

**USER MANUAL**



# Imperium

DC-DC Charger 40A

**MULTI-STAGE, DUAL INPUT,  
BUILT IN MPPT**

## IMPOTANT SAFETY INSTRUCTIONS!

- Not to be used by children, adults under the influence of alcohol or drugs or anyone who does not have the necessary skills or professional knowledge.
- The user must read and understand all of the warning and safety instructions supplied with this product prior to installation or use.
- Do not use or store this charger near heat sources such as fire or heaters or expose it to flammable chemicals, vapors or corrosive gases.
- Please only use this product as intended.
- Do not drop, hit or apply blunt forces to this charger.
- Do not mount the charger in places where there is a risk of gas explosion.
- Inadequate ventilation may lead to overheating and inefficient charging.
- Please do not expose the charger to moisture.
- This charger is to be securely fastened into place using the necessary fixing points which form part of the casing.
- Please do not disassemble this charger as such action will not only cause potential damage to you and your unit, but also void the warranty.
- Please note that this DC-DC charger is not waterproof.
- Please disconnect the charger before maintenance or cleaning.
- This DC-DC charger can only be repaired by authorised personnel.
- Before charging, please wear proper eye protection.
- Do not smoke or have an open spark or fire near this charger.
- Avoid dropping any metal tool or object onto the batteries when installing the charger, as this may cause a short circuit, or a spark which may cause an explosion.
- Examine the battery charger regularly for damage. If the battery charger is damaged, it must not be used until it has been repaired.

## KEY FEATURES

This DC-DC charger, which is ideal for 4WDs, caravans, RVs, trucks, campers, trailers, campervans, commercial vehicles and boats, offers an effective way to charge your auxiliary batteries from the 12V output car generator or solar panel (up to 40A) to charge AGM, Gel, calcium, and LiON batteries.

It also has a built-in MPPT regulator to maximize energy absorption, thus reducing the load on your engine. And over-charge, short circuit, over-temperature, thermal load, solar input overload, input/output reverse polarity protection have been integrated to offer an extra layer of protection. Furthermore, the charger allows you to re-select the battery during charging by pressing "POWER", LED and indicator showing the stage of charging. A memory function is integrated to make charging more convenient.

