suaoki

ICS4+ 6V/12V

Car Battery Charger

User Manual

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Thank you for choosing Suaoki.

About ICS4+

The ICS4+ is designed for charging all types of 6V&12V lead-acid and 12V lithium-ion batteries, including Wet, Gel, MF, AGM, and Lithium-ion batteries. It is suitable for charging 12 to 120Ah batteries and for maintaining batteries of any capacities.
Before using the charger, please carefully read the battery manufacturer's specific precautions and recommended rates of charge for the battery. Make sure to determine the voltage and type of your vehicle's battery by referring to your owner's manual prior to charging.

Charging Modes

The ICS4+ has multiple modes, all 9 together. Some charging modes must be selected manually. It is important to understand the differences and purpose of each mode before use. This way, you could select the appropriate charging mode for your battery before use.
Manual Selection
1.  Battery Type Selection Button: SLA (Wet, MF, GEL, Flooded and VRLA),  AGM (EFB), LiON (LiFePO4)
2.  Mode Button:  SLOW(1A),  FAST(4A)
Auto Selection
Charging Voltage: 6V, 12V

Battery Type & Mode	Explanation
Pon	In Standby mode, the charger is connected to AC supply but not to the car battery. The charger is not charging under this mode.
	No Power

12V	SLA 12V  FAST	For charging 12-volt Wet Cell, Gel Cell, and Maintenance-Free batteries. Press BATTERY TYPE SELECTION button after plug in and toggle until SLA icon shows on LCD screen. Press MODE button to toggle until  appears on LCD.
		14.4V | 4.0A | 2-120Ah Batteries
	SLA 12V  SLOW	For charging 12-volt Wet Cell, Gel Cell, and Maintenance-Free batteries. Press BATTERY TYPE SELECTION button after plug in and toggle until SLA icon shows on LCD screen. Press MODE button to toggle until  appears on LCD.
		14.4V | 1.0A | 2-35Ah Batteries
	AGM 12V  FAST	For charging 12-volt batteries in cold temperatures (winter mode) below 50°F (10°C) on AGM & EFB batteries. Press BATTERY TYPE SELECTION button after plug in and toggle to AGM icons displays on LCD, Press Mode button to toggle until  appears on LCD.
		14.7V | 4.0A | 2-120Ah Batteries

	AGM 12V FAST	For charging 12-volt batteries in cold temperatures (winter mode) below 50°F (10°C) on AGM & EFB batteries. Press BATTERY TYPE SELECTION button after plug in and toggle to AGM icons displays on LCD, Press Mode button MODE to toggle until appears on LCD.
		14.7V | 1.0A | 2-35Ah Batteries
	LiON 12V FAST	For charging 12-volt lithium-ion batteries, including lithium iron phosphate. (LiFePO4)
		14.4V | 4.0A | 2-120Ah Batteries
	Con 12V	An advanced battery conditioning mode for repairing and storing, old, idle, damaged, stratified or sulfated batteries. Automatically starts and initialize once it is determined necessary.
		20V | 0.3A | Any Battery Capacity
6V	SLA 6V SLOW	For charging 6-volt Wet Cell, Gel Cell, Enhanced Flooded, and Maintenance-Free batteries.
		7.2V | 1.0A | 2-35Ah Batteries
	AGM 6V SLOW	For charging 6-volt Wet Cell, Gel Cell, Enhanced Flooded, and Maintenance-Free batteries.
		7.3V | 1.0A | 2-35Ah Batteries

