

Tron^{UNO}

USER'S MANUAL

HTU-1005, HTU-1205 & HTU-2005



PLEASE READ THIS MANUAL CAREFULLY BEFORE USING THE MACHINE.

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SAFETY INSTRUCTIONS



Before using the product, please read carefully the warning messages and instructions on labels and user manual of this product and other components connected to the product.



The product is designed to be connected with lead-acid battery only. Do not connect the product with other types of battery.



To reduce risk of damage and injury, please use batteries with good quality.



In the event flooded batteries are used, regular maintenance on the battery shall be performed.



The product is design for indoor installation. Please do not expose the product to direct sunlight, rainfall, or snow.



Before performing any maintenance on the product, please disconnect all power sources (AC mains, batteries) to avoid the risk of electrical shock.



Do not attempt to disassemble or repair the product. Only authorized personnel is allowed to perform repair.



While performing maintenance or cleaning (especially on the batteries where hazardous liquid might be touched), it's recommended to wear necessary personal protections (e.g. gloves and goggle).



The product and external batteries shall not be installed anywhere near smoke, spark, and flame.



In the event a generator with auto-start function is connected with the product, before performing maintenance or cleaning should disconnect it.

SCOPE OF WARRANTY

The product comes with a standard 1-year warranty. This warranty includes all defects of design, components and manufacturing. The warranty is void and does not cover any defects or damages caused by in any of the following circumstances:

Seal on the product is broken

The product has been misused, neglected, or abused

Improper transportation and delivery

The product has been used or stored in conditions outside its electrical or environmental specifications

The product has been used for purposes other than for which it was designed

The product has been used outside its stated specifications, operating parameters and application

Acts of third parties, atmospheric discharges, excess voltage, chemical influences, natural wear and tear and for loss and damage in transit

Improper testing, operation, maintenance, adjustment, repair, or any modification of any kind not authorized in writing by the supplier

The product has been connected to other equipment with which it is not compatible

Use and application beyond the definition in this manual

Application beyond the scope of applicable safety standards or grid codes

Acts of nature such as lighting, fire, storm, flood, vandalism and etc.

The right to repair and/or replace the defective product is at the supplier's sale discretion. The supplier is not responsible for damages beyond the scope of this warranty.

PRODUCT OVERVIEW

This is a DC-to-AC inverter , which can be used as a long run-time UPS (Uninterruptible Power Supply), an energy-saving solution or an automotive inverter (hereinafter referred to as “inverter”).

The inverter accepts input power source from AC mains (utility) and battery and switches between various operation modes automatically depending on the operational conditions.

When used as an UPS, battery acts as back-up power source to supply loads during the outage of AC mains.

The battery can be charged by AC mains with intelligent charging control.

Key features:

Automatic line-to-battery switch over

Built-in enhanced AC charger

Selectable input voltage ranges/charging

High efficient DC-to-AC conversion with minimized energy loss

Rack design & wall-mounted design for flexible installation

Intelligent 3-stage charger control for efficient charging and preventing overcharge

Auto restart upon AC recovery

User-friendly LCD and LED indications with setting function

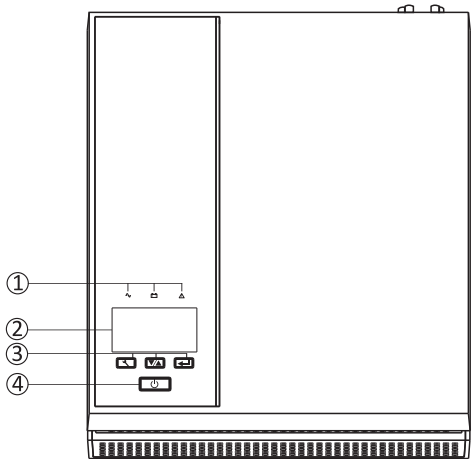
With the environmental temperature control charge management

