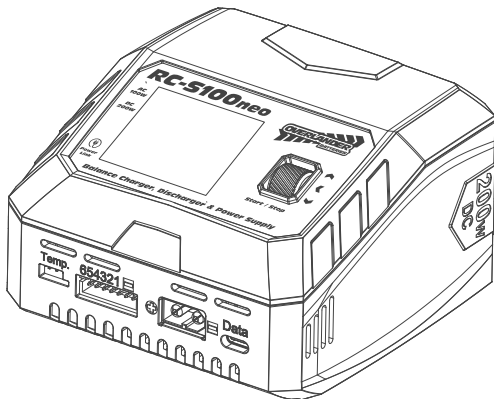


Instruction Manual



RC-S100neo

***AC/DC Balance Charger, Discharger
& Power Supply***

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Introduction

Thank you for choosing Overlander's RC-S100neo AC/DC Balance Charger.

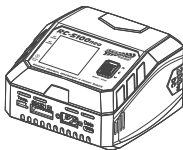
This compact charger is simple to use, however some knowledge is required for the operation of the RC-S100neo. These operating instructions aim to quickly acquaint you with its functions. Therefore, it's vital to thoroughly review the Operating Instructions, Warnings and Safety Notes before using RC-S100neo.

RC-S100neo, an AC/DC smart charger with a 200W maximum output, accommodates various battery chemistries (LiPo/LiFe/Lilon/LiHV/NiMH/NiCd/Pb) and serves as a power supply, offering adjustable voltage (2.0V-30.0V) and current (1.0A-12.0A) per output. Additionally, it allows voltage measurement without power on, simplifying battery voltage assessment.

Before initial use, please read these INSTRUCTIONS, WARNINGS, and SAFETY NOTES carefully!

Mishandling batteries and chargers poses significant risks, including fire and explosions!

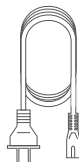
What is included



Overlander RC-S100neo Charger

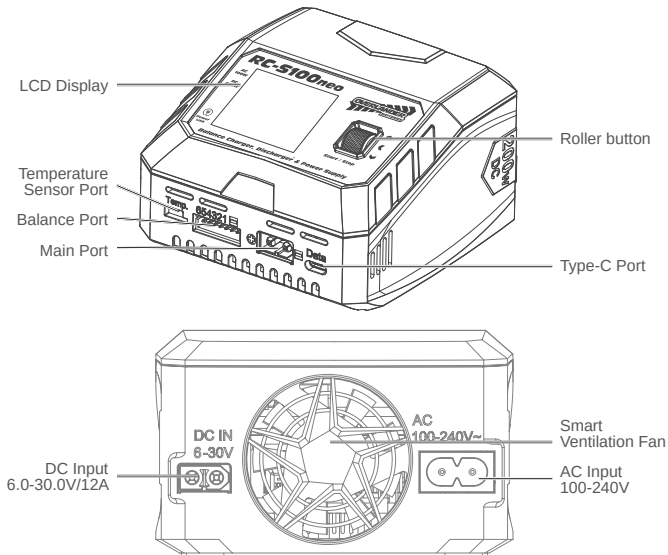
**Instruction
Manual**

User Manual



AC Power Cord

Meet RC-S100neo



Specification

Item	Option	Specification
Model		RC-S100neo
Input Voltage	AC	100-240V (50/60Hz)
	DC	6V-30V
Input Current	DC	12.0A
Charge Power	AC	100W($\pm 10\%$)
	DC	200W($\pm 10\%$)
Discharge Power	Main Port	5W($\pm 20\%$)
	Main Port+Balance Port	20W Max (Lipo 6s Discharge)
Charge Current	LiPo/LiIon/LiFe/LiHV/ NiMH/NiCd/Pb	0.1A~0.5A ($\pm 0.1A$) 0.6A~12A ($\pm 10\%$)
Discharge Current	LiPo/LiIon/LiFe/LiHV/ NiMH/NiCd/Pb	0.1A-0.2A ($\pm 0.1A$) 0.3A-2A ($\pm 10\%$)
Balance Current	LiPo/LiIon/LiFe/LiHV	1000mA Max
Trickle Charge Current	NiMH/NiCd	50~300mA & OFF Default: 60mA
Battery Types	LiPo/LiIon/LiFe/LiHV	1-6S
	NiMH/NiCd	1-15S
	Pb	3S/6S/12S

