MASHIN

MASHIN ELECTRIC CORP.

SC-1000S

USER GUIDE

Established in 1996 in Madou District, Tainan City, Mashin Electric Corp. begins as a manufacturer of car chargers.
Over the years, Mashin becomes a professional battery charger manufacturer for Automotive, Motorcycle, Industry, Jump Starter and functional battery chargers. Especially the car chargers stand the first selling position in domestic market.
Recently, we have committed into more and more product lines for battery chargers.

We specialized in Battery Charger, Adaptor, Transformer, Switching Power, DC to AC Inverter, LiFePO4 Lithium Battery Pack, Battery Analyzer, Booster Cable, Jump Starter and related electronic products.
With more than 20 years' factory experiences, we received customers' reliance for automotive market around the world.
Mashin can do OEM services and also has the capability for ODM. Our products are followed by high SOP standards throughout the whole production process. Besides, we put into the newest equipment and focus on employees training in order to provide the best service and products to our customers.

Creativity and experiences are our advantages to receive customers' trust.
Besides, our engineers have decades of experiences and contributed in developing our own battery chargers.
Every year, we will have more than 5% R&D developing fees for our new products. What we want is to provide our customers a more convenient life.

We take the four policies, "Total Quality Assurance, Quality First, Service First, Customer Satisfy" as our company goals.
From R&D, purchasing, production to the sales and delivery, we all have completely Quality Management System.
In addition, most of our products obtained UL, CE, CB, FCC, PSE, SAA, RoHs, and CEC certifications and safety regulations.
Strict company policy and management obtain the certification of French (ANFOR) ISO-9001 and be the Japan PSE and U.S. UL certified factory.

Since the factory established, Mashin has actively built up our own brand and strives to develop the best products on a daily basis.
It wasn't easy to keep the faith after several decades, but we did.
In the future, we will maintain our creativity, keep developing new types of chargers and extend the international market. It's our responsibility to feed back to the world.

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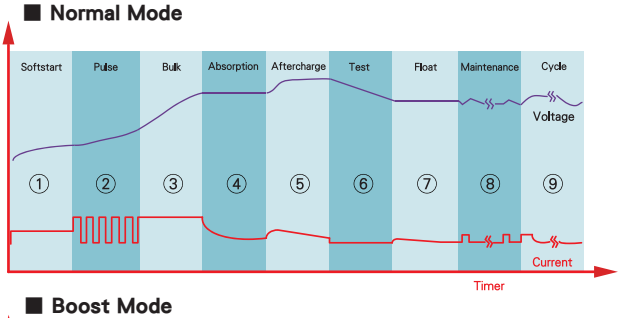
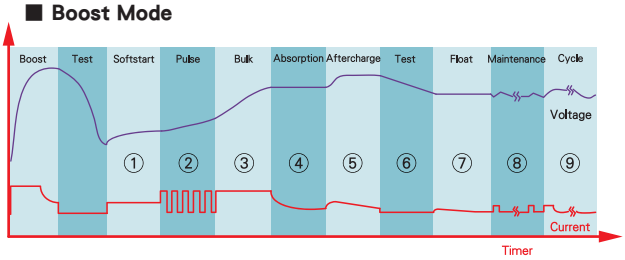
Features

■ 9 Stages Charging Mode

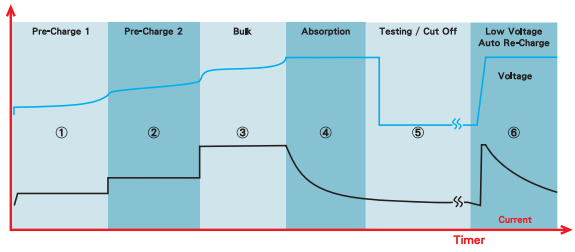
■ Normal Mode



■ Boost Mode



■ LifePO4 Mode



① Soft start:
Tests if the battery can accept charge, charging will commence if battery is okay.
＊Boost Mode will charge by high voltage.

② Pulse:
Pulsing current removes sulphates from the battery plates and restores battery efficiency and capacity.

③ Bulk Charge:
Charging with maximum constant current until approximately 80% of capacity.

④ Absorption:
Charging with constant voltage and declining current to equalize and maximize up the battery capacity.

⑤ Aftercharge:
Charging by equalizing the battery plates in order to increase the battery efficiency and extend service life.

⑥ Test:
Tests if the battery can hold charge. If the battery voltage drops below 11.6V within 10 minutes, battery is faulty.

⑦ Float:
Keep the battery voltage at maximum level by providing a constant voltage charge.

⑧ Maintenance:
Battery maintenance mode active when the battery voltage is lower than 12.6V, the charger will begin maintenance charging automatically.

⑨ Cycle Recharge:
A continuation of the Maintenance mode that monitors battery voltage and will gently pulse current and increase voltage. It will charge automatically every 15 days.

① Pre-Charge 1
This stage actives only if the battery is severely discharged and help to protect and recondition the cells against the damage.

② Pre-Charge 2
Soft start, moderately charging in the begining to avoid the peak current damages the cells.

③ Bulk
Charging with maximum current, the current is fixed according to the maximum capability of the charger.

④ Absorption
The current will decline to charge in order to maximize the battery capacity.

⑤ Testing / Cutoff
Test if the battery is in the normal condition.

⑥ Low Voltage Auto Re-Charge
Re-charge automatically if it detects the voltage is dropped off.

■ Safety Instructions

- Before removing the battery from the vehicle, please check your codes for audio, security systems…etc.
- Before removing the battery from the vehicle, please make sure to disconnect the earth (ground) terminal first. All accessories in the vehicle must be turned off to avoid sparks.

Warning:

- It is dangerous to work near a lead-acid battery. A battery will generate explosive gases during normal operation and gases increase when charging.

- Make sure working area is well ventilated.
- Make sure there is no possibility to cause gases being ignited. Must be no naked flames, cigarettes, flame heaters, blowtorches…etc. near the battery or working area.
- The gases can be ignited by sparks, please disconnect the chargers from the mains before disconnecting the leads from the battery.
- Must wear approved safety eyewear when connecting or disconnecting battery / battery charger leads.
- Avoid touching eyes while working with batteries.
- Do not smoke near the battery or engine.