Multiple protections: low battery alarm, low battery shutdown, over charger protection, overload protection, over temperature protection, short circuit protection

PRODUCT OUTLOOK

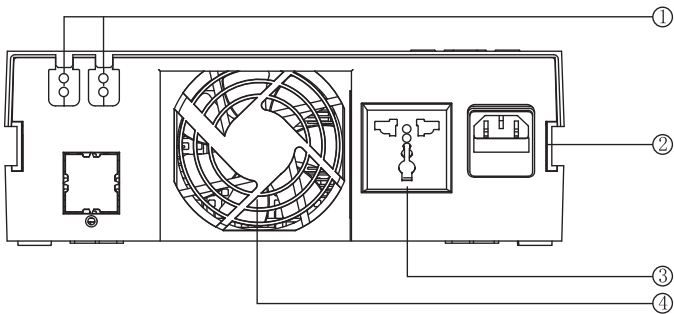
Top panel

- 1. LED indicators
- 2. LCD
- 3. Setting function buttons
- 4. Power ON /OFF switch



Rear Panel

- 1. DC input wires
- 2. AC inlet
- 3. AC output receptacle
- 4. Cooling fan



INSTALLATION

Unpacking and Inspection

This product package include following items. Please call your supplier or dealer if any items are missing.

- 1 X Inverter
- 1 X AC cable
- 1 X User's manual
- 1 X Warranty card
- 1 X Raw al Plug &Screw (Set)
- Installation guide
- Coupling cable (2kva only)

Safety Clearance

The minimum clearance to the wall shall be larger than 30cm in order to ensure proper ventilation.

In the event the ambient temperature is high, it's recommended to increase the distance of safety clearance to improve the heat dissipation.

Mounting Inverter on the wall

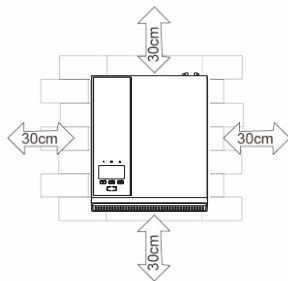
The inverter is designed to either be placed on horizontal surface or be mounted on the wall with various ways (as shown below). When mounting the inverter on the wall.

The wall shall be solid and strong enough to carry the inverter.

The location of installation shall allow the user to read the LCD easily.

Two screws shall be firstly fixed allow the wall (distance as shown below) so that the inverter can be hung on the screws, recommended screw size is M4*50~65mm.

After mounting the inverter, make sure it's firmly mounted and won't easily fall off in the event of unexpected earthquake or vibration.



Batteries

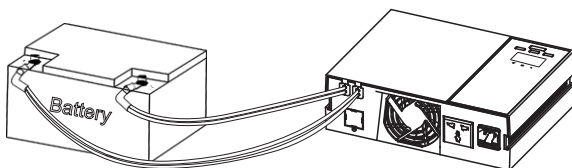
Determine the size of battery

The inverter is designed with pre-set charging current and voltage. Given a fixed charging current, under-sized batteries may shorten the battery life while over-sized batteries may result in unreasonable recharging time. It's recommended the batteries capacity shall be no less than 100AH.

Connect the battery cables

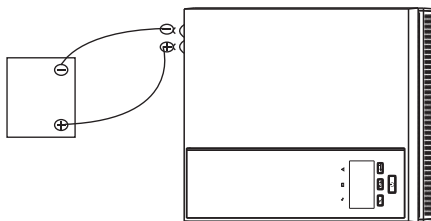
The gauge of battery cables shall be on less than 6AWG with 105°C rating.

