

NWB-25 Portable Charger Booklet

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1. NWB-25 Portable Charger Features

NWB-25 is an innovative and efficient intelligent charger designed for New Wisdom KL8M/ KL5M 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 significant features:

(1) Faster charging

After applying the intelligent fast charging technology, the time to full charge the lamp is much faster than before. For the KL5M cap lamp, it takes only 3 hours to get full charge; while for the KL8M, less than 5 hours is needed.

(2) Higher efficiency, much lesser heat

Compared with the old generations of the chargers, the new NWB-25 is improved to be more efficient. Even though charged in full power, it generates only a little heat.

(3) Applicable to both AC and DC Power Supply

The new NWB-25 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.

(4) Wide range of working Voltage

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

Voltage range of the DC power Supply is: 7V~30V

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

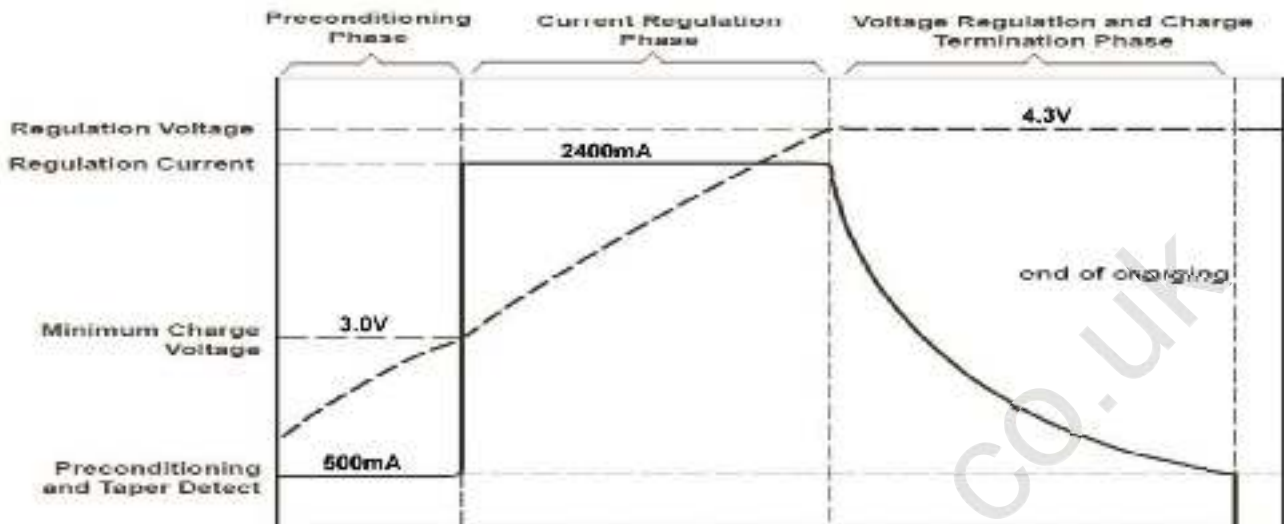
(5) Small size, light weight, convenient to carry

NWB-25 charger is designed to be portable. It can charge one cap lamp each time. Aluminum alloy is used to make the charger box to be 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.

(6) 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 $2400\text{mA} \pm 100\text{mA}$; voltage is $4.30\text{V} \pm 0.05\text{V}$ with an approximate charging time of 4-5 hours. The circuit is designed with a steady state charging and control system which automatically regulates the charging process. The circuit we design is near the theory charging for Li-ion battery. For a discharged battery a constant current charge is employed at $2400\text{mA} \pm 100\text{mA}$ (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 light is green flash).

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

3. Technical specifications

Features	NWB-25 Specifications
AC input	85~265V , 50~60Hz
DC input	6~30V
DC output voltage	$4.80\text{V} \pm 0.05\text{V}$ (Max)
DC output current	$2.400\text{mA} \pm 100\text{mA}$ (Max)
AC Plug	US, EU, UK or AU standards for different markets
Size	55x 73x 115mm
Weight	260g

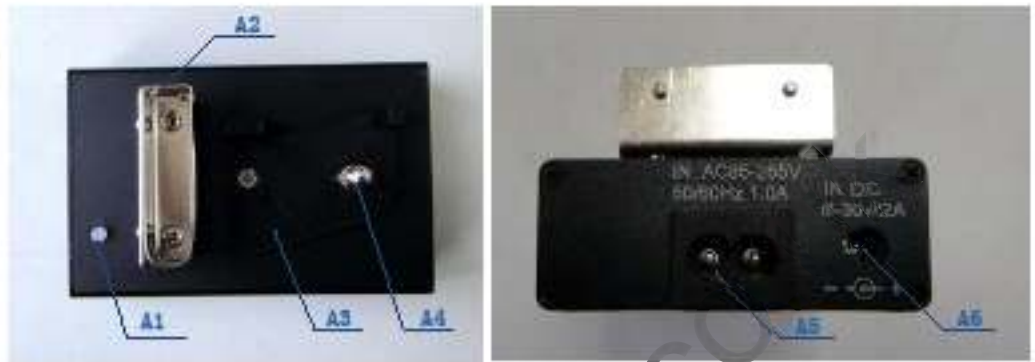
4. Structural Parts

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



A. Charger

- A1. Indicator
- A2. Connected metal base (Anode Spring Metal Piece)
- A3. Charger Base
- A4. Brass pin (Cathode of the charger)
- A5. AC Outlet
- A6. DC Outlet



5. User 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 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 for 180 degree clockwise, make sure the anode touch point of the head lamp closely connect to the connected metal base (anode spring metal 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
Indicator off	Charger is switched off without power
Green on	Charger is in working condition without load
Red on	Charger is in working condition with load(fast charging)
Flash between green and red	Small currency charging and the battery is at least 90% charged.
Flash at green	Battery is fully charged
Flash at red	Charger is out of function

7. Troubles and Troubleshooting

Trouble Description	Trouble analysis	Troubleshooting
indicator light inoperative	Power cable is not well connected to the power supply	Check the connection status
	charger is damaged	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 spring metal 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-25 Charger is specially designed for the New Wisdom KL5M/ KL8M series cap lamp, hence it's better not used to charge other lamps; otherwise the battery may damage.
- (3) Turn off the cap lamp when it is in 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 that they can be in good connection.
- (6) It's better to turn off the charger when the charging is finished.