



QUICK START GUIDE

450W Intelligent Battery Charger



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GS450C

Introduction

This product is a 450W AC/DC intelligent battery charger, with 100-240Vac wide voltage input. It is designed for charging all types of 6V & 12V & 24V lead-acid batteries, including Lithium, LiFePO₄, Wet (Flooded), Gel, MF (Maintenance-Free), CA (Calcium), EFB (Enhanced Flooded Battery), and AGM (Absorption GlassMat) batteries. It is suitable for charging battery capacity up to 600 Amp-hours and maintains all battery sizes, providing short circuit protection, over-current protection and over-voltage protection.

Important Safety Warnings

Before using the charger, please read the Quick Start Guide carefully and obey the battery manufacturer's specific precautions and recommended battery charging rate. Failure to follow rules may result in ELECTRICAL SHOCK, EXPLOSION, FIRE, which may result in SERIOUS INJURY, DEATH, or PROPERTY LOSS.

- Determine the voltage and chemistry of batteries before charging.
- Keep in mind the distance to batteries. The DC cable length of the charger, with either the battery clamp or eyelet terminal connectors, is approximately 1.2m.
- This product can expose you to chemicals including lead and exhaust fumes. Please always wash your hands after handling batteries and related materials.
- Prepare for clean water and soap nearby in the case of battery acid contamination.
- Do not handle or wear any metal objects when working with batteries including tools, watches, and jewelry.
- Do not leave children unattended with the product or any accessory.
- Do not use a damaged product or a damaged power cable.
- Store and use the product in dry locations. Do not use the product if it becomes wet. If the product becomes wet during use, disconnect it from batteries and stop using it immediately.

- Do not attempt to alter, modify, or repair any part of the product.
- If the product is damaged, malfunctions, or is exposed to liquid, stop using it and contact Wavlink.
- This product is only approved for use with accompanying accessories.
- Prevent battery acid from coming in contact with the product.
- Do not operate the product in an enclosed area or an area with restricted ventilation.
- Do not set a battery on top of the product.
- Place cable in a safe position, which avoids accidental damage including moving vehicle parts, moving engine parts or what could become a hazard that may cause injury or death.
- This product is designed to work in ambient temperatures between -4°F and 104°F (-20°C ~ 40 °C). Do not operate it outside of the temperature range. Stop using if the battery becomes excessively hot. The average storage temperature is -20°C ~ 40°C). Never exceed 70°C under any condition.
- Do not charge a battery if you are unsure of the battery's specific chemistry or voltage.
- The product contains magnetic components which may interfere with pacemakers, defibrillators, or other medical devices. Consult your physician before use if you have any medical devices including pacemakers.
- Use a soft, lint-free (microfiber) cloth when you clean the product.
- Do not operate the product in any area with a potentially explosive atmosphere, including fueling areas or areas that contain chemicals or particles such as grain, dust or metal powders.
- The product complies with regulations governing radio frequency emissions when designed, tested, and manufactured, but such emissions from the product can negatively affect the operation of other electronic equipment, causing them to malfunction.

NOTE: After tested, the product complies with the limits for a Class B digital device, according to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the product is operated in a commercial environment. The product can radiate radio frequency energy. If not installed and used following the Quick Start Guide, it may cause harmful interference to radio communications. Operation of this product in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Technical Specifications

Input Voltage AC: 100-240 VAC, 50-60Hz, Max 540W

Output Power: 450 W Max

Charging Voltage: Various

Charging Current: 10A (6V), 20A (6V), 10A (12V), 20A (12V), 35A (12V),
10A (24V), 20A (24V), Auto (6V, 12V, 24V)

Low-Voltage Detection: 1V (6V), 8V (12V), 16V (24V)

Back Current Drain: <0.5mA

Ambient Temperature: -20°C to +40°C

Type of Batteries: 6V, 12V, 24V

Battery Chemistries: Wet, Gel, MF, CA, EFB, AGM, Calcium, Lithium, LiFePO4

Battery Capacity: Up to 600Ah, Maintains All Battery Sizes

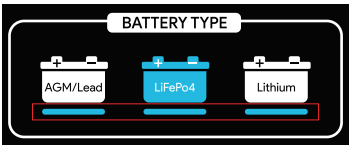
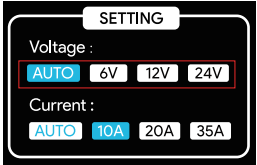
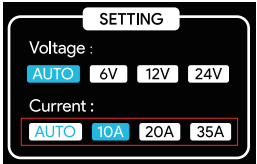
Cooling: Fan Convection

