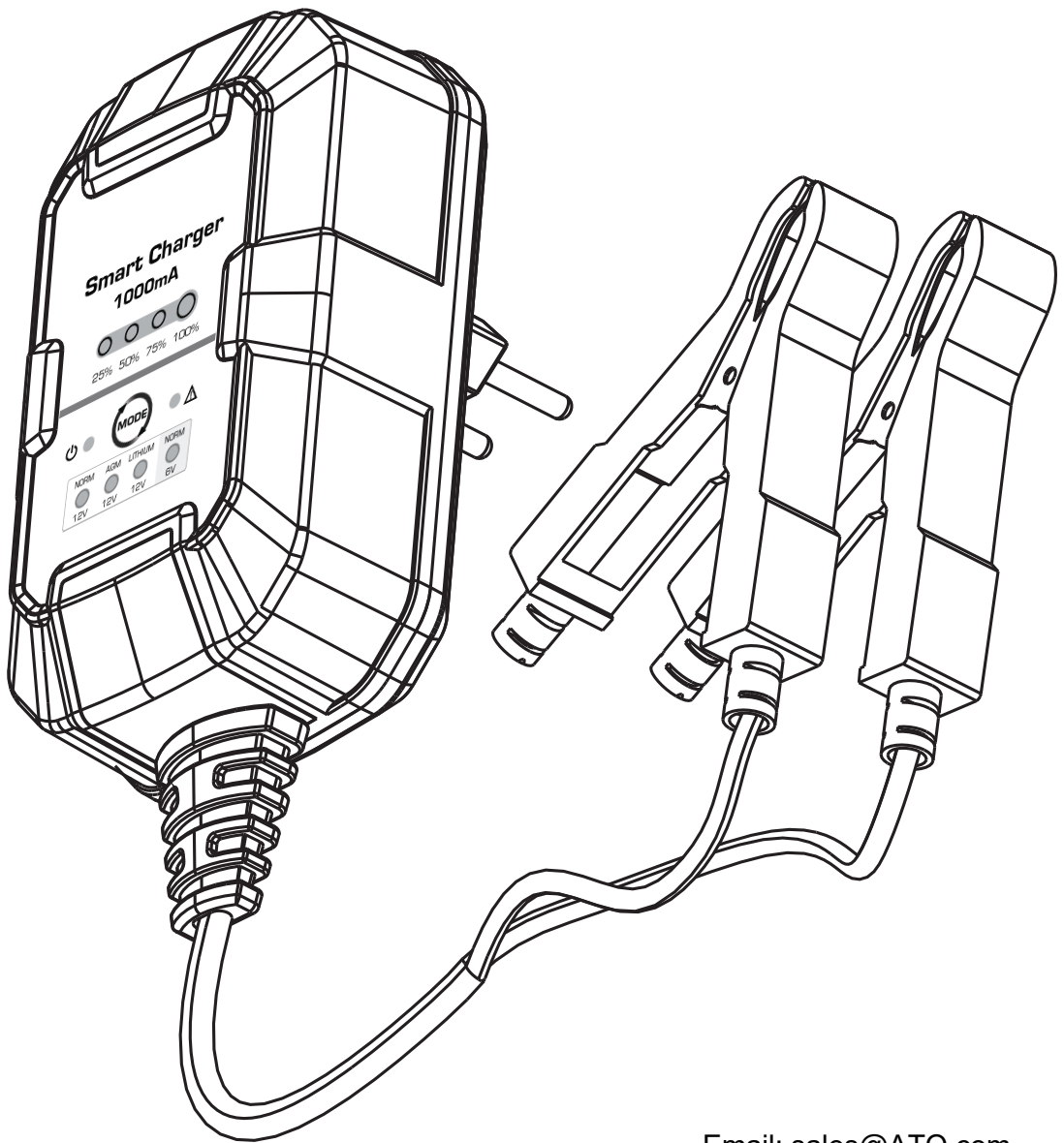


ATO.com

Smart Charger - F1000 User Manual



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About F1000.

The F1000 represents some of the most innovative and advanced technology in the market, making each charge simplify and easily. It is quite possibly the safest and most efficient charger you will ever use. The F1000 is designed for charging all types of 6V&12V lead-acid batteries, including Wet (Flooded), Gel, MF (maintenance-free), EFB (Enhanced Flooded Battery), AGM (Absorption Glass Mat) batteries and Lithium battery. It is suitable for charging battery capacities up to 30 Amp-hours and maintaining all battery sizes.

CAUTION:

PRIOR TO USE THE PRODUCT PLS READ AND UNDERSTAND THE SAFETY INFORMATION BELOW CAREFULLY! Failure to follow the instructions may result in ELECTRICAL SHOCK, EXPLOSION or FIRE, which may result in SERIOUS INJURY DEATH, DAMAGE TO DEVICE OR PROPERTY. Do not discard this information.