Operation Guidance

Step 1
First, plug in and LCD will light up and display "Pon".
Step 2
Press BATTERY TYPE SELECTION button until the correct battery type appears on LCD, and this could be show as SLA, AGM or LiON icon. Winter program and icon " ❄ " will appear when AGM is selected.
Step 3
Press MODE button , choose the correct charging rate to charge your battery and this could be 1A Slow and 4A Fast respectively. For 6V car battery, you MUST choose 1A Slow. Otherwise, abnormal behavior will damage your 6V battery.
Please Note: This device has a special memory function. After you unplug the charger from AC source, it will retain the selected battery type choice and charging speed.
Step 4
Attach the RED (+) and BLACK (-) clamps to the correct polarity of your vehicle battery.
(a) If the polarity is attached correctly, it would show vehicle battery voltage temporary, then it will display "Con" on LCD, this will indicate the charger is now entering self conditioning mode to repair car battery automatically.
(b) If you attach the RED (+) and BLACK (-) clamps to the wrong polarity, the LCD will display " Err " and stop operation.
Note: At 6V mode or if the car battery voltage reaches over 13.2V, battery Desulphation step would be skipped.
Manual selection mode:
Choose manual selection mode when the auto-detection function fails.
▪ Press and hold the MODE button for 3 seconds and the LCD would display 12V. This indicates that the charger selects 12V charging mode. Press and hold the MODE button again for 3 seconds, the LCD would display 6V. This indicates that the charger selects 6V charging mode. After that, connect the RED (+) and BLACK (-) clamps of the charger to your vehicle battery correctly.

▪ After the charging is complete, disconnect the charger from the battery, or from the AC power supply. Then the product would automatically exit the manual selection mode.

Step 5

This charger will now go through the pre-programmed charging steps. The time it takes to fully charge your vehicle's car battery depends on the battery size.

(I) If battery is 60~70Ah, average charging time = 10 hours.

(II) If battery is 120Ah, it might takes up to 35 hours.

Once the charger has completed the charging cycle, and battery confirmed to be in good condition, the LCD will indicate "FUL" and ICS4+ will continue to trickle charge your vehicle battery continuously as needed.

ATTENTION

(A) If outside temperature is below 10°C, the ICS4+ has a winter mode feature to allow special charging program. Press BATTERY TYPE SELECTION button, and until you see " ❄ " icon appears. Please note, winter mode share the same program as AGM. Even if your battery is SLA, this program applies. However, this program DOES NOT apply to LiON.

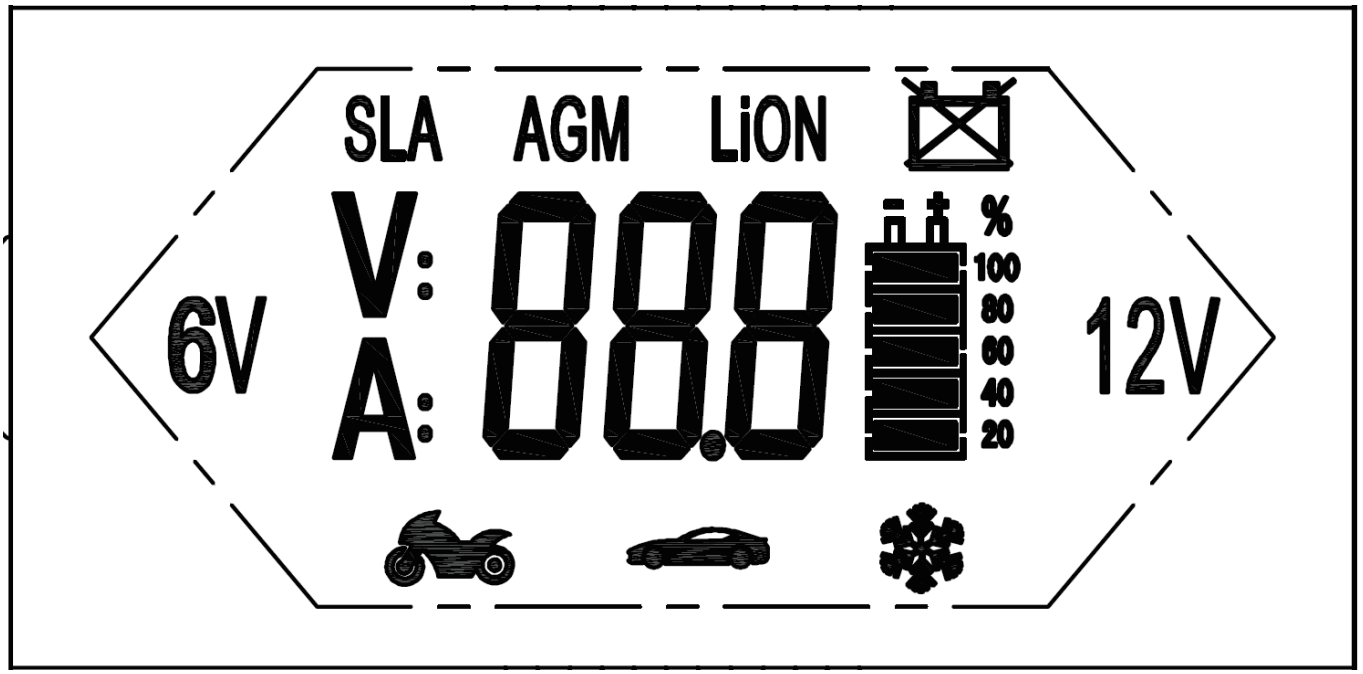
(B) At any time during charging, if your vehicle battery has been detected with abnormal feedback, the charger will determine the car battery as defective and display " ⊠ " icons.

