NITECORE SC4 Superb Charger with USB Output User Manual

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NITECORE SC4 Superb Charger with USB Output

Features

- Maximum charging speed up to 3000mA
- Charging current from 300mA-3000mA is manually selectable
- Compatible with 1.2V, 3.7V, 4.2V, 4.35V batteries
- High-definition color LCD screen displays charging parameter in real time
- Utilizes energy saving function
- Charging program optimized for IMR batteries
- Automatically identifies battery type and selects appropriate charging voltage and current.
- Capable of manually choosing charging voltage for LiFeP04 battery (3.7V) and Li-ion battery (4.35V).
- Automatically detects small capacity battery and selects appropriate charging current.
- Capable of charging four batteries simultaneously
- Independently controls and charges each slot
- Integrated USB port compatible with all USB devices
- Automatically stops charging upon charging completion
- Reverse polarity protection and short circuit prevention
- Li-ion battery restoration
- Overtime charging protection
- Built-in temperature monitor to prevent overheating
- Automatically detects internal resistance
- Made from fire retardant / flame resistant PC material
- Designed for optimal heat dissipation
- Certified by RoHS, CE, FCC and CEC
- Insured worldwide by Ping An Insurance (Group) Company of China, Ltd.

Specifications

- Input Voltage: AC 100-240V 50/60Hz 1A MAX) 40W
- Output voltage: DC 12V 3A
- Battery: 4.35V±1% / 4.2V ±1% / 3.7V ±1% / 1.48V ±1%
- USB: 5V±5% 2.1A MAX
- Output current: 3A*2 MAX 1.5A*4

- Compatible with: Li-ion/IMR/LiFePO4: 10440, 10500, 12340, 12500, 12650, 13450, 13500, 13650, 14350, 14430, 14500, 14650, 16500, 16340(RCR123), 16650, 17350, 17500, 17650, 17670, 18350, 18490, 18500, 18650, 22500, 22650, 25500, 26500, 26650 Ni-MH(NiCd): AA, AAA, AAAA, C, D
- Dimensions: 6.50” × 4.33” × 1.77” (165mm×110mm×45mm)
- Weight: 13.59oz (385g) (without batteries and power cord)

Operating Instructions

Connect to power source: connect the SC4 to an external power source (wall outlet, car adapter. etc.) via its power cord. The boot animation will be displayed on the LCD screen.
Insert batteries: The SC4 features four independently controlled charging slots. Insert batteries of supported types into each slot according to the polarity marks on the slot. After battery installation, the SC4 begins charging and presents Battery Status by “Good” or “Poor”, Internal Resistance, **Charging Current, Battery:** Voltage, Charged Volume and Charging Time on the LCD screen.
Battery inspection and error report: The SC4 has reverse polarity protection and anti-short circuiting function. If there are batteries inserted with polarity reversed or short-circuited, the LCD screen of relevant channel will indicate “EE EE” and the power level display will blink to notify the user of an error.
Smart charging: The SC4 can choose appropriate charging currents based on intelligent detection about battery types and capacities. Manual charging current selection is also available. The SC4 is compatible with:

- 3.7V Li-ion rechargeable batteries
- 3.8V Li-ion rechargeable batteries (4.35V±1% after fully charged)
- 1.2V Ni-MH/Ni-Cd rechargeable batteries
- 3.2V LiFePO4 batteries

Default Settings

The default settings (not manually configured) for the SC4 are:

- For Li-ion batteries with large capacity (>1200mAh), the default current is 2000mA, 4.2V±1%.
- For Li-ion batteries with small capacity (<1200mAh), the default current is 500mA, 4.2V±1%.
- For Ni-MH/Ni-Cd batteries, the default current is 500mA, 1.48V±1%.

Note: The SC4 can automatically select charging modes for Ni-MH batteries and 3.7V Li-ion batteries. However, LiFePO4 batteries and 3.8V Li-ion batteries require manual settings on charging cut-off voltages. For the battery which length is >60mm (2.4’’), the SC4 automatically identifies its capacity as >1200mAh.