■ Safety Notes

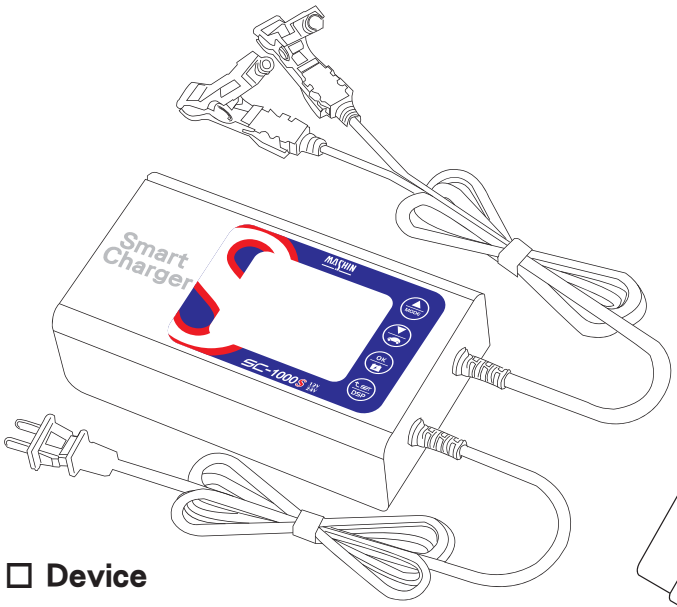
- This charger is designed for charging lead-acid battery of vehicles, do not charge the battery of home appliances.
- Place chargers as far away from the battery as the charger cables permit.
- When working with or near a lead-acid battery, make sure there is someone nearby to come to your aid if necessary.
- If battery acids contacts skin or clothing, wash immediately with soap and plenty of fresh water.
- If acids enter an eye, flushing eyes immediately with plenty of cold, clean water and get medical attention.
- When working with lead-acid battery, make sure to remove personal metal items, such as watch straps, rings, bracelets, necklaces…etc. A short circuit across from one of above will cause severe burns.
- Do not put the battery on top of the charger.
- Never touch the clamps when the charger is working.
- Never allow the clamps to touch each other or to contact a piece of metal that could bridge them.
- If you need to remove a battery, always remove the ground terminal from the battery first. Make sure all accessories are off to minimize the potential of a spark.

It is the operator's responsibility to comply with the following:

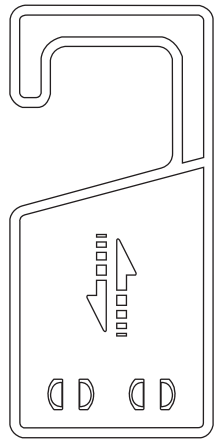
- Do not disassemble the charger without qualified professional when service or repair is required.
- Inspect all power supply leads, plugs and all electrical connections for wear and /or damage.
- Before use, inspect the insulation on the charger cable and check the charger and plug before connecting to the mains supply.
- Also regularly inspect power supply sockets, extension leads and connectors.
- Ensure that the mains voltage marked on the charger is the same as the electrical power supply to be used.
- Do not carry the charger by its power lead.
- Do not pull the power plug from the socket by the power lead.
- Extension lead reels: when a cable extension lead reel is used it should be fully unwound before connection. We recommend the cable reel has an RCD fitted. Be sure that the capacity of the cable reel is suitable for the product.

If in any doubt about electrical safety, consult a qualified electrician.