(C) This charger is designed to release power if and when a correct polarity is detected. There won't be any sparks or voltage at the clamps, unless connected correctly to the battery.

(D) This charger is designed to charge all Sealed Lead Acid (SLA) (Wet, MF, Gel), Absorption Glass Mat (AGM), Flooded and LiFePo4, Lithium (LiON).

(E) Please do not make any connections to the carburetor, fuel lines, or thin, sheet metal parts.

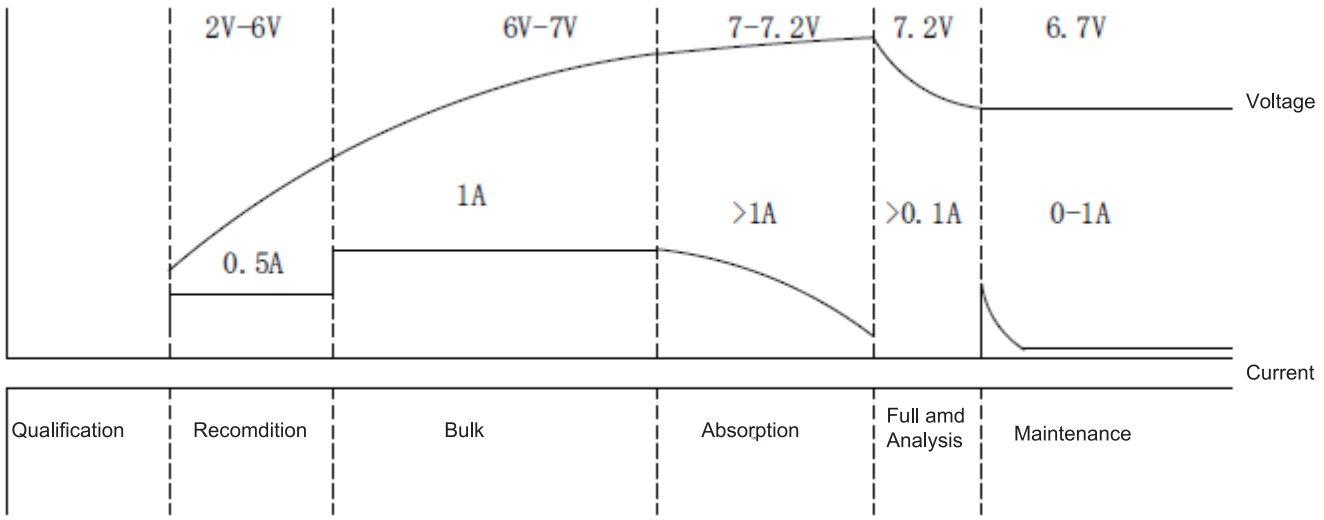
LCD Display



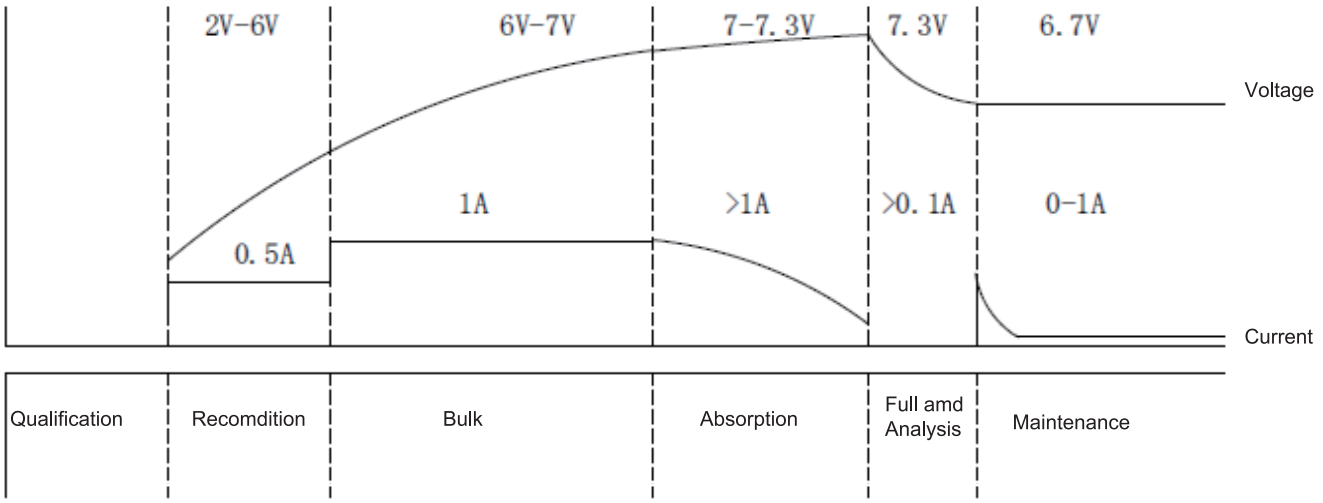
Display Items	Directions
	Charging voltage and amperage
	Battery and charging status
	1A Slow charge rate
	4A Fast charge rate
SLA	all Sealed Lead Acid (SLA) (Wet, MF, Flooded and Gel)

AGM	Snow mode and AGM
LiON	LiFePo4, Lithium
	Defective battery
FUL	Car Battery fully charged
Err	Wrong polarity +/-
Con	Automatic self repair
Pon	Power on/Standby