Working Modes	LiPo/LiIon/LiFe/LiHV	Balance CHG, Charge, Discharge, Storage
	NiMH/NiCd	Charge, Discharge, Re-Peak, CYCLE_D_C, CYCLE_C_D
	Pb	Normal, AGM Charge, Cold Charge, Discharge
DC Power Supply	Voltage	2V~30V
	Current	0.1A~10A (voltage 2V~2.9V) 0.1A~12A (voltage 3V~30V)
	Over Current Protection	0.1A ($\pm 0.1A$) 0.2A~4A ($\pm 20\%$) 4.1A~10A ($\pm 10\%$) 10.1A~12A ($\pm 5\%$)
	Power	AC Input: 100W Max DC Input: 200W Max
Size	Length*Width*Height	105*105*62mm
Weight	Net Weight	about 340g
Working Environment	Working Temperature	0-40°C
	Working Humidity	0%-75%
Storage Environment	Storage Temperature	-10°C-70°C
	Storage Humidity	0%-75%
DC Motor Run-In	Voltage	1.0V-12.0V
	Current	1.0A-5.0A
	DIRECTION	FORWARD
	Time	1-180min
	Motor Stall Protection Over Current Protection	Overload Protection

Warning

RC-S100neo is not intended for use by persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning the use of the charger by a person responsible for their safety.

Failure to exercise caution while using this product and comply with the following warnings could result in a product malfunction, electrical issues, excessive heat, FIRE, and ultimately injury and property damage.

- ⚠ Never leave charging batteries unattended during use.
- ⚠ Never charge batteries overnight.
- ⚠ Never attempt to charge dead, damaged, or wet battery packs.
- ⚠ Never attempt to charge a battery pack containing different types of batteries.
- ⚠ Never charge batteries in extremely hot or cold places or place in direct sunlight.
- ⚠ Never charge a battery if the cable has been pinched or shorted.
- ⚠ Never connect the charger if the power cord has been pinched or shorted.
- ⚠ Never attempt to dismantle the charger or use a damaged charger.
- ⚠ Never attach your charger to both an AC and a DC power source at the same time.
- ⚠ Always use the charger with the correct charging and discharging program.
- ⚠ Always use only rechargeable batteries designed for use with this type of charger.
- ⚠ Never use the charger on car seats, carpets, or similar surfaces.
- ⚠ Always operate the charger away from flammable and explosive materials.

Standard Battery Parameters

	LiPo	Lilon	LiFe	LiHV	NiMH	NiCd	Pb
Nominal Voltage	3.7V	3.6V	3.3V	3.8V	1.2V	1.2V	2.0V
Charge Voltage	4.18V-4.22V Default: 4.20V	4.08V-4.12V Default: 4.10V	3.63V-3.67V Default: 3.65V	4.33V-4.37V Default: 4.35V	-	-	2.4V/2.45V
Storage Voltage	3.8V	3.7V	3.3V	3.85V	-	-	-
Fast Charge Current	≤1C	≤1C	≤1C	≤1C	≤1C	≤1C	≤0.4C
Discharge Voltage	3.0V-3.4V Default: 3.3V	2.9V-3.3V Default: 3.2V	2.6V-3.0V Default: 2.9V	3.1V-3.5V Default: 3.4V	0.6V-1.0V Default: 0.9V	0.6V-1.0V Default: 0.9V	1.8V-2.0V Default: 1.9V

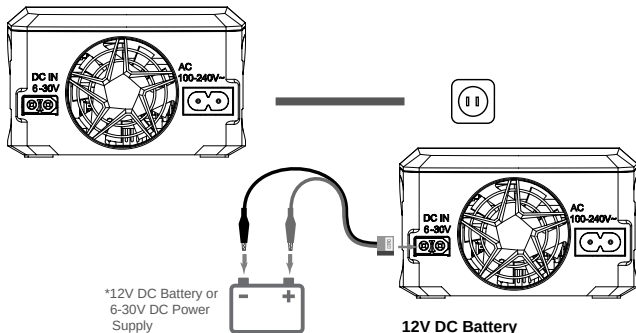
Select the correct operating procedure in accordance with the battery parameters.
Incorrect settings may cause the battery to burn or even explode.