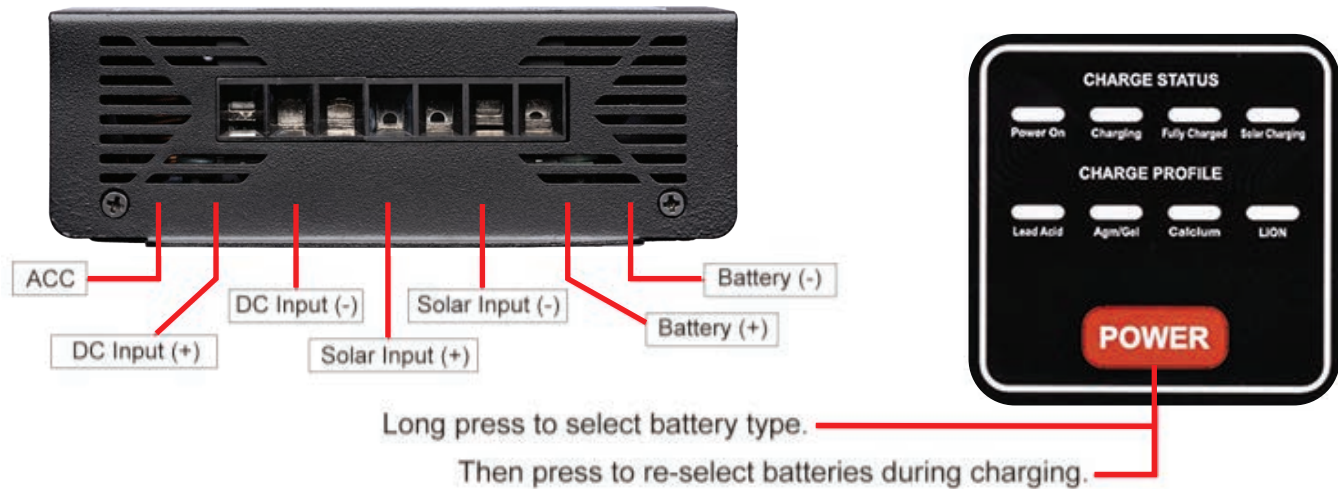
## STAGES OF CHARGING

|                                 |                               |
|---------------------------------|-------------------------------|
| (1) Standby                     | (5) Constant voltage charging |
| (2) Pre-charge                  | (6) Fully charged             |
| (3) Constant current charging 1 | ((7) Re-charge                |
| (4) Constant current charging 2 |                               |

## DIMENSIONS



## IDENTIFICATION OF PARTS

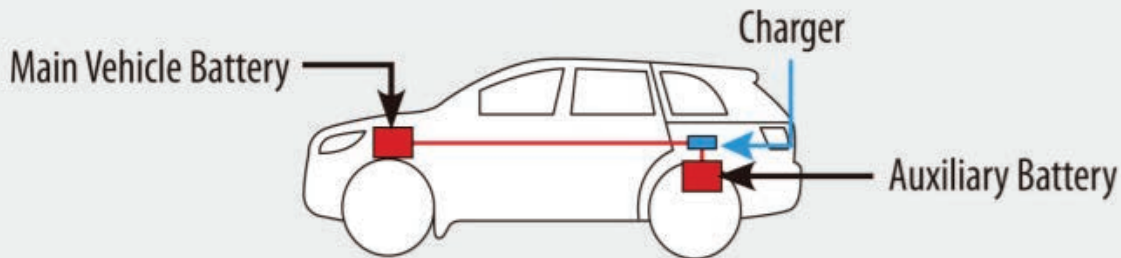


## INSTALLATION INSTRUCTIONS

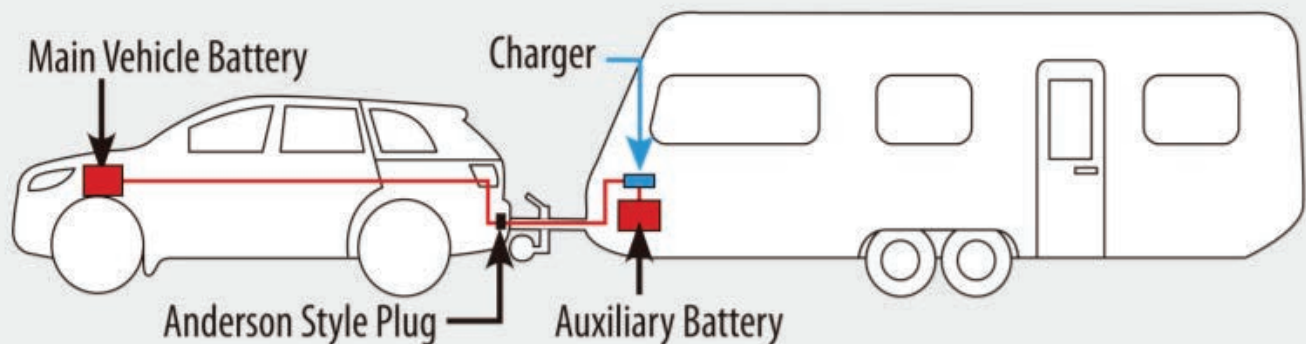
- Check whether the specification of your cable is compatible with this DC-DC charger. (See table on page 6)
- This charger can be installed both horizontally and vertically.
- Make sure that the charger is installed as close as possible to the battery you are going to charge, and you also need to make sure that the area is not susceptible to moisture, water, dust or high temperatures.
- Ensure that there is no heat source or flammable gas around the unit.
- Anderson plug is recommended when this charger is installed on a caravan or a camper (see picture below)
- Twin core cable must be used between the start battery and the charger, and you need to connect the common negative and common positive wires from the starter battery to the input of the DC-DC in the appropriate positive and negative terminals.
- It is highly recommended to install a 60 Amp circuit breaker (not included in this package) that should be installed near the starter battery.
- Check whether all connections are clean and tight.



