

Imperium
AC-DC Charger 20A

20A AC-DC CHARGER

14.6V/20A LITHIUM BATTERY



USER MANUAL

PART NUMBER IMP002

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1. Summary:

The IMP002 Imperium 20A AC-DC battery charger has single chip microcomputer (MCU) controlled, 3 stage intelligent charging technology. This can accurately track the battery charging process, and ensure that the battery is always in the best (electrochemical reaction) condition, which will prolong and optimise the battery's service life.

The Imperium 20A AC-DC charger's input voltage range is wide and it has multiple built in protection features. The control circuit of the charger adopts advanced, high frequency transformer LLC half-bridge resonant, soft-switching power supply control technology. The charger's highly efficient, robust design - in a compact, light weight shell - allows for ease of installation and portability

3. Pre-Use Checks and Ongoing Maintenance

- 1) Check the battery's technical specification very carefully before charging, to make sure that it matches the IMP002 Imperium 20A AC-DC charger's technical data.
- 2) Make sure the charger output is connected securely to the batteries terminal on the correct polarity.
- 3) Input/output connectors must be connected firmly during charging.
- 4) Reverse polarity connections or short circuits are prohibited during charging, as they will cause damage to both the battery and charger.
- 5) If the charger or battery are found to be abnormal or damaged during charge, immediately unplug the input and output cables.
- 6) If you use different input wires from the ones supplied then you must make sure that these cables can withstand the maximum input current of the charger, and also that the charger's input voltage is within its working scope.
- 7) If you need to extend the output connection cable, you must make sure that the cable can withstand the maximum output current of the charger and also that the voltage-drop between the charger and the connection wire of the battery is less than 1% of the battery voltage. Otherwise, it may have an adverse affect on the charging process.
- 8) DANGER - inside the charger there are high voltage components. If there is a defect you must contact either a qualified electrician, or Purple Line directly. Do not tamper with the casing of the product and do not attempt repairs to the internal components if unqualified to do so.
- 9) Never use the charger during a lightning storm.
- 10) Ensure that charger does not get wet.
- 11) Never use the charger near a heat source or in direct sunlight.
- 12) Never use the charger in or near flammable gas.
- 13) Ensure the compartment it is mounted in is ventilated and free from dust ingress.
- 14) Never place a wire, rod or other metal object into the vents or other openings of the charger body.
- 15) Never cover the air vent, and always leave 10cm space for it - at least.
- 16) Never shake, bump or drop the charger.

4. Instructions for Use

- 1) Turn off the power switch.
- 2) Connect the batteries to the output socket with the output wires supplied - positive to positive, negative to negative.
- 3) Plug the input wires in correctly and connect to the input power source.
- 4) Turn on the power switch; the LED will flash blue meaning that the battery is being charged.
- 5) When the LED turns green this means that the battery is fully charged.
- 6) At this stage you can switch off the charger, disconnect the input cable and disconnect the output wires. Or, you can leave it plugged in and attached, so that it can maintain the battery charge.

5. Product Features:

- 1) High efficiency, small size, light weight: The IMP002 Imperium charger control circuit uses advanced LLC half-bridge resonant soft-switching power supply control technology. The casing is a robust structure and has a positive thermal design which makes the charger efficient, small and light weight with easy installation.
- 2) Multi power supply options and MCU controlled charging technology: pre-charge mode, repair mode and prolong life mode function for long-term unused batteries.
- 3) High reliability: The IMP002 charger is made of high quality industrial level components. Advanced circuit design and strict production process, according to ISO9001:2008 quality management system, make the charger robust, reliable and long lasting.
- 4) The IMP002 Imperium charger has multiple protection features: over temperature protection, output short-circuit protection, reverse polarity protection and output over-voltage protection, all of which prevent damage from misuse or incorrect operation.
- 5) The charger's case is made of aluminium alloy with surface oxidation treatment. This sleek design is high-grade, has excellent heat dissipation qualities, is very robust and anti-oxidative and is non-fading.

6. Technical Specifications:

Input Voltage Range: AC100V~240V 45Hz~65Hz

Maximum Input Current: 3A

Operating Temperature: -10°C~45°C

Storage Temperature: -40°C~75°C

Relative Humidity: 5%~95%

Atmospheric pressure: 70KPa~106KPa

Dimensions (mm): 200(L) × 100(W) × 55(H)