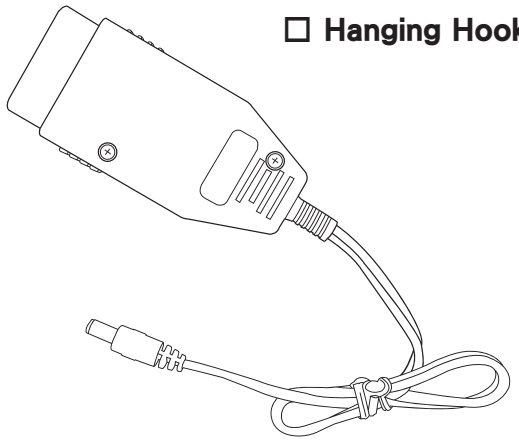
■ Accessories



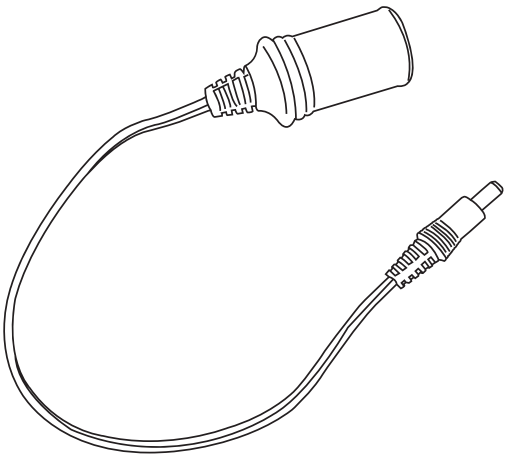
☐ Device



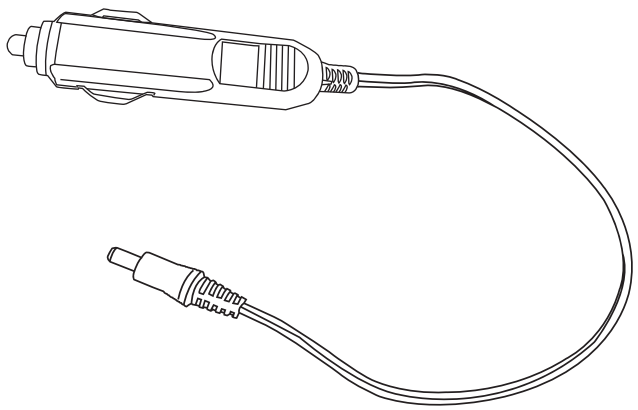
☐ Hanging Hook



☐ OBD II（Option）



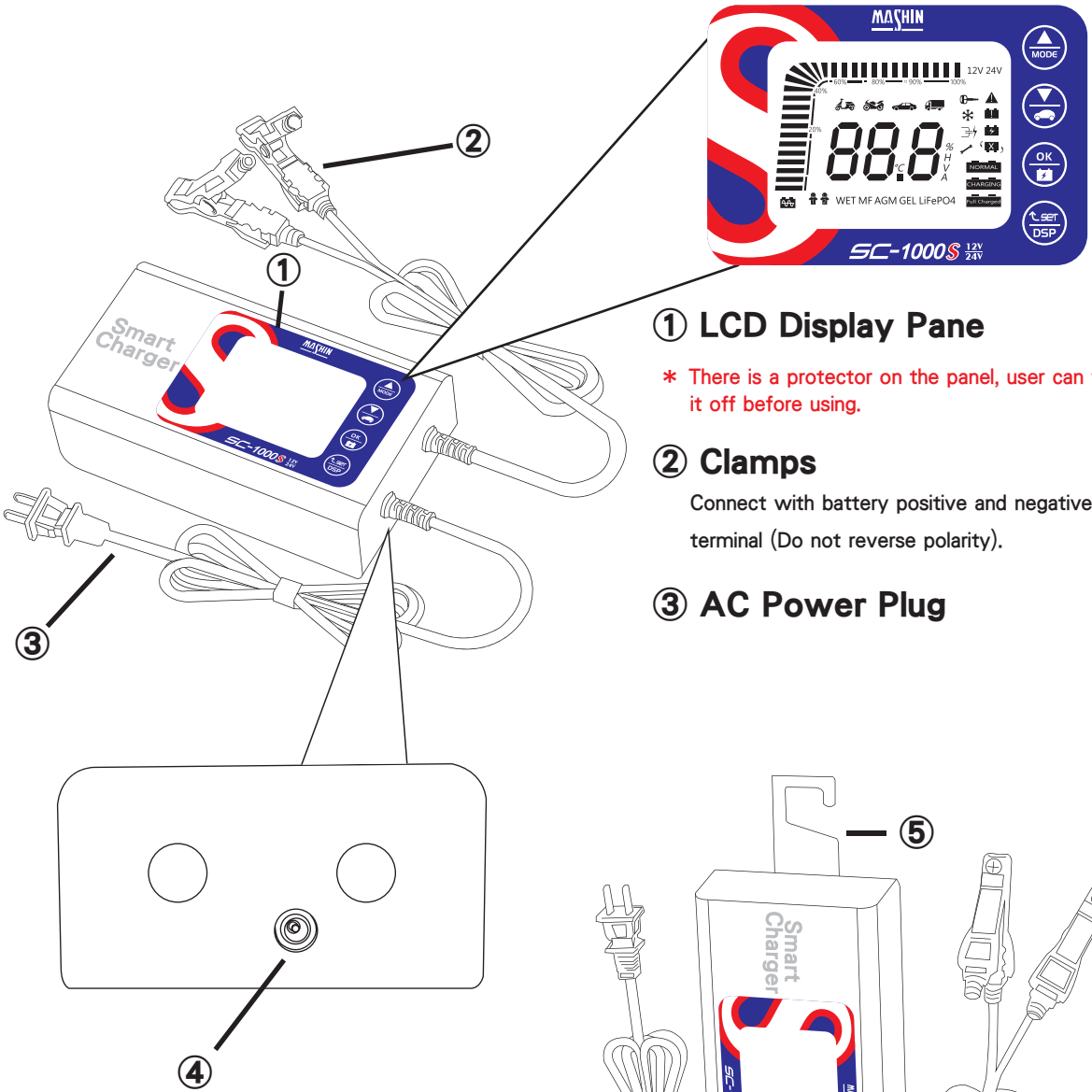
☐ Cigarette Female Socket（Option）



☐ Cigarette Connector（Option）

☐ User Manual

■ Parts Indicator



① LCD Display Pane

* There is a protector on the panel, user can tear it off before using.

② Clamps

Connect with battery positive and negative terminal (Do not reverse polarity).

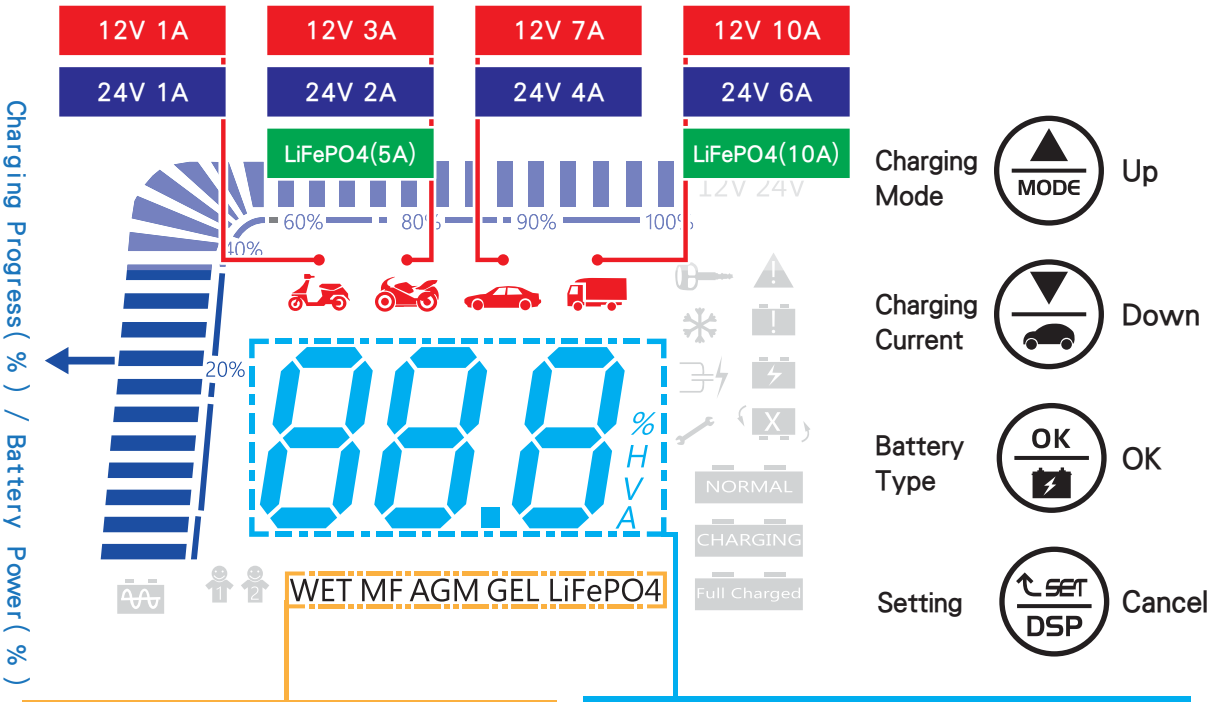
③ AC Power Plug

④ DC Port

* Cigarette Female Socket (Option)
* Cigarette Connector (Option)
* OBD II (Option)

⑤ Hanging Hook

■ LCD Display Panel and Functions



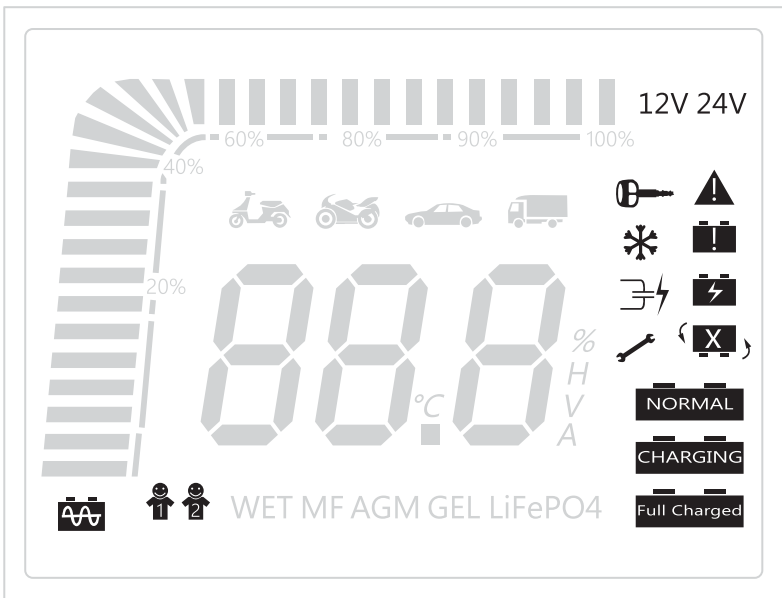
Battery type only can be selected by Normal and Snow Mode, such as WET, MF, AGM, GEL and LiFePO4.