## Suggested fitment to vehicle only



## Suggested fitment to vehicle with caravan



This charger can also be connected to a solar panel, see detailed wiring diagram at Page 5.

## HOW TO USE

### 1. DC Battery

- Start your vehicle and let it idle.
- The battery cable should be connected first, otherwise it cannot be charged.
- And the charger will recognize that there is a charge being applied to the main starting battery.
- The charger will charge the auxiliary battery when the main starting battery has reached 12.5V.

- Long press "POWER" to re-select batteries (The default setting is for lead acid battery, and your setting will be saved once selection is made).The charger will continue to operate even after the vehicle has been switched off ,however when the main starting battery below 12.5V will derate charging ;below 12V, the charging will automatically shut off.

## 2. Solar Input

- The charger will shift to solar charge mode when the input terminal is connected to the solar panel.
- Long press "POWER" to select the corresponding battery type, and batteries can be re-selected during charging by long pressing the button.
- Charging begins when the output of the solar panel reaches 16V~25V, and the panel will stop the charge when its output is below 10V.

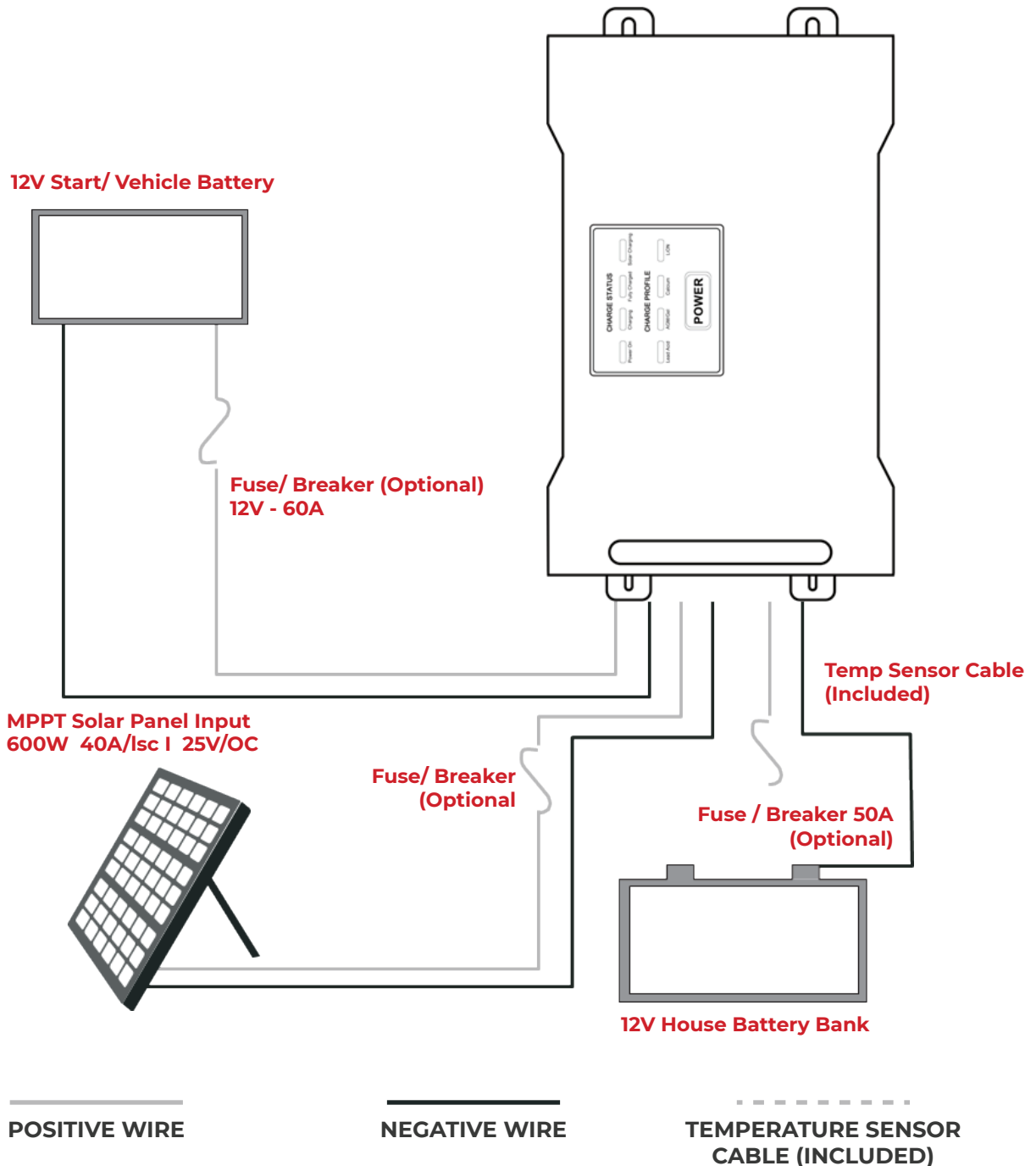
Note: this charger is not designed to charge your auxiliary battery with DC inputs and solar concurrently, DC enjoys input priority over solar.

