

USER MANUAL



Imperium

AC-DC Charger 50A

SMART BATTERY CHARGER

1. Important information

Thank you for purchasing our smart battery charger. Please read this instruction manual carefully before operating the device. Keep this manual in a safe place for future reference. This instruction manual is a part of the product. It must be handed over along with the device if it is passed on to a third party.

2. Introduction

The Imperium IMP009 50A AC-DC smart battery charger uses the latest switch-mode technology for charging AGM / lead-acid batteries. The automatic 7 stage charging algorithm delivers a more efficient and full charge without the issue of voltage drop. The boost-charging feature activates the battery status and will wake up a weak or flat battery to get it to a suitable recharging level, which improves the charge delivered to your battery, increases the service life of battery and prevents premature battery failure.

This smart battery charger can also be used to charge GEL AGM/WET batteries by pressing the mode selection button, and as a constant power supply (orange LED or red LED) to run devices that require a stable and clean DC voltage.

When charging lithium batteries, you must set the charger to lithium battery charging mode by pressing the MODE SELECTION button until you see the LED turn green. The LCD will display charging voltage, charging current and charging stage.

For safety reasons, the input and output of the charger are completely isolated and the batteries are protected from being overcharged.

The internal cooling fan is thermal & charge current dual controlled, activated when the temperature reaches 45 degrees centigrade or when the charge current is 2A. The fan will automatically switch on and off to control the internal temperature of the unit.

This smart battery charger must be connected to a battery before the DC output starts to activate. Note: this is a touch-type battery charger and the battery voltage required for constant current mode is 12.6V.

Protection features:

- DC short circuit protection: if activated the charger will automatically cut off the DC output immediately. The LCD will display "- P-" and the battery charger will reset automatically once the short circuit fault has been remedied.
- Over heat protection: if the internal temperature reaches 75 ± 5 °C the LCD will display "-P-". When the temperature drops back down the battery charger will reset automatically.

3. Warning

Risk of electric shock! Do not open the device if it has been connected to the AC power source.