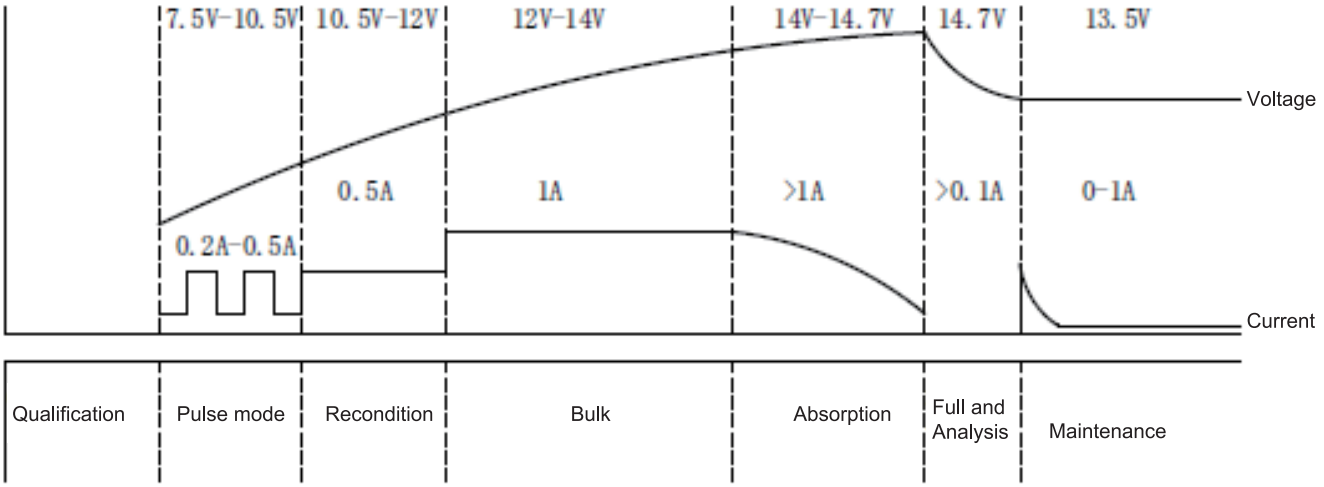
Charging Programs



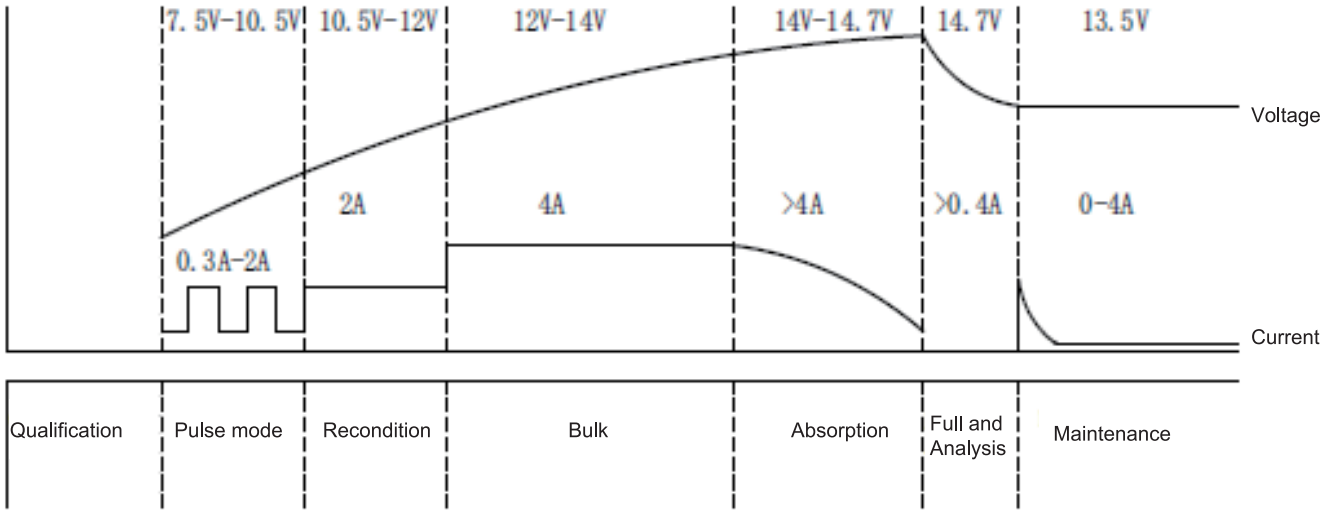
7 STEPS (6V SLA)



