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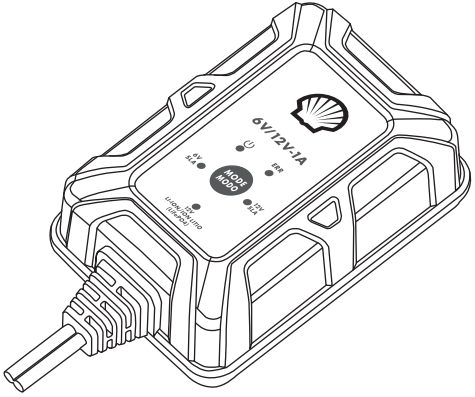


Battery Charger & Maintainer

SBC100

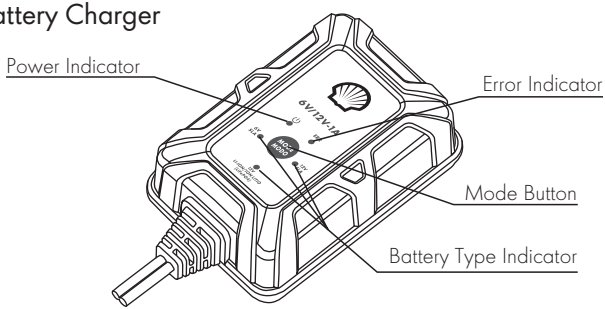
User Guide

For Your Safety

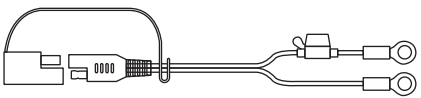
Thank you for choosing this Shell product. Please read the following instructions and keep them for future reference. This instruction manual contains important information on safe operation and use. To ensure long life and performance reliability, please operate and maintain as per the instructions on this sheet.

Product Details

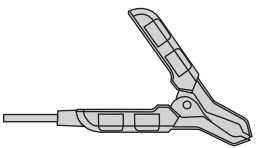
Battery Charger



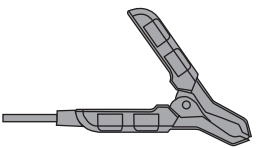
Fused Eyelet Terminal Connectors



Fused Battery Clamps

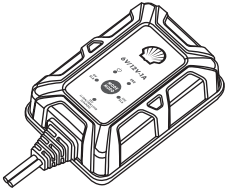


Red Battery Clamp



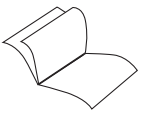
Black Battery Clamp

Package Includes

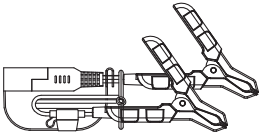


• 1 x Battery Charger

• 1 x Eyelet Terminal Connectors



• 1 x User Guide



• 1 x Fused Battery Clamps

• 1 x Product Warranty Registration

Product Features

- Designed for charging 12V Li-ion batteries and 6V and 12V lead acid batteries including Wet, Gel, MF, VRLA and AGM batteries
- 7-step charging cycle optimizes charging efficiency and battery life
- Maintenance mode ensures batteries of any capacity are always ready to use
- 7 levels of safety protection

Operating Instructions

Charging the Vehicle

Note: This product is designed for charging 12V Li-ion batteries and all types of 6V/12V lead-acid batteries like Wet, Gel, MF, VRLA, EFB and AGM. It is suitable for charging 2 to 20 Ah batteries and for maintaining batteries of any capacities.

Before connecting to the battery

1. Check the battery chemistry and voltage before charging it with our product. The battery information can be found in the vehicle's owner's manual.
2. Turn off the power loads such as headlamps, air-conditioning and radio before charging the battery.

