

YOSHIKO

Intelligent Battery Charger

YC4000 USER'S MANUAL

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Intelligent Charger YC4000

YC4000 is a battery charger for Ni-Cd and Ni-MH batteries of two sizes AA and AAA.

Device YC4000 provides the charge, discharge, recovery and testing batteries. The presence of LCD allows you to see a basic condition of a battery - voltage, process time, current charge / discharge, mode, capacity.

Parameter	Value
Supply voltage	100-240V 50/60Hz, 12V DC
Power consumption	12W - max
Type of the battery	NiCd, NiMH
Channels count of charge	4 (AA, AAA)
Charge current: independently for each compartment Channel 1 - 4, for 1-4 elements	200 mA, 500 mA, 700 mA, 1000 mA
Control method of charging	-dV
Protection against battery overheating	+
Protection against memory overheating	+
Battery discharge function	+
Discharge current: independently for each compartment Channel 1 - 4, for 1-4 elements	100 mA, 250 mA, 350mA, 500 mA
LCD	+
Device operation modes	Independently for each compartment: charging; discharging; recovery; testing
Battery restore function	+
Battery test function	+

Please carefully read instructions before use.

OPERATING INSTRUCTIONS. Battery Charger YC4000

1. Intended Use

The product is intended to charge and discharge NiCd or NiMH rechargeable batteries. It provides four independent charging slots for AA/AAA rechargeable batteries. The charger can also optimize and test the maximum capacity of the rechargeable batteries. Each charging slot has its own display to show various information, such as, charging current, battery voltage, charged capacity and used charging time.

The charging current can be selected from 200,500,700 and 1000mA.

The charger can charge batteries of different type and size and with different capacity at the same time. It also integrates the minus delta voltage (-dV) function, which monitors the voltage over the charging cycle. When battery is fully charged, the charger will switch to trickle charging automatically. Therefore the battery will be kept at its optimum capacity. The charger also includes overheat detection to protect rechargeable batteries and charger itself from overheating. The charger can only be powered by the specially designed power supply. Operate and store it in dry indoor environment only. This product fulfills European and national requirements related to electromagnetic compatibility (EMC). CE conformity has been verified and the relevant statements are available upon request. Unauthorized conversion and/or modification of the device are inadmissible because of safety and approval reasons (CE). Any usage other than described above is not permitted and can damage the product and lead to

associated risks such as short-circuit, fire, electric shock, etc. Please read the operating instructions thoroughly and keep them for future reference.

2. Delivery content

1. Battery Charger YC4000 1 pcs
2. Power Adapter 1 pcs
3. Operation Instructions 1 pcs

3. Safety Instructions

We do not assume liability for resulting damages to property or personal injury if the product has been abused in any way or damaged by improper use or failure to observe these operating instructions. The warranty will then expire!

3.1 Product Safety

The product must not be exposed to substantial mechanical strain or strong vibrations.

The product must be protected against electromagnetic fields, static electrical fields, extreme temperatures, direct sunlight and moisture

The manufacturer's instruction for the respective batteries must be observed, before they are charged.

The product should not be connected immediately after it has been brought from an area of cold temperature to an area of warm temperature. Condensed water might destroy the product. Wait until the product adapts to the new ambient temperature before use.

Sufficient ventilation is essential when operating the charger. Never cover the ventilating slots of the charger. Please take cautions especially when ambient temperature is over 35 degrees Celsius, when the device is more easily entering protection mode and thus longer charging time will be needed.

3.2 Battery Safety

Correct polarity must be observed while inserting the batteries.

Non-rechargeable batteries, rechargeable alkaline batteries (RAM), lead acid batteries and lithium batteries must not be charged with this product. There is danger of explosion!

Batteries should be removed from the device if it is not used for a long period of time to avoid damage through leaking. Leaking or damaged batteries might cause acid burns when in contact with skin, therefore use suitable protective gloves to handle corrupted batteries.

Batteries must be kept out of reach of children. Do not leave the battery lying around, as there is risk, that children or pets swallow it. Batteries must not be dismantled, short-circuited or thrown into fire. Never recharge non-rechargeable batteries. There is a risk of explosion!

