VOLTECH

INSTRUCTION MANUAL FOR PURE SINE WAVE INVERTER

NOTE: This is a general manual.

Safety Guidelines (Please read through this manual before installing)

WARNING:

· Risk of electrical shock and energy hazard. All failures should be examined by a qualified technician. Please
not remove the case of the inverter yourself.

· Do not install the inverter in places with high moisture or near water. (warranty is void if liquid damage occurs

· Do not install the inverter in area with high ambient temperature , in direct sun or near a flame source.

· Only connect batteries with the same size and type in one battery bank. Using batteries from different manufacturers or different capacity is strictly prohibited.

· Never allow a spark or flame in the vicinity of the batteries as this may ignite explosive gases when opperatin

· Make sure the air flow from the fan is not obstructed at both sides (front and back) of the inverter. Allow at lea
15cm of space from both sides.

· Do not place any objects on top of the inverter

WARNING:

Batteries may have a performance issue over time . It is recommended to perform regular checks and maintan
(e.g. every year). If the batteries have failed or are no longer performing, the batteries should be changed by a professional technician, otherwise, the failed batteries may cause a fire or other hazard.

Product Introduction

The TS inverters (Or Trade Series) are pure sine wave inverters that are CPU controled. They convert DC pow
into AC power. They do not produce power, but only convert.

They are durable and can run for long periods at a time, however they are not designed for continuous use.

Peak power is double the continuous power output for start up .

They are designed for most loads. However, they are not recommended for induction cookers.

Features

·Pure sine wave output (THD<3%)

·High efficiency up to 92%

·Optional remote purchased sepperately

·LED indicator and buzzer

·Can be used for most electronic products with AC input.

·Battery low alarm and indicator

·Compliance to CE / FCC / LVD / RoHS

Main Specifications

Output Waveform	Pure Sine Wave (THD<3%)						
Model	TS-300-XX	TS-600-XX	TS-1000-XX	TS-1500-XX	TS-2000-XX	TS-2500-XX	TS-3000-XX
Continuous Power	300W	600W	1000W	1500W	2000W	2500W	3000W
Peak Power	600W	1200W	2000W	3000W	4000W	5000W	6000W
No Load Current Draws	＜ 0.5A	＜ 0.5A	＜ 0.7A	＜ 0.7A	＜ 1.0A	＜ 1.0A	＜ 1.2A
Dimensions(L*W*H)cm	21x12x5.2	26x12x5.2	30x22x8		36x22x8		46.5x22x8
Weight (kgs)	1.0 ± 0.2	1.4 ± 0.2	3.9 ± 0.2		5.0 ± 0.2		7.0 ± 0.5
Efficiency	up to 92%						
Input Voltage	DC12V	DC24V	DC48V				
	10-15.5V	20-31V	40-61V				
Low voltage protection	10±0.5V	20±1V	40±1V				
Over voltage protection	15.5±0.5V	31±1V	61±1V				
Output Voltage	100V/110V/115V/120V/220V/230V/240V						
Frequency	50Hz/60Hz						
Protection Function	Low voltage shutdown protection						
	Over input voltage protection						
	Over temperature protection						
	Over load protection						
	Short circuit protection						
	Reverse polarity protection						
Fuse	Internal or external						
USB Port	5V, 2A						
Grounding	Ground Chasis: Do not ground to battery negative or inverter negative.						
Remote control	Sold seperately. Connects with either 5m or 8m cable option.						
Application	Caravans, RVs, boats, turcks, laptops, TV sets, video games, Cdplayers, DVD players, power tools, office equipment, major household appliances, etc. Not recommended for induction cookers.						
Environment	Operating temperature	0°C--+40°C @ 100% load; ≥ +60°C @ 50% load					
	Operating relative humidity	20%--90% RH non-condensing					
	Storage temperature	-30°C--+70°C					
	Cooling Fan	Auto starts when internal temp ≥ 45ºC, or load is ≥30%					

Output Protection

The LED and buzzer will indicate the below protections (see below table for details)

A: Over Temperature Protection（OTP）: When the inverter's internal temperature is higher than 65 degrees, the "Over Temperature Protection" will be activated. The buzzer will sound 5 times continuously, and fault light will flash red. When the internal temperature drops below 45 degrees, the inverter will automatically return to normal status.

