Compact Sine Inverter

Instructions for installation & use

Applies to the following models:

Output power:	**120watt, 200 watt, & 350 watts**
Output voltage:	**110VAC and 230VAC output, 50Hz & 60Hz**
Output frequency:	**50Hz & 60Hz**
Input voltage:	**12VDC & 24VDC input**

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High surge & high inrush loads

1. Important Safety Information

Please read and observe these installation instructions, which contain further safety information.

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.

1.1 General safety precautions

- Do not expose the inverter to water, mist, snow, road spray, dust, or other contaminants.
- Do not cover or obstruct the ventilation slots; leave at least 50mm clearance
- Do not install the inverter in a sealed compartment as overheating may occur.
- To avoid the risk of fire and electric shock, ensure that all wiring is in good condition and adequately sized to carry the maximum operating currents. Do not operate the Inverter with damaged or substandard wiring.
- In the event of a catastrophic failure, there are some components in the inverter can cause momentary arcs and sparks. To prevent from fire or explosion, do not put batteries, flammable materials, or anything potentially flammable in the immediate vicinity of the inverter.

1.2 Precautions when working with batteries

- If battery acid contacts skin or clothing, wash it out with soap and water immediately.
- If battery acid contacts your eyes, flush with cold running water for at least 20 minutes and seek medical attention immediately.
- Never smoke or expose a flame in the vicinity of the battery or the engine.
- Take care not to drop metal tools onto the battery. The resulting spark or battery short-circuit may cause an explosion.
- Remove personal metal items such as rings, bracelets, necklaces, and watches when operating with lead-acid batteries. An accidental short circuit can melt metal items and cause burns.

DC power supply cables must be sized to carry the maximum current that the inverter can draw from the DC supply and should be fused at the power source, normally the battery. Further guidance is contained in this manual.

The inverter's AC output is potentially hazardous & protection measures may need to be incorporated in the AC power distribution arrangement. Further guidance is contained in this manual.

2. Features

- Pure sine wave output (THD < 3%)
- Output frequency 50Hz or 60Hz, switch selectable
- Input & output fully isolated
- High efficiency 84~94%
- Drives poor power factor loads
- Starts high inrush loads
- Bi-colour status lamp
- Speed controlled cooling fan (200W & 350W models)
- Remote control input
- Protected from input low, input high, overload, short circuit, & overheating
- Low battery alarm

3. Installation

Choosing a location

Choose a location where the unit will not be subjected to water spray, dust, or insect ingress. 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 around the unit to allow air to circulate without undue restriction. Ideally, the unit should be located close to, but not immediately adjacent to, the battery. This is to minimise voltage drop in the DC input leads.

Connections

INCORRECT CONNECTION MAY CAUSE DAMAGE
PLEASE FOLLOW THESE INSTRUCTIONS CAREFULLY

Before proceeding, ensure that the inverter rear panel switch is in the *Off* position.

EARTHING - The “chassis ground” terminal on the inverter rear panel must be wired to the vehicle chassis (or protective earth if used in a building); the minimum wire size is 6mm^2.

DC INPUT – A flying lead is provided on the rear of the unit for connection to the DC supply. The ends should be connected in the following sequence:

1. Connect the –ve cable to battery –ve.
2. Connect the +ve cable to battery +ve or to the battery fuse +ve. On first contact, this connection will cause a spark, which is normal. Ensure any battery gases are dispersed before making this connection.

Connections should be made directly from the inverter to the batteries, with a suitable fuse at, or near to the battery positive.

Recommended battery supply input fuse:

Model	Input fuse
12 volt, 120 watt	20 amp
24 volt, 120 watt	20 amp
12 volt 200 watt	30 amp
24 volt 200 watt	20 amp
12 volt 350 watt	50 amp
24 volt 350 watt	30 amp

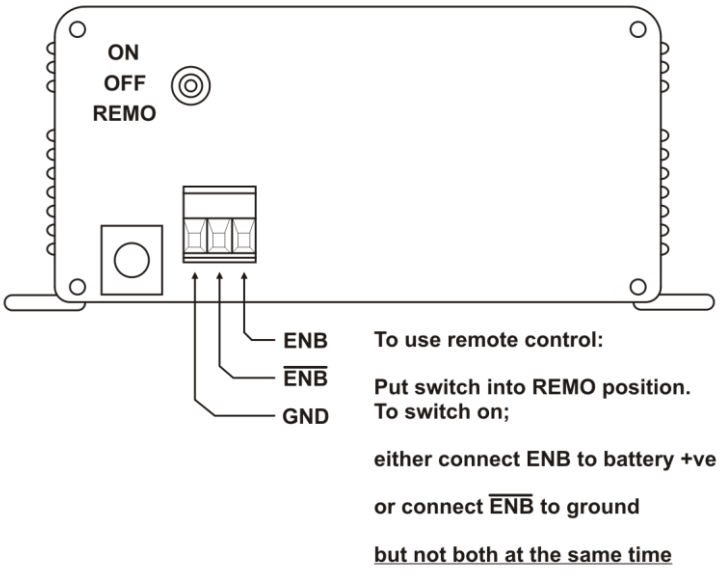
50 amp battery stud fuses are available from Antares, please enquire.