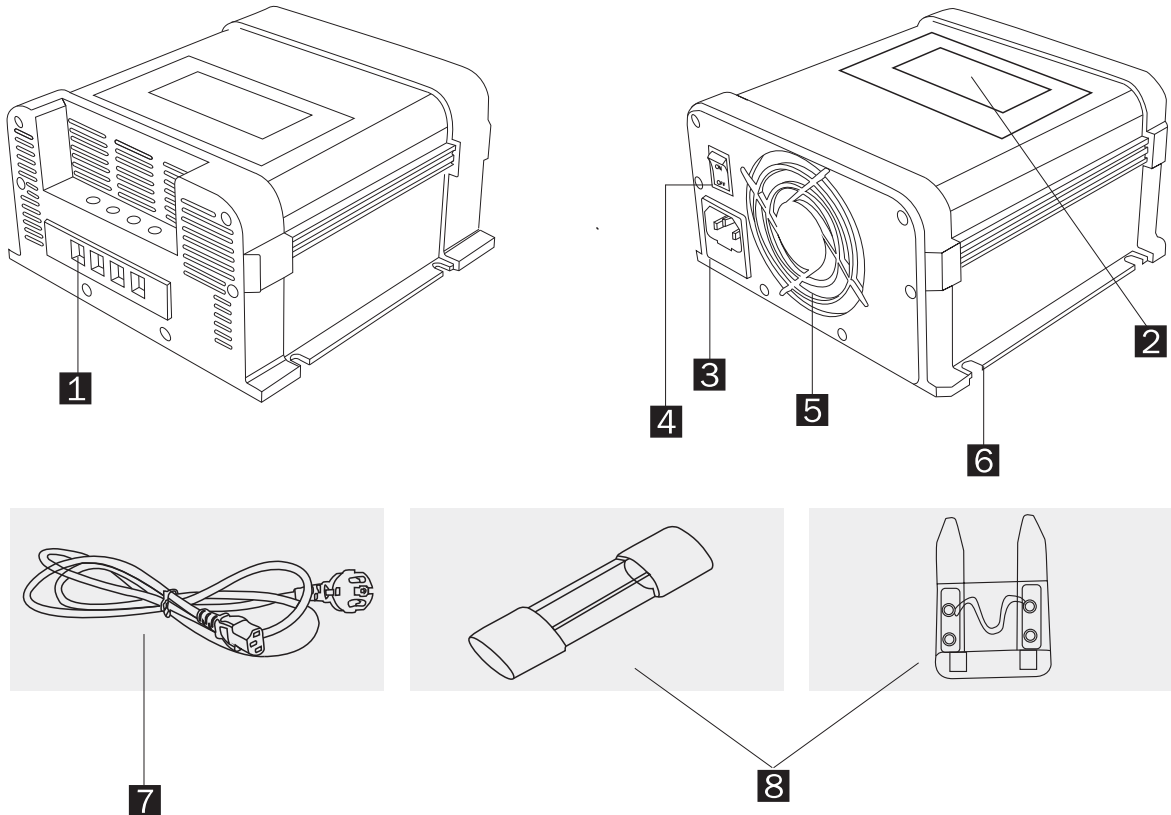
4. Compliance

The Imperium IMP009 50A AC-DC Smart Battery Charger has been tested and is compliant with the directives and standards of:

AS/NZS 61000.6.3:2012	EN 61000-6-3	EN 61000-4-2 (LEVEL 3)
AS/NZS 60335-2-29:2017	EN 60335-2-29:2017	EN 61000-4-3 (LEVEL 3)
AS/NZS 60335.1:2020	EN 60335-1:2011	EN 61000-4-4 (LEVEL 3)
	EN 60950-1	EN 61000-4-5 (LEVEL 3)
	EN55014 CLASS B	EN 61000-4-6 (LEVEL 3)

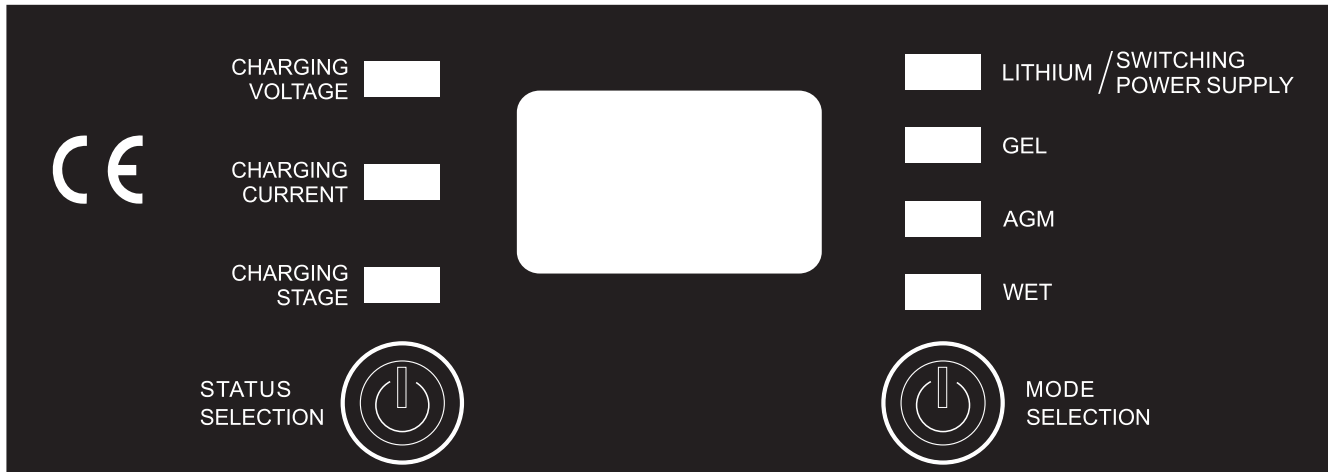
5. Parts Identification List

The package contents contain the Imperium IMP009 smart charger unit, user manual, AC power cable and spare fuse.



- | | | |
|-----------------------------------|-----------------------|-----------------------------|
| 1. Battery charging output | 2. LCD display | 3. AC input terminal |
| 4. Power on/off switch | 5. Cooling fan | 6. Mounting hole |
| 7. AC power cable | 8. Fuse | |

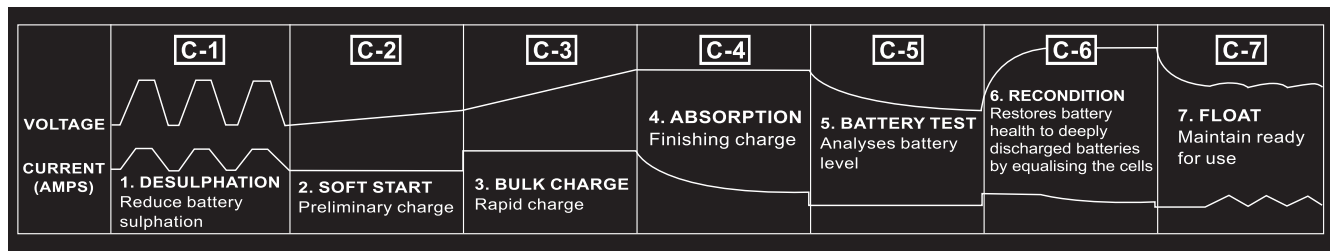
The LCD screen display and button function



