

Change®

POWER



600W POWER INVERTER

MODEL NO: CI600

PART NO: 6013051

USER INSTRUCTIONS



ORIGINAL INSTRUCTIONS

DL06/23

INTRODUCTION

Thank you for purchasing this CLARKE product. Before attempting to use this product it is essential that you read this manual thoroughly and carefully follow all instructions given. In doing so you will ensure the safety of yourself and that of others around you and you can also look forward to the inverter giving you long and satisfactory service. When unpacking, any damage or deficiency should be reported to your CLARKE dealer immediately.

PRINCIPLES OF THE INVERTER

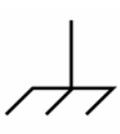
The inverter is a power conversion device which converts the DC power of the battery into AC power and supplies power to small electrical appliances and digital products. It gives a continuous 230V, 50Hz power supply via a standard 3-pin socket.

Household appliances include TVs, camcorders, laptops, lamps and power tool chargers etc, depending upon the rating of the inverter.

It is designed with five protection functions for Input low voltage, Input over voltage, Overload, Over temperature and Output short circuit. These five functions can protect the electrical equipment and the circuit of the vehicle.

This CLARKE product has been designed to give long and trouble free service. If, however, having followed the instructions in this booklet carefully, you encounter problems, take the unit to your local CLARKE dealer.

SAFETY SYMBOLS

	Read this instruction booklet carefully before use.		Do not expose to rain.
	Risk of Electrical Shock		Recycle unwanted materials under WEEE Directive
	Use Indoors Only		Connect Earth Terminal to Ground

The above symbols may be displayed on the machine.

GENERAL SAFETY PRECAUTIONS

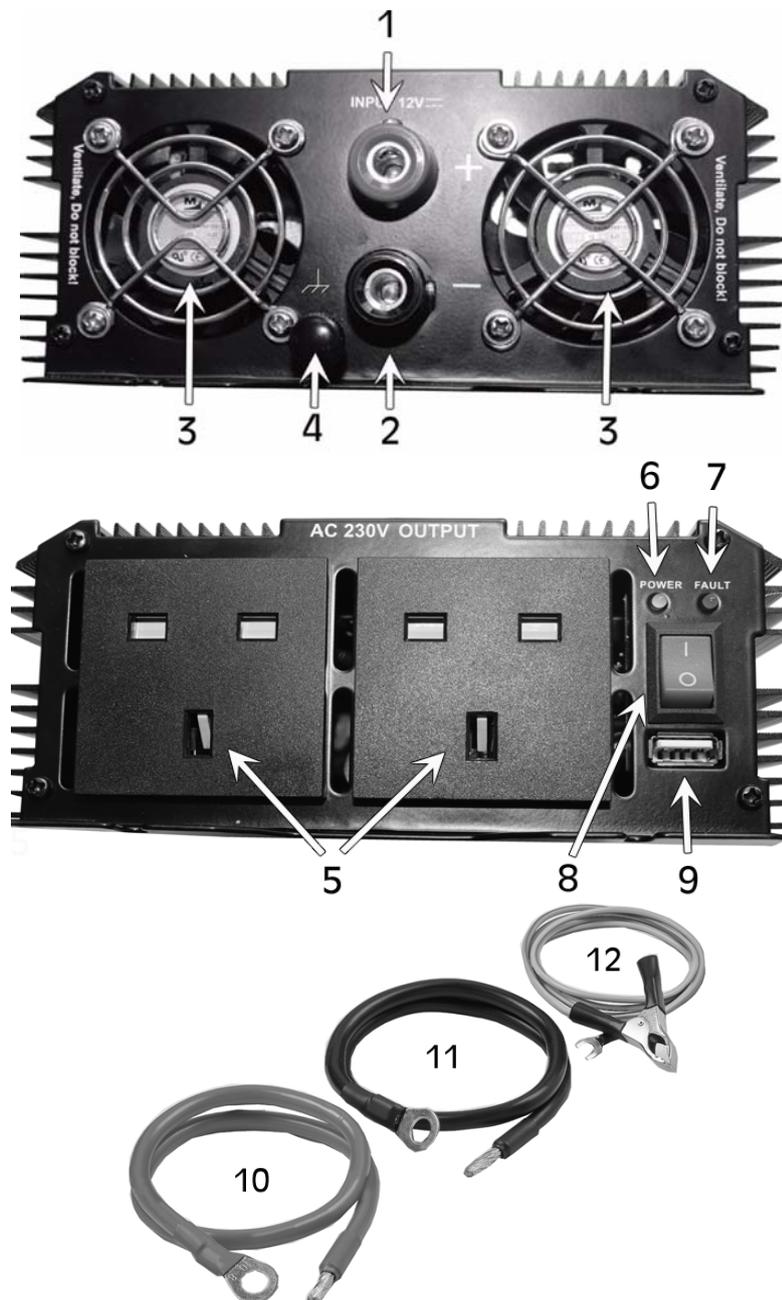
1. **ALWAYS** stay alert, watch what you are doing and use common sense when using this product. **DO NOT** use the product when you are tired or under the influence of medication, drugs or alcohol. A moment of inattention can result in personal injury.
2. **ALWAYS** thoroughly familiarise yourself with this product & its operation, and always read and understand the instructions and warnings in this manual before using the equipment.
3. **NEVER** dismantle the unit. **ALWAYS** return this product to the dealer if any problem is found.
4. Keep out of the reach of children.
5. **ALWAYS** have the unit repaired by your local CLARKE dealer, using only identical replacement parts. This will ensure the safety of the unit is maintained. The use of non standard parts could be hazardous.
6. **DO NOT** use with positive earth systems (most modern vehicles, lorries, boats etc, are negative earth). Reverse polarity connection will result in a blown fuse and may cause permanent damage to the inverter.
7. **DO NOT** use in a wet environment or with wet hands.
8. **DO NOT** install inside an engine compartment - the inverter must always be installed in a well ventilated area.
9. **DO NOT** use in potentially explosive atmospheres such as garage forecourts etc.
10. **NEVER** connect to an AC supply.
11. **ALWAYS** disconnect the appliance from the inverter before making adjustments to the appliance being run.
12. The outer shell may be hot after long periods of use so take care when handling.
13. This inverter is **NOT** tested for use with medical devices.

