



# Battery Charger IPC-1

Item no. 20 01 80 including 8 x AA 2500 mAh

Version 10/08



## 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 optimise and test the maximum capacity of the rechargeable batteries. Each charging slot has its own display to show various information, such as, charging current and battery voltage.

The charging current can be selected from 200, 500, 700 to 1000mA. If two or less batteries are inserted in slot 1 and/or slot 4, the charging current can go up to 1500 or 1800mA.

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 (-ΔV) function, which monitors the voltage over the charging cycle. When the battery pack 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 from overheating.

The charger can be powered from 12V cigarette lighter outlet or from 100-240V~, 50/60Hz mains socket. Operate and store it in dry indoor environment only.

This product fulfils European and national requirements related to electromagnetic compatibility (EMC). CE conformity has been verified and the relevant statements and documents have been deposited at the manufacturer.

Unauthorised 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 further reference.

## 2. Delivery contents

- Battery Charger IPC-1
- Power adapter
- 8x 2500mAh NiMH AA rechargeable batteries
- 4x Type C battery adapters
- 4x Type D battery adapters
- 12V vehicle cigarette lighter outlet connecting cable
- Carrying bag
- Operating instructions

## 3. Symbols explanation



An exclamation mark within an equilateral triangle indicates important information in the operating instructions. Carefully read the whole operating instructions before operating the device, otherwise there is risk of danger.



The device is authorised for use in dry indoors only.



The structure of the device complies with safety class II (double or reinforced insulation). Make sure the insulation of the product is neither damaged nor destroyed.



This symbol indicates special information and advice on operation of the device.

## 4. 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!

The icon with exclamation mark indicates important information in the operating instructions. Carefully read the whole operating instructions before operating the device, otherwise there is risk of danger.

### 4.1 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 instructions 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 slot of the charger.

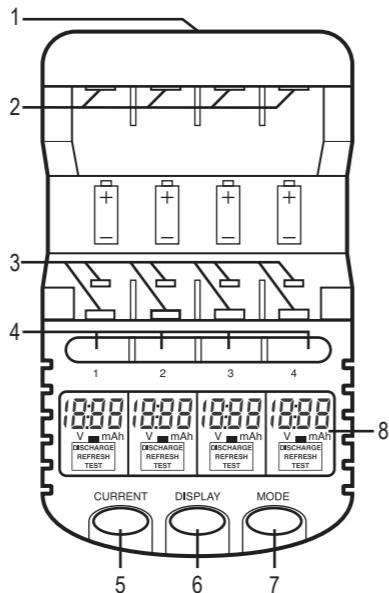
### 4.2 Battery safety

- 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!

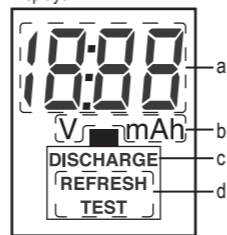
## 4.3 Miscellaneous

- The product and batteries are not a toy and should be kept out of reach of children and pets!
- Repair works must only be carried out by a specialist/ specialist workshop.
- If you have queries about handling the device, that are not answered in this operating instruction, our technical support is available under the following address and telephone number:  
Voltcraft®, 92242 Hirschau, Lindenweg 15, Germany, phone 0180 / 586 582 723 8

## 5. Operating elements



- 1 Power receptacle
- 2 Positive battery terminals
- 3 Negative battery terminals
- 4 Number buttons
- 5 "CURRENT" button
- 6 "DISPLAY" button
- 7 "MODE" button
- 8 Displays



- a Measured value
- b Unit of measured value
- c Charge/ Discharge mode indicator; It also indicates the charging or discharging cycle in refresh/ test mode
- d Refresh/ Test mode indicator

## 6. Power Supply

1. Select the desired power supply, either through a mains socket or a cigarette-lighter outlet.
  - a. **Through mains socket:**
    - Plug the power adapter to a mains socket.
  - b. **Through cigarette lighter outlet:**
    - Insert the cigarette lighter adapter to a cigarette lighter outlet. (metal tip = positive; side metal contacts = negative). The red LED on the cigarette lighter plug will light up.
2. Connect the low voltage plug to the power receptacle (1) of charger.
3. When the charger is powered up, all the segments will light up momentarily. The "n/A" icon will be shown until any batteries are inserted.

### 6.1 Fuse replacement for the cigarette lighter plug

If the red LED of the cigarette lighter plug does not light up after being inserted into cigarette lighter outlet, replace its fuse.

1. Unplug the cigarette lighter plug from the cigarette lighter outlet and disconnect it from the charger.
2. Turn the tip of the cigarette lighter plug counterclockwise to open the fuse compartment.
3. Replace the defective fuse with a new one of the same type (please refer to "Technical Data").
4. Close the fuse compartment.