Charging setup

1. Connect the battery clamps or eyelet terminal connectors to the DC connector of the battery charger.
2. Plug the charger into an outlet. The red power Indicator will turn on. At the same time 6V SLA and 12V SLA indicators will flash alternately.
3. To charge a 12V Li-ion battery, change the battery type by pressing the "MODE" MODE/MODO to toggle to 12V Li-ion battery. The green indicator light for 12V Li-ion battery will turn on. Otherwise, go to step 4.
4. Connect the black battery clamp or eyelet terminal connector to the negative (NEG, N, -) battery terminal.
5. Connect the red battery clamp or eyelet terminal connector to the positive (POS, P, +) battery terminal.
6. The charger will auto-detect the voltage of the SLA battery and the green indicator light of the detected battery type will flash.
   - If 12V Li-ion is selected, the corresponding indicator will flash.
   - To change the charging voltage of the SLA battery, follow the instruction of Mode change.
7. The charger will now go through the pre-programmed charging steps. The corresponding battery type indicator will keep flashing.
   - Refer to the table below for the explanation of the indicator lights.
8. When charging is finished and the battery is confirmed to be in good condition, the battery type indicator will turn to solid green. The charger will go into the maintenance step and will trickle charge the battery as needed. The charger can be disconnected from the battery at any time.
9. When disconnecting the battery charger, unplug the charger from the outlet first. Remove the black clamp and then the red clamp or directly remove the eyelet terminal connectors.

Mode change

If the charger fails to detect a 12V SLA battery, press and hold "MODE" MODE/MODO for 3 seconds, the charging mode will be changed from 6V SLA to 12V SLA.

LED Indicator Light Table

LED Indicator	Indicator Light	Explanation
⏻	Red light on	Power indicator. Plug in the charger and the indicator light will be on
ERR	Yellow light flashes	Possible causes: • The clamps are connected to the wrong polarities • The battery may be defective • The battery voltage exceeds 15V
6V SLA	• Green light flashes during charging • Green light turns solid when battery is fully charged	For charging 6V maintenance-free batteries such as Wet Cell, Gel Cell, AGM and EFB
		Suitable for 2-20 Ah batteries
12V SLA		For charging 12V maintenance-free batteries such as Wet Cell, Gel Cell, AGM and EFB
		Suitable for 2-20 Ah batteries
12V LI-ION (LiFePO4)		For charging 12V Li-ion batteries
		Suitable for 2-20 Ah batteries

Charging Steps

The charger is programmed with seven smart charging steps. It will go through some or all steps in order to extend your battery's life and maximize its performance.

Standby

The charger is ready to charge.

Qualification

The charger will check the battery condition, such as voltage, state-of-charge and health, to determine whether the battery is good for charging. If the battery is slightly sulfated, the charger will rejuvenate and recover the battery. As a safety measure, charging process will begin only if the battery is above 4V.

Soft Start

If the battery is at a very low state of charge, small charging voltage and current will be applied in order to prepare the battery for the next charging step.

Pulse
The battery undergoes the desulfation process to break down the sulfate and to restore the battery capacity.

Recondition
This stage reactivates the battery for bulk charging after desulfation.

Bulk Charging
The battery is charged at a constant current of 1A. This stage will charge the battery to approximately 85% of full charge.

Absorption
The charger switches to constant voltage charging. Charging current is gradually reduced allowing the battery to absorb more power until it achieves the 100% charged state.

Analysis
Charging stops when the battery is charged to its full capacity. The charger will check if the charging process is successful. Voltage test will be carried out to determine the state of charge of the battery. Based on the result, the charger will decide whether the battery will go to the next charging step or if it is a dead battery.

Maintenance
The battery is charged at constant voltage to maintain its full charged state without overcharging or damaging the battery.

Charging Time

The estimated time to charge a battery is shown below. The charging time is based on a 50% discharged battery and is for reference purposes only. Actual charging time depends on the battery capacity, the depth of discharge (DOD), age and condition of battery.

Battery Capacity (Ah)	Charging Time (Approx.)	
	6V/1A	12V/1A
2	1h 15min	1h 15min
4	2.5h	2.5h
8	5h	5h
10	6.5h	6.5h
15	10h	10h
20	13h	13h

Troubleshooting Table

Problem	Possible Cause	Solution
Power indicator light does not turn on	Charger is not plugged into the outlet properly	Make sure the charger is plugged into the outlet securely.
	AC outlet is not supplying power	Turn the switch on if the outlet is connected to a switch.
		Check for open fuse or circuit breaker.
Cannot select charging mode between 6V SLA and 12V SLA	Voltage is auto detected when the charger is connected to the power and the car battery	Charger is normal and will recharge the car battery.
Charger does not detect a 12V SLA battery and charges as 6V SLA	Battery is over discharged which leads to the auto voltage detection to fail	Select voltage manually by following the instruction of mode change. Press and hold "MODE" button (MODE / MODO) for 3 seconds. The 12V SLA indicator will turn on.
6V SLA and 12V SLA indicators flash alternately	Battery clamps are loose or not connected to the battery	Reconnect battery clamps to the battery.
	Fuse on the eyelet terminal connectors may be blown	Replace the fuse with correct amperage.
"ERR" indicator flashes	Battery clamps are connected to the wrong polarity	Reconnect the clamps with correct polarity
	Charger is connected to a 24V battery	Disconnect the charger from the battery. The charger works on 6V and 12V batteries.
	Battery voltage is lower than 4V	Battery is over-discharged. Replace it with a new battery.
	Battery voltage does not hold and drops quickly after fully charged	The battery is defective. Take the battery to the dealer.
	Battery voltage rose too fast	
	The battery has high capacity and it takes more than 72 hours to charge	SBC100 is designed for 2-20Ah batteries. Use a charger with higher charging rate.

