

Compact Power Inverters 12V & 24V VERSIONS

**ANTARES**  
engineering with answers

## Instructions for installation and use

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FM 37786  
ISO 9001:2000

Antares (Europe) Limited  
Chiltern Hill . Chalfont St Peter  
Gerrards Cross . Bucks . SL9 9UQ . UK  
Tel: +44 (0) 1753 890888  
Fax: +44 (0) 1753 891260-  
email: [support@antares.co.uk](mailto:support@antares.co.uk)  
web site: <http://www.antares.co.uk>

## **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

### **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 (Europe) Limited for any information required for compliance with the legislation.

## **UNPACKING**

### **Pack contents:**

- 1 Antares Compact Power Inverter
- 1 Instructions for Installation and Use

## **APPLICATION**

The Compact Power Inverter (CPI) is suitable for a powering a wide range of electrical appliances and equipment on vehicles or in fixed locations. High surge capacity, coupled with fully regulated output voltage and crystal controlled output frequency allow equipment, traditionally difficult to operate from inverters to be successfully run, without any reduction in performance. Such equipment includes microwave cookers, fluorescent and tungsten lighting systems, refrigeration plant, audio-visual entertainment products, computers and computer peripherals. Note that power factor correction capacitors fitted to some fluorescent lamps serve no useful purpose when run from the CPI, and can be advantageously disconnected to improve the inverter's efficiency.

It is important that the inverter and its supporting battery system are properly sized for the task in hand. The start up power demanded by some appliances can be troublesome if not taken into account. Several tens of kilowatts surge power can be drawn from the commercial mains supply, but this is not always practical with an inverter when using a battery as the power source.

## **IMPORTANT SAFETY INFORMATION**

1. Please read and observe the installation instructions, which contain further safety information.
2. DC Input - It is essential that correctly sized input leads are fitted. Some guidance is given on page 4. The unit rating plate provides information on the DC input current.
3. AC Output - The AC output from the inverter must be treated as equivalent to normal mains, and wired in accordance with the appropriate regulations for mains circuits.
4. Protective Earthing Arrangements  
In order to reduce the AC output terminal touch voltage, the inverter output is centre tap referenced to the output earth conductor. The earth conductor is in turn, internally connected to the inverter case metalwork. Note that the CPI embodies an electronic residual current trip for additional user protection.

## 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 inverter 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 obstructed accidentally should be prevented. Ideally, the unit should be located in the same area as the battery in order to minimise voltage drop in the DC input leads.

### Connections

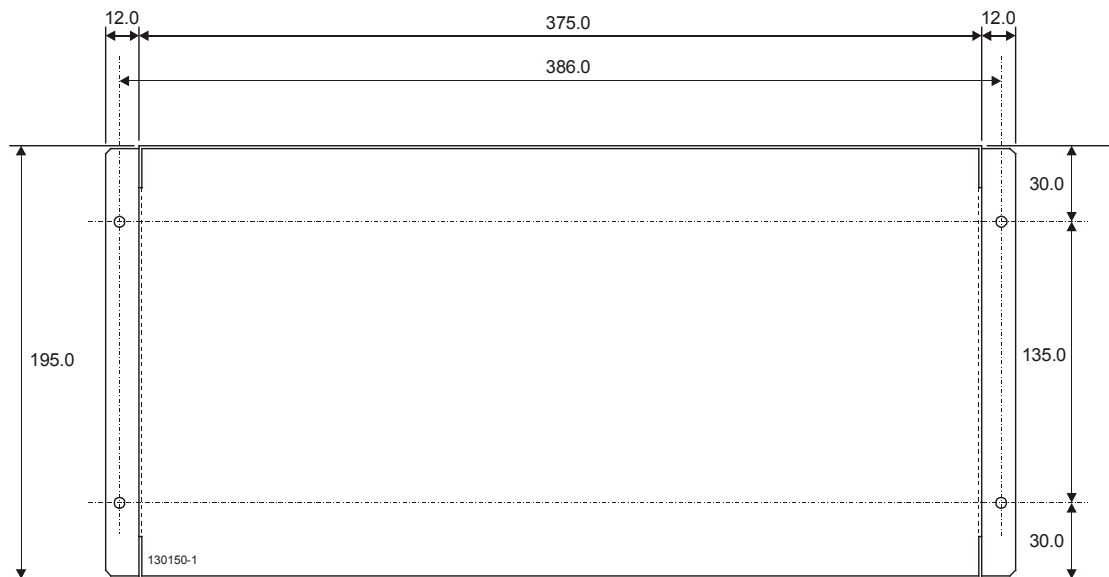
**DC INPUT** - Two DC input studs, size M8, are provided on the rear of the unit with an adjacent label showing polarity and nominal input voltage. Cables should be run directly from the inverter studs to the DC power source; normally a battery. In order to minimise feed voltage drop, it is essential to use cables capable of handling the high current drawn (See rating plate). If the voltage drop is excessive, the inverter low voltage cut-off may operate prematurely. The table on the next page gives recommended minimum cable sizes for typical installations, based on a 2% voltage drop at full load:

**AC OUTPUT** - Two sockets are provided for connection of the load equipment. The output may be routed directly to the equipment to be operated. External protection devices are not necessary, as the inverter electronically protects against overload and earth fault conditions.

Model	Length of cable run from inverter to battery				
	1m	2m	3m	5m	10m
90041	70mm <sup>2</sup>	70mm <sup>2</sup>	2x50mm <sup>2</sup>	2x70mm <sup>2</sup>	4x70mm <sup>2</sup>
90042					
90048					
90049					
90044	25mm <sup>2</sup>	25mm <sup>2</sup>	35mm <sup>2</sup>	50mm <sup>2</sup>	2x50mm <sup>2</sup>
90045					
90051					
90052					

### 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 in the centre pages of this manual.



## OPERATION

The Compact Power Inverter is fully automatic in operation making it very simple to operate.

The On/Off switch is used to turn the inverter on and off, and acts to fully isolate the unit from the DC input. External contactors are not necessary. NB: A remote switch connection is available as an option, and should be specified when ordering.

Three panel lamps show the operating condition of the unit:

The green OUTPUT lamp illuminates when power is available from the output sockets.

The red OVERLOAD lamp illuminates if the inverter's load is in excess of its rating, or if overheating occurs. The lamp will 'cycle' if a marginal overload condition exists, as the unit attempts to start the load. The lamp will remain on if a gross overload condition exists such as a short circuit and the power will be cut. Note that in some instances overload can occur due to an extremely poor power factor load, even though the power rating appears sufficient. Recovery is automatic, once the offending fault condition is removed.

The red PROTECTION lamp illuminates together with the OVERLOAD lamp if an external fault condition exists, putting the inverter into protection mode. Input overvoltage or undervoltage, or activation of the inverter's earth leakage trip will cause this to happen. The earth leakage trip can be reset by switching off, then switching back on again.

The Compact Power Inverter may be connected permanently to the battery. The unit is comprehensively protected from abuse or fault conditions. In vehicular applications, the engine may be started and run with the Compact Power Inverter connected.

The Compact Power Inverter provides fully regulated Quasi Sine wave AC output.

## TROUBLESHOOTING

The Antares inverter is an advanced unit, designed to closely mimic the mains AC supply. It does however have some limitations which in some circumstances may cause loads to operate incorrectly. The front panel lamps; OUTPUT, OVERLOAD, PROTECTION may be used to aid diagnosis of operational problems. The function of these lamps is described above. Problems can arise with high start surge loads, such as electric motors, because of the inability of the battery system to provide the required surge power. This could be due to battery sizing, or low state of charge. In this situation, the overload & protection lamps illuminate as the battery voltage collapses. The inverter then shuts off momentarily allowing the battery to recover, the lamps extinguish, and the cycle repeats. Larger batteries or an improved charging regime are required to alleviate this problem. A similar problem can arise if the voltage drop in the DC input leads is excessive, causing the inverter undervoltage shut off to operate. Whatever the problem, Antares technical support will be pleased to help diagnose & resolve any problems that may arise. Please call if help is required.