- 5.1** Charging voltage LED: to check the charging voltage press the status selection button until the charging voltage LED light is on. The charging voltage will be displayed on the LCD screen.
- 5.2** Charging current LED: to check the charging current press the status selection button until the charging current LED light is on. The charging current will be displayed on the LCD screen..
- 5.3** Charging stage LED: to check which charging stage is active, press the status button until the charging stage LED light is on. The LCD screen will then display which of the 7 charging stages is active.
- 5.4** Status selection button: press and hold the status selection button to change the LCD screen display between the charging voltage, charging current or different charging stages display.
- 5.5** Switching power supply LED: If you want to use this charger as a switching power supply unit, press the mode selection until the lithium battery mode LED light is on. There are two colours in this switching power supply mode: red-13.4V, orange-13.8V.
- 5.6** Lithium battery mode: press the MODE SELECTION until the Lithium battery mode light shows GREEN.
- 5.7** GEL/AGM/WET batteries mode: press the mode selection button to set the battery type.

- 5.8** Mode selection button: press and hold the Mode button to switching between power supply functions or for setting LITHIUM/GEL/AGM/WET batteries type.
- 5.9** LCD screen display: automatically circularly displayed will be the charging voltage, current and different charging stage. When overheat or short circuit protection is activated the LCD displays "-P ". When there is no operation for a period of 60 seconds, the screen will go out automatically and will come on again if a button is pressed.

6. 7-stage automatic charging



This is a fully automatic battery charger with 7 charging stages.

Automatic charging protects your battery from being overcharged. So you can leave the charger connected to the battery indefinitely.

7-stage charging is a very comprehensive and accurate charging process that gives your battery longer life and better performance compared to using traditional chargers.

7-stage chargers are suitable for most battery types including GEL, AGM, WET batteries. They may also help to restore drained and sulphated batteries.

The 7 stages are:

Desulphation: The desulphation stage breaks down sulphation that occurs in batteries which have been left flat for extended periods of time, bringing them back to be fully charged. Sulphation occurs when lead-sulphate hardens and clogs up to battery cells.

Soft start: A preliminary charging stage that introduces half of the rated current to the battery slowly. This stage protects the battery and extends its life.

Bulk charge: Charging with maximum current until the battery capacity approaches approximately 80 %.

Absorption: The charging current gradually decreases during charging and the battery capacity approaches 100 %.

Battery test: Test the battery to find out whether it can store power or not. If not, you must replace the battery.

Recondition: Choose the recond program to add the recond step to the charging process. During the recond step, voltage increases to create controlled gassing in the battery. Gassing mixes the battery acid and restore the battery.

Float: The float stage maintains 100% battery capacity without discharging. This means the charger can be left connected to the battery indefinitely. The battery charger has a 7-stagefully automatic charging curve, the cycle is repeated infinitely. When the terminal voltage drops below the lowest limit, the charger will automatically go back to the beginning of the charging curve.

7. Caution!

- 7.1** The charger is for indoor use only; do not use the device near flammable materials or in any location that may accumulate flammable fumes or gases.
- 7.2** The charger must only be used with rated voltage and frequency.
- 7.3** The surface of the battery will become hot when operating, especially at full load condition.
- 7.4** Make sure the polarity is correct. Reverse polarity may cause damage to the battery and charger.
- 7.5.** Do not put, or mount, the charger on the top of the battery, especially a wet type battery, as it may generate gas vapour while charging which would be flammable.

- 7.6** Do not use to try and charge non-rechargeable batteries.
- 7.7** Use the charger only in the described manner.
- 7.8** The charger should not be exposed to a heat source, such as direct sunlight or heating.
- 7.9** Store the charger in a dry and cool place.
- 7.10** Do not open the charger casing. There are no user serviceable parts contained inside.