## DEEP CYCLE BATTERY MAINTENANCE

- This DC-DC charger will be used to charge your auxiliary battery, for example, deep cycle batteries that are designed to provide power for your fridges and lights in your caravan or camper.
- It is known that the lifespan of a deep cycle battery can be extended if it is not discharged below 50% of its full capacity. A fully charged battery (50 amp) can deliver 50 amp/hours without shortening its lifespan.
- Your fridge might use appropriately 24 amps per day. If your 100AH battery is only used to power your fridge while receiving no charge, it would require charging after 48 hours.

## BATTERY WIRING

This diagram is for a reference only. Local rules and regulations should be followed when installing this unit.



## TROUBLESHOOTING

- Display shows that the charger is not charging: check where the battery is connected; check the terminals; check whether the battery is 12V
- Battery is not charging: check whether all connections are connected correctly; check the status of the battery; check the status of your vehicle or solar panel.
- Battery cannot be fully charged or power cannot be maintained: please check whether your battery has been used for over 3 years; overheat; low in electrolyte; over-charging or battery vulcanized; You need to consult your battery manufacturer to check its condition or make a replacement.

## SPECIFICATIONS

| Model:                   | IMP004  |
|--------------------------|---|
| Type                     | Multi Stage   |
| Input                    | DC Battery:12.5 -16.0 Volts; Solar Input:16.0 - 25.0 Volts                                    |
| Output/ Charging Voltage | 14.4 - 15.4 Volts (Stops charging when alternator output or vehicle battery below 12.5 Volts) |
| Output Current           | DC Output:40A Solar Output:40A  |
| Minimum Start Voltage    | 2.5 Volts - For battery being charged   |

