

# NWB-15 Portable Charger Booklet

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## 1. NWB-15 Portable Charger Features

NWB-15 is an innovative and effective intelligent charger designed for New Wisdom KL5M / KL8M series cap lamps with LED as light source and Li-ion battery as power supply. As a new generation of the New Wisdom charger, it has the following features:

### (1) Charging time

For the KL5M cap lamp, it takes 8-10 hours to get full charge by NWB-15; while for the KL8M, than 10-13 hours is needed.

### (2) Applicable to both AC and DC Power Supply

The new NWB-15 is designed for both AC and DC power supply. Indoors AC power supply can be used; while outdoors, the charger can also use the car charger cable to take power from the car cigarette lighter

### (3) Large Scale Voltage

Voltage range of the AC power Supply is: 85V~265V

Voltage range of the DC power Supply is: 6V~30V

The wide range makes the charger applicable to specific voltage standard in all countries.

### (4) Small size, low weight, convenient to carry

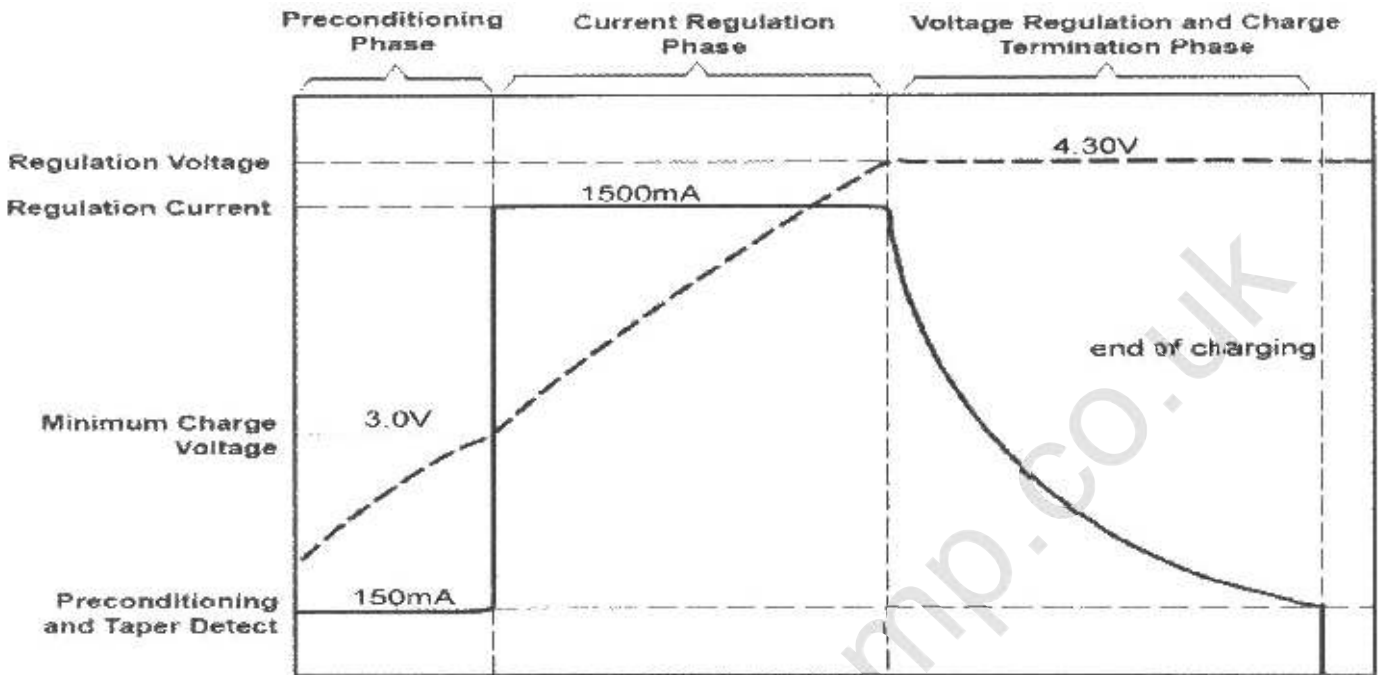
NWB-15 charger is designed to be portable. It can charge one cap lamp each time. Aluminum alloy is used to make the charger shell light weight and strong housing. The size of the charger is only 113x 73 x55mm which makes it very convenient to be used in the working area, at home or in a car.

### (5) Environmentally-friendly

The charger is designed in accordance with the Restriction of Hazardous Substances Directive (RoHS). RoHS standard is strictly followed in the whole process, from choosing the material to designing the production technical.