REMOTE CONTROL:

Screw terminals on the rear panel allow a contact to ground, or a connection to battery voltage to be used to switch the inverter on (this is active when the rear panel switch is set to REMO, i.e. remote).

The connections are shown on the next page.

Remote control connections:



AC OUTPUT - The AC output available at the socket on the front panel may be routed to the point of use using normal mains cabling, extension leads or multiple outlet socket strips. You will need to decide on the need for a residual current detection device at the output, & whether to earth the inverter's neutral or to leave it floating (as supplied).

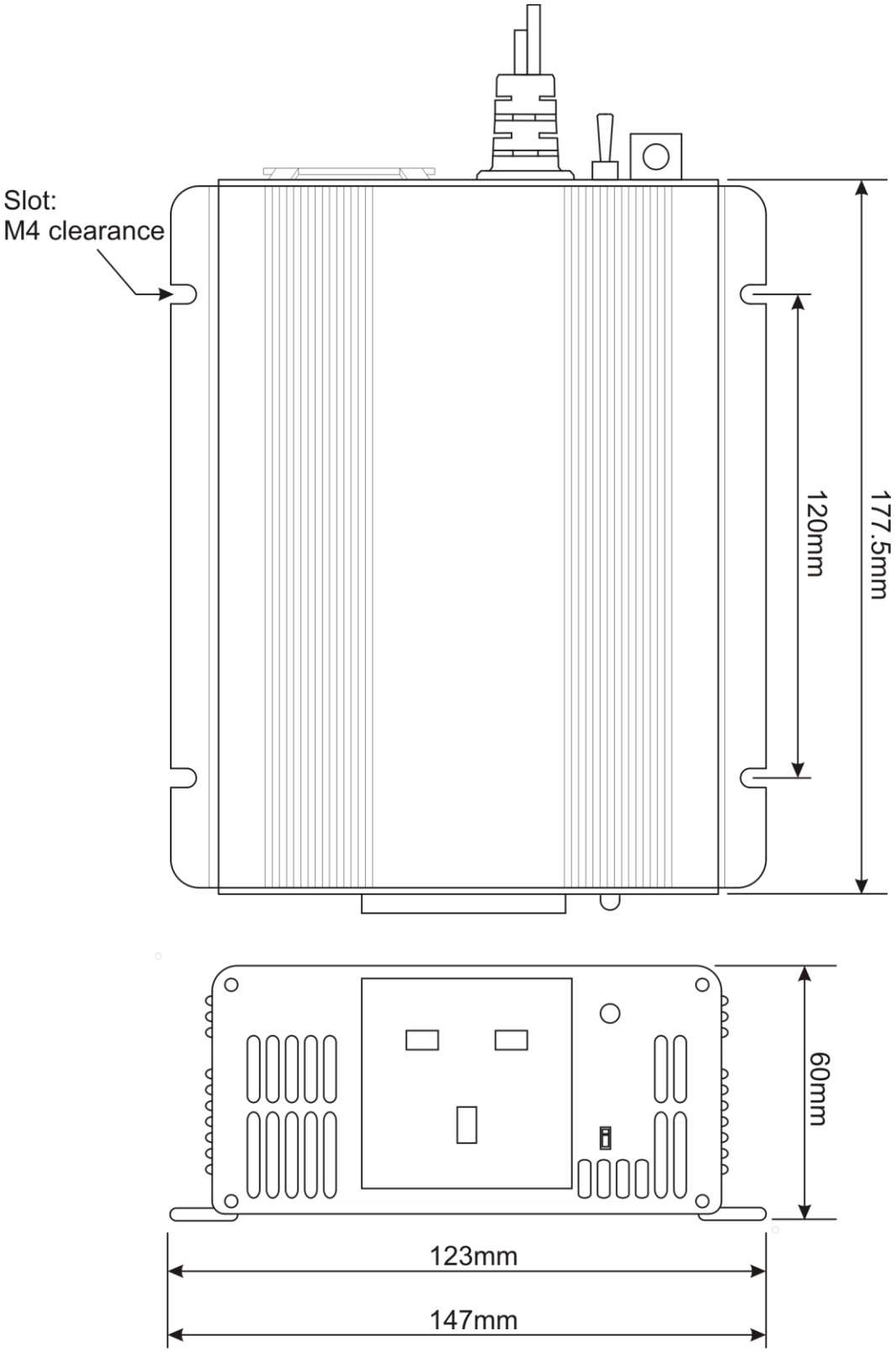
Note: If you have purchased a 110VAC output inverter with US style (NEMA) socket(s), it is normally supplied with an earthed neutral. Please call for guidance if you are unsure of the implications, or use the URL & link above to view the guidance document.

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. The "chassis ground" terminal must be wired to the vehicle chassis or to protective earth if used in a building; see "EARTHING" above.