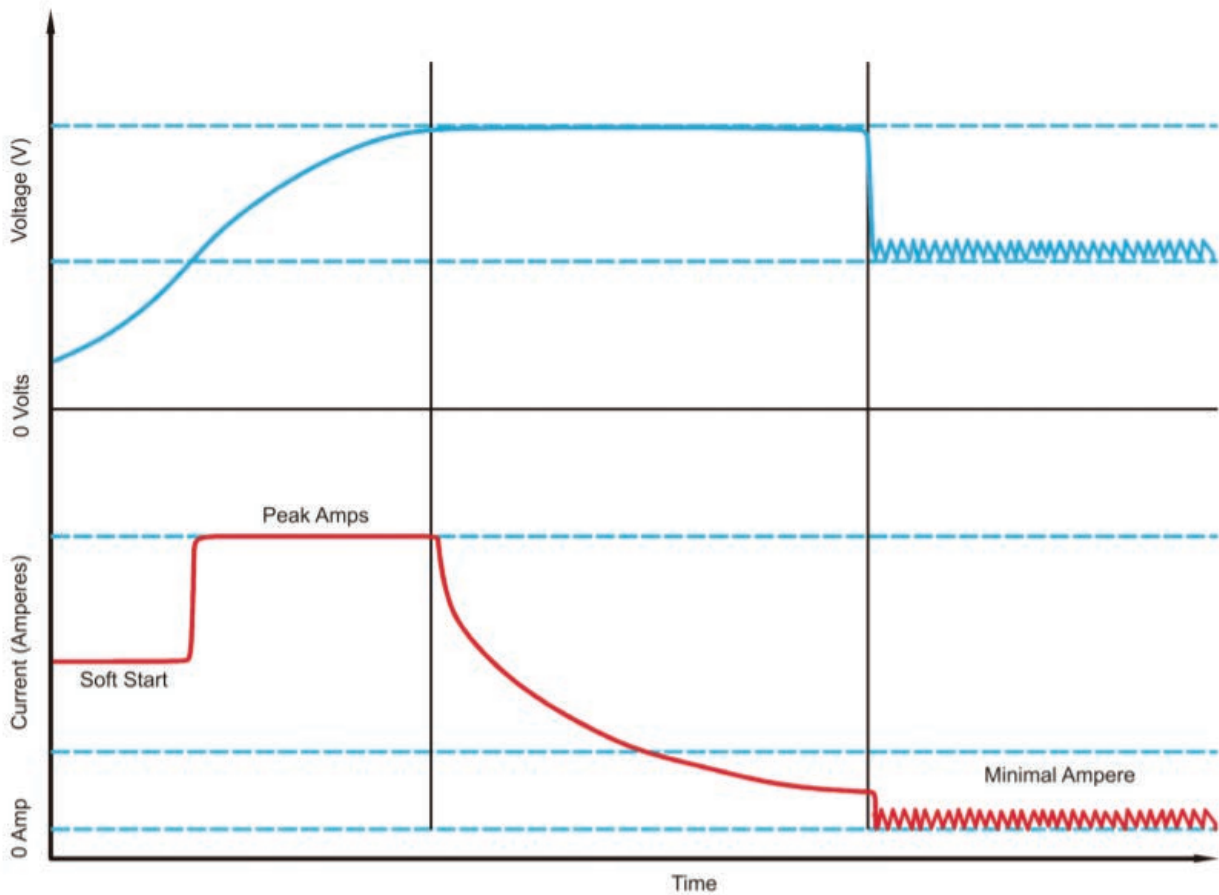
| Charge Control       |   |
|----------------------|---|
| Soft Start           | YES   |
| Soft Charge Current  | 40A   |
| Bulk Charge Voltage  | 14. 7V (AGM/Gel)14.4(Lead Acid)15.4(Calcium)14.4V(LiON) |
| Absorption           | Constant voltage with automatic amperage control        |
| Equalisation         | Automatic   |
| Float Charge Voltage | 13.5 (AGM/Gel)13.5V(Lead Acid)13.5V(Calcium)            |
| Float Charge Current | 100mA   |
| Battery Range        | 120 to 1200Ah   |

| Cable Length/ Twin Core |       |
|-------------------------|-------|
| 0- 1 Metres             | 10AWG |
| 1 - 5 Metres            | 6AWG  |
| 5 Metres+               | 4AWG  |
| N.W.                    | 1335G |

## CHARGING VOLTAGE

|             | AGM/GEL | LEAD ACID | CALCIUM | LiON   |
|-------------|---------|-----------|---------|--------|
| BOOST       | 14.3 V  | 14.0 V    | 15.0 V  | 14.0 V |
| CHARGING    | 14.7V   | 14.4 V    | 15.4 V  | 14.4 V |
| MAINTENANCE | 13.5 V  | 13.5 V    | 13.5 V  |        |

## CHARGING ALGORITHM



Charging algorithm will change according to battery type.

**NOTE:** Charging voltage is specified by your battery manufacturer. Non observance of instructions will void the warranty of your battery.

# 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 does not extend to subsequent purchasers or users other than OEM applications.
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.