## OUTLINE SPECIFICATIONS

See ratings plate for your particular model;

Output Power:	800W, 2200W (800VA, 2200VA)
Frequency:	50Hz, 60Hz, or 400Hz
Output Voltage:	230VAC, 110VAC +/- 5% over range
Output Type:	Regulated Quasi Sine
Output Sockets:	BS 4343 standard, BS 1363 optional
Environment:	-10 to +45°C, 0 to 95% RH
Protection:	Output overload protection Input overvoltage protection Input undervoltage protection Input reverse polarity protection Thermal trip Earth Leakage trip (Cycle on-off switch to reset) <i>With the exception of the earth leakage trip, all protection mechanisms automatically recover when the offending condition is removed.</i>
Features:	Speed-controlled fan cooling Soft Start Internal Battery Isolator Remote control (Optional)

## WARRANTY

The Compact Power Inverter comes with a full parts and labour 'return to base' warranty, held for two years from the date of invoice from Antares (Europe) Limited. In the event of any problem, please telephone first in order to confirm that the problem lies with the unit, and obtain a returns authorisation reference. Units will normally be repaired or replaced, and shipped within 24 hours of receipt, subject to availability of parts. Full details of the warranty provisions are contained in our 'Terms & Conditions of Sale'

## SERVICE

Units not covered by warranty or maintenance contracts may be returned for repair, for which a charge will be made. In the event of any problem, please telephone first in order to confirm that the problem lies with the unit, and obtain a returns authorisation reference. Units will normally be repaired or replaced with a unit of similar age and condition, and shipped back within 24 hours of receipt, subject to availability of parts. Repaired units carry a further 1 year warranty on parts and labour.

Alternatively, spares may be purchased for repair by customers, but no warranty can be given in respect of the consequences of incorrect diagnoses.

This manual is applicable to the following products:

CODE	DESCRIPTION	RATING
12V Versions		
90041	Inverter	12V/1600W/230VAC
90048	Inverter	12V/1600W/110VAC
90042	Inverter	12V/2200W/230VAC
90049	Inverter	12V/2200W/110VAC
24V Versions		
90044	Inverter	24V/1600W/230VAC
90051	Inverter	24V/1600W/110VAC
90045	Inverter	24V/2200W/230VAC
90052	Inverter	24V/2200W/110VAC

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Chiltern Hill, Chalfont St Peter, Gerrards Cross, Bucks. SL9 9UQ  
Tel: 01753 890888 Fax: 01753 891260  
e-mail: [info@antares.co.uk](mailto:info@antares.co.uk) web site: <http://www.antares.co.uk>

Antares (Europe) Limited  
Chiltern Hill  
Chalfont St Peter  
Gerrards Cross  
Buckinghamshire  
SL9 9UQ UK

www.antares.co.uk  
Tel: +44 (0) 1753 890888  
Fax: +44 (0) 1753 891260

☐ PRODUCT RETURNS FORM

☐ ADVANCE REPLACEMENT RETURNS FORM

(TICK BOX ABOVE TO INDICATE TYPE OF RETURN)

Date

PLEASE USE THIS FORM TO ACCOMPANY RETURNS TO ANTARES (EUROPE) LIMITED. This will enable us to expedite your repair/return more efficiently. If you have your own return form, please attach it to this form. After receipt of your return we will either repair or replace the unit if within our warranty. If outside our warranty, we will provide a written quotation for repair/replacement. Please note that in the case of a 'no fault found' or the repair does not proceed, then a charge of £25 ex VAT and return carriage (if required) is payable. Goods arriving without suitable paperwork will take longer to process.

Company Name

Contact

Delivery Address (for return)

Part Number

Serial Number

Product Description

Vehicle Type

Registration/your reference

Contact Fax

Contact Tel

Reason for return

- ( ) Advance replacement returned for credit against invoice ..... RA .....
- ( ) Incorrect supply
- ( ) Please repair under warranty (Invoice date ...../...../.....)
- ( ) Please quote for repair
- ( ) Please repair – purchase order attached ( )
- ( ) Not required (note there may be a restocking charge)
- ( ) Unit for reconditioning (advance replacement RA# .....

Description of observed fault and additional relevant information

continued on separate page ( )