No matter how the batteries are connected (in series or in parallel), make sure the cables' terminal voltage is consistent with the inverter's specification (12V for 1000VA/1200VA model and 24V for 2000VA model). It's recommended to cover the battery terminals during the connection. Check the polarity the cables before connecting to the inverter. Connect the inverter DC cables with battery terminals as shown below



Connect with single battery

Make sure the battery voltage meets the inverter's specification (12V for 1000VA/1200VA model and 24V for 2000VA model)

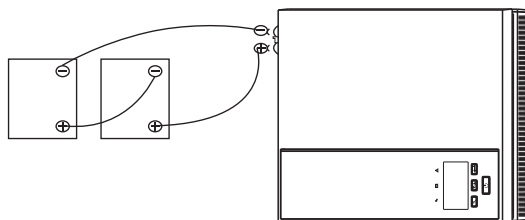


Connect with multiple batteries

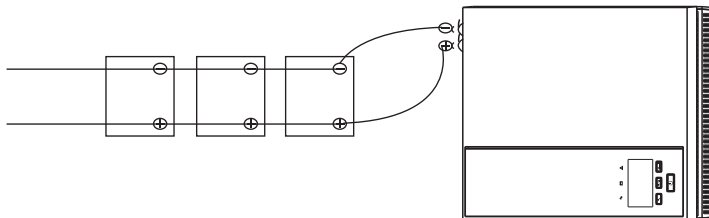


While connecting multiple batteries, use the same brand/type for all batteries. Do not mix the battery bank with different brand/type of batteries.

The user may connect the batteries in series in order to double the voltage connected to inverter. The diagram below illustrate how to connect two 12V batteries in series to make up 24V (for 2000VA model)



The user may connect the batteries in parallel in order to increase the total battery capacity without changing the battery voltage. The example below shows parallel connection of multiple 12V batteries. While the total capacity is times by the number of battery, the terminal voltage remains 12V.



Connect to utility and charge

Plug in the AC input power cord to the wall outlet. The unit will automatically charge the connected external battery even though the unit is off.

AC input voltage range selector

“NARROW” setting:

Configure LCD to “NARROW” when connected with loads which are more sensitive on voltage range. With this setting, the inverter is more sensitive to the voltage disturbance on the AC input and input voltage range is set at 170~280VAC while output voltage follows input voltage.

“WIDE” setting:

Configure LCD to “WIDE” when connected with loads which are less sensitive on voltage range (e.g. light bulb, fan fluorescent tube, or TV). With this setting, the input voltage range is set at 90~280VAC while output voltage follows input voltage.



Please note that the inverter’s transfer time switching from Line Mode to Backup Mode gets longer as the input with voltage gets low. Under the circumstance, connecting the inverter with loads which are sensitive to transfer time (e.g. computer) might result in power interruption.

OPERATION

After connecting batteries, AC input cables, and loads, the inverter is now ready to work.

Power on/off

Once the inverter has been properly installed, press the power switch to turn on the unit. The unit will work automatically in line mode or inverter mode according to input utility power's status. When press the power switch again, the unit will be turned off.

LED Indicators

The operation mode of the inverter can be easily understood by LED indicators. Please see the table below for details.

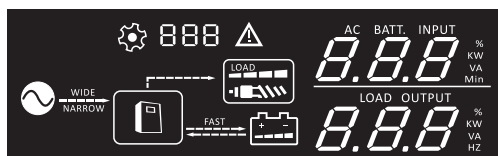
LED indicators			Information
	GREEN	Line Mode 1 (charge current $>3A$)	Green flashing every 2 seconds
		Line Mode 1 (charge current $\leq 3A$)	Green solid lighting
		Off-charge mode	Green flashing as cycle: 0.5s On $\rightarrow$ 0.5s Off $\rightarrow$ 0.5s On $\rightarrow$ 3.5s Off
	YELLOW	Battery mode	Yellow solid lighting
	RED	Overload	Red flashing every 0.5 second
		Fault	Red lighting

Function Keys

Function Keys	Description
	To power on/off
	To enter the setting mode or exit setting mode
	To go to the next selection page
	To confirm the selection in setting mode

LCD Display

LCD displays the power flow and input/output readings in a visualized graphic design which allows the user to understand the operation status easily. The backlight of LCD remains on whenever the inverter is working (including Standby Charging Mode and Fault Mode).