B: AC Output Abnormal Protection：AC output too high OR too low, output shuts off. Inverter needs to be restarted.

C: AC Output Short Circuit Protection: Short circuit on output, or the load increases suddenly, output shuts off, inverter needs to be restarted.

D: Low Voltage Shutdown Protection：Battery Voltage too low. The inverter will auto recover after the battery voltage is above 12.5V. The inverter will only try 10 times, if within this amount of tries the voltage does not rise above 12.5V the unit will shut down. All figures are double for 24V models. see below table for details.

E: Output Overload Protection（OLP）：When the output is overloaded to 120%, the inverter will automatically shutdown and the buzzer alarm will sound 3 times continuously. The fault light will flash red at the same time.

Suggested Battery Bank Capacity

A battery bank that is of larger capacity than needed should be installed. (to meet the discharge time and load requirements) The time that a load can run for is NOT determined by the inverter, rather than by battery capacity.

Note: this is a guide only. It is the responsibility of the installer to ensure the correct battery bank is installed.

·**Simple calculation of battery discharge time** : Battery capacity / discharge current = discharge time

eg : 12V/220V/50Hz/300W full load of inverter100% Efficiency 89%

Discharge time is 1 hour. What is the optional battery capacity?

·**Select the battery size according to the following formula** :

(1) 300W÷89%=337W Output power/efficiency = input power

(2) 337W÷10.5V=32A Input power / battery voltage (lowest operating Voltage) = Input Current

(3) 32A×1hour=32AH Input current × discharge time = battery capacity

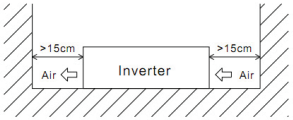
(4) a 40Ah battery can be discharged in 85 minutes.

Note: (Actual discharge time error may exist according to the lifespan and mantainenece of the battery.)

Ventilation and Positioning

The unit should be mounted on a flat surface or holding rack with suitable strenth. In order to ensure the lifespan of the unit, please refrain from operating in environment of high dust, high temperature or high moisture. This is a power supply with built-in DC fan. Please make sure that ventilation is not blocked.

(Note: There should be no obstruction within 15cm of the ventilating holes.)



Mounting Suggestion:

install in a horizontal position using the mounting points provided. Install in a dust & moisture free area.

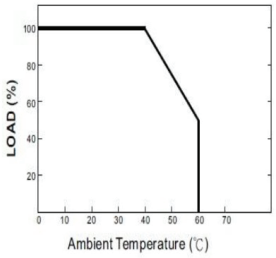
Output and Load

CAUTION

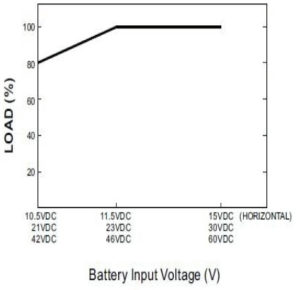
The inverter can power most loads that need an AC source which need to be powered continuously. This applies to light loads such as phone chargers and light loads. It is not reccomended to run heavy loads continuously.

(1) Since inductive loads or motor based appliances need a large start up current (6~10 times the rated current), the inverter may not start up successfully with these kinds of loads. Induction cookers cannont be used on these inverters for this reason.

(2) When using capacitive or switched loads(such as a power supply), to ensure proper operation, only turn on the load or increase the load after the unit has been turned on. Do not start the inverter with the load on.

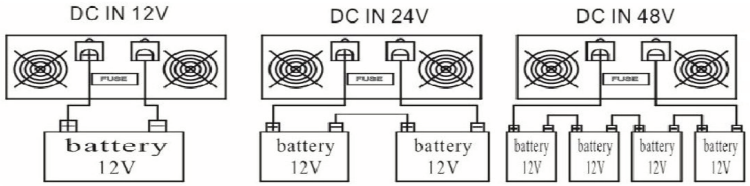


Output Derating Curve



Input Derating Curve

Installation Diagram



Inverter Components

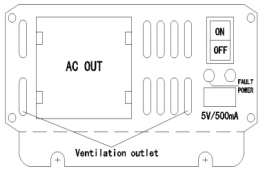
Please note the following labels are the same for all units.