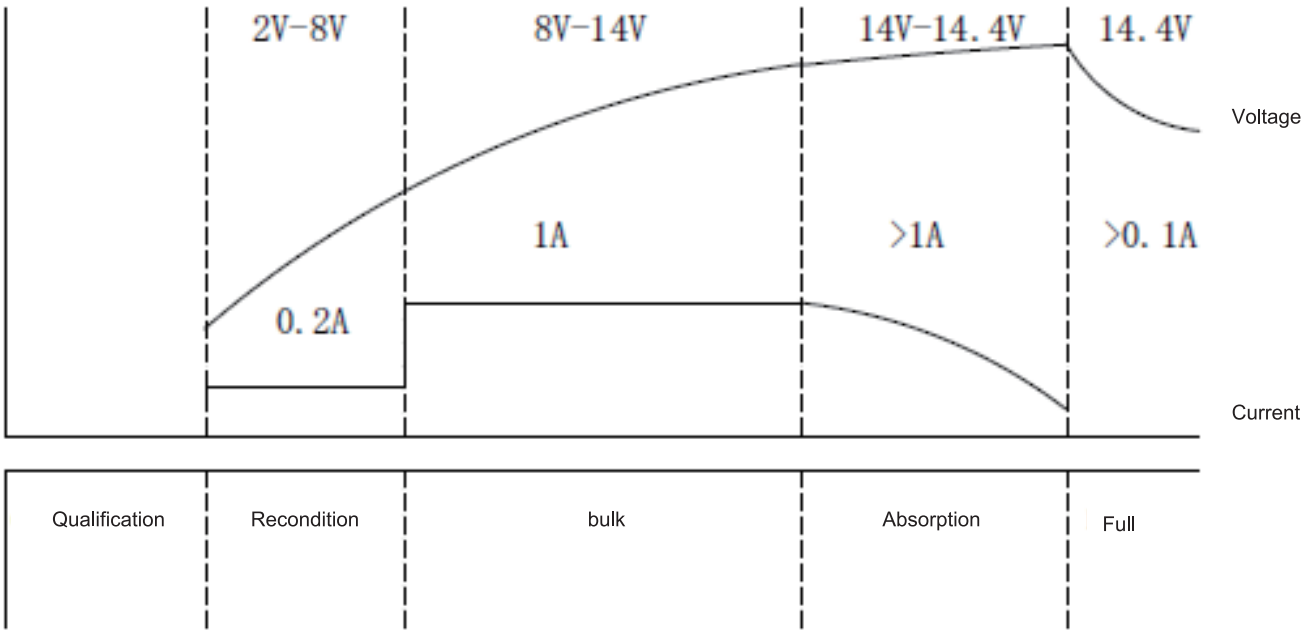
7 STEPS (6V AGM)



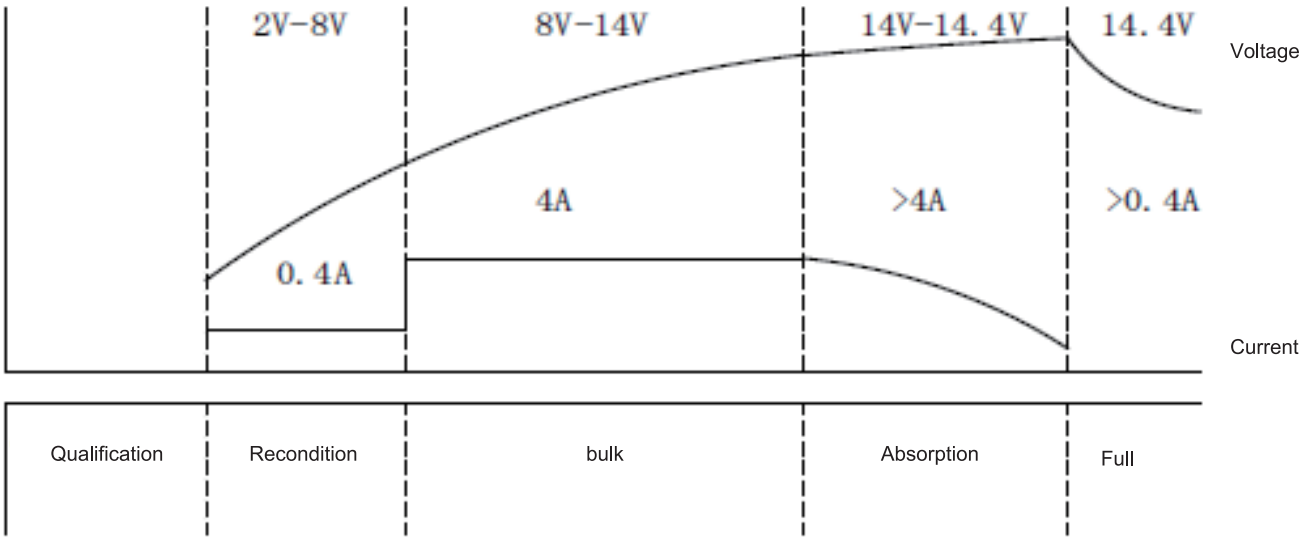
8 STEPS (12V/1A AGM)