Power and Battery Connection

1. Connect to power source

There are two options of inputs for Overlander RC-S100neo:
AC 100-240V or DC 6-30V.

AC 100-240V



2. Connect the battery

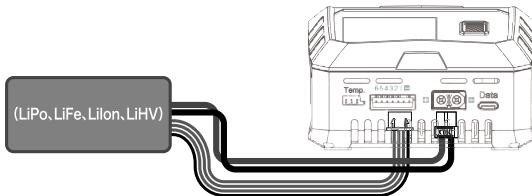


TO AVOID SHORT CIRCUITS, ALWAYS CONNECT THE CHARGE LEADS TO THE CHARGER FIRST AND THEN TO THE BATTERY. REVERSE THE SEQUENCE WHEN DISCONNECTING.

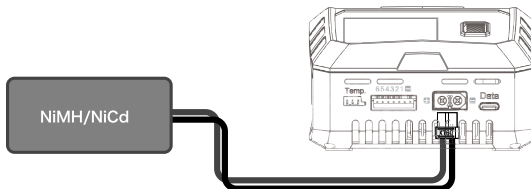
1) LiPo Battery Connection with Balance Adapter

For safety reasons, it is highly recommended to charge Lithium batteries (LiPo, Lilon, LiFe and LiHV) using Balance CHG mode unless the battery comes without a balance connector.

The battery balance connector must connect to the charger with the black wire aligned with the negative marking.



2) NiMH/NiCd or Pb Battery Connection



Charging

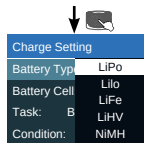
Various operations are applicable depending on the battery type. This chart illustrates operations relevant to different types of batteries.

Battery Type	Working Mode	Description
LiPo Lilon LiFe LiHV	Balance CHG	This mode is to balance charge the lithium battery based on the charging rate the user set. It can balance each cells of the battery.
	Charge	This mode is to charge the lithium battery based on the charging rate selected.
	Storage	This mode is to store the battery via charging or discharging its voltage to a specific storage value.
	Discharge	This mode is to discharge the lithium battery based on the discharging rate selected.

Battery Type	Working Mode	Description
NiMH NiCd	Charge	This mode is to charge the NiMH/NiCd battery based on the charging rate selected.
	Discharge	This mode is to discharge the NiMH/NiCd battery based on the discharging rate selected.
	Re-Peak	In re-peak charge mode, the charger can peak charge the battery twice in a row automatically. This is good for confirming the battery is fully charged.
	Cycle_D_C	1 to 3 cyclic and continuous process of discharge>charge is operable for refreshing and restoring the performance of NiMH/NiCd batteries.
	Cycle_C_D	1 to 3 cyclic and continuous process of charge>discharge is operable for refreshing and restoring the performance of NiMH/NiCd batteries.
Pb	Normal	This mode is to charge the Pb battery based on the charging rate selected.
	AGM Charge	This mode is to charge the AGM battery based on the charging rate selected.
	Cold Charge	This mode is to charge the Pb battery under a low temperature based on the charging rate selected.
	Discharge	This mode is to discharge the Pb battery based on the discharging rate selected.

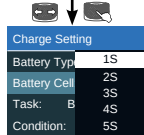
Lithium Battery Program (LiPo/Lilon/LiFe/LiHV)

Here is a flowchart to guide you to set up the program.



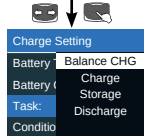
Select Battery Type

Press button to call out the Battery Type menu, and select LiPo.



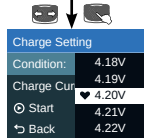
Select Battery Cell

Press and button to select the correct battery cells.



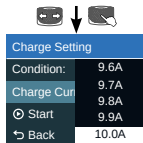
Select Task

Press and button to select your desired working mode.



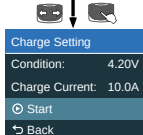
Select Condition

Press and button to select the terminal charging voltage.



