

# User's Manual

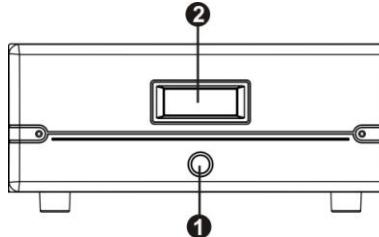
## 700VA/1.2KVA Inverter/Charger

### 1. Introduction

This robust inverter is designed to power your home appliances or precious electronics. It also can accept wide input voltage to generate stable and pure power source to power downstream AC loads. Based on different types of loads, this inverter can provide pure and stable power either to house appliances or to sensitive personal computers via selectable operation modes. It is a brilliant choice for home owners or small office users in the unstable power area.

### 2. Product Overview

#### Front View:

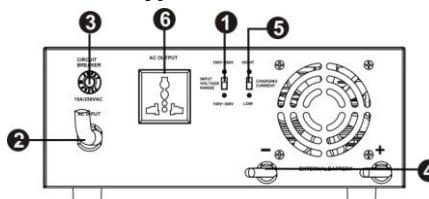


① Power Switch

② Display indication (please see the Operation section for the details)

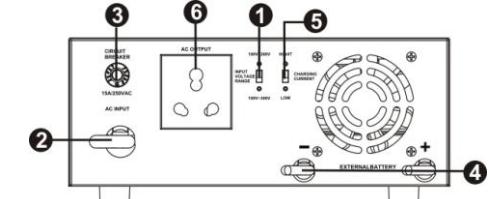
#### Back View:

##### Universal Type:



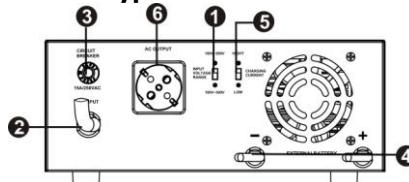
Model with input power cord

##### South Africa Type



Model with input power cord

##### Schuko Type



Model with input power cord

① Input voltage range selector

② AC input

③ Input breaker

④ External battery connector

⑤ Charge current selector

⑥ Output receptacles

### 3. Important Safety Warning (SAVE THESE INSTRUCTIONS)

**Before using the inverter, please read all instructions and cautionary markings on the unit, this manual and the batteries.**

#### General Precaution-

##### Conventions used:

**WARNING!** Warnings identify conditions or practices that could result in personal injury;  
**CAUTION!** Caution identify conditions or practices that could result in damage to the unit or other equipment connected.

**CAUTION!** The unit is designed for indoor use. Do not expose this unit to rain, snow or liquids of any type.

**CAUTION!** To reduce risk of injury, only use qualified batteries from qualified distributors or manufacturers. Any unqualified batteries may cause damage and injury. Do NOT use old or overdue batteries. Please check the battery type and date code before installation to avoid damage and injury.

**CAUTION!** Do not disassemble the inverter. Contact with the qualified service center when service or repair is required.

**WARNING!** Provide ventilation to outdoors from the battery compartment. The battery enclosure should be designed to prevent accumulation and concentration of hydrogen gas at the top of the compartment.

**CAUTION!** Use insulated tools to reduce the chance of short-circuit when installing or working with the inverter, the batteries, or other equipments attached to this unit.

**CAUTION!** For battery installation and maintenance, read the battery manufacturer's installation and maintenance instructions prior to operating.

#### Personnel Precaution -

**CAUTION!** Careful to reduce the risk of dropping a metal tool on the batteries. It could spark or short circuit the batteries and could cause an explosion.

**CAUTION!** Remove personal metal items such as rings, bracelets, necklaces, and watches when working with batteries. Batteries can produce a short circuit current high enough to make metal melt, and could cause severe burns.

**CAUTION!** Avoid touching eyes while working near batteries.

**CAUTION!** Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.

**CAUTION!** NEVER smoke or allow a spark or flame in vicinity of a battery.

**CAUTION!** If a remote or automatic generator start system is used, disable the automatic starting circuit or disconnect the generator to prevent accident during servicing.

