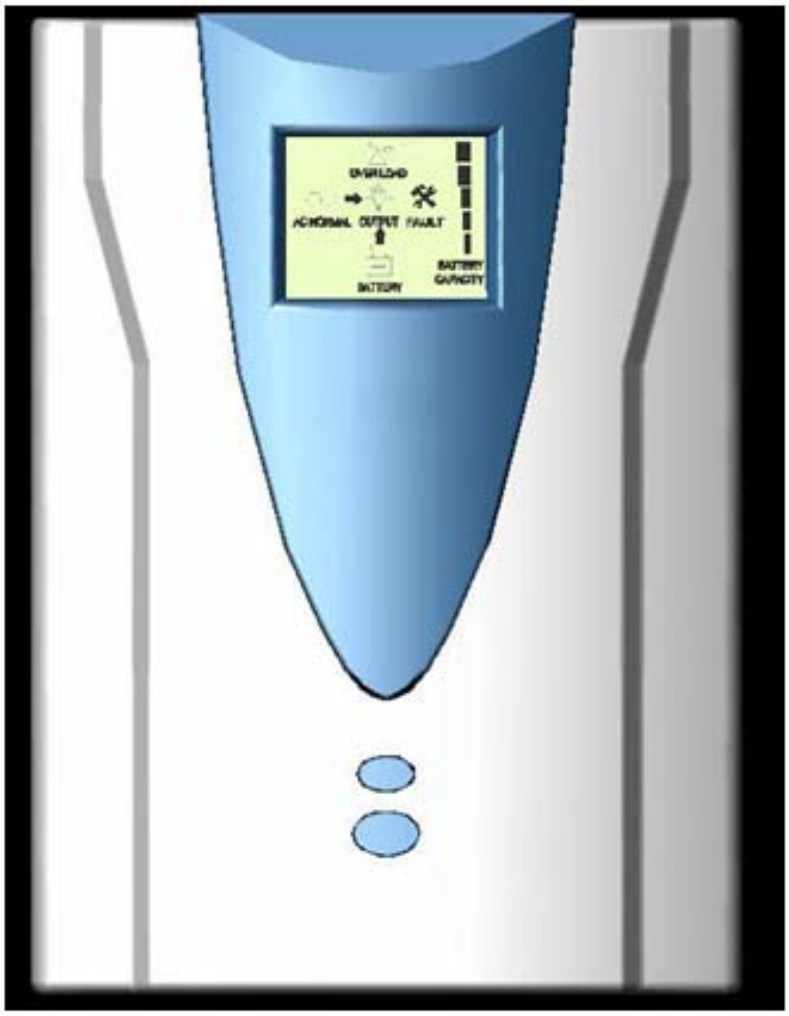
Star T2 Series UPS

Line-interactive 1-3kVA



User Manual

Contents:

SAVE THIS MANUAL

This manual contains important instructions that should be followed during installation, operation, and storage of this UPS. Please read these instructions carefully before installation and start-up of the UPS.

1、Important Safety Warings and Information

WARNING! DO NOT USE FOR LIFE-SUPPORT EQUIPMENT

- DO NOT use this UPS for applications in which a malfunction or failure of the UPS would cause failure or alter the performance of a life-support equipment.

WARNING! RISK OF ELECTRICAL SHOCK

- The outlet receptacles may be electrically live even when the UPS is disconnected from the AC power source.
- This UPS contains potentially hazardous voltages. Do not open the UPS. There are no user-serviceable parts inside.
- Apart from battery replacement, all maintenance and service work should be performed by qualified service personnel.
- Turn off the UPS and unplug it from the AC power source before battery replacement.
- Do not connect your UPS to an outlet that is not properly grounded.
- Do not remove the ground connection from the UPS's power plug.