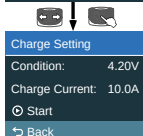
Select Charge/Discharge Current

Press and button to select the current.



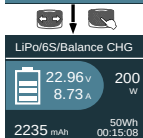
Start

Press and button to initiate the program.



Back

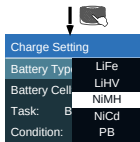
Press and button to step back to the main interface.



Stop

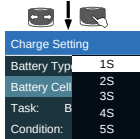
Press button to stop the program, if prompted to stop, short-press the again to confirm, or short-press the button to return.

NiMH/NiCd Battery Program



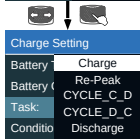
Select Battery Type

Press button to call out the Battery Type menu, and select NiMH.



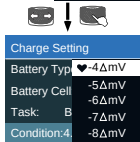
Select Battery Cell

Press and button to select the correct battery cells.



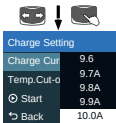
Select Task

Press and button to select your desired working mode.



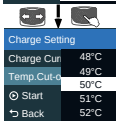
Select Condition

Press and button to set the delta voltage.



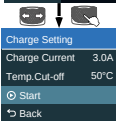
Select Charge/Discharge Current

Press and button to select the current.



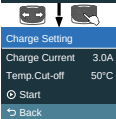
Temp. Cut-off

Press and button to select the temp.



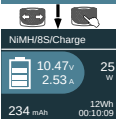
Start

Press and button to initiate the program.



Back

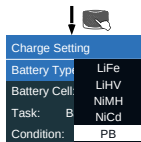
Press and button to step back to the main interface.



Stop

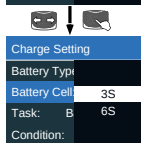
Press button to stop the program, If prompted to stop, short-press the again to confirm, or short-press the button to return.

Pb Lead-Acid Battery Program



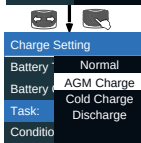
Select Battery Type

Press button to call out the Battery Type menu, and select PB.



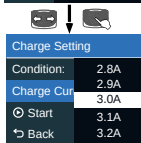
Select Battery Cell

Press and button to select the correct battery cells.



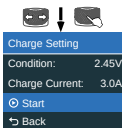
Select Task

Press and button to select your desired working mode.



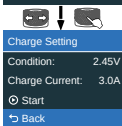
Select Charge/Discharge Current

Press and button to select the current.



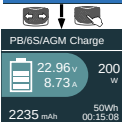
Start

Press and button to initiate the program.



Back

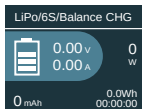
Press and button to step back to the main interface.



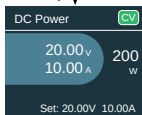
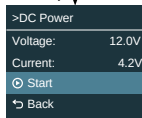
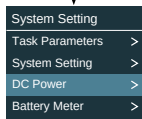
Stop

Press button to stop the program, If prompted to stop, short-press the again to confirm, or short-press the button to return.

DC Power



Long Press



On the main menu, hold the ENTER button for two seconds to enter System Setting>DC Power.

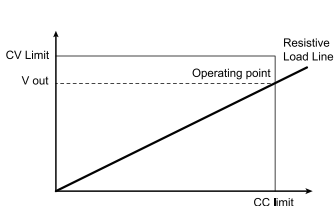
Select the options of DC Power: adjust the output voltage and current.

Select Start to activate the DC Power working mode and then connect your desired DC equipment.

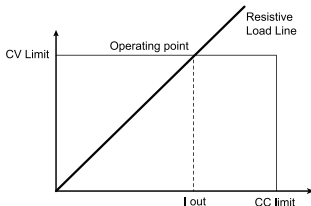
When acting as a digital power supply, RC-S100neo can regulate its output voltage or current at a constant level. Constant Current(CC) Mode and Constant Voltage(CV) Mode can switch automatically as follows:

If $R_{load} > (V_{out} / I_{out})$, then the power supply is in CV mode

If $R_{load} < (V_{out} / I_{out})$, then the power supply is in CC mode



Power Supply I-V Diagram, CV Operation



Power Supply I-V Diagram, CC Operation

It is vital for efficient and precise power delivery in various applications for RC professionals

*Benefits of using a CC/CV mode DC power supply explained:

1. Versatility:

CC/CV power supplies are versatile because they can switch between constant current and constant voltage modes. This makes them suitable for a wide range of applications, from powering delicate electronics to driving high-power devices.