### 4. Specifications

MODEL	700VA 12V	1.2KVA 12V
CAPACITY	700VA/500W	1200VA/840W
INPUT		
Voltage	230VAC	
Voltage Range	170-280 VAC (For personal computer); 90-280 VAC (For home appliances)	
OUTPUT		
Voltage Regulation (Batt. Mode)	230VAC ± 5 %	
Transfer Time	10ms typical (For personal computer); 20ms typical (For home appliances)	
Waveform	Pure Sine Wave	
BATTERY		
Battery Voltage	12 VDC	
Floating Charge Voltage	13.5 VDC	
Maximum Charge Current	10/15Amp	10/20Amp
Recommended Battery Capacity	100 Ah – 200 Ah	
PHYSICAL		
Dimension(DxWxH) mm	289 x 290 x 127	
Net Weight (kgs)	4.5	4.8

### 5. Installation

**NOTE:** Before installation, please inspect the unit. Be sure that nothing inside the package is damaged.

#### Connect External Battery

**Step 1-** Install a DC Breaker in a positive battery line. The rating of the DC Breaker must be at least 60Amp for 700VA model and 100A for 1200VA model to guarantee safe operation without interruption. Keep the DC breaker off. (**see Fig. 1**)

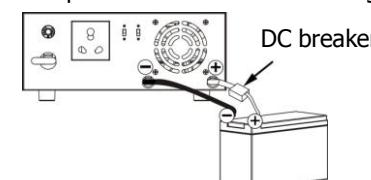
**Step 2-** Connect battery cables to the external batteries. To have better performance, the recommended battery capacity is 100Ah – 200 Ah.

Following battery polarity guide printed near the battery terminal to connect external batteries!

**RED cable to the positive terminal (+);**  
**BLACK cable to the negative terminal (-)**

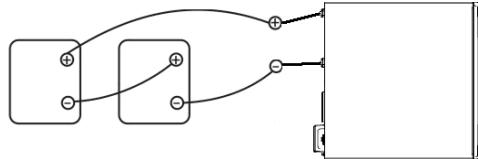
**Note:** For the user operation safety, we strongly recommend that you should use tapes to isolate the battery terminals before you start to operate the unit. When connecting to external batteries, do not cause any short circuits.

**1) Single battery connection (Refer to Fig. 1):** When using a single battery, its voltage must be equal to the Nominal DC Voltage of the unit.



**Fig. 1**

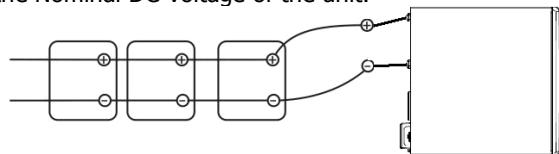
**2) Multiple batteries in series connection (Refer to Fig. 2):** All batteries must be equal in voltage and amp hour capacity. The sum of their voltages must be equal to the nominal DC Voltage of the unit.



**Fig 2**

**Note:** when connecting batteries in series connection, it's necessary to use battery wires at AWG#8 or above.

**3) Multiple batteries in parallel connection (Refer to Fig. 3):** Each battery's voltage must be equal to the Nominal DC Voltage of the unit.



**Fig 3**

**Note:** when connecting batteries in parallel connection, it's necessary to use battery wires at AWG#10 or above.

**Step 3-** Make sure to connect the polarity of battery side and the unit correctly.

**Positive pole (Red) of battery to the positive terminal (+) of the unit.**

**Negative pole (Black) of battery to the negative terminal (-) of the unit.**

**Step 4-** Take the DC breaker on.

#### Connect to Utility and Charge

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

#### 6. Operation Power On/Off

Once the inverter has been properly installed, press the power switch to turn on the unit. The unit will work automatically. When press the power switch again, the unit will be turned off.

**WARNING!** The unit may have output power when connected to the utility, even though it is powered off. To completely cut off the output power, please switch off the unit and disconnect the unit from the utility.