UPS LOCATION PLACEMENT AND CONNECTION

- Install the UPS in a clean indoor environment, away from excess moisture or heat, dust or direct sunlight, flammable gases or fumes.
- Place and operate the UPS where the surrounding temperature range is from -5°C to 40°C. Optimal battery life is obtained if the temperature does not exceed 30°C
- Keep the UPS on a flat, stable surface with adequate space around it for proper ventilation. Do not block the vents.
- The UPS must be powered from a single phase grounded wall outlet; not a surge protector or power strip. Avoid storage locations that are excessively humid, near water, near heat sources or in direct sunlight.
- Do not plug appliances such as electric heaters, toasters and vacuum cleaners into the UPS.
- Do not connect inductive loads, such as laser printers, to the UPS.

BATTERY WARNING

- This UPS contains a sealed lead-acid battery. **DO NOT** open the battery.
- DO NOT short or bridge the battery terminals with any object.
- Once the battery has reached the end of its life, ensure that they are properly disposed. **REFER TO YOUR LOCAL LAWS AND REGULATIONS FOR BATTERY DISPOSAL REQUIREMENTS.**

2、Introduction

The Star T2 Series UPS is an uninterruptible power supply (UPS) and protects your equipment from all forms of power problems such as blackouts, brownouts, surges, sags, etc. It is designed to support electronic equipment such as computers and telecommunications devices.

2.1 Key features:

- **Intelligent MCU Technology**

The intelligent MCU can automatically monitor the input voltage surge, sags, break, abnormal frequency, output loads and battery status providing the equipments with well protections.

- **High Reliability**

With well protections for input over-voltage/under-voltage, surge, output over-voltage, overloading, short circuit, over-charged battery and battey low, have increased the reliability.

- **DC Start and re-Startup**

The UPS may switch on from the battery without the power source exists or re-startup when the power source is back.

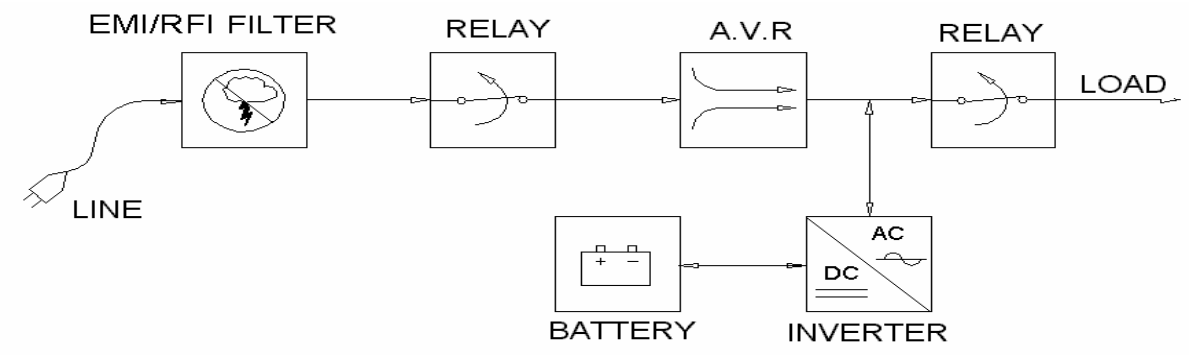
- **Battery Self-test**

Automatic battery test is to make sure if battery ok.

- **User-friendly Power Quality Management**

The optional intelligent software via RS232 port can save the datas and shut-down the computers automatically and provide the UPS status in real-time remotely.

2.2 Design Principles:



- **EMI / RFI filter**

The unit eliminates spikes interference and electromagnetic interference.

- **Input relay**

When AC power is abnormal, input relay operates and battery powers to loads. When input relay connects again and AC power is back to loads.

- **Automatic stablizer**

Automatic stabilizer starts to work when AC power voltage is out of range. It ensures output voltage normally against battery discharging.

- **Dual directional inverter**

Dual directional inverter turns AC power to stablize battery when AC power is normal. Inverter converts battery to sine-wave when AC power is abnormal.

- **Output control**

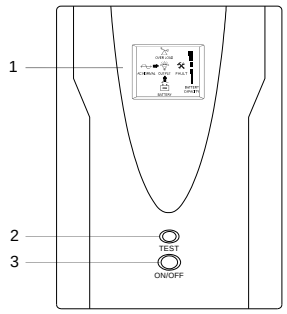
Turn on or turn off the UPS via RS232 software without interrupting to UPS operation.