Icon	Function
Input source information	
	Indicates the AC input
	Indicates input voltage
	Indicates the unit works in wide AC mode.
	Indicates the unit works in narrow AC mode.
Configuration Program and Fault Information	
	Indicates the setting programs
	Indicates the warning and fault codes
Output Information	
	Indicates output voltage, load in watt
Battery Information	
	Indicates battery level by 0-24%,25-49%,50-74% and 75-100% in battery made and charging status.
Load Information	
	Indicates load level by 0-24%,25-49%,50-74% and 75-100%
Mode operation information	
	Information the unit connects to the mains.
Charging information	
	Indicates the AC charger current is setting to maximum.

LCD Setting

After pressing and hold  button for 3 seconds, the unit will enter setting mode. Press  button to select setting programs. And then, Press  button to confirm the selection. If want exit the setting mode, press and hold the  button for 3 seconds. The unit will exit setting mode if no operating for 1 minute.

Setting Items	Icons	Description
AC input voltage range	 001 	If selected, acceptable AC input voltage will be within 90-280VAC (default)
	 001 	If selected, acceptable AC input voltage will be within 170-280VAC
Maximum AC charging current	Available options in 1000VA and 1200VA models	
	 002 	For 1000VA and 1200VA model, utility charging current is 20A, 25A is selectable.
	Available options in 2000VA models	
	 002 	For 2000VA model, utility charging current is 15A, 20A is selectable
The mode LED on/off setting	 003 	If selectable, the mode LED solid lighting(default)
	 003 	If selectable, the mode LED is off status
Auto restart when overload occurs	 004 	If selectable, not auto restart when overload occurs in battery mode(default)
	 004 	If selectable, auto restart when overload occurs in battery mode Note: reset 2 times every 30seconds. then inverter will go into fault mode overload is not released.

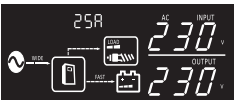
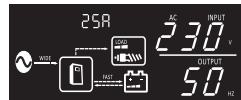
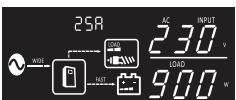
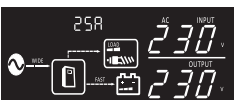
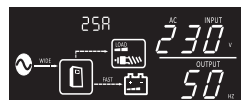
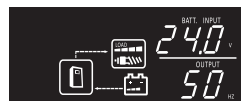
Battery Charging Status 1 & 1.2KVA:

Status	Battery Voltage				
		1	2	3	4
Floating	Bat =13.5V	Solid on	Solid on	Solid on	Solid on
CV	14.2≥Bat>13.65V	Solid on	Solid on	Solid on	Flashing
CC	Bat >13.5V	Solid on	Solid on	Flashing	Flashing
	13.5≥Bat>13.0V	Solid on	Flashing	Flashing	Flashing
	Bat ≤13.0V	Flashing	Flashing	Flashing	Flashing

Battery Charging Status 2KVA:

Status	Battery Voltage				
		1	2	3	4
Floating	Bat =27V	Solid on	Solid on	Solid on	Solid on
CV	28.4≥Bat>27.3V	Solid on	Solid on	Solid on	Flashing
CC	Bat >27V	Solid on	Solid on	Flashing	Flashing
	27≥Bat>26V	Solid on	Flashing	Flashing	Flashing
	Bat ≤26V	Flashing	Flashing	Flashing	Flashing

Operating Mode description

Operating mode	LCD Display		
Standby charging mode	Utility input bypass to output, and battery can be charged without switching on the unit.		
	In this mode, the  icon will flashing every 0.5s		
	 Display load in first page	 Display output voltage for 10s	 Display output frequency for 10s
Line mode	Utility input bypass to output, and battery can be charged when switching on the unit.		
	 Display load in first page	 Display output voltage for 10s	 Display output frequency for 10s
Battery mode	The backup power to load comes only from battery.		
	 Display load in first page	 Display output voltage for 10s	 Display output frequency for 10s

