Innovative Circuit Technology Ltd.

ICT SITE INVERTER 300

INSTRUCTION MANUAL

855-131-002 Rev. C

ICT300-12SNV
ICT300-24SNV
ICT300-48SNV

⚠ WARNING

Risk of serious personal injury or damage to equipment and property. Always observe the following:

- Check the battery polarity and voltage before connecting the unit. Incorrect polarity will damage the unit.
- Make sure that all the DC connections are tight. Loose connections could result in overheating and can be a potential hazard.
- The AC neutral lead is internally bonded to chassis. The chassis must be bonded to earth ground through the external ground connector located at the back of the unit.
- Do not attempt to operate the inverter from any power source other than a battery. The 12V inverter (ICT300-12SNV) must be connected to a 12V battery. The 24V inverter (ICT300-24SNV) must be connected to a 24V battery. The 48V inverter (ICT300-48SNV) must be connected to a 48V battery. Connecting the inverter to any other battery may damage the unit.
- Ensure the inverter's input is connected directly to a battery with the appropriately rated inline battery breaker.
- Connecting the inverter to the output of a DC distribution panel is not recommended as the inverter input's inrush may exceed the rating of the device, potentially causing damage to internal circuitry.
- Calculate the total power consumption (W) of the output load. Make sure the total power consumption does not exceed the rated load capacity of the inverter.

⚠ CAUTION

Risk of personal injury or damage to equipment. Always observe the following:

- No user serviceable parts inside. Only ICT personnel are authorized to service the unit.
- It is the installer's responsibility to ensure compliance with all applicable installation codes and regulations.
- Before any connections are made to the unit or system, be sure to disconnect the battery terminals. Always disconnect the grounded battery terminal first. When reconnecting, connect ungrounded terminal first and grounded terminal last.
- Avoid mounting the unit near sources of moisture, flammable gases or fumes.
- Do not block the fan opening on the front of the inverter.
- Follow the provided wire size recommendations provided in this manual. DC connection cables should be as short as possible and large enough to handle the required current in accordance with the electrical codes or regulations applicable to your installation. Cables that are not an adequate gauge or are too long will result in excessive voltage drop, decrease inverter performance, and possibly damage the unit.
- To ensure that the inverter's safety features are not compromised, use the inverter as specified in the manual and do not substitute parts or make any unauthorized modifications.
- Install an in-line fuse (not supplied) in the positive lead from the battery to the inverter (see page 3).

Rev C 2022

INTRODUCTION

Whether your communications site is off the grid or designed to operate from DC power for uninterrupted quality of service, certain components still require high quality, reliable AC sine wave power to operate.

The ICT SITE INVERTER 300 is a low profile, high performance sine wave inverter that converts DC energy from your battery source into 300 watts of utility grade power for site equipment that requires AC electricity such as radio links, multiplexers, routers or digital video recorders. ICT inverters provide extremely low harmonic distortion and high efficiency, meaning that your equipment receives extremely quiet, high quality power.

Up to three ICT SITE INVERTER 300 units can be mounted in a single 1RU 19-inch rack shelf to provide almost 1kW of power (non-parallel) and six AC outlets in an ultra-compact, space saving design.

Other options include an accessory kit that provides two AC outlets on the front faceplate of the inverter rack.

FEATURES

The ICT SITE INVERTER 300 is designed specifically for communications site applications and includes the following features:

- Two rear-facing AC outlets for easy access to the equipment that needs to be powered.
- Rear-mounted DC input terminal block for connection to the DC battery source.
- A grounding stud on the rear of the unit.
- Front mounted power switch and LED indicator lights.
- Thermo-controlled, ball bearing brushless cooling fan blowing front to back ensures the best thermal performance and longevity for the internal components.
- Air intake is from the front of the unit.
- LED indicators provide information on AC status and on the built-in protection features including input voltage condition, overload and temperature shutdown conditions.
- Operating temperature range from –20°C to +60°C.
- Capable of handling up to twice its rated capacity (600 watts) for up to three seconds.

OPTIONS

- 1RU 19-inch mounting rack (model number ICT-RM1U) holds 1, 2, or 3 inverters.