Key Switches

During charging, press the C switch to cycle through the charging states of 4 channels; Press the V switch to display Battery Status, Internal Resistance, Charging Current, Battery Voltage, Charged Volume and Charging time on the LCD screen; Holding the C switch will enter the Manual Settings Mode; whilst holding the V switch will prioritize CH1 and CH2 for charging. After entering the Manual Settings Mode, press the C switch to alternate CHG. MODE, CHANNEL STATUS and the Settings Mode of the next channel; Press the V switch to select Charging Voltage in CHG. MODE and Charging Current in CHANNEL STATUS; Hold the V switch to increase Charging Current in CHANNEL STATUS; Hold the C switch to exit the Manual Settings Mode.

Charging Voltage Settings

- **Step 1:** During charging, press the C switch to select channel and hold down the C switch to enter the settings

of selected channel;

- **Step 2:** After entering Settings Mode, press the C switch again till the CHG. MODE is showed on the screen, press V to select voltage (3.7V/4.2V/4.3V). After successful setup, holding down the C switch to begin charging.

Charging Current Settings

- Step 1: The same as above.
- Step 2: After entering the Setting Mode, press the C switch until CHANNEL STATUS is shown on the screen; press or hold the V switch to set the Charging Current from 300mA to 3000mA:
  - For large capacity batteries (>1200mAh), the selectable Charging Current ranges from 300mA to 3000mA (steadily increased by 100mA);
  - For small capacity batteries (<1200mAh), the selectable Charging Current ranges from 300mA to 2000mA (steadily increased by 100mA)

    After the appropriate Charging Current is selected, release the C switch and hold the C switch again to exit Manual Settings Mode and begin charging. “FULL” will appear in the CHANNEL STATUS on screen when charging is fully complete.

    Note:
    - If no further operation is done in 30 seconds in Manual Settings Mode, the SC4 will automatically begin charging with the selected setting;
    - For large capacity batteries, 300mA-3000mA charging current is selectable; For small capacity batteries, Nitecore suggests to select charging current below 1000mA (depends on the batteries capacity);For Ni-MH/ Ni-Cd batteries (regardless of capacity), 300mA-2000mA is suitable.
    - Do not charge Ni-MH/NiCd batteries at larger than 0.5C current. Doing so can cause overheat of the batteries.

Charging in Priority Function
The CH1 and CH2 can be selected to charge in priority by pressing the C switch to access CH1 or CH2, then hold the V switch to prioritize the chosen channel (CH1 and CH2 can be selected at the same time). If CH1 or CH2 is selected to charge in priority, the other channels automatically begin charging after the battery in CH1 or CH2 is fully charged.

Automatically Battery Internal Resistance Detection
With the SC4 switch on and batteries installed, the SC4 automatically detects and displays the Internal Resistance in the CHANNEL STATUS. When the Internal Resistance is below 250mΩ, the LCD screen will indicate GOOD; when it is above 250mΩ, the LCD screen will present POOR to indicate Battery Status and suggest replace the battery (For battery which voltage is higher than 4V, the SC4 will display the default internal resistance 120mΩ only)

Power Detection
During charging, SC4 will automatically calculate and display Charged Volume in the CHANNEL STATUS. Anti-short Circuiting and Reverse Polarity Protection If there are batteries inserted with polar reversed or short-circuited, the LCD screen of relevant channel will indicate “EE EE” and the power level display will blink.

Energy Saving Function
If there is no operation in 3 minutes, the screen will automatically dim to save energy; if there is any operation, the screen will light again.

PID (Proportion Integration Differentiation) System
The PID system will automatically control the charging temperature within the safety limit when charging in a large current.

Battery Activation
The SC4 is capable of activating depleted Li-ion batteries with protective circuit. After battery installation, SC4 will test and activate the battery before charging. When a battery is detected as damaged, the power level over the channel will blink to urge an immediate termination of charging.