- **Battery**

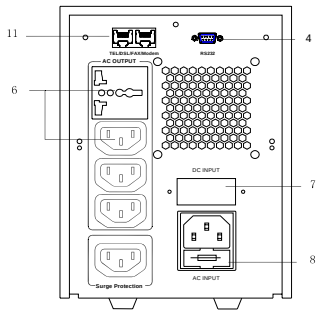
Star T2 series UPS uses maintenance-free lead-acid batteries. UPS shall discharge/ recharge batteries according to battery regulation to protect battery life.

3、Installation & Operation

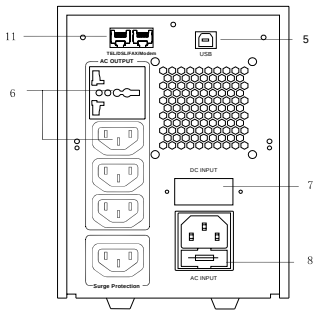
3.1 Front Panel and Rear Panel of UPS



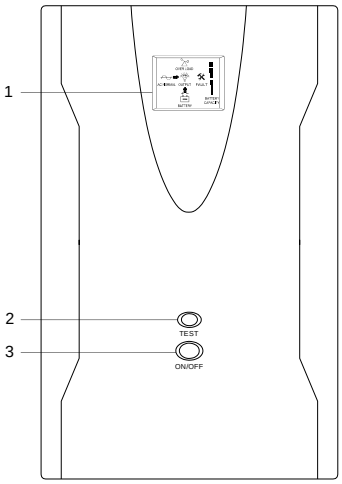
ST2010 Front Panel



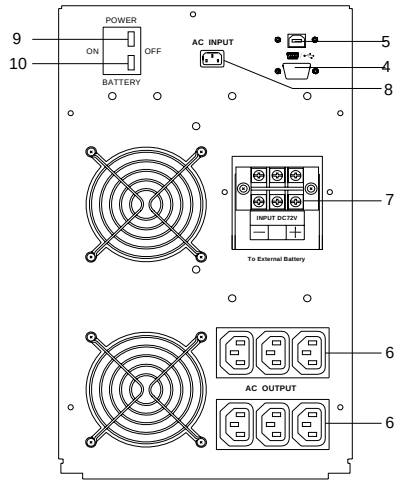
ST2010 Back Panel



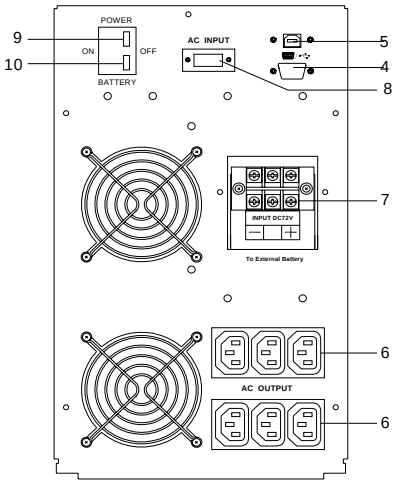
ST2010 Back Panel for USB



ST2020/ST2030 Front Panel



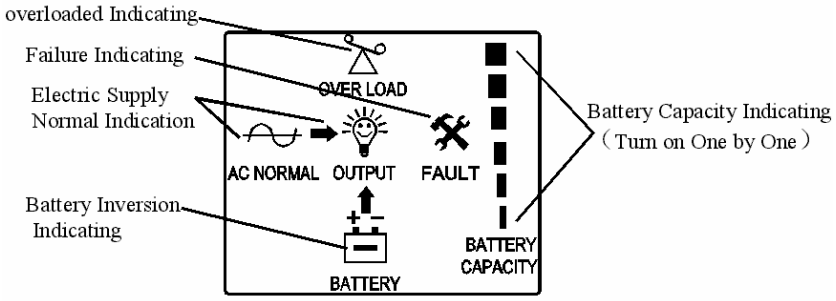
ST2020 Back Panel



ST2030 Back Panel

1) Graphic LCD Display
2) Battery Self-test/ Alarm Silence Button
3) Power Switch
4) True RS232 Communication Port as standard
5) USB Port as option
6) Output Receptacles (Universal slot for 1kVA only)
7) External Battery Connectors
8) Inlet with Fuse
9) Power breaker (AC input breaker)
10) Battery breaker
11) TEL/DSL/FAX/Modem

Graphic LCD Display:



3.2 Installation:

1) After unpacking the UPS, check whether there is any mechanical damage due to transportation. If the UPS has been damaged obviously, please contact your sales representative for assistance.