Dimensions (L x W x H): 7.87 x 4.53 x 2.17in

Weight: 3.04lb



Button Illustration

Button 1	Battery Button: Press the button to choose battery type. The Battery Tye indicator is on.	
Button 2	Voltage Button: Press the button to choose voltage. The voltage indicator is on.	
Button 3	Current Button: Press the button to choose current. The current indicator is on.	
Button 4	Charging and Maintain Mode: "Charging" indicator is on. When connecting well to the battery and power, the progress bar indicator is on according to charging mode.	
	If the battery is not used for a long time, press the button to select maintain mode. The battery is charging by a smaller current to maintain. "Maintain" indicator is on. The progress bar cyclic flashes. ("Maintain" mode is only for Lead Acid Battery.)	
Button 5	Desulfation Mode (Lead Acid Battery Only): If the battery is used for a long time and the capacity is used up soon. Press the button and use "Desulfation" mode to charge the battery. "Desulfation" indicator is on. The progress bar cyclic flashes.	
Button 6	Supply Mode: When battery is connected well, but it can not be detected. Press the button and use "Supply" mode to charge the battery. The "Supply" indicator is on. The progress bar cyclic flashes.	
Button 7	Start and Pause Button: When set well, press the button. "Start" indicator is on, indicating the charger is working. Press the button under working condition. "Pause" indicator is on, indicating the charger does not work.	

Graphic Indication



88.8

V

88.8

A



NO BATTERY



BATTERY
Cells 8 S

S/N	Graphic	Indicator	Explanation
1		Show battery cell number	In professional mode, it displays battery cell number; In normal mode, nothing displayed.
2		On or flash	Warning: Over current Short circuit
3		On	Charging in "Desulfation"
4		On	The battery is connected reversely.
5	 NO BATTERY	On	Not connect the battery yet.
6		On	Ambient temperature for charging.

7		On	Show battery capacity.
8		---	Show charging voltage
9		---	Show charging current
10		Display number	Description of error codes. Please find the below indication for error codes.

Progress Bar Indication



- ① The battery is detected as a normal condition.
- ② Desulfation stage, only for lead acid battery.
- ③ Small current charging mode.
- ④ Bulk charging mode.
- ⑤ ABS mode.
- ⑥ Floating charging mode.
- ⑦ Full charged.

Failure Codes

When the machine cannot be charged during use, the product screen will show error codes. Please find the description of them.

Error Code	Description
01	The battery’s output electrode is reversed.
02	The charger output is short-circuited.
03	The internal temperature of the product is too high.
04	The output charging mode is selected incorrectly.
41	The output voltage is too high.
42	The output current is too high.

How to Use

Charging Modes

The product has fifteen charging modes: Standby, Charging (6V AGM, 12V AGM, 24V AGM, 12V Lithium, 24V Lithium, 12V LiFePO4, 24V LiFePO4), Maintain (6V AGM, 12V AGM, 24V AGM), Desulfation (6V AGM, 12V AGM) and Supply Mode (6V AGM, 12V AGM, 24V AGM). When Supply mode is selected, you can charge by selecting different currents with different voltages. Please select battery types after opening the switch. These modes are advanced charging modes that require your full attention before selecting. It is important to understand the differences and purpose of each charging mode. Do not operate the charger until you confirm the appropriate charging mode for your battery. Below is a brief description:

Mode	Explanation	Peak voltage measured at 25°C and rated amperage is bulk amperage when above 0°C.
Standby	In Standby mode, the charger does not charge or provide any power to the battery and energy save is activated, drawing microscopic power from the electrical outlet. CAN bus is enabled. When in Standby, the orange Standby LCD will light.	