2. Protection:

The CC mode can prevent overcurrent situations, which could damage electronic devices or create hazardous situations. By setting a maximum current limit, the power supply ensures that it won't deliver more current than the device can safely handle.

3. Battery Charging:

CC/CV power supplies are particularly useful for charging lithium-ion batteries, which require a precise charging protocol. Initially, the charger works in CC mode to restore most of the battery's capacity, then switches to CV mode to top off the charge while preventing overcharging.

4. Optimized for Various Loads:

Some loads require a specific voltage to operate correctly, while others need a particular current. A CC/CV power supply can adapt to these needs, providing a stable and suitable power output under various load conditions.

5. Improved Efficiency:

By dynamically switching between modes depending on the load, a CC/CV power supply can often operate more efficiently than a power supply using only one mode.

6. Safe for LED driving:

LEDs are current-driven devices, and a slight increase in voltage can lead to a high current, causing damage to LEDs. CC mode allows safe driving of LEDs. CV mode can be useful when LEDs are configured in parallel strings.

Voltage Calibration (For expert user only)

You can calibrate the voltage directly on the charger with a 6S LiPo battery. For more information, please contact us at support@overlander.co.uk

Battery Voltage Meter

RC-S100neo measures the lithium battery voltage easily and conveniently. Use the balance port to connect the lithium battery directly to the charger.

RC-S100neo lights up and displays battery voltage without power on.

Battery Resistance Meter

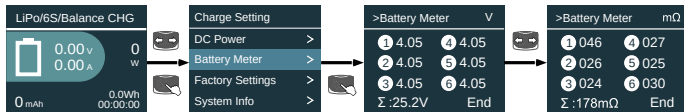
Power on RC-S100neo, and hold the Start button for seconds to enter the System Setting.

Connect the battery to RC-S100neo and scroll down to Battery Meter

Press ENTER button to measure the battery voltage and resistance.

Press + button to check the resistance value.

Press - button to exit the Battery Meter interface.

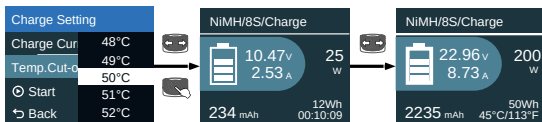


Battery Temperature Test

Power on RC-S100neo and select the NiMH/NiCd charging mode

Connect the temperature sensor and NiMH/NiCd battery

Press - button to show battery temperature



MOTOR RUN-IN MODE

1. Connect the motor to main port.
2. On the main menu, hold the ENTER button for two seconds to enter System Setting>DC Motor Run-In.
3. Select voltage, current and Timer.
4. Press ENTER button to start.

Firmware Upgrade

1. Download the latest PowerLink app onto your desktop. Unzip and open it.
2. Connect RC-S100neo to your computer via a USB-C cable.
3. Launch PowerLink, which will detect the charger automatically.
4. After successful detection, click to check the new version of the firmware.
5. When there is a new version, click to upgrade till the process finishes.

Charge Settings

Short press the ENTER button to enter the Charge Setting.

Menu	Definition
Battery Type	Select the desired battery type. (LiPo, Lilon, LiFe, LiHV, NiMH, NiCd, PB)
Battery Cell	Select the number of battery cells by different battery type. (Li-xx: 1-6S, Ni-xx: 1-15S, Pb: 3S/6S/12S)
Task	Select the work mode to be performed. (Balance CHG, Charge, Storage, Discharge, etc.)
Condition	Set the cut-off voltage.
Current	Set the charge or discharge current.
Start	Start the program.
Back	Back to the main interface.

System Setting

On the main interface, hold the START button for two seconds to enter the System Setting.