Charger Information Indicator:

%= Capacity
H= Charging Time (Unit / Hour)
V= Voltage
A= Current
AH= Accumulative Current (Hour)

■ Signal Indicator

	Starter Motor
	Snow Mode
	DC Supply / Alternator Check
	Advanced Setting
	Charger Error
	Battery Error
	Boost Mode
X	Reverse Polarity
NORMAL	Normal Mode
CHARGING	Battery Charging
Full Charged	Charging Completed
	Battery Check
1 2	Advanced Mode
12V 24V	Battery Spec.



Operating Instructions

◆ Before Connceting

- Please make sure battery types and capacity of your vehicles before selecting charging current and mode.
- Please clean the battery vent tube before using.
- If acids enter an eye, flushing eyes immediately with plenty of cold, clean water and get medical attention.
- Make sure working area is well ventilated.
- Please make sure the battery electrolyte is within the range.
- When removing the battery from the car, please disconnect the negative terminal first.
- Please make sure all the electronic devices are in OFF position.
- The charger presets in 12/24V auto-detecting, but you can change the settings through advanced mode.
- Please identify the correct polarity of your clamps before using LifePO4 forced on charging. Must not reverse polarity or it may cause the damage for battery or charger.

◆ Connecting to Battery

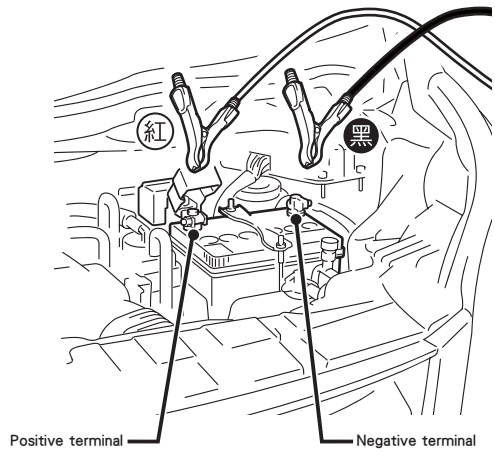
- Do not bind the cable to use.
- Connect the red clamps with positive terminal first.
- Do not use the other cables instead of Mashin’ s standard when connecting.
- Ensure there is no cracks or dirts on the clamps.
- The battery terminals might get rusty, please clean the terminals before charging.
- Never touch the cables and battery in wet hands.

◆ Before Charging

① Please identify the correct polarity of your battery.

② Connect the red clamp with positive terminal.

③ Connect the black clamp with negative terminal.



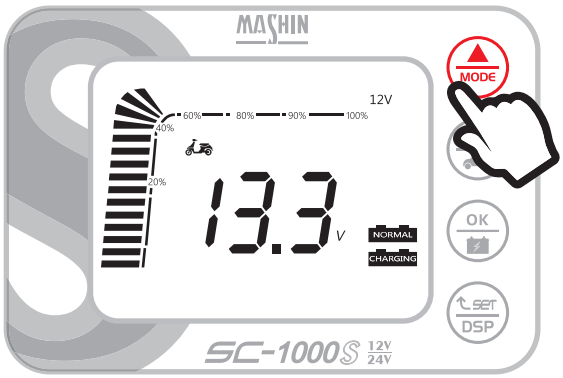
※ Please make sure clamps and battery are well-connected.

■ Easy Operation

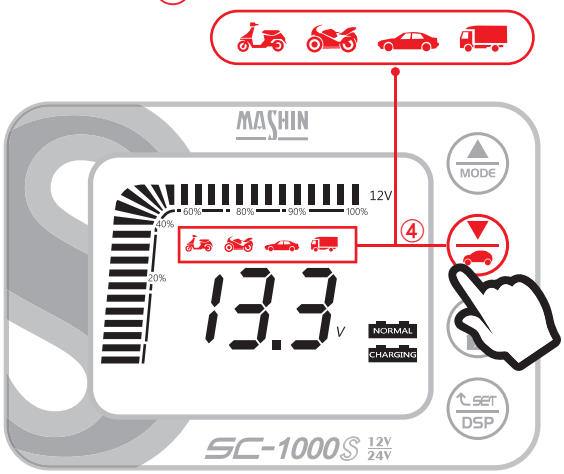
① Connect with AC power.

② Connect clamps with car battery positive and negative.

③ The charger will detect 12V or 24V automatically. After detecting, press button MODE to the Normal Mode NORMAL.



④ Press button to select your charging current.



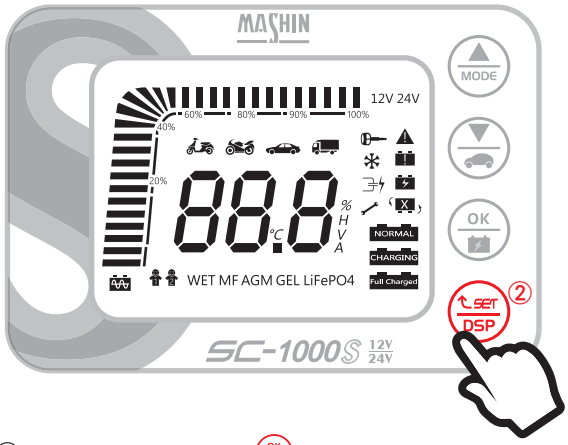
⑤ The signal CHARGING lights when charging begins, the charging progress will be showed on the screen.

⑥ When the signal Full Charged lights, charging completed.

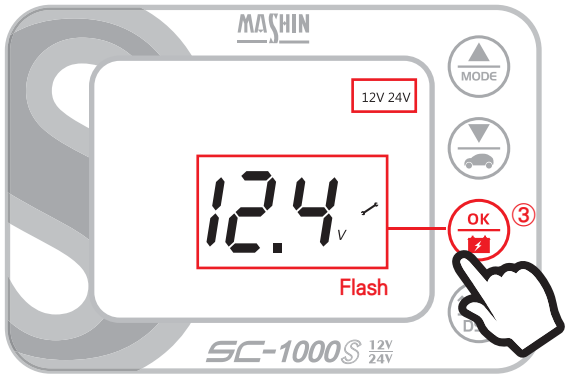
■ 12/24V Auto-detecting and Switch

① Connect with AC power.