3.3 Miscellaneous

Repair works must only be carried out by a specialist/specialist workshop.

If you have queries about handling the device, which are not answered in this operating instruction, please check with the distributor for further help.



4. Operating Elements

1, 2, 3, 4 - Select a battery compartment to customize «MODE» and / or «CURRENT».

MODE - Select mode: charging, discharging, recovery, testing. The button should be held down for more than one second to activate mode. To customize a single compartment - first press 1-4.

DISPLAY - selection of displayed information: current; process time, voltage, capacity.

CURRENT - selection of the charge / discharge current value. Button works in the first eight seconds after inserting batteries, or after activation of mode selection.

5. Power Supply

Only the shipped power adapter is allowed to be used for this charger! When the charger is powered up, all LCD segments will light up momentarily. The "null" icon will be shown until any batteries are inserted.



6. Operation

Once a rechargeable battery is inserted, its present voltage (for example, "1.12v") will be displayed for 4 seconds, then "200mA Charge" will be shown on display for another 4 seconds as the default charging current. If MODE or CURRENT button is not pressed during these 8 seconds, the charging process will start. After that charging current and / or mode can be changed by activation «MODE» or by pressing 1-4 and editing appropriate compartment.



Discharged or defective batteries may not be able to 3 charge, and the display will show "zero" icons. Sometimes, for fully discharged batteries "slow" charger will be more effective. Afterwards, the charging current can no longer be changed without re-inserting the rechargeable batteries or re-power up the charger. If completely empty or defective batteries are inserted into the charger, the "null" icon will be displayed on the display and the charger will refuse to charge them. Sometimes those completely empty batteries are still usable because they are not used for a long time and the internal leakage current emptied the battery by itself. To avoid this refusal by the charger, we suggest charging them with a normal 3v battery pack for a few seconds before insert into the charger.



6.1 Mode Selection

- Press and hold the "MODE" button for 1 seconds to change the operating mode for all charging slots.
- Press the "MODE" button subsequently to toggle among the "Charge", "Discharge", "Test" and "Refresh" mode.



- After selecting the mode you can change the charging / discharging current pressing «CURRENT».

Mode selection can be activated by pressing 1,2,3,4 - separately for specific battery compartment.

6.2 Current selection

Within the first 8 seconds after insert the battery, press the "CURRENT" button to select desired charge current of 200, 500, 700 or 1000mA for slots inserted with batteries. After expiration of 8 seconds the charger will go into setting mode. After that, the charging current and / or mode can be changed by activation «MODE» or by pressing 1-4 and editing of appropriate compartment.

During or after the work mode complete, press the "DISPLAY" button to toggle among the display mode for voltage, current, capacity and work time.

7. Overheat Protection

When overheating occurs, either batteries temperature over 55 degrees Celsius or charger controller board temperature over 70 degrees Celsius, the charging or discharging process will be paused immediately and the charging or discharging current display will show "000mA". The charging/discharging process will only resume once the temperature of the rechargeable batteries drops below 40 degrees and charger controller board drops below 50 degrees. This feature is extremely important in protecting the batteries or charger itself from over heating.

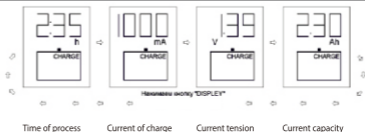


8. Operation Modes and Display

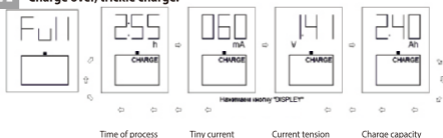
8.1 Operation Modes:

Charge Mode: The rechargeable battery is charged up to its maximum capacity.

Stage 1 Charge.

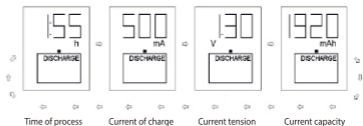


Stage 2 Charge over, trickle charge.

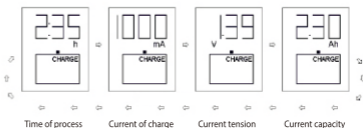


Discharge Mode: It is used to reduce the memory effect. The rechargeable battery is discharged to a preset battery voltage (0.9v). Once discharge is finished, the battery will be charged at the pre-selected charging current. Discharge current is always half of the selected charge current.

