple of seconds to, see top right.



## CONNECTION TO POWER SUPPLY (CONT...)



Connect the battery to be charged to the SuperNova using appropriate charge leads.

## MODELS

The SuperNova has two modes of operation, either automatic or manual.

## AUTOMATIC MODE

SJ has created this innovative auto charging/discharging system. The charger will automatically detect and select the most appropriate current level by checking the battery status every minute during auto charging/discharging.

**DO NOT ATTEMPT TO CHARGE OR DISCHARGE NICKEL METAL HYDRIDE, OR CHARGE LEAD ACID BATTERIES, IN AUTOMATIC MODE.**

The Automatic charging/discharging procedure is as follows,

Having connected both the power source and the battery to be charged to the SuperNova the display will show as below.



The SuperNova can start to charge or discharge your NiCd battery by simply pressing either the **UP/CHARGE** or **DOWN/DISCHARGE** buttons. Charging/discharging will commence immediately, with the current at a low level,



after approximately 1 minute the current will increase to the level decided by the SuperNova software. The current will continue to vary slightly during the charge/discharge cycle depending on the charge states of the input and output batteries.

## AUTOMATIC MODE (CONT...)

When charging, the peak detection circuitry will terminate the charge automatically when the battery is fully charged.



Discharging will be terminated when the battery voltage has fallen to 0.9v per cell, discharge beyond this point may damage the battery and will not provide any further useful power. The screen will display the capacity supplied by the battery being discharged.

## MANUAL MODE

Connect the SuperNova to the power source being used, ensuring the correct polarity of the connections. Plug the battery to be charged into the unit. The automatic start screen will be displayed.

Press the **SET/STOP** button once and the display will show.

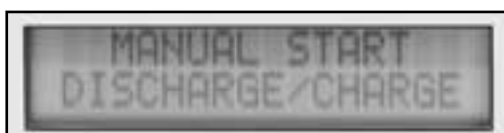


Note that this display, as with some others, alternates between 2 screens, enabling more information to be shown.

Press the **UP** button twice and the display will show.



Press the **SET/STOP** button again and the display will alternate between the three shown.





Note that the parameters of the battery to be charged must be entered on one of the 10 memories before manual charging, unless one of the pre-set memories matches exactly. (see setting battery parameters)

Commence charging/discharging by pressing the charge/discharge buttons. When manual charging Nickel Cadmium batteries the screen will show the battery check screen (see below) for approximately 3 minutes while the software checks the battery status and the level of charge already in the battery.



At the end of this check period the battery charge screen will appear, with the level of charge which has been detected appearing as a percentage on the bottom right of the screen. This battery check feature can be bypassed by pressing the **SET/STOP** button when the battery check screen appears. Bypassing the battery check will not allow the level of charge to be detected, and the charge display screen will commence at 0% level of charge

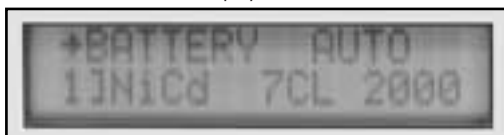
**DISCHARGING: NOTE THAT WHEN THE DISCHARGE CYCLE IS COMPLETED, THERE WILL BE A SHORT PAUSE BEFORE SUPERNOVA WILL AUTOMATICALLY START TO CHARGE.**



**AFTER THE CHARGER HAS COMMENCED CHARGING THE BATTERY IT IS STILL POSSIBLE TO SEE THE DISCHARGE RESULTS IN THE DATA REFERENCE PROGRAM.**

#### SETTING BATTERY PARAMETERS (1-10 MEMORIES)

From the initial screen press the **SET/STOP** button followed by the **DOWN** button. The display will now show this.



Press the **SET/STOP** button twice. The display will now show this,



use the **UP/DOWN** buttons to select the memory you wish to program (0-9). All of these memories are preset during manufacture and can be modified as necessary.

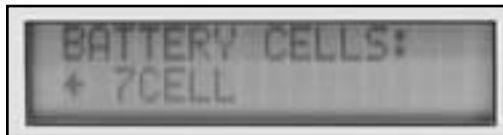
Once the required memory is selected press the **SET/STOP** button followed by the Up button before pressing the **SET/STOP** button again.

This displays the first options screen where the details of the battery to be charged can be entered -



- use **UP/DOWN** buttons to select the required option NiCd, Pb or NiMH.