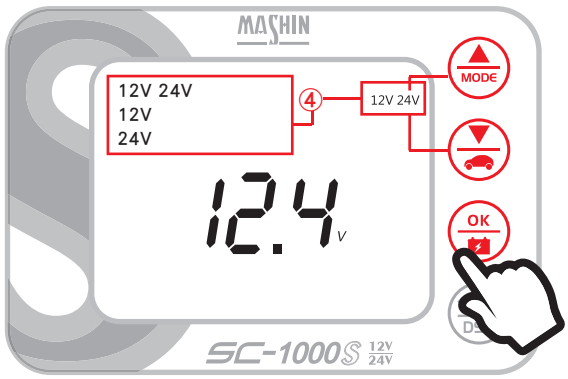
② Long press button SET DSP for 3-5 seconds, and you will hear a " Bi " sound.



③ Then press the button OK to go into the settings.



④ Press button MODE to select 12V/24V auto-detecting, 12V or 24V system, then press button OK to confirm.

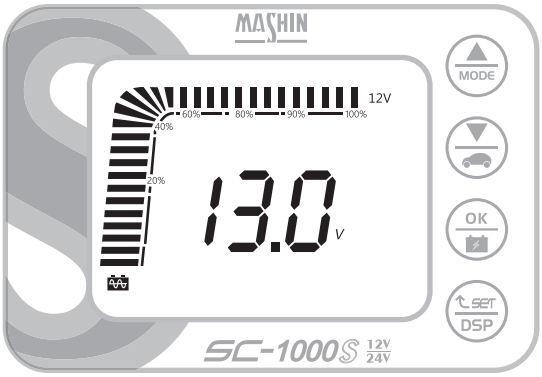


■ Check Your Charging System

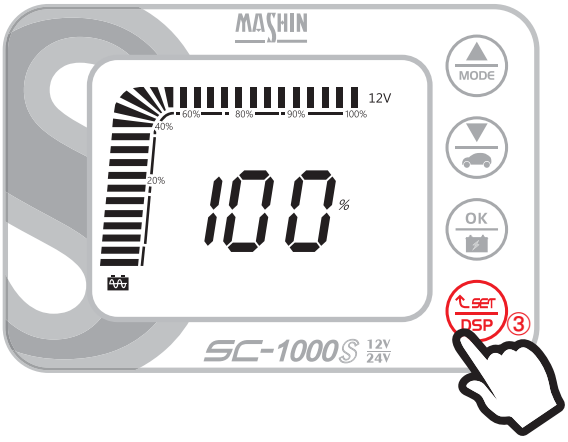
◆ Battery Check

① Connect with car battery positive and negative.
No need to connect with AC power.

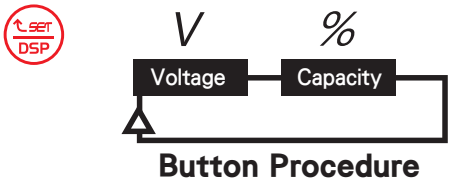
② The battery voltage will show on the screen.
(Measuring range is 6V-16V)



③ Press button (SET DSP), the battery capacity will be indicated on the screen.



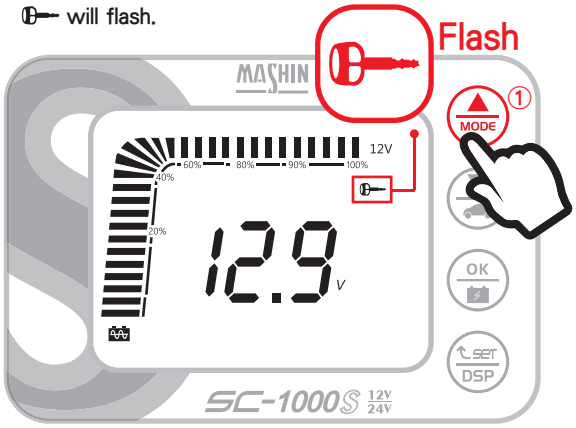
④ Please charge your battery when it is running low.



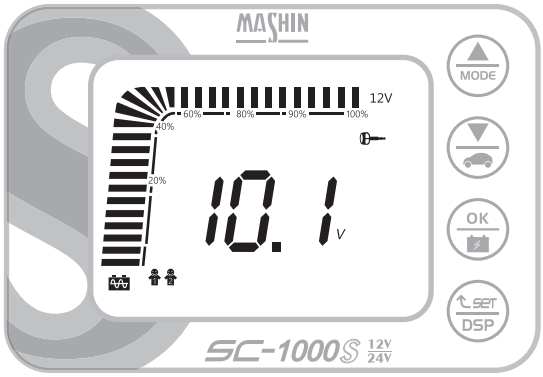
Button Procedure

◆ Starter Motor Check

① After battery checking, press button (MODE), the signal will flash.

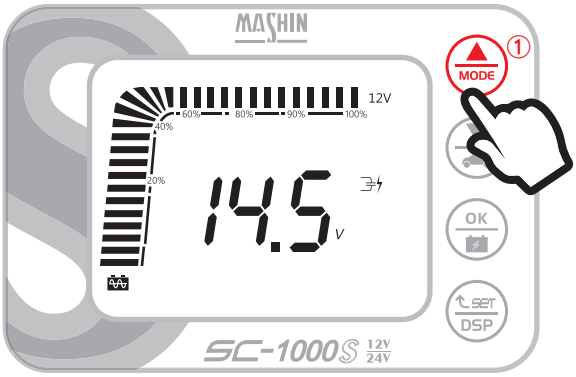


② Then start the car engine, the lowest voltage of starter motor will be indicated on the screen.



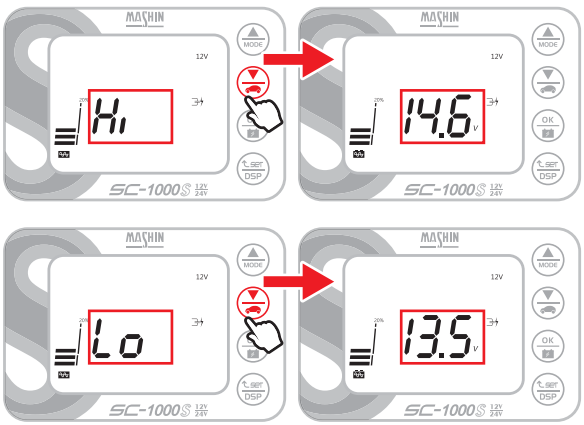
◆ Alternator Check

① After checking starter motor, press button (MODE), the signal of DC Supply will flash for measuring the alternator voltage.



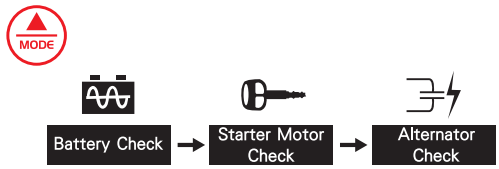
② The alternator voltage will showed on the screen. Running the engine at 2,000~3,000RPM to get a more accurate data.

③ Press button (), the screen will indicate the highest, lowest and current voltage of the alternator.