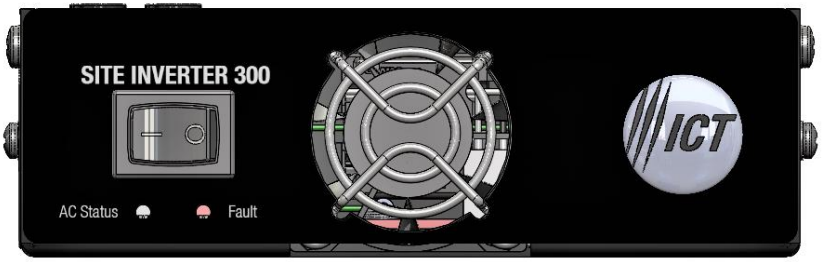

Figure 1. ICT SITE INVERTER 300 Front Panel

Figure 2. ICT SITE INVERTER 300 Rear Panel

PROTECTIONS

Overload Protection
The inverter will shut down if the AC output is shorted or if the continuous draw exceeds 300 Watts for more than three seconds. The inverter can be manually reset by turning the power switch located on the front panel off then on. The inverter can supply up to 600 watts during the overload event, allowing this inverter to start larger loads.

Under Voltage Protection
The inverter will shut down if the battery discharges below 10.5V for 12V inverter (21.0V for 24V inverter / 42.0V for 48V inverter). The inverter will automatically restart when battery voltage rises to at least 11.8V for 12V inverter (23.6V for 24V inverter / 47.2V for 48V inverter).

Over Voltage Protection
The inverter will shut down if the battery voltage exceeds 16.0V for 12V inverter (32.0V for 24V inverter / 64.0V for 48V inverter). The inverter will automatically restart when battery voltage drops below 15.0V for 12V inverter (30.0V for 24V inverter / 60.0V for 48V inverter).

Over Temperature Protection
If the inverter is subjected to higher ambient temperatures than the maximum rated temperature, or if the cooling vents or fan openings are blocked, the unit will shut down. The inverter will automatically restart after the unit cools down.

INSTALLATION

1. Ensure the power switch located on the front panel is in the OFF position before installing the unit.

2. Mount the unit as close to the battery as possible. Shorter wires between the inverter and battery will result in higher efficiencies (refer to “WIRE SIZING GUIDE” on page 4).

3. For safety, the metal chassis of the inverter must be grounded to earth. Connect the ground connector located on the back panel to the earth ground connection using 10AWG copper wire.

4. An in-line fuse is recommended to protect the battery and wiring to the unit. Use 60A fuse for 12V inverter, 30A fuse for 24V inverter or 15A fuse for 48V inverter. The in-line fuse should be connected to the positive wire within 18 inches of the battery. Connect the battery to the input terminals located on the rear panel as shown in Figure 3. See “WIRE SIZING GUIDE” on page 4 for recommended input wire sizes.

   Ensure the positive terminal of the battery is connected to the positive input of the inverter and the negative terminal of the battery to the negative input of the inverter. Incorrect polarity will blow the internal fuse and damage the unit.

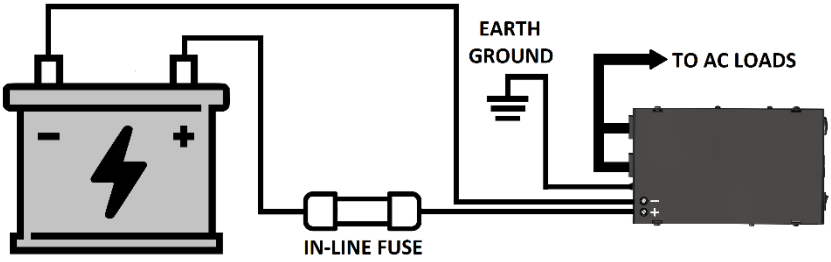

Figure 3. ICT SITE INVERTER 300 Wiring Diagram

5. Plug your AC loads into the AC outlets located on the rear panel.

RACK MOUNTING

If installing the ICT SITE INVERTER 300 into an equipment rack, use the optional 1RU 19-inch rack mounting kit (part number ICT-RM1U). 1, 2 or 3 inverters can be installed in one ICT-RM1U. Position the inverter into the rack tray, and using the supplied #6-32 x 3/16” flat head Phillips mounting screws, fasten the inverter to the tray by inserting the screws through the tray and into the integrated nuts located on the bottom of the inverter. Do not over tighten.