Menu	Option	Definition
Task Parameters	Safety Timer	Customize a period for program protection.
	Max. Capacity	Customize the maximum capacity.
	Trickle Charge	Enable/disable trickle charge.
	Holding Voltage	Enable/disable holding voltage If the battery voltage is dropped to a specified value, then it will charge the battery automatically with a small current if it's enabled.
	Back	Back to the previous interface.
System Settings	Language	Select your desired system language.
	Min.Input Voltage	Set the minimum voltage for input protection.
	LCD BackLight	Adjust the brightness of the screen.
	Volume	Adjust the volume of the key and beep.
	Completion Signal	Choose the way you'd like to be reminded when the program completes.
	Warning	Enable/disable the start-up warning.
	Back	Back to the previous interface.

DC Power	Voltage	Set the output voltage. (2.0-30.0V)
	Current	Set the output current. (1.0-12.0A)
	Start	Enable DC power output and return to the main interface.
	Back	Back to the previous interface.
Battery Meter	N/A	Measure the battery voltage and internal resistance. Press - to return to the system setting.
Factory Settings	N/A	Restore to the factory settings.
System Info	N/A	Check the current system status.
Regulatory	N/A	Check the certification information
Back	N/A	Back to the previous interface.

Errors and Warnings

In the event of a fault, the charger will display an error message and sound an alarm.

Error Message	Explanation
DC In Too Low	DC input voltage is lower than preset or min.input voltage!
DC In Too High	DC input voltage is higher than preset!
Connection Break	The battery connection is broken!
Overcharge Capacity Limit	The charged capacity is exceeding the limit!
Over Time Limit	The program times out!
Int. Temp Too High	The internal temperature is high!
Over Load	The charger is overloaded!
Reversed Polarity	The battery connection is reversed!
Fully Charged	The battery is fully charged already!
Outlet Overload	The output is overloaded.
Balance Connection Error	The balance connection is incorrect.
Battery Type Error	The cells do not match.
Cell Error	The battery type is wrong!
Cell Volt Diff.	The voltage difference between each cell is high.

Conformity Declaration

Overlander RC-S100neo satisfies all relevant and mandatory CE directives and FCC Part 15 Subpart B.

Test Standards	Title	Result
EN 60335-1	Household and similar electrical appliances - Safety - Part 1: General requirements	Conform
EN 60335-2-29	Household and similar electrical appliances – Safety – Part 2-29: Particular requirements for battery chargers.	Conform
EN 55014-1	Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission	Conform
EN 55014-2	Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Part 2: Immunity Product Family Standard	Conform
EN 61000-3-2	Electromagnetic compatibility (EMC) – Part 3-2: – Limits for harmonic current emissions (equipment input current up to and including 16 A per phase)	Conform
EN 61000-3-3	Electromagnetic compatibility (EMC) - Part 3-3: Limitation of voltage supply systems for equipment with rated current ≤ 16 A.	Conform
FCC Part Subpart 15B	Title 47 Telecommunication PART 15 - RADIO FREQUENCY DEVICES Subpart B - Unintentional Radiators	Conform

Warranty and Service

Liability Exclusion

This charger is designed and approved exclusively for use with the types of battery stated in this Instruction Manual. Overlander accepts no liability of any kind if the charger is used for any purpose other than that stated. We are unable to ensure that you follow the instructions supplied with the charger, and we have no control over the methods you employ for using, operating, and maintaining the device. For this reason, we are obliged to deny all liability for loss, damage, or costs that are incurred due to the incompetent or incorrect use and operation of our products, or which are connected with such operation in any way. Unless otherwise prescribed by law, our obligation to pay compensation, regardless of the legal argument employed, is limited to the invoice value of those Overlander products which were immediately and directly involved in the event in which the damage occurred.

Warranty and Service

We guarantee this product to be free of manufacturing and assembly defects for a period of one year from the time of purchase. The warranty only applies to material or operational defects, which are present at the time of purchase. During that period, we will repair or replace free of service charge for products deemed defective due to those causes.

For any repair or replace service, please contact your retailer in the first instance, who is responsible for processing guarantee claims.

This warranty is not valid for any damage or subsequent damage arising as a result of misuse, modification, or as a result of failure to observe the procedures outlined in this manual.

If you have any questions which are not mentioned in the manual, please feel free to send an email to support@overlander.co.uk



The manual is subject to change without notice;
please refer to our website for the latest version!

OVERLANDER BATTERIES
www.overlander.co.uk

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