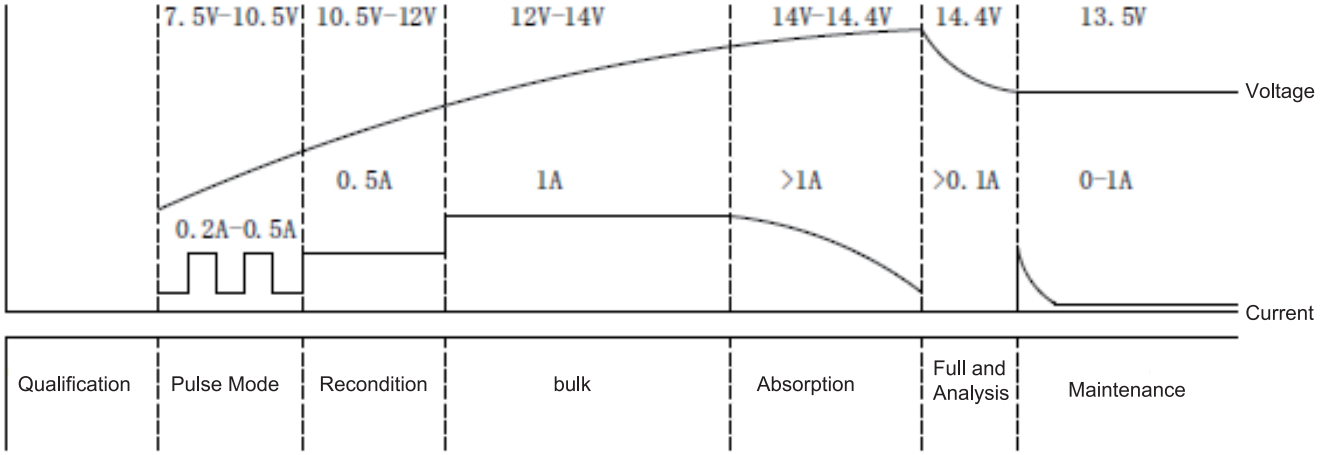
8 STEPS (12V/4A AGM)



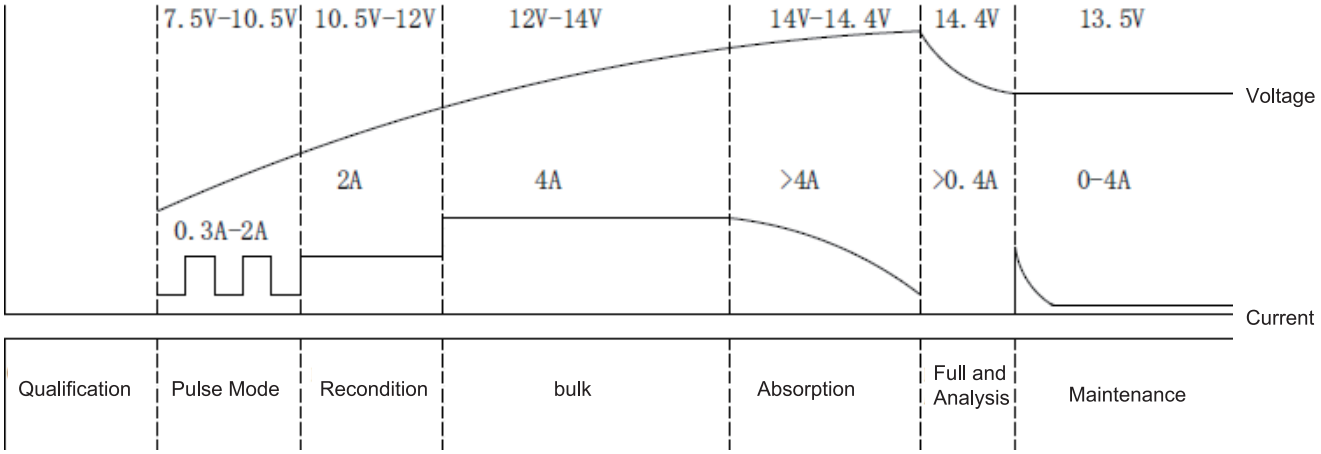
5 STEPS (12V/1A LiON)



5 STEPS (12V/4A LiON)



8 STEPS (12V/1A SLA)



8 STEPS (12V/4A SLA)

Step1. Qualification

Ensure the battery in good condition prior to charge. Charger will not be started if battery is less than 7.5V. If charge detect the battery is slightly fatigue with minor sulphated condition, it will rejuvenate and recover the battery back to its peek performance.