Thank you for buying the F1000 Smart Battery Charger. Read and understand the User Manual before operating the charger.

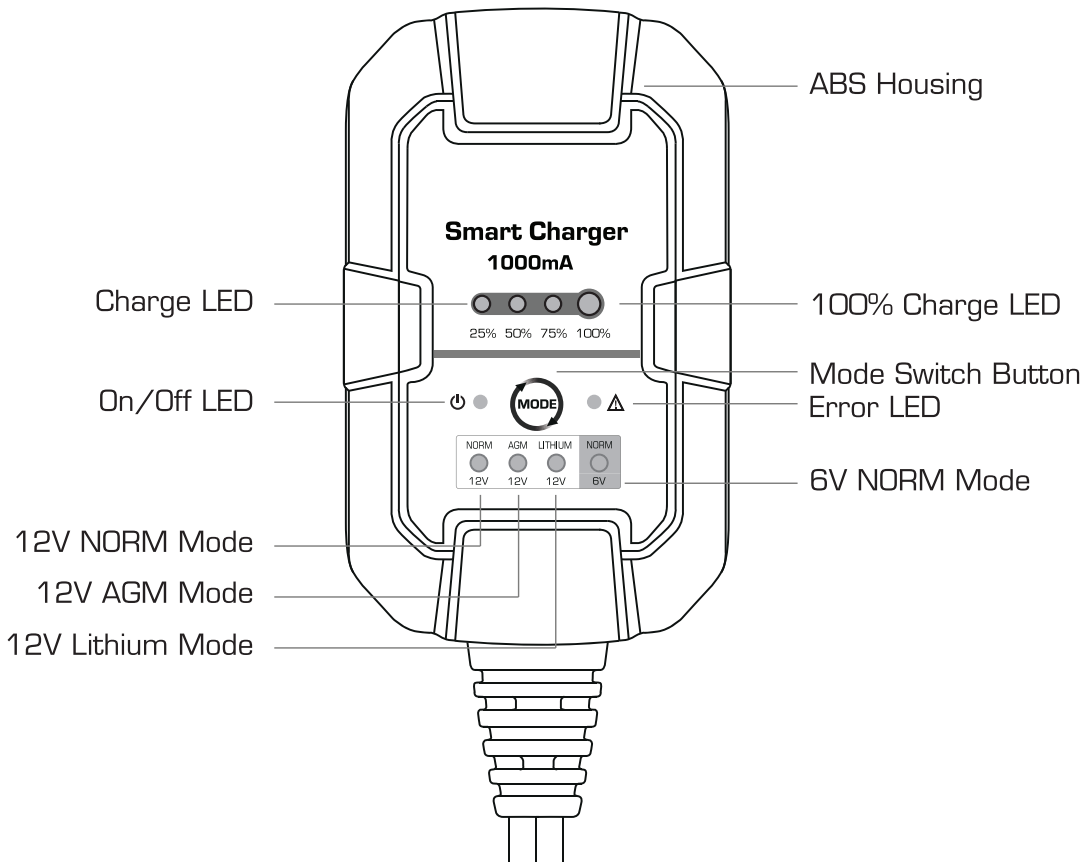
What's in The Box.

1X F1000 Smart Battery Charger

2X Battery Clamp Connectors with Integrated Eyelet Terminal Connectors

1X User Manual

Product Introduction.



Getting Started.

Before using the charger, carefully read the battery manufacturer's specific precautions and recommended rates of charge for the battery. Make sure to determine the voltage and chemistry of the battery by referring to your battery owners manual prior to charging.

Mounting.

The F1000 is a direct wall plug-in charger and it is important to keep in mind the distance to the battery. The DC cable length from the charger, with either the battery clamp or eyelet terminal connectors.

Charging Modes.

The F1000 has four(4) modes Standby, **12V NORM**, **12V AGM**, **12V Lithium** and **6V NORM**. Some charge modes must be restart the Charger and reconnect the battery. Then turn the key of the mode to change the modes. After the selecting , it is important to understand the differences and purpose of each charge mode. Do not operate the charger until you confirm the appropriate charge mode for your battery. Below is a brief description:

Mode	Explanation
Standby	In Standby mode, the charger is not charging or providing any power to the battery. Energy Save is activated during this mode, drawing microscopic power Standby from the electrical outlet. When selected, an orange LED will illuminate.
12V NORM	For charging 12-volt Wet Cell, Gel Cell Enhanced Flooded, Maintenance-free and Calcium batteries. When selected, a white LED will illuminate.
12V AGM	For charging 12-volt AGM batteries. When selected, a white LED will illuminate.
12V Lithium	For charging 12-volt Lithium batteries. When selected, a white LED will illuminate.
6V NORM	For charging 6-volt Wet Cell, Gel Cell Enhanced Flooded, Maintenance-free and Calcium batteries. When selected, a white LED will illuminate.