Install the rack tray with the inverters into your equipment rack. Wiring connections can be made before or after this step, depending on your specific situation. Remember to follow all guidelines and cautions about connecting the inverters.

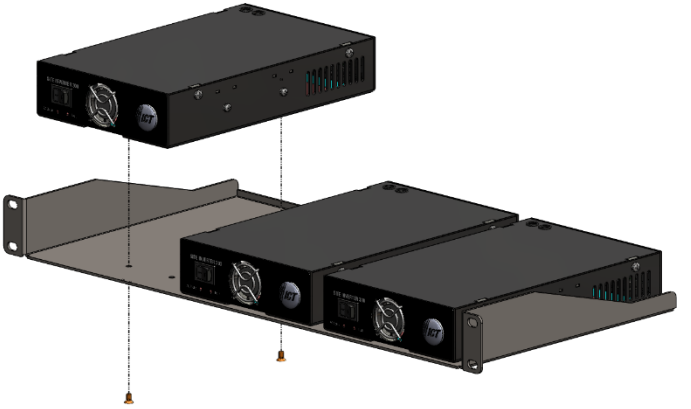

Figure 4. ICT SITE INVERTER 300 Rack Mount Installation

WIRE SIZING GUIDE

Distance of Inverter from Battery	12V Inverter Recommended Input Wire Size (copper)	24V Inverter Recommended Input Wire Size (copper)	48V Inverter Recommended Input Wire Size (copper)
0 – 5 feet	10AWG (2-966067-2)	12AWG (1-966067-9)	12AWG (1-966067-9)
5 – 10 feet	6AWG (2-966067-6)	10AWG (2-966067-2)	12AWG (1-966067-9)
10 – 20 feet	6AWG (2-966067-6)	8AWG (2-966067-4)	10AWG (2-966067-2)

Note: Use TE Connectivity or equivalent wire ferrule listed in brackets next to the wire gauge size.

OPERATION

Turn the power switch located on the front panel to the ON position. The green LED below the power switch should turn on to indicate the inverter is operational.

STATUS OF LED INDICATOR LIGHTS

AC Status LED	Fault LED	Status
GREEN	OFF	AC Output ON
GREEN	RED (BLINK)	Under Voltage Warning
OFF	RED (BLINK)	Under Voltage Shutdown
OFF	RED	Overload or Inverter Fault

TROUBLESHOOTING

No AC output voltage. No indicator LEDs are illuminated.

- Check the DC wiring to the unit for loose connections or blown fuses.
- Ensure that the power switch is in the ON position.

No AC output voltage. Red fault LED is blinking.

- The battery is discharged. The inverter will automatically restart when the battery voltage rises to at least 11.8V for 12V inverter (23.6V for 24V inverter / 47.2V for 48V inverter).

No AC output voltage. Red fault LED is on steady.

- The inverter may be overloaded. Check that the input power requirements of the load do not exceed the rated output power of the inverter. Reset by cycling the power switch.
- The battery voltage may be too high. The inverter will automatically restart when the battery voltage drops below 15.0V for 12V inverter (30.0V for 24V inverter / 60.0V for 48V inverter).
- The inverter may have overheated. The inverter will automatically restart after it cools down. Ensure that the unit has adequate ventilation if this happens.

PRODUCT SPECIFICATIONS

	ICT300-12SNV	ICT300-24SNV	ICT300-48SNV
Input Voltage	10.5 – 16.0VDC	21.0 – 32.0VDC	42.0 – 64.0VDC
Output Voltage	115VAC ± 5VAC		
Output Waveform	Pure Sine Wave		
Output Frequency	60Hz ± 0.05Hz		
Total Harmonic Distortion (THD)	< 3%		
Continuous Output Power	300W		
Maximum Surge Power	600W (for 3 seconds)		
No Load Power Consumption	< 10W		
Efficiency (Full Load)	91%	93%	94%
Peak Efficiency	92%	93%	94%
Input Current (Full Load)	35A	18A	9A
Under Voltage Warning	11.0VDC ± 0.5V	22.0VDC ± 0.5V	44.0VDC ± 1.0V
Under Voltage Shutdown	10.5VDC ± 0.5V	21.0VDC ± 0.5V	42.0VDC ± 1.0V
Under Voltage Recovery	11.8VDC ± 0.5V	23.6VDC ± 0.5V	47.2VDC ± 1.0V
Over Voltage Shutdown	16.0VDC ± 0.5V	32.0VDC ± 0.5V	64.0VDC ± 1.0V
Over Voltage Recovery	15.0VDC ± 0.5V	30.0VDC ± 0.5V	60.0VDC ± 1.0V
Operating Temperature	–20°C to +60°C		
Size (L x W x H)	9.0” x 5.4” x 1.7”		
Weight	2.4lbs		
Cooling	Forced Air (Temperature Controlled)		
DC Input Connector	Clamp Terminal Block 20 – 6AWG (10.5in·lb)		
AC Output Connector	Dual NEMA 5-15R North American Receptacles		
Chassis Grounding Connector	#8-32 x 3/8” Slotted Hex Screw with Lock Washer		