Specifications

Input: 100 - 120V ~ 60Hz 20W
Output: 12V ⎓1A 6V ⎓1A
Battery Type: Lead-acid including Wet, GEL, AGM, VRLA and MF, and Li-ion (LiFePO4)
Battery Capacity: 2-20 Ah; maintain all sizes
Battery Voltage: 6V & 12V
DC Cable: 78 inches/198.1 cm
Operating Temperature: -10°C to 45°C
Storage Temperature: -20°C to 55°C
Product Dimensions: 3.56 x 2.47 x 1.98 inches/90.42 x 62.0 x 50.29 mm
Product Weight: 0.38±0.02 lb/175±10 g

Accessories:
Battery Clamps: 27 inches/68.6 cm
Eyelet Terminal Connectors: 24 inches/61 cm
Fuse in the Battery Clamps and Eyelet Terminal Connectors: 3A

~ The symbol indicates alternating current (AC)
⎓ The symbol indicates direct current (DC)

Safety Instructions

Failure to follow the instructions may cause serious injury, death or property damage
WARNING: Risk of electric shock, explosion and fire
WARNING: Risk of explosive gases
Working in the vicinity of a Lead-acid battery is dangerous. Battery generates explosive gases during normal operation. To reduce the risk of battery explosion, follow all the instructions in this user guide and those published by the battery manufacturer and the manufacturer of any equipment you intend to use in the vicinity of a battery. Review cautionary markings on these products and on the engine.

- This product is compatible with 12V Li-ion (LiFePO4) batteries, 6V & 12V lead acid including Wet, Gel, MF, VRLA and AGM batteries. Do not use this product to charge other types of battery as it may result in injury, death or property damage.
- Disconnect the battery clamps or eyelet terminal connectors only after disconnecting the AC power cord.
- Do not use an adapter plug with this product.
- It is not recommended to use an extension cord with this product.
- The product may become warm under extended high-power operation.
- Do not disassemble, modify or repair this product.
- Do not destroy product by crushing or cutting.
- Do not expose the product to fire, rain, snow, sunlight and heat.
- Keep this product away from water and other liquids.
- Keep this product in a dry place. Do not allow the product to get wet.
- Use the product in a well-ventilated area. Do not operate in explosive atmospheres such as areas of flammable gas, dust and liquid.
- Do not overcharge battery.
- Handle the product with care. Do not use the product when it is damaged. Do not operate with damaged cable or clamp.
- Clean this product only with a dry cloth. Avoid using cleaning product with rough or chemical substances.
- The product should not be charged while in contact with flammable material like textiles.
- Use the accessories that are provided in the package. Shell is not responsible for any damage or injury when using accessories that are not provided by us.
- Connect the charger only with the clamps or eyelet terminal connectors provided in this package.
- Do not disconnect the product from the outlet by pulling the cord.

- Do not put cables on or near moving parts such as hoods, doors, fans and belts.
- Do not allow the clamps to touch each other.
- Keep out of reach of children.

Personal Precautions

- Wear adequate eye protection and protective clothing when working near a car battery.
- Do not smoke or allow a spark or flame near the battery or engine.
- Remove all metal objects such as rings, bracelets, and watches.
- Have plenty of fresh water and soap nearby in case of battery acid contact with eyes, skin or clothing.
- If battery acid comes in contact with the skin or clothing, immediately wash with soap and water. If the acid enters the eye, immediately flood eye with running cold water for at least 10 minutes and seek immediate medical attention.
- Beware not to drop metal items on the battery. It might cause sparks or short-circuit the battery.
- Consider having someone nearby to come to your aid in case of emergency.
- Be very cautious not to drop metal tools onto the battery. It might cause sparks or short-circuit the battery or other electrical part that may cause explosion.
- Incompatible or damaged car batteries may explode when used with this product.