Press **SET/STOP** and the display will show



battery cells/voltage-use **UP/DOWN** to set from 1-25 cells (NiCd/Ni-MH) or Pb from 2-12volt in 2volt increments

Press **SET/STOP** and the display will show battery capacity of pack being charged-can be set for any capacity from 50-5000mAh in 50mAh increments (NiCd/Ni-MH). Pb from 0.5 to 50.0Ah in 0.5Ah increments.



Press **SET/STOP** and the display will show charge current- NiCd and Pb can be set from 0.1A to 5.0A in 0.1A increments. Ni-MH can be set from 0.1A to 5.0A in 0.1A increments, however the highest charge rate that the software will allow is equal to the capacity of the battery. For example, the highest charge rate allowed for a 3.0Ah battery is 3.0A (1C), charge rates lower than this can of course also be used.

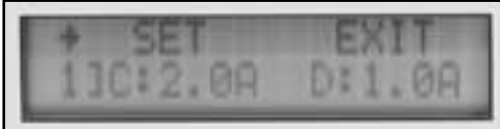


## SETTING BATTERY PARAMETERS (1-10 MEMORIES) (CONT...)

Press **SET/STOP** and the display will show discharge current—NiCd and Ni-MH can be discharged from 0.5 to 3.0A in 0.1A increments, Pb cannot be discharged using this program.



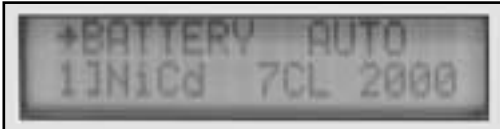
Press **SET/STOP** and the display will show.



Press the **UP** button and the display will show.



Press the **SET/STOP** button and the display will show,



use the **UP/DOWN** buttons to scroll to the 'START BATTERY' screen.



Press the **SET/STOP** button to show,



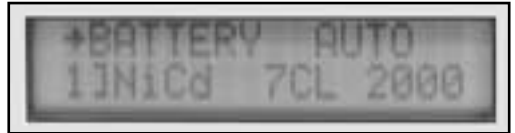
then press the **UP/DOWN** buttons to commence charge/discharge on the just set memory. Charging/discharging can be stopped at any time by pressing the **SET/STOP** button.

## MEMORY ALL CLEAR FUNCTION

If after setting the memory parameters, you wish to revert to the factory pre-set values, this can be done quickly and easily by using the Memory All Clear function.

Press **SET/STOP** followed by the **DOWN** button, the display will show.

## MEMORY ALL CLEAR FUNCTION (CONT...)



Press **SET/STOP** and the display will show.



Press **DOWN** and the display will show.



Press **SET/STOP** and the display will show.



Choose either 'Yes' or 'No' by pressing the **UP** or **DOWN** button.

If you confirm 'Yes' by pressing the **SET/STOP** button, all of the selected values will be erased and the factory set values will be reinstated.

If you confirm 'No', none of the settings will change.

## SOUND FUNCTION

The audible warning sound can be switched on or off using this function.

Press **SET/STOP** and the display will show.



Press **UP** button and the display will show.



Press **SET/STOP** and the display will show.



## SOUND FUNCTION (CONT...)

Choose either 'On' or 'Off' by pressing the **UP** or **DOWN** buttons.

If you choose 'On', the audible warning will sound every time the buttons are pressed, if you choose iOff no audible warning will be given.

Press **SET/STOP** to exit this function.

## DATA REFERENCE DURING CHARGING/DISCHARGING

To check details of the input voltage, output voltage, charge/discharge time etc whilst charging, press the **UP** and **DOWN** buttons simultaneously. Then by pressing the **UP** or **DOWN** buttons it is possible to scroll through all the displays step-by-step.

### Characters used:

- Va: - Average voltage
- Vc: - Discharge cut-off voltage
- Vi: - Input voltage
- Vo: - Output voltage
- Vp: - Peak voltage
- Vs: - Discharge start voltage



## ADJUSTMENTS POSSIBLE DURING CHARGING/DISCHARGING

Changes to the charge/discharge current are only possible when manual charging/discharging.

When the battery is being charged the following screen will be displayed.



## ADJUSTMENTS POSSIBLE DURING CHARGING/DISCHARGING

Press the **UP/DOWN** buttons and the display will show



use the **UP/DOWN** button to adjust the current to that required.

Press the **SET/STOP** button to confirm the new charge/discharge current and to return to the charge/discharge display.

**NOTE:** That it is possible to increase the charge rate above that allowed in the manual parameter setup for Ni-MH cells. Great caution should be taken if this is done as some of the lower quality Ni-MH cells will not tolerate charge rates greater than 1C. (Charge rate equal to the capacity of the battery being charged).