## 2. Battery Charging Mechanism

The Lithium-ion battery makes use of both constant current and constant voltage charging methods. The charging current is  $1600\text{mA} \pm 100\text{mA}$ ; voltage is  $4.30\text{V} \pm 0.05\text{V}$  with approximately 4-5hours for charging. The circuit is designed with a steady state charging and control system which automatically regulates the charging process automatically. The circuit we design is near the theory charging for Li-ion battery. For a discharged battery a constant current charge is employed at  $1600\text{mA} \pm 100\text{mA}$  (the charger indicator light is red). When the battery voltage reaches 4.30V, the battery switches to a constant voltage charge (at this point the battery is approximately 80% charged) and the current gradually decreases. When the battery is sufficiently charged it automatically cuts off the circuit to protect the battery from over charging (the charger indicator lights flash at green).



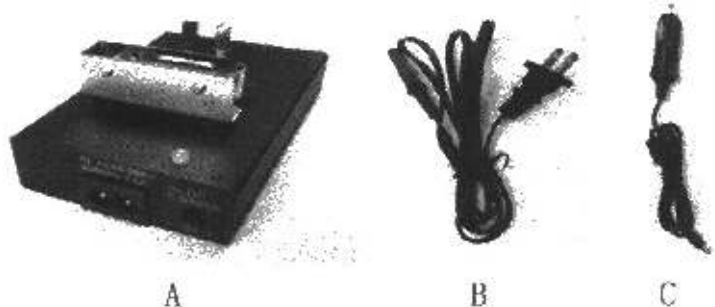
**Note:** It is not necessary to wait until the battery is completely discharged before charging. Charging can be undertaken at any stage of battery capacity, actually, it prolongs the life span of the battery if charging is taken before complete discharged.

### 3. Technical specifications

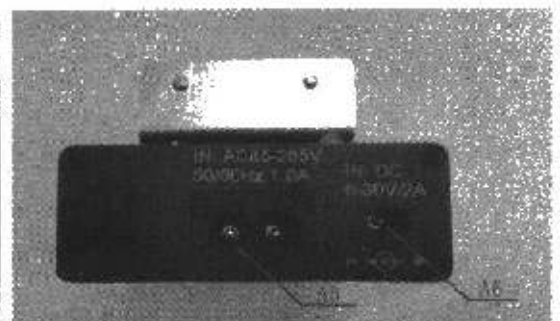
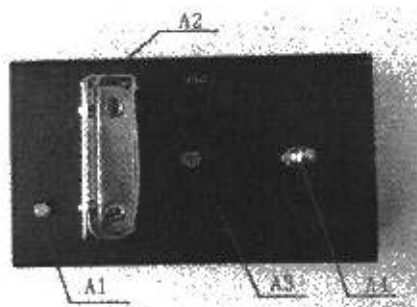
Features	NWB-15 Specifications
AC input	85~265V/1A 14VA , 50~60Hz
DC input	6~30V/2A 10W
DC output voltage	4.20V±0.05V (Max)
DC output current	1600mA±100mA (Max)
AC Plug	US, EU, UK or AU standards for different markets
Size	55x 73x 115mm
Weight	260g

### 4. Structural Parts

- A. Charger
- B. Power cable(AC)
- C. Vehicle power cable(DC)



- A. Charger
  - A1. Indicator
  - A2. Connected metal base (Anode Metal Spring)
  - A3. Charger Base
  - A4. Brass pin



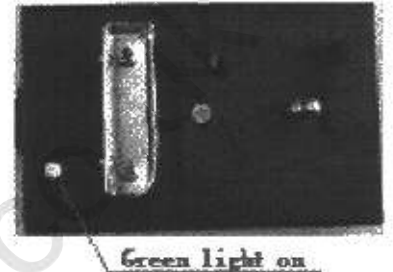
(Cathode of the charger)

A5. AC Outlet

A6. DC Outlet

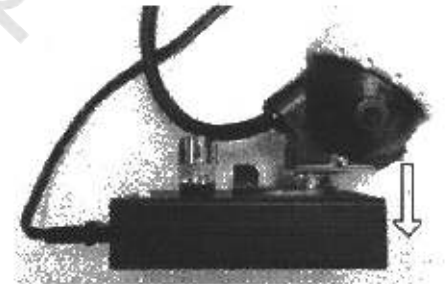
## 5. Usage Guide

- (1) Connect the AC power cable to the AC outlet of the charger and plug to the socket on the wall. Then the charger is with power and in working condition, the charger indicator light is green which means the charger is without load.