Fault and warning code

Fault event or warning	Icon	Alarm
Battery low	A56 	Buzzing every 2 seconds
Overload warning	A64 	Buzzing every 0.5 seconds
High temperature	A68 	Buzzing every 0.5 seconds
Output volt high	E07 	Buzzing continuously
Output short	E09 	Buzzing continuously
Over charge	E13 	Buzzing continuously
Overload fault	E14 	Buzzing continuously
Fan fail	E18 	Buzzing continuously
Over temperature	E19 	Buzzing continuously

TROUBLE SHOOTING

Problem	Possible Cause	Remedial Action
No LCD display	Battery voltage is low	Re-charge the battery and check if the battery cables are well-connected
	Battery is defective	Replace the batteries
	Power button is not pressed	Press and hold the power button
Mains are normal but works in backup mode	AC input is absent	Check the connection of AC input
Backup time is short	Overloading	Disconnect non-critical loads
	Battery voltage is too low	Re-charge battery for at least 8 hours
	Battery is bad	Replace good quality batteries
Alarm buzzer beeps continuously	Inverter entered into fault mode	Refer to the fault code to identify the fault and report to service representative for further assistance

SPECIFICATION

Model		HTU-1005	HTU-1205	HTU-2005
CAPACITY	VA/W	1000VA/800W	1200VA/1000W	2000VA/1600W
NOMINAL BATTERY VOLTAGE		12Vdc	12Vdc	24Vdc
LINE MODE				
INPUT	Nominal Voltage	230Vac		
	Voltage Range	Wide mode: 90VAC-280VAC (default) Narrow mode: 170VAC-280VAC		
	Normal Frequency	50Hz / 60Hz		
OUTPUT	Voltage	230VAC		
	Frequency	Follow the utility		
	Output waveform	Follow the utility		
EFFICIENCY		>96%(full R lad, battery full charged)		
TRANSFER TIME		15ms Typical, 40ms Max		
BATTERY MODE				
OUTPUT	Voltage	230Vac(+10%/-18%)		
	Frequency	50/60Hz(Auto detection)		
	Output waveform	Modified sine-wave		
EFFICIENCY		>80%		
OVERLOAD PROTECTION		1min@>110%, 0s@>120%		
PROTECTION		Discharge, over-charged, over-loading, short-circuit protection		
BATTERY CHARGER				
CHARGING ALGORITHM		3-stage charging		
AC CHARGE CURRENT		20A default, 25A(selectable)		15A default 20A(selectable)
FLOATING CHARGING VOLTAGE		13.5V	13.5V	27V
OVER CHARGING VOLTAGE		16V	16V	32V
Physical				
Total #of INVERTER Receptacles		(1) UN		
Maximum Dimensions		253mm(W)*88mm(H)*296mm(D)		
Weight		2.43kg	2.76kg	2.66kg
Warning Diagnostics				
Indicators		INVERTER Status display.		
Audible alarms		Low Battery, Overload, Fault		
Environmental				
Operating Temperature		0℃to 50℃		
Operating Relative Humidity		5 to 95% NON-CONDENSING		
Management				
Auto-Charger		Yes		
Auto-Restart		Yes		

DISPOSAL

In the event the product reaches the end of its service life, please contact the local dealer for disposal instructions.



The product must not be disposed of with the household waste.

Disposal of the product at the end of its service life shall be done in accordance with applicable regulations for electronic waste.

技术要求:

1: 材质: 80克书写纸, 黑白印刷;

2: 装订后成品尺寸:123*183mm(公差+/-2MM);

3: 印刷效果:图片、字体、线条需清晰,无重影,无毛边,无多余杂点;