ICT LIMITED WARRANTY

The warranty period on ICT products is two (2) years from date of purchase from an authorized ICT reseller or OEM with valid proof of purchase, or from date of shipment from the ICT manufacturing facility. The warranty period for a repaired product or part is ninety (90) days or the remainder of the unexpired term of the new product warranty period, whichever is greater. Repair or replacement of a defective product or part does not extend the original warranty coverage period.

ICT Limited Warranty is only intended for the benefit of the original purchaser and user of this product. This Warranty is not transferable or assignable without the prior written permission of ICT. ICT's sole obligation and liability under this warranty is limited to either repairing or replacing defective products at the sole discretion of ICT. When repairing or replacing the products, ICT may use products or parts that are new, equivalent to new or re-conditioned. Parts repaired or replaced during the warranty period will be under warranty for the remainder of the warranty period.

No claim will be accepted unless written notice of the claim is received by ICT in accordance with ICT's Return Material Authorization (RMA) procedure, as soon as reasonably possible after the defect is discovered. A valid product serial number must be provided with the RMA claim to prove eligibility. The RMA form is available on the ICT website at www.ict-power.com/support/warranty-repair/.

The Purchaser shall at their own risk and cost return the defective product to ICT's factory or designated repair center once an RMA is issued by ICT. Return of the products to the customer after repair is completed shall be prepaid by ICT unless otherwise mutually agreed between the parties. Products shipped to ICT which have incurred freight damage will not be covered by this Warranty and any repairs or replacement parts, components or products needed will be invoiced in the full current price amount and returned freight collect to Purchaser. It is the Purchaser's responsibility to check the product upon receipt for any damage during shipping and to contact the carrier or shipper regarding such damage. Product that is returned as defective, which is determined to operate within published specifications will be returned to the Purchaser freight collect.

ICT assigns to Purchaser any warranties which are made by manufacturers and suppliers of components of, or accessories for, the ICT product and which are assignable. ICT makes no representations as to the effectiveness or extent of such warranties, assumes no responsibility for any matters which may be warranted by such manufacturers or suppliers and extends no additional coverage under this Warranty to such components or accessories.

In no event shall ICT be liable for any special, indirect or consequential damages such as, but not limited to, loss of use, business or goodwill, loss of revenue, or loss of profits, which may result, either directly or indirectly, from defects in products provided by ICT.

This Warranty will be void if the product has been subjected to misuse, neglect, accident, exposure to environmental conditions not conforming to the products' limits of operation, improper installation or maintenance, improper use of an electrical source, defects caused by sharp items or by impact pressure, a force majeure event, has been modified or repaired by anyone other than ICT or its authorized representative, has been subjected to unreasonable physical, thermal or electrical stress, improper maintenance, or causes external to the unit including but not limited to general environmental conditions such as rust, corrosive atmospheres, sustained temperatures outside the specified operating range of the equipment, exposure to power surges and/or electrical surges, improper grounding, mold or dust, animal or insect damage, water damage or immersion in liquid of any kind, or if the serial number has been altered, defaced, or removed.

ICT does not control the installation and use of any ICT product. Accordingly, it is understood this does not constitute a warranty of performance or a warranty of fitness for a particular purpose. This Warranty represents the entire agreement between ICT and Purchaser with respect to the subject matter herein and supersedes all prior verbal or written communications, representations, understandings or agreements relating to this subject.

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