



Integrated Power Charger 2
24V & 12V VERSIONS FOR SPECIALIST VEHICLES

ANTARES
engineering with answers

Instructions for installation and use

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FM 37786
ISO 9001:2000

Antares TDC
Knaves Beech Business Centre
Davies Way
Loudwater
High Wycombe
HP10 9QR

Telephone: +44 1628 535440
Facsimile: +44 1628 535441
e-mail: info@antares.co.uk
website: <http://www.antares.co.uk>

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CE MARKING - INFORMATION

Conditions of use for which CE mark applies

This equipment is intended to be used solely for professional purposes in commercial and light industrial locations, powered from the low-voltage public mains supply.

Non approved conditions of use

This unit may be suitable for use in other applications, but it can only be supplied as a component in this respect, for which the CE mark displayed on this manual does not apply. If the unit is used in this way, as a component part to build a battery charging or similar apparatus, then this unit is supplied solely on the condition that it is the responsibility of the manufacturer of the charging apparatus to ensure that the apparatus complies with the requirements of the relevant legislation, and apply the CE marking should it be required. In this case, this user manual does not apply, and reference should be made to Antares for any information required for compliance with the legislation.

UNPACKING

Pack contents: 1 Antares Power Charger
1 Instructions for Installation & Use

APPLICATION

The Power Charger is suitable for use under shelter only. It must not be exposed to rain. It is suitable for a wide range of applications on vehicles or in fixed locations, subject to the conditions of use stated above under CE marking. It may be used as a stand alone high performance DC power supply, or as a fully automatic multistage charger when connected to a battery. The charging characteristics of the standard model are optimised for flooded and retained electrolyte lead acid batteries.

Please ensure that operation is confined to within the limits contained in the product specification given at the end of this manual.

Suitable Battery Types:

The power charger is suitable for charging the following types of battery:

12 VOLT MODELS:

Flooded and retained electrolyte lead acid batteries of 12 volt rating, being made up from 6 cells connected in a series configuration.

24 VOLT MODELS:

Flooded and retained electrolyte lead acid batteries of 24 volt rating, being made up from 12 cells connected in a series configuration.

No attempt should be made to charge non-rechargeable batteries with this unit, as a hazard could result.

IMPORTANT SAFETY INFORMATION

- 1 Please read and observe the installation instructions, which contain further safety information.
- 2 **WARNING: Explosive gasses may be generated by a battery on charge. To prevent ignition, allow time**

for gasses to disperse before attempting to connect this unit to the supply battery.

- 3 Statutory Notice: The wires in the mains input lead are coloured in accordance with the following code:
Blue: Neutral
Brown: Live
Green/Yellow: Earth

If the colours of the wires in the mains lead of this equipment do not correspond with the markings in your plug, proceed as follows:

The Blue wire must be connected to the terminal marked N or coloured Black.
The Brown wire must be connected to the terminal marked L or coloured Red.
The Green/Yellow wire must be connected to the terminal marked E or coloured Green.

THIS EQUIPMENT MUST BE EARTHED

4 Low Voltage Circuits

This equipment must be installed in such a way that high currents present in any battery circuits or other output connections are prevented from flowing through the equipment mains lead. Such currents could damage the integrity of the protective earth connection.

The incoming mains earth connects only to the Power Charger enclosure. Both the earth and enclosure are isolated from all Power Charger output circuits, which helps the above requirement to be achieved.

The low output voltage from this unit does not present an electric shock hazard, but the high current available can be hazardous by virtue of its potential heating effect, particularly if batteries are also connected. The installation wiring must therefore be adequate for the currents involved, with suitable protection from potential fault conditions. Accidental bridging of high energy circuits by users (eg by jewellery) must be prevented.

INSTALLATION

Choosing a location

Choose a location where the unit will not be subjected to water spray, dust, or insect ingress. Filters are available for the fan air intake, and must be fitted if a low dust environment cannot be provided.

Locations subjected to high temperature or vibration must be avoided if performance and reliability are not to be impaired.

The power system may be mounted in any orientation, but ensure that there is sufficient clearance at each end of the unit to allow air to enter and leave without undue restriction (15 to 20mm clearance is sufficient). Any possibility of the air vents becoming accidentally obstructed should be prevented.