PRODUCT SPECIFICATIONS

Model	CI600
Unpacked Weight	1.35kg
Dimensions (L x W x H) (mm)	207 x 165 x 69
Nominal DC Input	13V (+/- 0.2V)
Input working DC voltage	11-15V
Input full load current	63A
Output voltage	230V+/-10% 50Hz, 5V DC(USB)
Output Power	600W
Peak output power (0.1 sec)	1200W
Output wave	Modified sine wave
Max efficiency	85%
Protection devices	Thermal overload, Low voltage, Over voltage & short circuit
Operating temperature	5-35°C

NOTE: The details and specifications contained herein, are correct at the time of going to print. However, CLARKE International reserve the right to change specifications at any time without prior notice.

PRODUCT FEATURES



1	DC Input Positive + Terminal (Red)	7	Fault Light (Red)
2	DC Input Negative - Terminal (Black)	8	On/Off Switch
3	Cooling Fan (Thermally Controlled)	9	USB Port
4	Earthing Terminal	10	Positive + (Red) Connection Cable
5	AC 230V Output Socket	11	Negative - (Black) Connection Cable
6	Power Light (Green)	12	Earth Terminal Connection Cable

GENERAL OPERATION

CONTROLS, INDICATORS AND CONNECTORS

An ON/OFF switch turns the inverter on and off and will reset the inverter internal circuits.

One end panel provides DC connections for battery clamps and an earthing terminal. Two 230V AC 3 pin plug sockets and a USB connector is provided on the other end together with two LEDs (green and red) and the On/Off switch.

- The GREEN LED illuminates when the inverter is connected, switched ON, and working correctly.
- The RED LED, when illuminated, indicates that the inverter is in a fault condition and has shutdown from overload, excess voltage or overheating, see page 12 for more details.

SUITABLE POWER SOURCES

In order to operate the inverter and supply power to an appliance, a suitable DC power supply is required. This can be a vehicle or caravan battery, portable power pack, or an independent 12 Volt battery. For most applications, a 'deep cycle' battery is recommended for best performance.