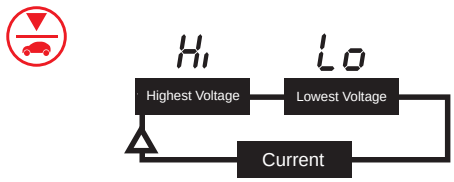
※ Hi (Highest Voltage) / Lo (Lowest Voltage) .

● Button Procedure



※ To begin the next test, please remove your clamps to reconnect.

Before Connecting with AC Power

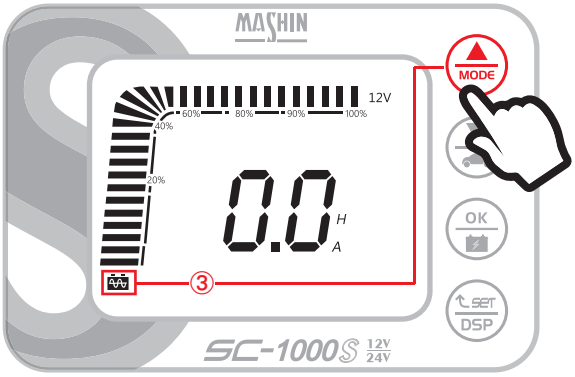


■ Charge Your Car Battery

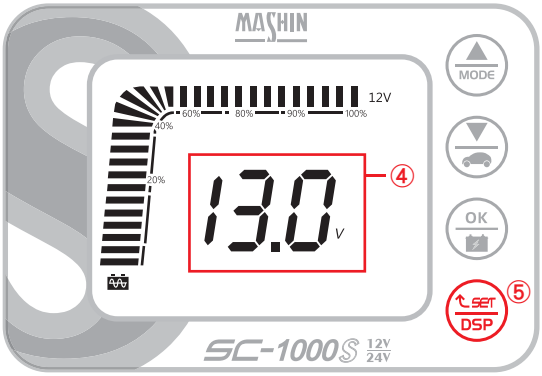
① Connect with AC power.

② Connect clamps with car battery positive and negative.

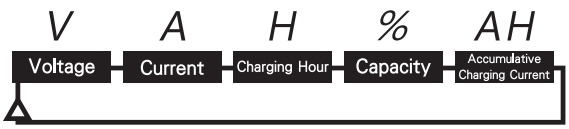
③ Press button (MODE) to the battery check.



④ The battery voltage will show on the screen.
（Measureing range is 6V-16V）.



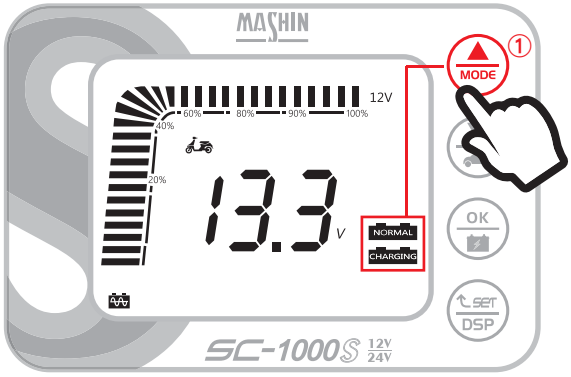
⑤ Press button (SET DSP), the following information will be showed.



■ Normal Mode

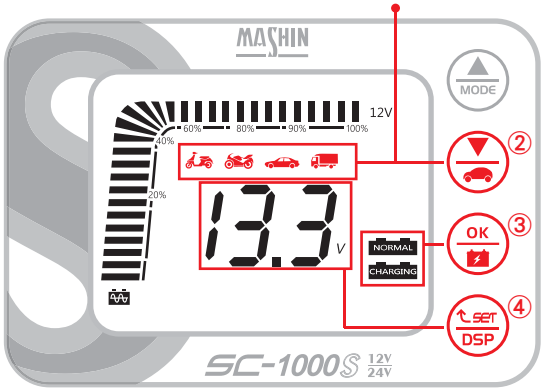
① Press button (MODE) to the Normal Mode NORMAL, then charging begins automatically.

※ If unsure on what types of battery you have , please press Normal Mode.

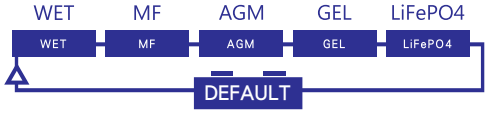


② Press button (▼) to select your charging current.

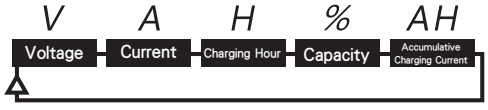
12V	1A	3A	7A	10A
24V	1A	2A	4A	6A



③ Press button (OK) to select your battery type, such as WET, MF, AGM, GEL, LiFePO4...etc. to go into charging（LiFePO4 is only available for 12V）.



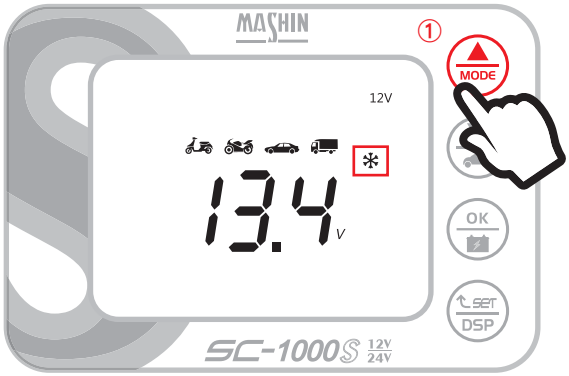
④ Press button (SET DSP), the following information will be showed.



※ This charger can save your last charging procedure automatically.

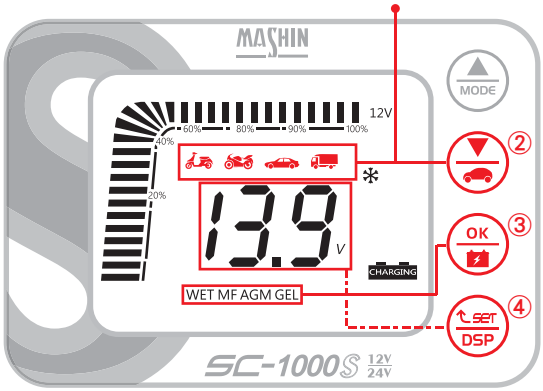
■ Snow Mode

① Press button (MODE) to the Snow Mode ❄, then charging begins automatically.

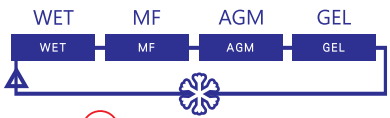


② Press button (▼) to select your charging current.

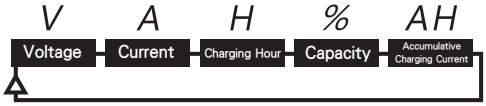
12V	1A	3A	7A	10A
24V	1A	2A	4A	6A



③ Press button to (OK) select your battery type, such as WET, MF, AGM, GEL...etc. to go into charging.