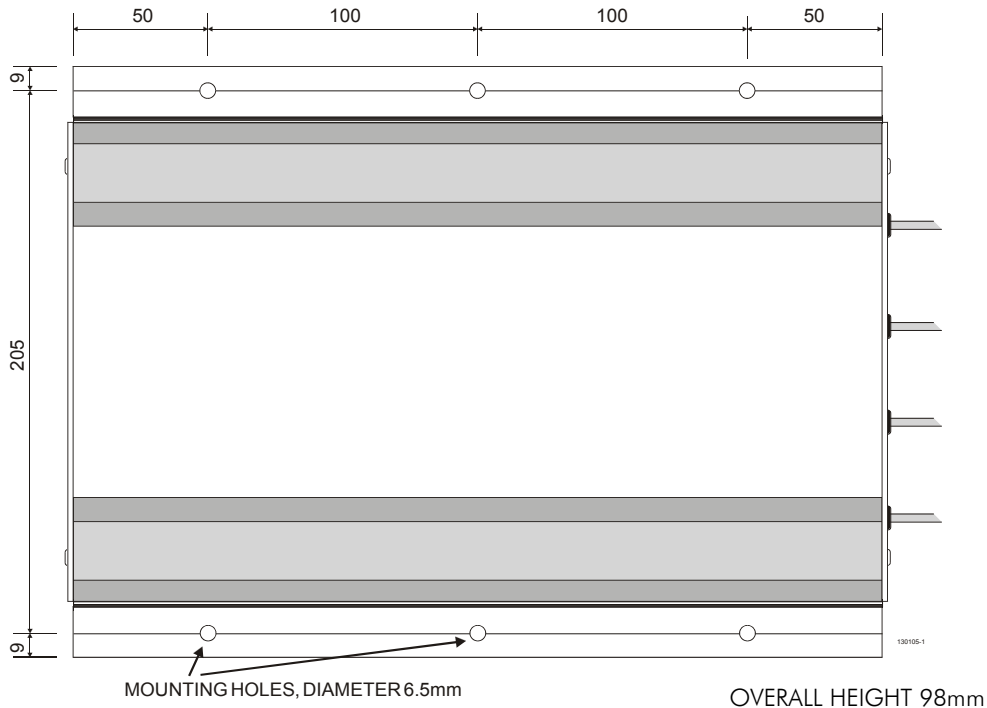
Ideally, the unit should be located in the same area as the load equipment or battery in order to minimise voltage drop in the DC output leads, and also to ensure that the Power Charger temperature compensating charge system samples air with the same temperature as the batteries. If a similar operating temperature environment cannot be provided, then a remote temperature sensor is available as an option.

A range of extended output leads is available for situations where longer leads are required.

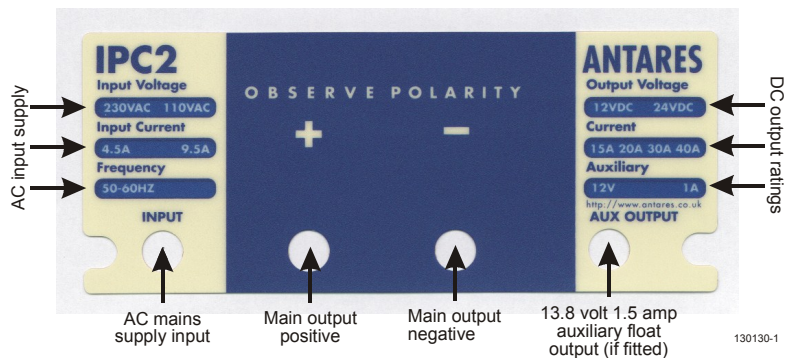
Integral flanges are provided for ease of mounting in situations where the unit needs to be secured to prevent movement, such as in vehicles. Dimensional details and locations of the mounting holes are below.

Mounting

Integral flanges are provided for ease of mounting in situations where the unit needs to be secured to prevent movement, such as in vehicles. Ideally, the mounting should make electrical contact with the vehicle bodywork. Mounting hole locations are shown below.



Connections



Mains Connection

This equipment is designed for connection to public low-voltage single phase AC mains supplies. It is built to insulation class 1, and so must be earthed. The input voltage range for each model is given in the product specification at the end of this manual.

The wires in the mains input lead are coloured in accordance with the following code:

- Blue: Neutral
- Brown: Live
- Green/Yellow: Earth

The unit is equipped with a fuse in the input Live circuit only, located in the fuseholder inside the rear panel. Rupture of this fuse is indicative of a unit fault; it is not a user serviceable item.

Earth leakage current is less than 1mA, which permits mains connection via an appropriate non-reversible

mains plug if desired. If a standard UK domestic plug is used, it should be fitted with a 10 amp fuse.