Li-ion Battery Recovery
Upon insertion of a 0V IMR battery, LCD on the SC4 will blink to indicate non-rechargeable. In this situation, press the C and V switch simultaneously to enter recovery mode, the power level display will gradually increase. Nitecore recommends abandoning this battery if it fails to be recovered after several attempts.
NOTE: When attempting to activate an IMR battery, reverse polarity protection is temporarily disabled.

Overtime Charging Protection

The SC4 will separately calculate the charging time of each battery. When the overall charging time exceeds ten hours, it will automatically stop charging and display a fully charged status. This is to prevent possible overheat or even explosion due to battery quality issue.

USB Charging

The maximum charging current for the USB output is 2.1A. During charging, the output of USB is inhibited until the batteries are fully charged.

Precautions

1. The charger is restricted to charging Li-ion, IMR, LiFePO4, Ni-MH/Ni-Cd rechargeable batteries only. Never use the charger with other types of batteries as this could result in battery explosion, cracking or leaking, causing property damage and/or personal injury.
2. The safe operation temperature for the charger is between -10-40°C, and the safe storage temperature is -20-60°C.
3. Please charge batteries in accordance with the specifications on the back. Do not charge a battery pack with the charger.
4. Observe polarity diagrams located on the charger. Always place the battery cells with positive tip facing the top.
5. Do not leave a working charger unattended. If any malfunction is found, please terminate operation immediately, and turn to user manual for instruction.
6. The charger is designed for adults. Use of the charger by kids under age must be under supervision. Operation, using or cleaning of the charger may NOT be done by kids aged 8 years or younger.
7. Please make sure the correct program and settings are chosen and set. Incorrect program or setting may damage the charger, or cause fire or explosion.
8. Never attempt to charge primary cells such as Alkaline, Zinc-Carbon, Lithium, CR123A, CR2, or any other unsupported chemistry due to risk of explosion and fire.
9. Do not charge a damaged IMR battery as doing so may lead to charger short-circuit or even explosion.
10. Never charge or discharge any battery having evidence of leakage, expansion/swelling, damaged outer wrapper or case, color-change or distortion.

11. Use the original adapter and cord for power supply. To reduce the risk of damage to the power cord, always pull by connector rather than the cord. Do not operate the charger if it appears damaged in any way.
12. DO NOT store or use the product in an environment where the temperature is extremely high / low or changes rapidly, or in a confined area with a high temperature.
13. Please operate the charger in a well-ventilated area. Do not operate or store it in damp area. Keep all the inflammable volatile substances away from operating area.
14. Avoid mechanical vibration or shock as these may cause damage to the device.
15. Do not use short-circuit slots or other parts of the device. Do not allow metal wires or other conductive material into the charger.
16. Do not touch hot surfaces. The rechargeable batteries or the device may become hot at full load or high power charging/discharging.
17. Do not overcharge or over discharge batteries. Recharge drained batteries as soon as possible.
18. Remove all batteries and unplug the charging unit from the power source when not in use.
19. Opening, disassembling, modifying, tampering with the unit may invalidate its guarantee, check warranty terms.
20. Do not misuse in any way! Use for intended purpose and function only.

Disclaimer

This product is globally insured by Ping An Insurance (Group) Company of China, Ltd. Nitecore shall not be held responsible or liable for any loss, damage or claim of any kind incurred as a result of the failure to obey the instructions provided in this user manual.

Warranty Details

Our authorized dealers and distributors are responsible for warranty service. Should any problem covered under warranty occurs, customers can contact their dealers or distributors in regards to their warranty claims, as long as the product was purchased from an authorized dealer or distributor. NITECORE's Warranty is provided only for products purchased from an authorized source. This applies to all NITECORE products. Any DOA / defective product can be exchanged for a replacement through a local distributor/dealer within the 15 days of purchase. After 15 days, all defective / malfunctioning NITECORE® products can be repaired free of charge for a period of 12 months (1 year) from the date of purchase. Beyond 12 months (1 year), a limited warranty applies, covering the cost of labor and maintenance, but not the cost of accessories or replacement parts.