#### Input Voltage Range Selector

a). "170V-280V": setting for precious electronic devices

If you select this mode, the unit's input utility range will be 170~280VAC as normal home UPS. If the utility is higher or lower than this range, the unit will transfer to inverter mode automatically. And you can connect the computer systems or other precision home equipment when you select this operation mode.

b). "90V-280V": setting for home appliances

If you select this mode, the unit's input utility range will be extended to 90~280VAC. If the utility is higher or lower than this range, the unit will transfer to inverter mode automatically. So, you can connect the home equipments, such as light bulb, fluorescent tube, fan, or TV on this mode.

**Caution!!** If you select the "90V-280V" mode and connect the computer to the output of the unit, the computer may reboot if the input voltage is too low to be accepted.

#### Charging Current Selector

- a) High: setting battery charging current at 20A for 1.2KVA, 15A for 700VA
- b) Low: setting battery charging current at 10A

#### LCD Display & Audible Alarm

Status	LCD Display	Audible Alarm
Line mode		Off
Line mode with charging battery.		Off
Battery mode		Off
Off-mode charging		Off
Fault mode	Fault code will be displayed. Fan is locked: F01 Over temperature: F02 Battery voltage is too high: F03 Output short circuited or Over temperature: F05 Output voltage is abnormal: F06 Over load time out: F07 Bus voltage is too high: F08 Bus soft start fail Main relay failed led: F09 Main relay failed: F11	Beep Continuously sounding. The unit will shut down after it's in fault mode for 15 seconds.
Battery weak at battery mode.	The mark  will flash every second	Beep once every 1 second
The unit is waning of overload.	The mark  will flash every second.	Beep once every 0.5 second
Power limitation warning in Line mode	The mark  will flash every second.	Beep twice every 3 seconds
Fan is locked	Beep three times every second	
Battery is over charged	Beep once every 1second	

**Load level indicator:**

Display	Load Level
	75%~100%
	50%~75%
	25%~50%
	0%~25%

**Battery capacity indicator:**

Display	Battery Capacity
	75%~100%
	50%~75%
	25%~50%
	0%~25%

**7. Trouble Shooting**

Use the table below to solve minor problems.

Problem	LCD / Buzzer	Explanation / Possible cause	What to do
Buzzer beeps continuously	Fault code 07.	Overload error. The inverter is loaded with more than 110% load and time is up	Reduce the connected load by switching off some equipment.
	Fault code 05.	Output short circuited.	Check if wiring is connected well and remove abnormal load.
		Temperature of internal converter component is over 120°C.	Check whether the air flow of the unit is blocked or whether the ambient temperature is too high.
	Fault code 02.	Internal Inverter component over 100°C	
	Fault code 03.	Battery is over charged.	Return to repair center.
		The battery voltage is too high.	Check if spec and quantity of batteries are meet requirements.
	Fault code 01.	Fan fault	Replace the fan.
	Fault code 06.	Output abnormal (Inverter voltage below than 190Vac or is higher than 260Vac)	1. Reduce the connected load. 2. Return to repair center
	Fault code 08.	Internal components failed.	Return to repair center
Mains exist but the unit works in battery mode.	Input voltage is displayed as 0 on the LCD	Input protector is tripped	Check if AC breaker is tripped and AC wiring is connected well.

		The mark Batt. MODE on or flash	1. Check if AC wires are too thin and/or too long. 2. Check if generator (if applied) is working well, or check if input voltage range setting is correct (UPS→Appliance)
Unit shuts down automatically during startup process.	LCD and buzzer will be active for 3 seconds and then complete off.	The battery voltage is too low (<1.91V/Cell)	1. Re-charge battery. 2. Replace battery.
No response after power on.	No indication.	1. The battery voltage is far too low. (<1.4V/Cell) 2. Battery polarity is connected reversed.	1. Check if batteries and the wiring are connected well. 2. Re-charge battery. 3. Replace battery.
When the unit is turned on, internal relay is switched on and off repeatedly.	LCD display flashing.	Battery is disconnected.	Check if battery wires are connected well.
Input circuit breaker acted and no output voltage on terminal but the LCD display show the normal output voltage	LCD display is normal	The relay had been damaged during the AC short circuit	Return to repair center.

If there is any abnormal situations occur, which doesn't list above, please call the service people immediately for professional examine.