Local regulations, or regulations applicable to the intended application of this product, may override or impose additional requirements, which must be taken into account. Attention is drawn to the requirement for residual current circuit breakers in some vehicular applications.

Output Connections

WARNING: Explosive gasses may be generated by a battery on charge. To prevent ignition, allow time for gasses to disperse before attempting to connect this unit to the supply battery.

The Power Charger is normally supplied with two flying leads for the main power output. The heavy gauge red lead is the connection to system positive, and the black lead to negative. Positive, negative or isolated chassis circuits may be connected. Be sure to disconnect the input supply before making or removing the connections to the battery. If the auxiliary 13.8 volt float output is fitted, it is accessible at the 6.3mm blade terminal at the AUX OUTPUT. Its negative is shared with the main output negative.

In battery charging applications, both the positive and negative leads should ideally be routed directly to the battery terminals. This ensures that the Power Charger system responds only to the battery conditions, without being disturbed by other connected equipment. The unit is suitable for permanent connection to the battery.

If a temporary connection is made to an automobile battery whilst in situ, proceed as follows:

- Ensure that the AC input supply is disconnected.
- Then connect the appropriate output conductor to the battery terminal which does not connect to the vehicle chassis (normally positive on negative earth vehicles), then connect the other output conductor to the battery terminal which connects to the vehicle chassis.
- Connect the AC input supply.
- To stop charging, disconnect the AC input supply then remove the battery connections in reverse order.

The leads may be shortened if required.

If longer leads are required, the leads supplied can be replaced or lengthened, using suitable cable, up to a maximum extended length of around 5 metres. Suitable cable sets can be supplied by Antares if required. Note that Power Charger units can be supplied to order with customer specified mains or output cable lengths and terminations.

OPERATION

The Power Charger system is fully automatic in operation.

Three panel lamps show the operating condition of the unit:

CHARGE:	Green lamp - indicates that the battery is in the process of being fast charged.
INPUT:	Green lamp - This lamp illuminates once fast charging is complete, indicating that the battery is being held on float.
PROTECTION:	Red indicates that the unit has shut down due to an external fault or internal overheating. Recovery is automatic once the offending fault condition has been cleared.

The Power Charger may be permanently connected to the battery, and continuously powered if required. There is no reverse drain on the battery when mains is disconnected and the unit is comprehensively protected from abuse or fault conditions. In vehicular applications, the engine may be started and run with the Power Charger system connected.

SPECIFICATIONS

Model range & part numbers

90165 - 12 volt 40 amp, 230VAC
90166 - 12 volt 40 amp, 110VAC
90167 - 24 volt 20 amp, 230VAC
90168 - 24 volt 20 amp, 110VAC
90173 - 24 volt 15 amp, 230VAC
90174 - 24 volt 15 amp, 110VAC
90175 - 24 volt 15 amp, with auxiliary 12V, 230VAC
90176 - 24 volt 15 amp, with auxiliary 12V, 110VAC
90177 - 24 volt 20 amp, with auxiliary 12V, 230VAC
90178 - 24 volt 20 amp, with auxiliary 12V, 110VAC
90181 - 12 volt 30 amp, 230VAC
90182 - 12 volt 30 amp, 110VAC

Input specifications

Input voltage range:

230 volt models: 200 to 264VAC continuous, 275VAC intermittent.

110 volt models: 95 to 121VAC continuous, 126VAC intermittent.

Input frequency range: 45 to 66Hz

Inrush current:

230 volt models: 85 amps peak, 1.2 milliseconds
total inrush 0.1 amp-seconds

110 volt models: 39 amps peak, 5.2 milliseconds
total inrush 0.2 amp-seconds

Insulation class I; protective earth required, supplied via mains input cable.

Output specifications

Output voltage:

12 volt models:

Float voltage 13.7VDC at 20° C

Boost voltage 14.2VDC at 20° C

Temperature coefficient -24mV/degC

24 volt models:

Float voltage 27.4VDC at 20° C

Boost voltage 28.6VDC at 20° C

Temperature coefficient -47mV/degC

Aux 12volt output:

Float voltage 13.8VDC

Charging current 1.5 amps (typical)

Battery sensing threshold

12 volt models: 4.0 volts

24 volt models: 4.0 volts

The battery voltage must be higher than this threshold for charging to commence.

Climatic specifications:

Operating temperature range:

Full output power: -5°C to +30°C

Reduced output power +30° to +45°C

(IPC2 is self limiting)