Net Weight: 2.0Kg

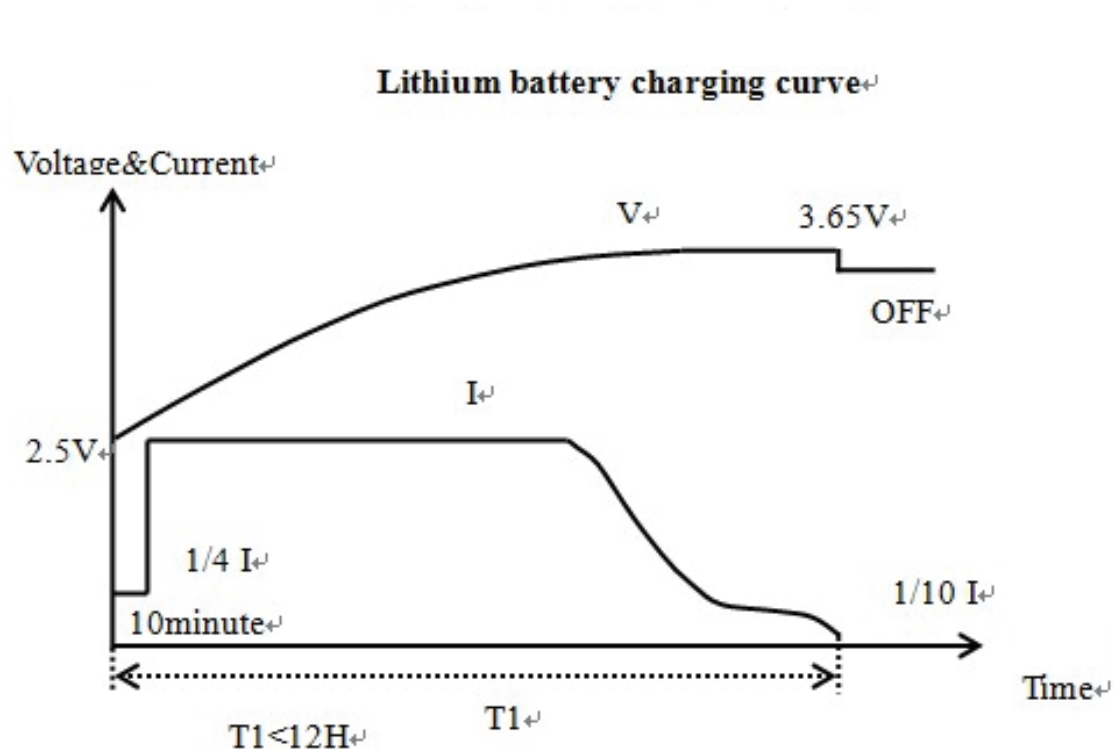
7. Charging Modes

1) Pre-charge stage (T1): When the battery voltage is very low the charger cannot withstand large current charging. In this mode the charger will supply a smaller current for charging. This has the functions of activation, repair and battery life extension. When the output voltage reaches a normal level, or at the T1 of the timing period, the charger will switch to the next "fast charge" stage automatically.

2) Fast charge stage (T2): When the battery is into the main stage of charging, the charger will quickly charge the batteries with a constant flow, at the maximum current which can be delivered to the battery. When the battery voltage gets up to the maximum charge, the charger will switch to the next "float charge" stage automatically.

3) Float charge stage (T3): As the charger switches to the float charge stage, the charging current will fall off gradually until the current drops to the set value or at the T3 of the timing period. At this stage the charger will turn off the output voltage automatically and the battery charging is complete.

Charge curve as below:



8. Protection Features:

- 1) Over Temperature Protection: When the charger's internal temperature reaches its protection point, the charger will stop charging automatically and the LED is always on red.
- 2) Output Short-circuit Protection: When the charger has a short-circuit, it will cut off the output current and the LED is always on red.
- 3) Reverse Polarity Protection: When the battery polarities are incorrectly reverse connected, the charger will cut off the connection and the LED is always on red.
- 4) Output Over-Voltage protection: When the charger's output is over-voltage, it will cut off the output current and the LED is always on red.

9. LED Indicator:

LED Status	Charger Status
LED constant green	Fully charged or no connected.
LED constant red	Battery is being charged.
LED flashing red	Charger under protection (over temperature protection, output short-circuit protection, reverse polarity protection, output over-voltage protection).

10. Troubleshooting:

If the charger is not working normally, the following methods can help you quickly solve general problems. If the problem is still not fixed, please contact the local distributor or Purple Line directly.

Failure Mode	Troubleshooting Methods
LED is not lighting	a. Input connectors must be connected firmly. b. Open power switch.
Charger is not charging, and the LED is always green	a. Output connectors must be connected firmly. b. Battery failure or damage: replace the battery.
Charger is not charging, and the LED is flashing red	a. Make sure the output polarity is right. b. Battery voltage is too high and cannot match the battery charger.
Battery is not fully charged	a. Output connectors must be connected firmly. b. Output wire cannot be too long. c. Battery failure or damage: replace the battery.

Purple Line is not responsible for any accidents or harm caused by misuse or improper user operation.

Specification

Humidity:	5-95%
Operating temp.:	-10 to 40C
Storage temp:	-40 to 70C
Dimensions:	l=245mm, w=100mm, h=54mm
Max output power =	292W
Input voltage=	100-260 VAC
Output voltage =	14.6 VDC
Output current =	20A
AC input voltage frequency =	47-63 HZ

Compliance:

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

WARRANTY



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 is only valid for the original purchaser only. Proof of purchase is required to be held.
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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Photographs & diagrams for illustration purposes only. Actual product may differ slightly. All weights & dimensions are approximate. The manufacturer reserves the right to change product specification without prior notice. E & OE.