④ Press button (SET DSP), the following information will be showed.



※ Snow Mode is recommended to charge in low temperature. This is only available for lead-acid batteries, LifePO4 battery cannot be selected in this mode.

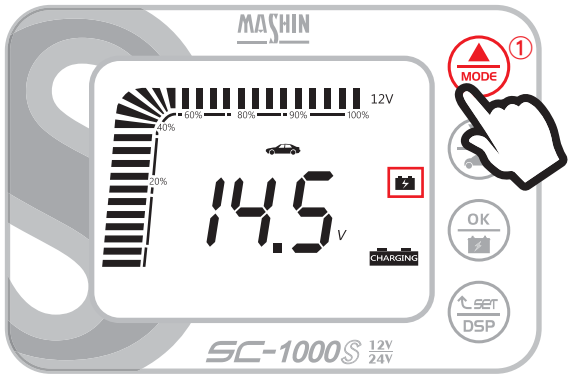
※ This charger can save your last charging procedure automatically.

■ Boost Mode

① Boost Mode is used when battery can not work in a normal charging condition or the voltage is lower than 6V.

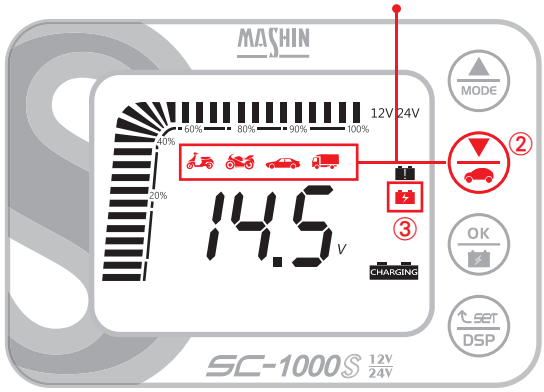
② Boost charging involves a high current for short period of time to charge the battery. It is generally if the battery has been discharged heavily. It enables the quick charging of depleted batteries.

③ Press the button (MODE), to go into Boost Mode ⚡.



④ Press button (▼) to select your charging current.

12V	1A	3A	7A	10A
24V	1A	2A	4A	6A



⑤ It will do the the boost charging by 16.5V at most for four times. If the battery is still not working after four times, the signal will light ❗.

※ Only available for lead-acid battery.

※ Cannot assure the battery will back to normal condition.

※ Battery type is unselectable.

※ The percentage of battery capacity is unavailable.

❗ Please remove the battery from the car before using Boost Mode charging.

⚠ Remove the car battery might cause the data loss of your car ECU and electronic devices. It is recommended to use OBD II to supply power for your car.

■ Additional Functions

◆ LiFePO4 Mode (12V Only)

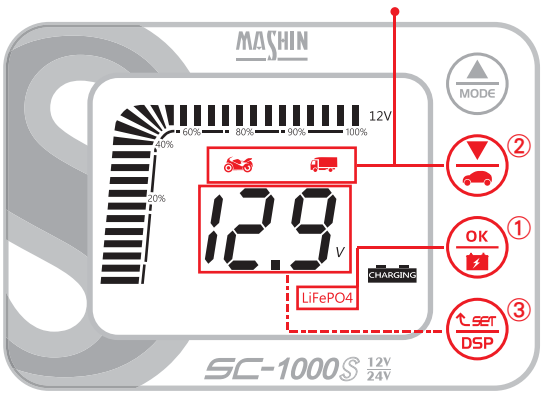
※ This is designed for charging LifePO4 battery.

※ Only can be used under 12V Normal Mode.

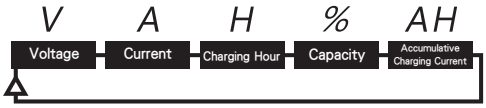
① Press button (OK) under Normal Mode and select LiFePO4 to go into charging.

② Press button to select your charging current.

12V	5A	10A



③ Press button (SET DSP), the following information will be showed.



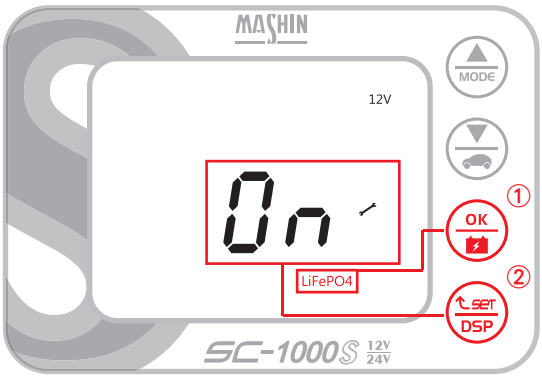
※ To get out of this mode, please press (OK).

◆ Forced On Charging (12V Only)

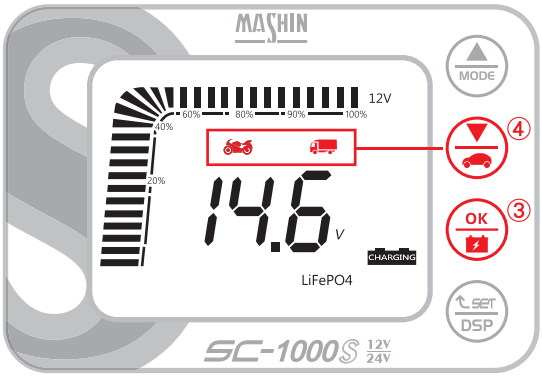
※ The BMS of LiFePO4 battery will cut off the output automatically when it is over discharged. To solve this situation, you could use the forced on charging.
Must not reverse polarity when using this mode or it might cause damage for battery or charger.

① Press button (OK) under Normal Mode and select LiFePO4 to go into charging.

② Long press button (SET DSP) at least 3 seconds, two signals and On will show on the screen.



③ Press button (OK) to go into charging, it will do a forced on charging by 14.6V for only 60 seconds. After then, it will back to LiFePO4 normal charging.



④ Then press button to select your charging current.

12V	5A	10A

◆ DC Supply - OBD II/Cigarette Connector (Option)

※ When using this function, please make sure the voltage setting is the same with your car battery. Or it may cause damage of car ECU or electronic devices.

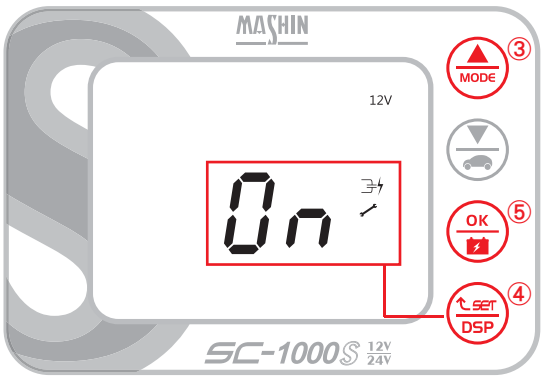
① Connect with AC power.