Stage 1 Discharge.



Stage 2 Charge.

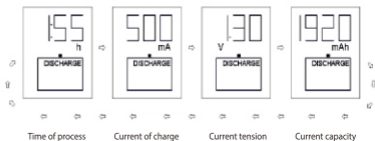


Stage 3 Charge over, trickle charge.

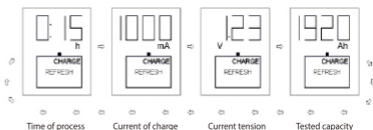


Refresh Mode: The rechargeable battery is charged and discharged repeatedly to optimize to its maximum capacity. Old rechargeable batteries or rechargeable batteries that have not been used for a long period of time can be restored to their rated capacity. Depends on the selected charge current, it can take tens hours or even days time before complete.

Stage 1 Discharge.



Stage 2 Charge.

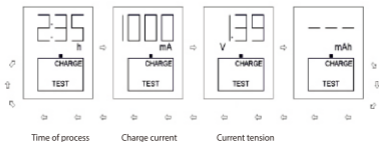


Stage 3 The recovery process is over, trickle charge.

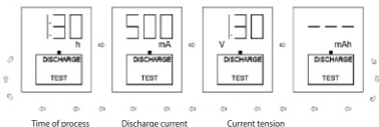


Test mode: Checks the present capacity of a rechargeable battery. The maximum capacity is determined by discharging the rechargeable battery after it was fully charged. If the maximum capacity is much lower than the rated capacity then it may reach the end of its lifetime.

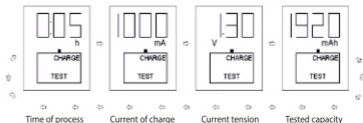
Stage 1 Charge.



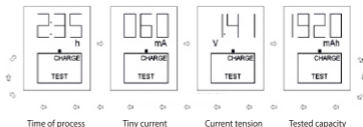
Stage 2 Discharge.



Stage3 Discharge over, the second charge current selected.



Stage 4 The testing process is over, trickle charge.



8.2 Display

- Charge/Discharge Current: the instantaneous current is displayed.
- Time Elapsed : The charging/discharging time of the last cycle is displayed.
- Accumulated Capacity: The accumulated battery capacity is displayed in mAh or Ah.
- Charge Voltage: The instantaneous battery voltage is displayed.
- Full: After the rechargeable battery is fully charged in any of the operation modes, trickle charging will be started automatically. Trickle charging prevents the rechargeable batteries from being overcharged and compensates for self-discharging of the batteries

**The Timer will resume and count from 0:00 again after the time elapsed is longer than 20 hours. For example: 1:45 will be shown if the time elapsed is 21 hours and 45 minutes.*

9. Maintenance

The device is maintenance-free but should be cleaned occasionally. When cleaning, the device must be removed from any power source. Only use dry and soft cloth to clear the housing of the charger. Do not use abrasive or solvents.

10. Disposal

10.1 Disposal of waste electrical and electronic equipment In order to preserve, protect and improve the quality of environment, protect human health and utilize natural resources prudently and rationally, the user should return unserviceable product to relevant facilities in accordance with statutory regulations.

The crossed-out wheeled bin indicates the product needs to be disposed separately and not as municipal waste.

10.2 Used batteries/rechargeable batteries disposal

The user is legally obliged (battery regulation) to return used batteries and rechargeable batteries. Disposing used batteries in the household waste is prohibited! Batteries/rechargeable batteries containing hazardous substances are marked with the crossed-out wheeled bin. The symbol indicates that the product is forbidden to be disposed via the domestic refuse.

10.3 The chemical symbols for the respective hazardous substances are Cd= Cadmium, Hg = Mercury, Pb = Lead. You can return used batteries/rechargeable batteries free of charge to any collecting point of your local authority.

all Inquiries : yc4000@youshiko.co.uk

Notes

Special Instructions:

Inserting the batteries in charger, Gently need to tuck in the
negative end under a lip in first and then push the positive end
down and when taking the batteries out, Gently you need to push
back from the positive end towards negative end and then pull out
the batteries. (secure connection to achieve accurate charging).