## 7. Operation

Once a rechargeable battery is inserted, its present voltage (for example, "1.12V") will be displayed for 4 seconds. Then "200 mA Charge" will be shown on display for another 4 seconds.

If "MODE" (7) or "CURRENT" (5) button is not pressed during these 8 seconds, the charging process will start. Afterwards, the charging current can no longer be changed without re-inserting the rechargeable batteries.

If defective batteries or non-rechargeable batteries are inserted into the charger, the "n/A" icon will be displayed on the display.

### 7.1 Mode selection

1. Press and hold the "MODE" button (7) for 1 second to change the operating mode for all charging slots.
2. Press the "MODE" button (7) subsequently to toggle among the "Charge", "Discharge", "Test" and "Refresh" mode.
3. To change the operation mode of an individual slot:
  - Press one of the number buttons (4) to select a particular charging slot.
  - Press the "MODE" button (7) to change the operating mode for the selected charging slot.

### 7.2 Current selection

Press the "CURRENT" button (5) to set the charging/ discharging current.

The charging/ discharging current of the rechargeable battery inserted first restricts the maximum charging/ discharging current for all the remaining charging slots.

For instance, if the rechargeable battery inserted first is set to charge at 500mA, then the second, third and fourth rechargeable batteries can be only set to charging at a maximum current of 500mA.

Therefore, the user is recommended to place the battery with the highest expected charging/ discharging current into the slot first.

To reset the maximum charging current, remove all four rechargeable batteries from the charging unit and insert them anew. Then, set the desired charging current.

## 7.3 Charging time estimation

The charging time can be calculated by dividing the battery capacity by the selected charging current.

For example, if an AA (Micro) battery with 2500mAh and the charging current is set to 500mA, then (2500 ÷ 500) hour = 5 hour

## 7.4 Overheat protection

When overheating occurs, the charging will be stopped immediately and the display will show "000 mA". The charging process will only resume once the temperature of the rechargeable batteries drops to a safe level. If overheat conditions persist, remove the charger from the power source and let the rechargeable batteries cool down. The batteries should be charged at a lower current.

## 8. Operation modes and displays

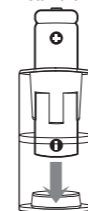
Display	Measured value	Operation modes
	<b>Charging current:</b> The instantaneous charging current is displayed.	<b>Charging mode:</b> The rechargeable battery is charged up to its maximum capacity. The process starts automatically at 200mA or select 500, 700, 1000, 1500 or 1800mA for faster charging times. 1500 and 1800mA are only available if one or two batteries are inserted in slot 1 and/or slot 4.
	<b>Discharging current:</b> The instantaneous discharging current is displayed.	<b>Discharging mode:</b> It is used to reduce the memory effect. The rechargeable battery is discharged to a preset battery voltage. The discharging current can be set to 100, 250, 350 or 500mA. Once discharging is finished, the battery will be charged at double the selected discharging current.
	<b>Time elapsed*:</b> The charging/ discharging time of the last cycle is displayed.	<b>Refresh mode:</b> The rechargeable battery is charged and discharged repeatedly to optimise 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.
	<b>Accumulated capacities:</b> The accumulated battery capacity is displayed in mAh or Ah.	<b>Test mode:</b> 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.
	<b>Charging voltage:</b> The instantaneous charging voltage is displayed.	
		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 rechargeable batteries.

\* The timer will resume and count from 00:00 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)

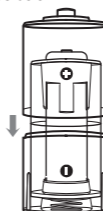
## 9. Type C and D battery adapters

The battery adapters are used for connecting the AA battery to the electric devices requiring Size C or D batteries. To apply the adapter:

Install the AA battery to Size C or Size D adapter as below.



The AA battery used with the type C adapter



The AA battery used with the type D adapter (place the battery into the "C" adapter first and then the "D" adapter)

## 10. 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!

## 11. Disposal

### 11.1 Dispose of waste electrical and electronic equipment

In order to preserve, protect and improve the quality of environment, protect human health and utilise 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.

### 11.2 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.

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, our stores or where batteries/ rechargeable batteries are sold.

Consequently you comply with your legal obligations and contribute to environmental protection!

## 12. Technical data

Operating Voltage:	3V---	
Power adapter:	Input:	100 – 240 V~, 50/60 Hz
	Output:	3,0 V---, 4,0 A
Charging current range:	200 to 1800 mA	
Discharging current range:	100 to 500 mA	
Max. charging capacity:	3000 mAh	
Fuse:	250 V, 2 A	
Operating temperature:	0 to 40 °C	
Dimensions:	75 x 129 x 37 mm	