Cautions

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to

radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: reorient or relocate the receiving antenna; increase the separation between the equipment and receiver; connect the equipment into an outlet on a circuit different from that to which the receiver is connected; consult the dealer or an experienced radio / TV technician for help. Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm.
For more information, go to www.p65warnings.ca.gov.

CAN ICES-3(B)/NMB-3(B)

CONFORMS TO UL STD.1236
CERTIFIED TO CSA STD.C22.2 No. 107.2
CONFORMS TO UL STD.1310
CERTIFIED TO CSA STD.C22.2 No.223

ENERGY PERFORMANCE VERIFIED

Made in China

Shell Five (5) Years Limited Warranty

Shell warrants that this product (the "Product") will be free from defects in material and workmanship for a period of five (5) years from the date of purchase (the "Warranty Period"). For defects reported during the Warranty Period, Shell will, at its discretion, and subject to Shell's product support analysis, either repair or replace defective Product. Replacement parts and products will be new or serviceably used, comparable in function and performance to the original part and warranted for the remainder of the original Warranty Period. SHELL'S LIABILITY HEREUNDER IS EXPRESSLY LIMITED TO REPLACEMENT OR REPAIR OF THE PRODUCT. TO THE MAXIMUM EXTENT PERMITTED BY LAW, SHELL SHALL NOT BE LIABLE TO ANY PURCHASER OF THE PRODUCT OR ANY THIRD PARTY FOR ANY SPECIAL, INDIRECT, CONSEQUENTIAL OR EXEMPLARY DAMAGES, INCLUDING BUT NOT LIMITED TO, LOST PROFITS, PROPERTY DAMAGE OR PERSONAL INJURY RELATED IN ANY WAY TO THE PRODUCT HOWSOEVER CAUSED, EVEN IF SHELL HAD KNOWLEDGE OF THE POSSIBILITY OF SUCH DAMAGES. THE WARRANTIES SET FORTH HEREIN ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED, STATUTORY OR OTHERWISE, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND THOSE ARISING FROM COURSE OF DEALING, USAGE OR TRADE PRACTICE. IN THE EVENT THAT ANY APPLICABLE LAWS IMPOSE WARRANTIES, CONDITIONS OR OBLIGATIONS THAT CANNOT BE EXCLUDED OR MODIFIED, THIS PARAGRAPH SHALL APPLY TO THE GREATEST EXTENT ALLOWED BY SUCH LAWS.

This Limited Warranty is made solely for the benefit of the original purchaser of the Product from Shell or its approved reseller or distributor and is not assignable or transferable. To make a warranty claim, the purchaser must: (1) request and obtain a return merchandise authorization ("RMA") number and return location information (the "Return Location") from Shell Support by emailing shellsupport@camelionna.comor by calling 1.833.990.2624 ; and (2) send the Product, including RMA number and receipt to the Return Location provided. DO NOT SEND IN PRODUCT WITHOUT FIRST OBTAINING AN RMA FROM SHELL SUPPORT. THE ORIGINAL PURCHASER IS RESPONSIBLE (AND MUST PREPAY) ALL PACKAGING AND TRANSPORTATION COSTS TO SHIP PRODUCTS

FOR WARRANTY SERVICE. NOTWITHSTANDING THE ABOVE, THIS LIMITED WARRANTY IS VOID AND DOES NOT APPLY TO PRODUCTS THAT: (a) were misused, mishandled, subjected to abuse or careless handling, accident, improperly stored, or operated under conditions of extreme voltage, temperature, shock, or vibration beyond Shell's recommendations for safe and effective use; (b) improperly installed, operated or maintained; (c) are/were modified without the express written consent of Shell; (d) have been disassembled, altered or repaired by anyone other than Shell; (e) had defects which were reported after the Warranty Period. THIS LIMITED WARRANTY DOES NOT COVER: (1) normal wear and tear; (2) cosmetic damage that does not affect functionality; or (3) Products where the Shell serial and/or lot number is missing, altered, or defaced.

shellsupport@camelionna.com
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1-833-990-2624
M-F 9 am - 5 pm
Eastern Standard Time

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Battery Charger & Maintainer

SBC100

SH SBC100 IM ENG D10057R2

Printed in China