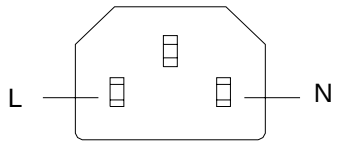
2) Keep the UPS on a flat, stable surface with adequate space around it for proper ventilation. Do not block the vents.

3) Before making any connection and switching on the UPS, please check the following conditions:
   - All the equipment connected to the UPS does not exceed the maximum output power of the UPS (as indicated on the UPS rear panel and specifications).

4) Connect the power cord from your equipment into an output receptacle at the rear of the UPS.

5) Connect the power cord of the UPS to a working, grounded AC wall socket. When AC power is available, the batteries will begin automatically charging.

   The following is the schematics of Inlet:



6) Please allow the UPS to charge its batteries for 24 hours before turning it on. Your connected equipment will still receive power while the UPS is off. Backup time may be shortened if the UPS is not charged first.

7) To **Turn On** please gently press the UPS power switch for 2 seconds, and turn on the computers after the UPS startup completed.

8) To **Turn Off** please gently press the UPS power switch for 2 seconds until the UPS off.

3.3 Status & Alarm Indications:

UPS Status	LCD Display	Audible Alarm
- AC normal - AC power is connected to the loads - Battery is charging	AC NORMAL“ ”On OUTPUT“ ” On Battery Capacity 5-segment bar-graphics **(lit one by one)**	**n/a**
- AC normal - AC power is connected to the loads - Battery is fully charged	AC NORMAL“ ” On OUTPUT“ ” On Battery Capacity 5-segment bar-graphics (**All lit on)**	**n/a**
- AC fail - UPS is at battery mode	BATTERY“ ” On OUTPUT “ ” On Battery Capacity 5-segment bar-graphics **(Turn off one by one)**	**Slow beeping** in every 3 seconds and beeps in every 10 seconds after 10 beeps
- UPS battery is fully discharged **- Please save datas and shut down computer immediately**	**Only one battery capacity LED lits**	**Fast beeping** in every 1 second
- UPS output overload **- please reduce the loads**	**OVERLOAD“ ” On**	**Fast beeping** in every 1 second

3.4 Battery Self-test and Alarm Silence:

- UPS may test the capacity of battery automatically if press the test/ silence button and hold for 0.5 second. UPS works at battery mode in ten seconds and indicates the battery capacity level on the LCD display.
- Press the test/ silence button for 0.5 second to silent any alarms when UPS is at battery mode. Alarms will sound again when UPS has new problems come up. Alarms can’t be silenced when battery voltage is low or not work at battery mode.

3.5 Communications:

The RS232 port enables communication between the UPS and a connected computer. The UPS software monitors the status of the UPS, shuts down the system before the battery power is depleted and can remotely observe the UPS via the Network. When the AC power fails or the battery is low, the monitoring software takes all the necessary actions without intervention from the system administrator. In addition to automatic file saving and system shut-down functions, it can also send warning messages to a pager or an e-mail address.

Pin Definition (RS232 Port)

Pin Number	Description
1…….	n/a

2……. AC fail
3……. n/a
4……. 2,5 earth for communication signal
5……. Battery voltage low
6……. Shut down remotely / serial communication receiver
7……. Grounding
8……. n/a
9……. serial communication transiver

4、Storage

- Before storing, charge the batteries for at least 24 hours.
- Be sure that the UPS is switched off and that no cable is connected to the interface port.
- Store the UPS in a dry location with a storage temperature within -5°C to 40°C.
- If the unit is to be stored for an extended period of time, then the battery must be recharged once every three months. Connect the UPS to an AC power source for a minimum of 48 hours. If the battery is not recharged, then it may suffer permanent loss of capacity.