The size of the battery used will determine how long the inverter will supply power to an appliance and how well the inverter will perform. Most batteries are marked with their size in Amp Hours (A/h).

Because 12 Volt inverters are capable of drawing high currents the inverter should only be connected to a suitable size battery. Connection to an undersized battery could damage the battery and will result in the inverter shutting down within a short period due to low battery voltage. The amount of power drawn from the battery is proportional to the inverter load.

To avoid excessively discharging the vehicle battery, it is advisable to let your engine run for a while after a period of using the inverter. This allows the vehicle battery to recharge.

ALWAYS remember to disconnect the AC inverter before using a battery charger to recharge your battery. Failure to disconnect the inverter prior to connecting a charger may result in an input spike which will damage the inverter. **CONNECTING THE INVERTERS INPUT TO A BATTERY CHARGER WILL VOID THE WARRANTY.**

CONNECTION AND POSITIONING

Connecting the inverter in the wrong way may damage the inverter as well as the electrical equipment. Please follow the steps below to avoid connection errors.

CONNECTING TO A BATTERY

1. Insert the exposed wire end of the Positive (Red, +) connection cable into the DC input Positive (Red, +) terminal on the inverter and tighten the holding screw.
2. Insert the exposed wire end of the Negative (Black, -) connection cable into the DC input Negative (Black, -) terminal on the inverter and tighten the holding screw.
3. Connect the earthing cable to the earthing terminal and tighten the screw.
4. Connect the earthing cable crocodile clip to a suitable earthing point in the engine bay or earthing rod.
5. Before connecting the connection cables to the battery, make sure the inverter On/Off switch is in the Off position.
6. Connect the ring terminal of the Positive (Red, +) connection cable to the Positive (Red, +) terminal of the battery.
7. Connect the ring terminal of the Negative (Black, -) connection cable to the Negative (Black, -) terminal of the battery.

NOTE: DO NOT reverse these connections as this may damage the inverter.

8. Turn on the inverter using the On/Off switch, this will illuminate the green LED light.
9. Insert the plug of the electric equipment into one of the AC sockets of the inverter and switch on the equipment.

POSITIONING OF THE INVERTER

The inverter should always be placed on a flat, level surface and should only be used in locations that meet the following criteria:

DRY - DO NOT allow water/other liquids to come into contact with the inverter.

COOL - DO NOT place the inverter on or near a heating vent or any piece of equipment which is generating heat. Keep the inverter away from direct sunlight.

VENTILATED - Keep the area surrounding the inverter clear to ensure free air circulation around the unit. **DO NOT** block the cooling fans. **DO NOT** place

items on or over the inverter during operation. The unit will shut down if the internal temperature exceeds 60°C. The unit will restart after it cools down.

SAFE - **DO NOT** use the inverter near flammable materials or in locations that may accumulate flammable vapours.

CAUTION: THE INVERTER MUST BE CONNECTED ONLY TO BATTERIES WITH A NOMINAL OUTPUT VOLTAGE OF 12-VOLTS. THE UNIT WILL NOT OPERATE FROM A 6-VOLT BATTERY AND WILL SUSTAIN DAMAGE IF CONNECTED TO A 24-VOLT BATTERY.

CAUTION: DO NOT USE WITH POSITIVE EARTH ELECTRICAL SYSTEMS (MODERN VEHICLES AND LORRIES ARE NORMALLY NEGATIVE EARTH).

EXTENSION CABLES

AVOID using an extension cable between the DC power source (battery) and the inverter DC input. Using an extension this way would create a voltage drop causing reduced efficiency and output. Any extension cable can be used between the inverter AC output and the AC appliance but greater lengths will result in a noticeable drop in power.

Any cable used between the appliance and the inverter must be of suitable diameter and length, otherwise power loss or reduced operating time may occur.

Marine installations are also subjected to vibration and stresses that exceed those of other mobile installations. Therefore ensure all connections are tight, water resistant and have suitable strain relief for DC cables etc. Cable installation must be the correct type for the environment.

Position the inverter as far away as possible from any television, the antenna and the antenna cable.

RECHARGABLE DEVICES

Most of these devices use a separate charger or transformer that is plugged into an AC socket. The inverter is capable of running most chargers and transformers.