Charge	6V Lead	For charging 6-volt lead acid batteries. When selected, the 6V lights blue. 7.3V 10A Up to 200Ah batteries 7.3V 20A Up to 400Ah batteries
	12V Lead	For charging 12-volt lead acid batteries. When selected, the 12V lights blue. 14.6V 10A Up to 200Ah batteries 14.6V 20A Up to 400Ah batteries 14.6V 35A Up to 600Ah batteries
	24V Lead	For charging 24-volt lead acid batteries. When selected, the 24V lights blue. 29.2V 10A Up to 200Ah batteries 29.2V 20A Up to 400Ah batteries
	12V LiFePo4	For charging 12-volt LiFePo4 batteries. When selected, the 12V lights blue. 14.6V 10A Up to 200Ah batteries 14.6V 20A Up to 400Ah batteries 14.6V 35A Up to 600Ah batteries
	24V LiFePo4	For charging 24-volt LiFePo4 batteries. When selected, the 24V lights blue. 29.2V 10A Up to 200Ah batteries 29.2V 20A Up to 400Ah batteries
	12V Lithium	For charging 12-volt Lithium batteries. When selected, the 12V lights blue. 12.6V 10A Up to 200Ah batteries 12.6V 20A Up to 400Ah batteries 12.6V 35A Up to 600Ah batteries
	24V Lithium	For charging 24-volt Lithium batteries. When selected, the 24V lights blue. 25.2V 10A Up to 200Ah batteries 25.2V 20A Up to 400Ah batteries

Maintain	6V Lead	For charging 6-volt lead acid batteries. When selected, the 6V lights blue. 7.3V Up to 400Ah batteries
	12V Lead	For charging 12-volt lead acid batteries. When selected, the 12V lights blue. 14.6V Up to 600Ah batteries
	24V Lead	For charging 24-volt lead acid batteries. When selected, the 24V lights blue. 29.2V Up to 400Ah batteries
Desulfation	6V Lead	For charging 6-volt lead acid batteries. When selected, the 6V lights blue. 7.3V Up to 400Ah batteries
	12V Lead	For charging 12-volt lead acid batteries. When selected, the 12V lights blue. 14.6V Up to 600Ah batteries
Supply Mode	6V Lead	For charging 6-volt lead acid batteries. When selected, the 6V lights blue. 7.3V 10A Up to 200Ah batteries 7.3V 20A Up to 240Ah batteries
	12V Lead	For charging 12-volt lead acid batteries. When selected, the 12V lights blue. 14.6V 10A Up to 200Ah batteries 14.6V 20A Up to 400Ah batteries 14.6V 35A Up to 600Ah batteries
	24V Lead	For charging 24-volt lead acid batteries. When selected, the 24V lights blue. 29.2V 10A Up to 200Ah batteries 29.2V 20A Up to 400Ah batteries



Tips:

-Lead Acid Battery Charging.

1. Firstly, press Battery Type button to select Lead, then press Start button to charge.
2. Firstly, press Battery Type button to select Lead. Secondly, press Voltage button (6V, 12V, 24V), then press Start button to charge.
3. Firstly, press Battery Type button to select Lead. Secondly, press Voltage button (6V, 12V, 24V), then press Current button, at last press Start button to charge.

CAUTION :

Before selecting this mode, please make sure your charger is lead acid battery and your battery voltage is suitable with the selected voltage. Otherwise, the charging will fail. When the battery voltage is unknown, please select Auto for voltage.

- LiFePo4 Battery Charging.

1. Firstly, press Battery Type button to select LiFePo4, then press Voltage button (12V, 24V), at last, press Start button to charge.
2. Firstly, press Battery Type button to select LiFePo4. Secondly, press Voltage button (12V, 24V), then press Current button, at last, press Start button to charge.

CAUTION: Before selecting this mode, please make sure your charger is LiFePo4 battery and your battery voltage is suitable with the selected voltage. Otherwise, the charging will fail.

- Lithium Battery Charging

1. Firstly, press Battery Type button to select Lithium, then press Voltage button (12V, 24V), at last, press Start button to charge.
2. Firstly, press Battery Type button to select Lithium. Secondly, press Voltage button (12V, 24V), then press Current button, at last, press Start button to charge.

CAUTION: Before selecting this mode, please make sure your charger is Lithium battery and your battery voltage is suitable with the selected voltage. Otherwise, the charging will fail.

- **Maintain**

Firstly, press Battery Type button to select lead. Secondly, press Maintain button, then press Voltage button to select suitable voltage and at last press Start button to charge. The charger will be charged by light current to make sure full current state and this mode will not damage your battery.