5、Maintenance & Troubleshooting

5.1 General Problems:

Problem 1: The UPS can't turn on when power switch on.
Actions: Check if the power cord is plugged into the wall-socket properly; or the input AC power fuse has burned out.

Problem 2: Unplug the input power cord after it is turned on, but the UPS cannot work at battery mode.
Actions: There are some possible causes: battery voltage low or output overload or output short circuit. Please recharge the battery or replace it or check if the output overload to reduce the loads or if the output short circuit.

5.2 Maintenance:

5.2.1 General:
The UPS is virtually maintenance-free. Please read information regarding UPS location placement and connection under section 1.

5.2.2 Fuse:
If the AC input fuse burns out, be sure it is replaced by a compatible fuse with the same type and rating.

5.2.3 Battery:
- When replacing the battery, use the same number and voltage(V)/capacity(Ah).
- Avoid harm to the environment: proper disposal or recycling of the

batteries is required. Refer to local regulations for disposal requirements.

- NEVER dispose of battery in a fire. They may explode.
- Do not open or damage the battery. The contents (electrolyte) may be extremely toxic. If exposed to electrolyte, then wash immediately with plenty of water.
- Avoid charging in a sealed container.
- Never short circuit the battery. When working with batteries, remove watches, rings and other metal objects. Only use insulated tools.
- Maintain or change the battery according to the following suggestion:

Ambient Temperature	Battery Life	Recharge/ Discharge in Every Six Months	Maintainance in Every Month
20°C	3-5 years	Within 18 months after purchase	Discharge it for 1-3 minutes in every month if there is no AC power outage
30°C	1.5-2 years	Within 10 months after purchase	

5.3 Replacing the Battery

The battery shall be replaced after the UPS has been turned off and the AC power cord has been disconnected as well.

Replacement procedures: (Please check if these procedures are correct???)

1) Turn off the UPS, and unplug all AC power cord and output receptacles;
2) Loose the 7 screws on the top cover;
3) Place the UPS upside down, and loose the 3 screws on the battery bottom cover;
4) Pull out the battery, and replace the new battery;
5) Screw up the battery bottom cover and top cover.

6、Technial Specifications

Model		ST2010	ST2020	ST2030
Capacity	Maximum Capacity	1000VA/700W	2000VA/1400W	3000VA/2100W
Input	Input Voltage Range	220/230/240VAC± 25% Single Phase w/ Ground		
	Input Frequency	44Hz ~ 56Hz		
Output	Output Voltage	220/230/240 VAC nominal		
	Output Voltage Regulation	± 2% (Battery mode)		
	Output Frequency	46~54Hz (Normal mode) 50± 0.1Hz (Battery mode)		
	Output THD	< 3% (line load)		
	Efficiency (Battery mode)	>80%		
	Overload Capability (Normal mode)	Sustaining 5 min @ 100 - 200%; 3 sec @ > 200%		
	Overload Capability (Battery mode)	Sustaining 30 sec @ >100%; 1 sec @ ≧150%		
Battery	Battery Type	Sealed lead-acid maintenance-free 12VDC/ 7Ah per cell		
	Numbers of Batteries	2 cells	4 cells	6 cells
	Backup Time (at Full Load)	3 min	3 min	3 min
	Recharge Time to 90%	< 8 hours (adjustable)		
Indication	LCD	AC mode, Battery Mode, Output status, Battery Capacity, Overload, UPS Fault		
Audible Alarm	Battery Mode	Long beeping		
	Low Battery	Continuous beeping		
	Overload	short beeping		
Dimensions	W x H x D (mm)	156 x 215 x 450	220 x 330 x 487	220 x 330 x 487
Weight	Net Weight w/ Battery (kgs)	19	32	42
Environmental	Operating Temperature	-5~40° C		
	Relative Humidity	< 95% (Non-Condensing)		
	Audible Noise	<45dBA @ 1 Meter		
Communication Port	Standard RS232; USB or SNMP/HTTP (optional)			

Note: Specification changes without notice.