USING THE USB PORT

The USB port is only for charging and does not have any data exchange function.

Before charging, check carefully that the charging current of the appliance is lower than the USB current. If it is higher than the USB current, do not use or it could otherwise it may damage the USB port.

Some appliances must be charged with original charger, not with the USB port.

If the inverter makes a beeping sound, switch off the appliance, unplug the inverter and restart the vehicle engine. The beeping sound is simply the low

battery warning which indicates that the voltage of your vehicle battery is getting low. The inverter will shut down automatically if you do not restart the engine and continue the use of the inverter. This will leave the vehicle battery at about 10.5 VDC, enabling you to start your engine and resume operation of the inverter.

To avoid excessively discharging the vehicle battery, it is advisable to let your engine run for a while after a period of using the inverter. This allows the vehicle battery to recharge.

Always remember to disconnect the AC inverter before using a battery charger to recharge your battery. Failure to disconnect the inverter prior to connecting a charger may result in an input spike which will damage the inverter. **CONNECTING THE INVERTERS INPUT TO A BATTERY CHARGER WILL VOID THE WARRANTY.**

SCOPE OF THE INVERTER

1. Only use the inverter for class II appliances.
2. **DO NOT** use with appliances that exceed the rated power of the inverter.
3. **DO NOT** use with capacitive or perceptual load appliances such as air condition, high power electric drill, fridge, microwave oven, blender.
4. It is **NOT RECOMMENDED** using the inverter with appliances which have strict requirements on power supply, such as precise measuring equipment, as it may effect the measuring data.
5. The USB port is only for charging, it has no data exchange function.
6. Before using the USB port, check carefully if the charging current of the appliance is lower than the USB current, if it is higher than the USB current, then **DO NOT** use, as it may damage the USB port.
7. Some appliances must charge with their original charger. If this is the case, **DO NOT** use the USB port and charge the appliance via the 230V AC outlet.

SYSTEM PROTECTION

The inverter has;

- Input low voltage protection,
- Input over voltage protection
- Over load protection,
- Over temperature protection and
- Short circuit protection.

If these are activated the inverter will shut down.

After troubleshooting, the inverter will work normally again.

The inverter will switch off automatically if the total wattage of the connected appliance(s) exceeds the inverter output capacity. This will also happen if the temperature of the inverter housing reaches proximately 60°C due to prolonged use.

The protection circuit will also switch off the output in the case of short-circuit or overload. If this should happen:

1. Switch off the inverter.
2. Disconnect any appliances.
3. Check all connections.

The inverter can be used again when any faults have been rectified.

When the unit is in continuous operation, the AC output may suddenly stop although there remains a good supply from the battery. This may be caused by overheating and the inverter should be switched off until it cools down.

MEASURING AC VOLTAGE

The output wave of the AC inverter is a modified sine-wave. If you choose to measure the AC output voltage, you must use an authentic RMS volt meter.

Using any other type of voltage measuring device will result in an AC voltage reading that is up to 20 to 30 volts lower than the rated value. The reading will only be accurate when using an authentic RMS voltmeter.

TYPICAL PROBLEMS DURING OPERATION

EXCESSIVE START-UP LOAD

An appliance can be trying to draw too much power as displayed when a motorised power tool does not operate at correct speed.

PURELY INDUCTIVE LOAD

Make the load not purely inductive. Use an adaptor to operate a lamp at the same time as the motorised appliance, ensuring the combined load does not exceed that of the inverter.

SNOW IN TV PICTURE, BUZZ IN SPEAKER

This can be caused by RF interference. Keep the inverter and any antenna well away from each other. Use a shielded antenna cable.

TROUBLESHOOTING

Protection	Condition			Re-start method
	LED light	Alarm	AC output	
Input low voltage alarm	Green on/red off	Alarm	Yes	When the battery voltage returns to the related voltage, alarm stops automatically.
Input Low-Voltage shut down	Green on Red on	Alarm	No	When the battery voltage returns to the related voltage the inverter will work normally again (Green LED on Red off)
Input over voltage shut down	Green on Red on	No Alarm	No	When the battery voltage returns to the related voltage the inverter will work normally again (Green LED on Red off)
Overload protection	Green on Red on	No Alarm	No	Reduce the load in the related range. The inverter will work normally again (Green LED on Red off)
Over-temperature shutdown	Green on Red on	Alarm	No	Check fans for any obstructions. When the inside temperature returns to the related range, the inverter will work normally again (Green LED on Red off)
Output short-circuit	Green on Red on	No Alarm	No	When the short-circuit is removed the inverter will restart and work normally.