1. The warranty is nullified if the product(s) is/are broken down, reconstructed and/or modified by unauthorized parties
2. damaged from wrong operations (i.e. reserve polarity installation, installation of non-rechargeable batteries)
3. damaged by batteries leakage.

For the latest information on NITECORE® products and services, please contact a local NITECORE® distributor or send an email to **service@nitecore.com**. All images, text and statements specified herein this user manual are for reference purpose only. Should any discrepancy occurs between this manual and information specified on **www.nitecore.com**, information on our official website shall prevail. SYSMAX Innovations Co., Ltd. reserves the rights to interpret and amend the content of this document at any time without prior notice.

Safety Instruction for Lithium-ion Batteries

1. Charging Voltage

   Lithium-ion (Li-ion) batteries have strict requirement on voltage control. Charging Li-ion batteries with electric

voltage beyond safety standard can lead to battery damage and explosion.

- 3.7V Li-ion Batteries/ IMR Batteries
  3.7V Li-ion batteries are the most common rechargeable Lithium batteries. The skins of these batteries are often marked with 3.6V/3.7V signs. If our chargers judge that an inserted battery is a Li-ion battery, the battery will be automatically charged in 4.2V standard charging mode. You do not need extra voltage settings for these types of batteries.
- 3.8V Li-ion Batteries
  3.8V Li-ion batteries are comparatively rare. It usually has a 3.7V mark on its skin. Normally its seller will inform its buyer that it needs to be charged with 4.35V power. When charging this type of battery, please manually set the charging voltage to 4.3V, otherwise the charger will charge at 4.2V by default, and cannot provide adequate charging voltage.
- 3.2V LiFePO4 Batteries
  3.2V LiFePO4 batteries have LiFePO4 and/or 3.2V marks on the skin. Be careful with this type of batteries. Without manual setting, our chargers will charge this type of batteries with 4.2V, and will damage or even explode the battery with excessive charging voltage. You need to manually set the charging voltage to 3.7V for safe charging.

2. Charging Current
   For all rechargeable Lithium batteries (including Li-ion, IMR and LiFePO4 batteries), we suggest not using current larger than 1C* for charging. For small capacity batteries, the charging current must be smaller than 1C. *C=Capacity of a battery. For example, 1C in a 2600mAh rechargeable Lithium battery is 2.6A. 1C in a 3400mAh rechargeable Lithium battery is 3.4A. Excessively large charging current will lead to great amount of heat, and consequently battery damage and explosion.
   Warning: Our chargers automatically judge and select charging current by the batteries' length. For some long but small capacity batteries (i.e. 12650, 13650, 14650, 16650), please manually set appropriate charging current (smaller than 1C).
3. Precautions
   1. Do not short circuit the battery in any way.
   2. Do not use a 3.7V/3.8V Lithium battery when its voltage is lower than 2.8V, otherwise it can be over discharged, and/or prone to explosion at next charging.
   3. We strongly recommend batteries with protective circuit. For batteries without protective circuit (such as IMR batteries), please stay alert for over-discharge and short circuit.
   4. Do not discharge a battery with a discharging current larger than its maximum rated current.
4. Long-term Storage
   The best storage voltage for 3.7V/3.8V rechargeable Lithium batteries is 3.7V. The voltage is too low or too high can damage your battery during storage. You can discharge a battery to 3.7V, or charge it to 3.7V in a charger before you keep it in long-term storage.

Validation code and QR code on package can be verified on Nitecore website.

1. The charger must be used with Nitecore's official cords. During charging, third party cords can cause malfunction, overheat and even fire on the charger. Damages from using unofficial cords cannot be covered by official warranty.
2. The SC4 is restricted to charging Li-ion, IMR, 3.2V LiFePO4, Ni-MH/Ni-Cd rechargeable batteries only. Never use the SC4 with other types of batteries as this could result in battery explosion, cracking or leaking, causing

property damage and/or personal injury.

Documents / Resources

	NITECORE SC4 Superb Charger with USB Output [pdf] User Manual SC4, Superb Charger with USB Output, Charger, USB Output

References

- NITECORE
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