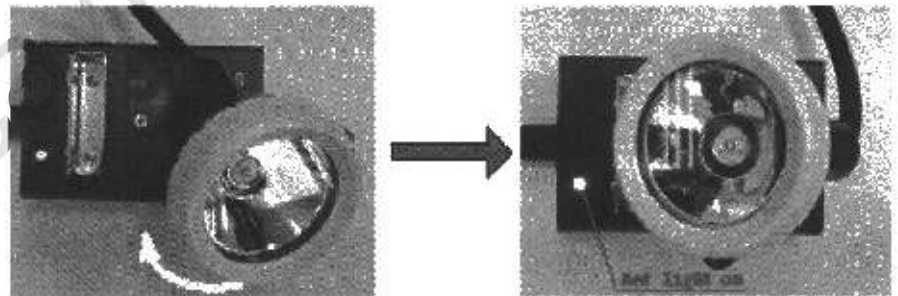


Or connect the outlet of the vehicle power cable to the DC socket of the charger and the other end of the cable to the car cigarette lighter. Then the charger is with power and in working condition, the charger indicator is green which means the charger is without load.

- (2) Put the KL8M cap lamp connect with the charger. To position the brass pin (cathode) of the charger to fix with the hole of the cap lamp clip united parts.

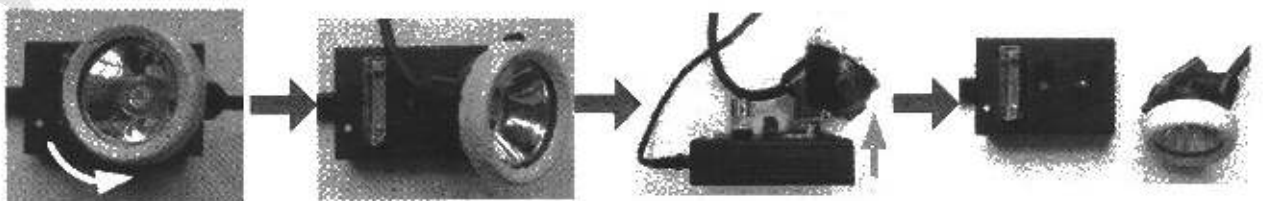


- (3) Rotate the head lamp 180 degree clockwise, making sure the anode touch point of the head lamp closely connect to the connected metal base (anode metal spring piece), and then the indicator becomes red showing the lamp is in charging.



- (4) When the indicator of the charger flashes from green to red, it means the battery is at least 90% charged. The KL8M can work for more than 14h continuously if stop charging at this moment. If the indicator of the charger flashes at green only then the battery is fully charged.

- (5) Rotate the lamp head 180 degree anti-clockwise; take it off from the charger.



## 6. Indicator Signal instruction

Indicator signal	Meaning
Green on	Battery is fully charged
red on	In the charging

## 7. Troubles and Troubleshooting

Trouble Description	Trouble analysis	Troubleshooting
Indicator light inoperative	Power cable is not well connected to the power supply charger is damaged	Check the connection status. Send back to the manufacturer for repair
Load the cap lamp on the charger, and the indicator is still in green	Bad connection between the cap lamp and the charger	Clean the connected metal base(anode metal spring piece) and the brass pin(cathode) to make sure that they can be well connected
Load the cap lamp on the charger, and the indicator flashes in red	Charger is out of function	Send back to the manufacturer for repair
Load the cap lamp on the charger, and the indicator flashes in green	Nothing wrong, and the battery is full of charge	Take off the lamp for usage

## 8. Notes

- (1) Strictly follow the voltage range during usage.
- (2) The new NWB-15 Charger is specially designed for the New Wisdom KL5M/ KL8M series cap lamp, hence it is better not used for other lamps; otherwise the battery may be damaged.
- (3) Turn off the cap lamp when charging.
- (4) AC and DC power cable cannot be used at the same time.
- (5) Regularly clean the connected metal base (anode spring metal piece) and the brass pin (cathode) to make sure they can connect well.
- (6) It is better to turn off the charger when the charging is finished.

## 9. Safety Warnings

- (1) Prohibited to pour water on the charger or use it in a humid environment such as the bathroom, otherwise it will run into a short circuit.
- (2) Prohibited to crash or strike the charger, it may cause the nut to loosen and the inside circuit board to be damaged.

## 10. Package

Each charger is packed in an inner box with size 138x 100x 70mm and weight 0.4kg.  
Every 30 boxes are packed in one carton with size 38x 22.5x 44cm and weight 11kg.

### 11. CE Certification NWB-15