② Connect OBD II with OBD II port, one signal lights. or Connect Cigarette Connector with cigarette lighter socket.

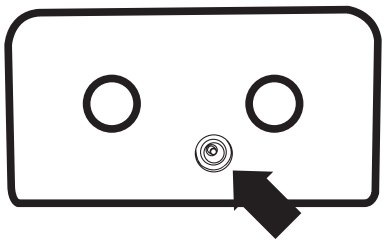
③ Press button (MODE) to DC Supply.

④ Long press button (SET DSP) at least 3 seconds, two signals and On will show on the screen.

⑤ Then press button (OK) to confirm.



⑥ Plug the OBD II DC connector or Cigarette DC connector into the DC port.



⑦ When the other signal of OBD II lights on, connection is completed. You can change your battery now.

◆ DC Supply - Cigarette Female Socket (Option)

※ When using this function, please make sure the voltage setting is the same with your car battery. Or it may cause damage of car ECU or electronic devices.

① Connect with AC power.

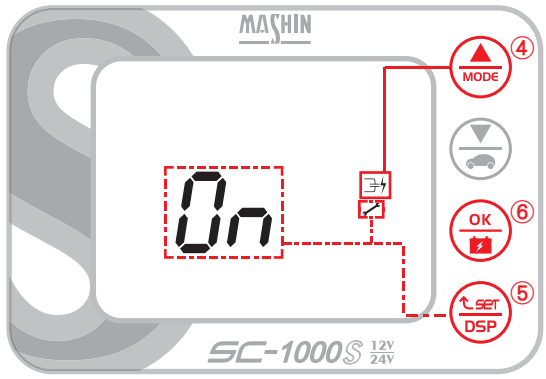
② Plug the DC connector of Cigarette Female Socket into the DC port.

③ Connect the cigarette connector of electronic devices with female socket.

④ Press button (MODE) to DC Supply.

⑤ Long press button (SET DSP) at least 3 seconds, two signals and On will show on the screen.

⑥ Then press button (OK) to confirm.



⑦ You can start to check and use car electronic devices.

General Information

① Why battery needs to charge ?

Batteries will be affected by self-discharge even unused, therefore, it is necessary to use a charger to charge batteries. Proper charging can increase battery efficiency and extend its service life.

② What is the voltage for a fully charged battery ?

Normally the voltage should be over 12.6V for a 12V battery, if it is between 12.3~12.6V which means it is not fully charged, please charge it.

If the voltage does not over 12.6V after charging, the battery capacity is reduced.

③ How to remove the battery terminal corrosion ?

Please disconnect the terminals from the battery first.

Then wearing the gloves to wash terminals with 100℃ hot water and clean it with a steel brush or a sandpaper. Finally, you can rub some rust preventive oil on the terminals.

④ Precaution for standard type batteries ?

Remember to check the electrolyte level as often as you can. When the level is lower, please refill the liquid (pure water or distilled water) .

⑤ Precaution for replacing a battery ?

To reomve a battery, please disconnect the negative terminal first then disconnect the positive terminal.

When installing, please connect with positive terminal then connect with negative terminal.

Do not reverse polarity.

⑥ Precaution for charging a battery ?

◎ Please make sure the battery electrolyte is within the range.
◎ Make sure working area is well ventilated.
◎ If you are charging a standard type battery, please open the vent plug to charge.
◎ If the battery acid is leaking out when charging, please clean it.
◎ Please identify the correct polarity of your battery.
◎ If the battery temperature is over 45℃, please stop charging.
◎ Make sure the clamps and battery are well-connected.

⑦ How to set up the charging current of a battery ?

Normally the charging current will be 1/10~1/6 of a battery capacity.

(Eg. 60Ah battery can charge by 6A~10A) .

Specification

■ Spec. Chart

SC-1000S		
Input Power	AC100V ~ AC240V 50 / 60HZ	
Normal Voltage	DC 12V	DC 24V
Charging Voltage	Normal Mode = max.DC14V~15V Snow Mode = max.DC14.6V~15.5V Boost Mode = max.DC16.5V LiFePO4 Mode = max. DC14.6V	Normal Mode = max.DC28.8V~30V Snow Mode = max.DC29.2V~30V
DC Supply	DC 13.5V 5A	DC 27V 5A
Charging Current (Current Selection)	1A / 3A / 7A / 10A 5A / 10A (LiFePO4)	1A / 2A / 4A / 6A
Protection	1. Short Circuit Protection 2. Over-temperature Protection 3. Spark Protection 4. Over-charge Protection	5. Over-voltage Protection 6. Reverse Polarity Protection 7. Disconnecting Protection 8. Over-current Protection
Battery Types	WET / MF / AGM / GEL LiFePO4	WET / MF / AGM / GEL
Operating Temperature	-20~40℃, Humidity 90%	
Dimensions (L* W * H	197 x 113 x 61 mm ±2mm	
Weight	0.95 kgs	

■ Available Battery

◆ Battery Voltage DC12V / DC 24V

◆ Battery Types

- ● Lead-acid battery for vehicles
- ● GEL battery
- ● Shield battery
- ● VRLA battery
- ● AGM battery
- ● Others

Non starter lead-acid batteries, please select NORMAL to charge your battery.

- ● LiFePO4 Battery (12V Only)
- ● EFB (ISS) Battery

◆ Battery Capacity

- ● 3Ah ~ 120Ah

◆ Recharging Battery

- ● 3Ah ~ 200Ah

■ Warning

- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved
- Children shall not play with the appliance
- Cleaning and user maintenance shall not be made by children without supervision
- This appliance can not be used for non-rechargeable batteries
- Disconnect equipment from power supply before cleaning.
  Do not use any liquid or aerosol cleaner. Use only moisture cloth.
- If the supply cord is damaged, it must be replaced by the manufacturer.
- The battery terminal not connected to the chassis has to be connected first. The other connection is to be made to the classis, remote from the battery and fuel line. The battery charger is then to be connected to the supply mains.
- After charging, disconnect the battery from the supply mains. Then remove the chassis connection and then the battery connection.

Troubleshooting

Q : Connect with AC power but the charger does not turn on?
A : Check if connecting with AC power correctly.
Check if there is no electricity in AC outlet.

Q : Battery Error lights on?
A : Check if battery is defective or deteriorative.
Check if battery is DC12V.

Q : Reverse polarity lights on?
A : Check if connection is reversed.

Q : Battery gets hot or having smell when charging?
A : Check if battery is defective or deteriorative.

Q : Battery can not fully charging?
A : Check if settings are correct.
Check if battery is defective or deteriorative.

■ Warrenty

The warranty is void if the product is misused, careless handling, or repaired by anyone other than Mashin Electric Corp. or its authorized representative.

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