Using 6V NORM. [Press & Hold]

6V NORM charge mode is designed for 6-volt lead acid batteries only, like Wet Cell, Gel Cell, Enhanced Flooded, Maintenance-free and Calcium batteries. Consult the battery manufacturer before using this mode.

CAUTION: THIS MODE IS FOR 6-VOLT LEAD-ACID BATTERIES ONLY

Connecting to the Battery.

Do not connect the AC power plug until all other connections are made. Identify the correct polarity of the battery terminals on the battery. The positive battery terminal is typically marked by these letters or symbol(POS, P+). The negative battery terminal is typically marked by these letters or symbol(NEG, N-).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) battery clamp or eyelet terminal connector to the positive (POS, P+)battery terminal.
- 2) Connect the negative (black)battery clamp or eyelet terminal connector to the negative(NEG, N-)battery terminal.
- 3) Connect the battery charger's AC power plug into a suitable electrical outlet. Do not face the battery when making this connection.
- 4) When disconnecting the battery charge, disconnect in the reverse sequence, removing 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) The charger will begin in Standby mode, indicated by a green LED. In this status, the charger is not providing any power.
- 4) Press the mode button to toggle to the appropriate charge mode for the voltage and chemistry of your battery.
- 5) The mode LED will illuminate the selected charge mode and the Charging LED Display will illuminate (depending on the health of the battery) indicating the charging process has started.
- 6) The charger can now be left connected to the battery at all times to provide maintenance charging.

Understanding Charge LED.

The charger has one(1) Charge LED. This Charge LED indicates the connected battery(s) state-of-charge(SOC). See the explanation below:

LED	Explanation
Pulsing Red LED	<ol style="list-style-type: none"> 1. The Charge LED will slowly pulse "on" and "off" when the DC output is reverse connection. 2. The Charge LED will pulse "on" two times and "off" one time when the AC output short circuit. 3. The Charge LED will pulse "on" three times and "off" one time when the Charge is over temperature protection.
Solid Red LED	<ol style="list-style-type: none"> 1. The Charger is connect the uncorrected battery or the battery is bad. 2. The Charger is have the DC output but have not the AC output.
Solid Green LED	The power LED (green)are always bright after the Maintenance LED turn around two times.
Maintenance LED	During maintenance charging, the 25% or 50% or 75% Charge LED will pulse "on" and "off" slowly. Means the status of charging and Display the current Battery capacity. The 100% Charge LED will pulse "on" and "off" slowly When the battery is topped off and fully charged again. Green LED the 100% Charge LED will turn solid green. The charger can be left connected to the battery indefinitely.

Understanding Advanced Diagnostics.

Advanced Diagnostic is used when displaying Error Conditions, It will display a series of blink sequences that help you identify the cause of the error and potential solutions.

All Error Conditions are displayed with the Error LED and Standby LED flashing back and forth. The number of flashes between each pulse denotes a potential Error Condition except reverse polarity and low-voltage battery.

Error	Reason/Solution
Single Flash	The Charge LED will slowly pulse "on" and "off" when the DC output is reverse connection. Have correct your DC reverse connection.
Double Flash	The AC output short circuit. Please stop the Charger connection and check your Charger and AC cable wire.
Triple Flash	Charge is over temperature protection, please stop charging and check your connection.
Error LED Solid Red	<ol style="list-style-type: none"> 1.The Charger is connected to the uncorrected battery or the battery is bad. Have battery checked by a professional. 2.The Charger is have the DC output but have not the AC output. Please check your charger.

Charging Times.

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 charge 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.

Battery Size (Ah)	Approx. Time to Charge in hours	
	6V	12V
8	5.3	5.3
12	8.	8.0
18	12.	12.0
24	16.	16.0
30	2 .	20.0

Technical Specifications.

Input Voltage AC	110-120VAC, 60Hz±2
Working Voltage AC	110-120VAC, 60Hz±2
Efficiency	80%
Power	13W Max
Charging Voltage	Various
Charging Current	1000mA(6V) 1000mA(12V)
Low-voltage Detection	2V(6V) 2V(12V)
Back Current Drain	≤0.5mA
Ambient Temperature	0°C to+40°C
Charger Type	3-Step, Smart Charger
Type of Batteries	6V & 12V
Battery Chemistries	Wet, Gel, MF, CA, EFB, AGM, Lithium
Battery Capacity	Up to 30Ah, Maintains All Battery Sizes
Housing Protection	IP60
Cooling	Natural Cooling
Dimensions (LxWxH)	118*70*62mm
N.W	0.3kg