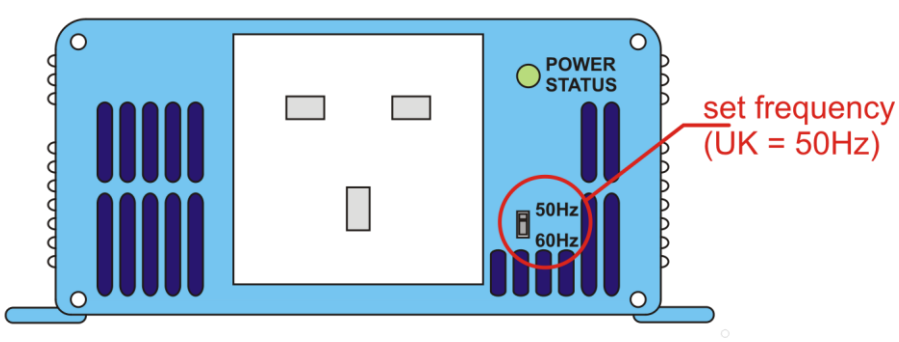
Mounting hole dimensions are shown on the next page.

Mounting hole locations are shown below;



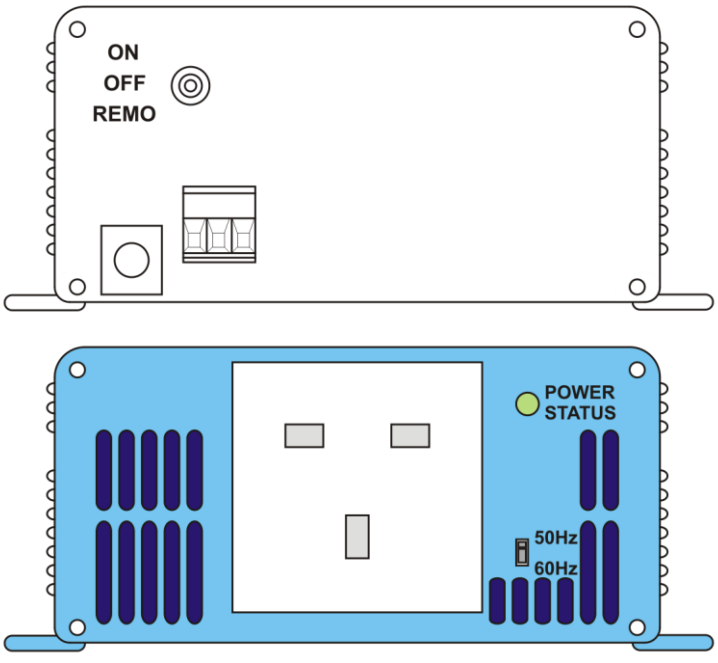
Setup

The DIP switch on the unit front panel sets the AC output frequency.



4. Operation

The inverter on/off switch is located on the rear panel. If the remote control is used, then set this switch to the REMO position.



FRONT PANEL LAMP

The front panel POWER STATUS lamp shows the inverter status:

Green: inverter on & running normally
Red: fault

5. Specifications

120 watt models:

Parameter	12VDC 110VAC	24VDC 110VAC	12VDC 230VAC	24VDC 230VAC
Continuous output	120 watts			
Maximum output	150 watts			
Maximum surge load	240 watts			
Frequency stability	50Hz or 60Hz, ±0.05%			
Waveform	Pure sine wave, THD less than 3% on resistive load			
Efficiency, up to:	89%	91%	92%	93%
Safety compliance	UL458		CE: EN60950-1	
EMC compliance	FCC class A		CE e13	
Operating temperature	0 to 40°C			
Mass	1kg			

200 watt models

Parameter	12VDC 110VAC	24VDC 110VAC	12VDC 230VAC	24VDC 230VAC
Continuous output	200 watts			
Maximum output	230 watts			
Maximum surge load	400 watts			
Frequency stability	50Hz or 60Hz, ±0.05%			
Waveform	Pure sine wave, THD less than 3% on resistive load			
Efficiency, up to:	87%	90%	90%	93%
Safety compliance	UL458		CE: EN60950-1	
EMC compliance	FCC class A		CE e13	
Operating temperature	0 to 40°C, see also protection thresholds above			
Mass	1.2kg			

350 watt models

Parameter	12VDC 110VAC	24VDC 110VAC	12VDC 230VAC	24VDC 230VAC
Continuous output	350 watts			
Maximum output	400 watts			
Maximum surge load	700 watts			
Frequency stability	50Hz or 60Hz, ±0.05%			
Waveform	Pure sine wave, THD less than 3% on resistive load			
Efficiency, up to:	84%	86%	86%	89%
Safety compliance	UL458		CE: EN60950-1	
EMC compliance	FCC class A		CE e13	
Operating temperature	0 to 40°C, see also protection thresholds above			
Mass	1.4kg			

Notes on surge load ratings

The inverter will attempt to start a load which attempts to draw power up to the inverter's surge rating. A higher load may cause the inverter to shut down.

During an attempted surge load start, the inverter will automatically reduce its output voltage to limit the delivered power to the inverter's maximum rating. In such applications, you should ensure that any other connected AC loads can cope with this supply dip. If the surge load demand does not fall within the inverter's ratings within a few seconds, then the inverter may shut down.

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