8. Operating Instructions

- 8.1** To start with, connect the smart charger to the battery and switch it on. The charger will start charging the battery as per the 7-stage charge functions listed above. The LCD display will automatically display if there is an error (see above).
- 8.2** The LCD screen display will automatically turn off if there is no operation for 60 seconds. The screen can be lit again by pressing any button.
- 8.3** Long press the button 'MODE SELECTION' to change the mode. Note: there are three colours of indicators in lithium battery mode: GREEN - lithium battery mode, RED - switching power supply mode 13.4V, ORANGE - switching power mode 13.8V.
- 8.4** Pressing the 'STATUS SELECTION' button will change the LCD display.

9. Trouble Shooting

Problems and Symptoms	Possible Cause	Solutions
No DC output or charger cannot startup	No AC input	Check the AC power source
	Overheat shutdown	Cool down the device.
	Bad contact of battery terminal	Check the connection between charger and battery
Battery charging not stable	Output short circuit	Check whether the AC voltage is in the range of the voltage
	AC input voltage is not stable	Select the proper battery
	Choose the improper battery	

Problems and Symptoms	Possible Cause	Solutions
Charger cannot switch to float	Battery cable connected to the battery is too thin	Change cable of proper size
	Battery in poor condition	Replace new battery

10. Safety Operation!

- 10.1** If the cable needs be routed through walls with sharp edges, always use tubes, ducts or grommets to prevent damage to the cable.
- 10.2** Ensure that the charger and cables are fastened securely. Do not pull on the cables and ensure they are secured away, so as not to become a trip hazard.
- 10.3** Ensure the charger is secured firmly so that it cannot be tipped over or dropped.
- 10.4** Do not let children near the charger.
- 10.5** Ensure no water drips onto or splashes the charger.
- 10.6** Ensure the air inlets and outlets of the charger are free from obstruction.
- 10.7** Ensure the housing and connection cables are undamaged before operating the charger.
- 10.8** Do not reverse the polarity of the connection to the battery.
- 10.9** Disconnect the power supply before making or breaking the connections to the battery.
- 10.10** Warning! There is risk of electric shock! Do not open the device when connected to AC power. This could be fatal.

11. Specification

Model	IMP009
Input voltage range	Input voltage AC110V(90-130V)
Bulk/Absorption Charging	14.2V/14.6V/14.8V DC Selectable (12V) 14.4V+/-0.2V(12V), 27V+/-0.4V(24V) (Lithium mode)
Float Charging	13.2V/13.5/13.8V DC Selectable (12V) 13.5V+/-0.2V (12V), 27V+/-0.4V(24V) (Lithium mode)
Max. DC output current	55A

Model	IMP009
Output voltage	12V
Suggested battery capacity	400-600Ah
Output ripple	<50mA at full load
Max. efficiency	88%
Load regulation	1.5% at output current; no load to full load
Optimum ambient temperature	0-40C
Isolated DC output	2
Ventilation	Cooling fan: automatic thermal and current control
Dimensions (mm)	226 x 175 x 95 (LxWxH)

Battery type and charging voltage setting

Battery Type	Float Charging	Bulk/Absorption charging
	12V	12V
Gel/SLA	13.2V	14.2V
AGM	13.5V	14.6V
WET/calcium	13.8V	14.8V
Lithium	13.5V+/-0.2V	14.4V+/-0.2V

WARRANTY

2
YEARS

WARRANTY PERIOD:

Full 2 years warranty from date of purchase against all manufacturing defects.

WHAT DOES THE WARRANTY COVER?

Under normal usage conditions, this warranty covers:

1. Any defect in design or manufacture which results in its failure to perform correctly as described.
2. We will either repair or replace the product at our discretion provide that the fault is found to have been caused by a design or manufacturing defect and not misuse or tampering.

THE WARRANTY DOES NOT COVER

1. Cost of removing and reinstalling the product.
2. Travel and /or other expenses due to customer's location
3. Transport charges and damage in transit. It is your responsibility to deliver and pick up your product, including any costs associated with the postage of repairing or replacing your product. If you want to send the product back we recommend that you insure against loss or damage.
4. Any loss directly or indirectly associated with the product that fails to operate.
5. Damage caused by mould, misuse, incorrect operation, adverse weather, accidents and daily wear and tear.
6. The warranty is non-transferable and only applies to the original purchaser.
7. This unit is not intended for commercial use.
8. This warranty does not apply to damage to units from misuse or incorrect installation/connection. Misuse includes wiring or connecting to improper polarity power sources.

Imperium

Lithium Power

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