- **Desulfation**

Firstly, press Battery Type button to select lead. Secondly, press Desulfation button, and then press Voltage button(6v, 12v), at last press the key Start to charge.

CAUTION: This mode can be selected for reconditioning when the battery is seriously aged and has low capacity. Please note that batteries can only be reconditioned one by one.

- **Supply Mode**

Firstly, press the Battery Type button to select lead. Secondly, press Voltage button. Thirdly, press Current button, at last press Start button.

CAUTION: This mode can be selected when it is used as a power supply or battery voltage is undetected.

- **Professional Mode**

Firstly, press Battery Type button, then open the power to enter the professional mode.

- **When entering professional mode, please select different batteries with different steps:**

1. Firstly, press Battery Type button to select LiFePo4. Secondly, press Voltage button to select voltage and bat cells (11V when 3 cells are fully charged, 14.6V when 4 cells are fully charged, 21.9V when 6 cells are fully charged, 29.2V when 8 cells are fully charged.), and the current is selected as the same with non-profesional mode.
2. Firstly, press Battery Type button to select Lithium. Secondly, press Voltage button to select voltage and bat cells (12.6V when 3 cells are fully charged, 16.8V when 4 cells are fully charged, 25.2V when 6 cells are fully charged, 33.6V when 8 cells are fully charged.), and the current is selected as the same with non-professional mode.

CAUTION:

In the mode of LiFePo4 and Lithium, hidden bat cells will be shown. Please notice that non-professionals don't select this mode. If this mode is selected, please contact the battery supplier, otherwise, it could be dangerous. This mode can't be memorized. After being put off, the charger will back to the state of non-professional.

Connecting to the Battery

Do not connect the AC power plug until all other connections are made. Identify the correct polarity of terminals on the battery. Do not make any connections to the carburetor, fuel lines, or thin, sheet metal parts. The below instructions are for a negative ground system (most common). If your vehicle is a positive ground system (very uncommon), follow the below instructions in reverse order.

1. Connect the positive (red) eyelet terminal connector to the positive (POS,P,+) battery terminal.
2. Connect the negative (black) eyelet terminal connector to the negative (NEG,N,-) battery terminal.
3. Connect the battery charger into a suitable electrical outlet. Do not face the battery when making this connection.
4. When disconnecting, disconnect it in the reverse order. Remove the negative first (or positive first for positive ground systems)

Begin Charging

1. Verify the voltage and chemistry of the battery.
2. Confirm that you have connected the battery clamps or eyelet terminal connectors properly and the AC power plug is plugged into an electrical outlet.
3. [First time use] The charger will begin in Standby Mode, and Pause indicator is on.
4. Firstly, press the Battery Type button to select batteries. Secondly, press Voltage button, then press Current button.
5. After pressing the Start button, the button will light blue, then the battery will be detected. If the battery level is normal, no battery indicator will disappear and the charger will work normally, otherwise the opposite.
6. The charger can be connected to the battery at all times to provide maintenance charging.

AUTO-MEMORY: The charger has built-in auto-memory and will return to the last charging mode when connected. Select suitable mode and press Start button, then the charger will save new working mode.

CAUTION: Professional mode does not apply to auto-memory.

Charging Time

The estimated time to charge a battery is shown below. 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. Temperature will also impact charging times. GS450C features thermal compensation that automatically adjusts charging profiles to maximize charging performance. The table below is for reference purposes only. Actual data may vary depending on battery conditions.

Battery Size Ah (Amp hour)	Approximate Time to Charge In Hours	
	6V	24V
40	1.5	1.5
80	3.0	3.0
160	6.0	6.0
200	7.0	7.0
400	17	17

Battery Size Ah (Amp hour)	Approximate Time to Charge In Hours
	12V
60	1.5
120	3.0
240	6.0
300	7.0
600	17

Need help?

We're here for you!



Online support: [wavlink.com](https://www.wavlink.com)

Available Mon-Fri 8:30 am-5:30pm (UTC+8)



support@wavlink.com

Available Mon-Fri 8:30 am-5:30pm (UTC+8)



+1 8889730883 (US Local)

Mon-Fri 9:00 am - 10:00 pm (UTC-5)

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