FRONT

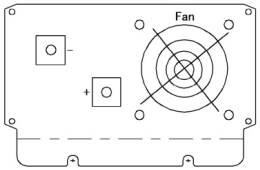
a. ON/OFF switch: This switch controls ON/OFF operation of the unit.
b. AC OUT: Australian socket
c. Ventilation outlet: to cool the inverter. Do not obstruct
d. FAULT/POWER: LED indicator. Green: normal operation. Red: fault and warnings (see table)

REAR

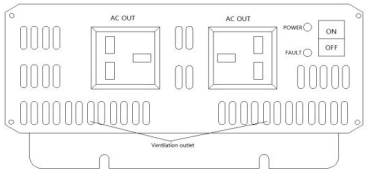
a. DC battery terminals: connect the inverter to batteries or other power sources.
both terminals should be kept insulated to protect from accidental short circuits.
b. Cooling fan: temperature and load controlled.



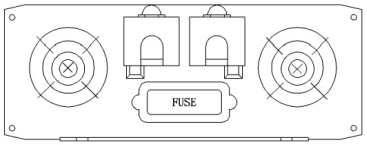
Front panel of 300W-600W



Rear panel of 300W-600W



Front panel of 1000W-3000W



Rear panel of 1000W-3000W

Warranty

12 Month back to base warranty. See www.electroparts.com.au for general warranty and return statement.

No warranty is given for any liquid damage or vermin/insect or any damage by animals, or excesive abuse to the unit that is caused by vibration or any other operation that is not fit for the unit.

Fault Indication

LED and Buzzer	Condition
Buzzer sounds once and LED flashes green once	This indicates normal operation. This occurs when the unit starts up.
Buzzer sounds 3 times (LED flashes red 3 times)	**Low voltage protection:** These units have three stages of UVP; 1) WARNING: Single slow warning beep & LED flash when Input is below 11.2V. 2) AC SHUTOFF: Below 10.5V the Output shuts off & 3 beeps with 3 x LED flashes. 3) INV SHUTDOWN: It will then repeat this cycle 10 times (3 x beeps / 3 Flashes x 10), unless the input Voltage increases to above 12.6V within that time, It will completely shut down so as to not draw any power from the battery (The unit will need to be switched back on manually). (all figures are double for 24V units)
Buzzer sounds 3 times (LED flashes red 3 times)	**Over load protection:** The load is 120% higher than rated power. Reduce load and restart. THIS ALSO INCLUDES START UP POWER.
Buzzer sounds 4 times (LED flashes red 4 times)	**Over voltage protection:** The battery voltage is too high. Make sure input voltage is lower than 15.5V for 12V models and 31V for 24V models.
Buzzer sounds 5 times (LED flashes red 5 times)	**Over temperature protection:** The internal temperature is too high. Reduce temp and make sure there are no vents being obstructed. Make sure there is enough ventilation.

Fault Conditions

The inverter should be serviced by a professional technician. Any incorrect usage or modification may damage the unit or result in shock hazard or damage to the unit. If you cant clear the fault condition, contact your place of purchase.
NOTE: diagnosing the fault without the unit being tested is not practical. If you cannot get the unit tested, you can return/ freight the unit back to Electro Parts Aust Pty Ltd

You must contact Electro Parts for a Return Manufacturer Authority (RMA) number

Status	Possible Cause	Solution
No AC output voltage	Abnormal input	Check the DC input source. Make sure the voltage is within required range AT TERMINALS.
	Over temperature protection	Make sure that the ventilation is not blocked or the ambient temperature is not too high. Minimize load or reduce heat.
	Overload protection	Make sure the load isnt too hihgh for the unit. Or the start up current is not too high. (for inductive or capacitive loads) Startup can be as high as 7-10 times cont rating (will overload)
	Short circuit protection	Make sure the output is not overloaded or shout circuited.
Batteries are not lasting	Batteries are aged or broken	Get batteries tested. Replace batteries.
	Battery capacity is too small	Check that the load is not too large for battery
Fan does not spin	Connection. Obstruction. Faulty	Check the leads for fan on PC board. Remove any obstruction.

If the unit has been tested and found faulty, you must get a RMA number before sending the unit in.

Installation & Wiring

It is highly reccomended that wire connections be as short as possible, and less than 1.5 meters if possible. Long DC wires may have Voltage drop and reduce the overall performances of an inverter. Make sure that suitable wires are chosen based on the rating of current. Too small of a cross-section may result in low input and high heat.

Note: this is a guide only. It is the responsibility of the installer to ensure correct wiring.