CARE AND MAINTENANCE

No routine maintenance is required but you can clean the exterior of the unit periodically with a damp cloth to prevent accumulation of dust and dirt. At the same time check that the screws on the DC terminals are tight.

Never attempt to dismantle the unit due to hazardous voltages. Please return to the dealer if any problem is found with this unit.

ENVIRONMENTAL RECYCLING POLICY



Through purchase of this product, the customer is taking on the obligation to deal with the WEEE in accordance with the WEEE regulations in relation to the treatment, recycling & recovery and environmentally sound disposal of the WEEE.

In effect, this means that this product must not be disposed of with general household waste. It must be disposed of according to the laws governing Waste Electrical and Electronic Equipment (WEEE) at a recognised disposal facility.

If disposing of this product or any damaged components, do not dispose of with general waste. This product contains valuable raw materials. Metal products should be taken to your local civic amenity site for recycling of metal products.

GUARANTEE

This CLARKE product is guaranteed against faulty manufacture for a period of 12 months from the date of purchase. Please keep your receipt as proof of purchase.

This guarantee is invalid if the product is found to have been abused or tampered with in any way, or not used for the purpose for which it was intended.

Faulty goods should be returned to their place of purchase, no product can be returned to us without prior permission. This guarantee does not effect your statutory rights.

DECLARATION OF CONFORMITY -UK



Clarke[®]
INTERNATIONAL

Hemnall Street, Epping, Essex, CM16 4LG

DECLARATION OF CONFORMITY

This is an important document and should be retained.

We hereby declare that this product(s) complies with the following legislation:

The Electromagnetic Compatibility Regulation 2016

The Electrical Equipment (Safety) Regulations 2016

The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2009

The following standards have been applied to the product(s):

BS EN 61000-6-2:2005, BS EN 61000-6-4:2007+A1, BS EN 62368-1:2014+A11:2017,

IEC 62321-3-1:2013, IEC 62321-4:2013+AMD1:2017CSV, IEC 62321-5:2013, IEC 62321-6:2015,

IEC 62321-7-1:2015, IEC 62321-7-2:2017, IEC 62321-8:2017.

The technical documentation required to demonstrate that the product(s) meet(s) the requirement(s) of the aforementioned legislation has been compiled and is available for inspection by the relevant enforcement authorities.

The UKCA mark was first applied in: 2023

Product Description: 350W / 600W Power Inverter
Model Number(s): CI350 / CI600
Serial/Batch Number: Refer to product/package label
Date of Issue: 27/06/2023

Signed:

J.A Clarke

Director

DECLARATION OF CONFORMITY -CE



Clarke[®]
INTERNATIONAL

Fitzwilliam Hall, Fitzwilliam Place, Dublin 2

DECLARATION OF CONFORMITY

This is an important document and should be retained.

We hereby declare that this product(s) complies with the following legislation:

2014/30/EU	Electromagnetic Compatibility Directive
2014/35/EU	Low Voltage Directive
2011/65/EU	Restriction of Hazardous Substances (RoHS) Directive

The following standards have been applied to the product(s):

EN 61000-6-2:2005, EN 61000-6-4:2007+A1, EN 62368-1:2014+A11:2017, IEC 62321-3-1:2013,
IEC 62321-4:2013+AMD1:2017CSV, IEC 62321-5:2013, IEC 62321-6:2015, IEC 62321-7-1:2015,
IEC 62321-7-2:2017, IEC 62321-8:2017.

The technical documentation required to demonstrate that the product(s) meet(s) the requirement(s) of the aforementioned legislation has been compiled and is available for inspection by the relevant enforcement authorities.

The CE mark was first applied in: 2023

Product Description:	350W / 600W Power Inverter
Model Number(s):	CI350 / CI600
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Signed:

J.A Clarke
Director

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