Step2. Pulse Mode/Battery Desulphation

Detects sulphated batteries. Pulsing current and voltage removes sulphate from the lead plates of the battery restoring the battery capacity.

Step3. Recondition

Recondition follows when the desulphation mode is completed, it aims to re-active the element of battery for battery charging condition.

Step4. Bulk

The normal charge is commenced to deliver the constant current for charging up the battery until 80% full.

Step5. Absorption

The charge program has switched over to constant voltage; the charge current has to be reduced according to the raised of battery level, until the battery is full.

Step6. Full

The charge will stop until the battery is 100% charged.

Step7. Analysis

It checks the battery voltage after charged, to make sure the voltage can be retained otherwise the battery is classified a dead battery.

Step8. Maintenance

(fully charged) - Maintaining the battery voltage at maximum level by providing a constant voltage charge. The battery can be permanently maintained at a proper work level and to be kept ready to go.

Charging Times

Battery Size (Ah)	Approx. Charging Time	
	6V	12V
20	2.9	2.9
40	5.7	5.7
80	11.4	11.4
100	14.3	14.3
120	17.1	17.1

The estimated time to charge a battery is shown above. The size of the battery (Ah) and its depth of discharge (DOD) greatly affect its charging time. The charging time is based on an average depth of discharge to a fully charged battery and is for reference purposes only. Actual data may differ due to battery conditions. The time to charge a normally discharged battery is based on a 50% DOD.

Caution

-If the battery voltage is 6V, please make sure that you are using 1A slow charge. Otherwise, your 6V battery would be damaged.
-Please attach the RED (+) and BLACK (-) clamps to the correct polarity of your vehicle battery. -The LCD will display " Err " and stop operation if the the clamps are connected in reverse.
-Please note this device has a special memory function. After you unplug from AC source, it will retain your previous battery type choice and selected charging speed.
---Please note, SNOW MODE shares the same program as AGM. Even if your battery is SLA, this program applies. However, this DOES NOT apply to LiON battery.

Auto select 6V/12V mode.

6V charge mode is designed for 6-volt lead-acid batteries only, like Wet Cell, Gel Cell, and Maintenance-Free batteries. It automatically determines the correct voltage for your target battery.

Using 12V Lithium

12V Lithium charge mode is designed for 12V lithium batteries only. Please consult the manufacturer of your vehicle’s car battery before charging and ask for recommended charging rates and voltages. Some lithium-ion batteries may be unstable and unsuitable for charging.

Con Self Conditioning Mode

This Mode is for 12V lead-acid batteries only. This mode uses a high charging voltage and may cause some water loss in wet (flooded) cell batteries. Some batteries and electronics may be sensitive to high charging voltages. To minimize risks, please disconnect the battery before using this mode.

Technical Specification

1. Input Voltage: 100-240V 50-60HZ
2. Working Voltage: 85-264V 50-60HZ
3. Output Voltage: 6V/12V AUTO
4. Output Current: 1A, 4A (59W MAX)
5. Suitable Battery Type: All SLA batteries (Wet, MF, GEL Flooded and VRLA), AGM (EFB), LiON(12V LiFePO4)
6. Material: ABS + PC housing
7. Working temperature: -10°C~45°C（14°F~113°F）
8. Housing Protection: IP65

Package Content

- ICS4+ Car Battery Charger
- 1*Battery Clamp
- 1*Eyelet Terminal Connector
- 1*Carrying Bag
- 1*User Manual

Warranty

Our company provides customers with warranty of 12 months from the date of purchase.

Warranty

For any inquiries or comments concerning our products, please send an email to support@suaoki.com, and we will respond to you as soon as possible.

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