COTEK

ST Series

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Pure Sine Wave Power Inverter User's Manual

COTEK ELECTRONICS CO., LTD.
文管中心
發行章

CE FC e13

Contents

1. Important Safety Instructions

WARNING!
Before using the Inverter, read and save the safety instructions.

1-1. General Safety Precautions

1-1-1. Do not expose the Inverter to rain, snow, spray, bilge or dust. To reduce risk of hazard, do not cover or obstruct the ventilation openings. Do not install the Inverter in a zero-clearance compartment. Overheating may result.

1-1-2. To avoid a risk of fire and electronic shock. Make sure that existing wiring is in good electrical condition; and that wire size is not undersized.
Do not operate the Inverter with damaged or substandard wiring.

1-1-3. This equipment contains components which can produce arcs or sparks. To prevent fire or explosion do not install in compartments containing batteries or flammable materials or in locations which require ignition protected equipment. This includes any space containing gasoline-powered machinery, fuel tanks, or joints, fittings, or other connection between components of the fuel system.

1-2. Precautions When Working with Batteries

1-2-1. If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eye, immediately flood eye with running cold water for at least 20 minutes and get medical attention immediately.

1-2-2. Never smoke or allow a spark or flame in vicinity of battery or engine.

1-2-3. Do not drop a metal tool on the battery. The resulting spark or short-circuit on the battery of other electrical part may cause an explosion.

1-2-4. Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a lead-acid battery.
A lead-acid battery produces a short-circuit current high enough to weld a ring or the like to metal, causing a severe burn.

2. Functional Characteristics

2-1. General Information

ST-series completes with stand –alone power inverter with AC transfer switch and is suitable for RV, Marin and Emergency appliances.

Either mode is front panel programmable.
In the first option, **Off-line mode**, AC output power will be supplied through the AC bypass mode in its normal operation. Upon AC input failure, output power will be diverted through the DC to AC Inverter Mode. Once AC mains are restored, the unit will revert from the Inverter Mode to the Bypass Mode.

In the second option, **On-line mode**, AC output power will be provided directly by the inverter from the DC source. Should the DC source or inverter fail, the system will transfer its output power through the bypass mode. Once the DC power source is restored, the system will revert to the inverter mode.

This power inverter series is a member of the most advanced line of mobile AC power systems available.

To get the most out of the power inverter, it must be installed and used properly. Please read the instructions in this manual before installation and operation this model.

WARNING!

The above two option are fixed during the production and customer unable to modify.

2-2. Application

2-2-1 Power tools–circular saws, drills, grinders, sanders, buffers, weed and hedge trimmers, air compressors.

2-2-2. Office equipment – computers, printers, monitors, facsimile machines, scanners.

2-2-3. Household items – vacuum cleaners, fans, fluorescent and incandescent lights, shavers, sewing machines.

2-2-4. Kitchen appliances – coffee makers, blenders, ice markers, toasters.

2-2-5 Industrial equipment – metal halide lamp, high – pressure sodium lamp.

2-2-6. Home entertainment electronics – television, VCRs, video games, stereos, musical instruments, satellite equipment.

2-3. Features

- Pure sine wave output (THD < 3%) to operate higher-end electronic Equipments.
- Output frequency：50 / 60Hz switch selectable
- Built in 16A/25A or 30A rating transfer switch.
- Speed up transfer time and synchronized operation with the AC source at all times that allows the transfer to be interruption-free for sensitive equipments.
- Built in advance microprocessor to make friendly interface with user.
- Low power “ Power Saving Mode “ to conserve energy
- Capable of driving highly reactive & capacitive loads at start moment.
- Hardwire AC connection model option.
- Loading controlled cooling fan.
- Smart remote controller.
- 3 LED indicators with tri-color display all operation status.
- High efficiency 88 ~ 94%.
- Protection:

  Input over voltage and Input low voltage protection.

  Low battery alarm

  Over temperature protection.

  Over load protection

  Short Circuit protection

  Reverse polarity protection.

  AC circuit breaker (6Amp to 30Amp)

2-4. Electrical Performance

Specification	Model No.					
Item	ST1000-112	ST1000-124	ST1000-148	ST1000-212	ST1000-224	ST1000-248
Continuous Output Power	1000W					
Maximum Output Power (3Min.)	1150W					
Surge Rating	2000W					
Input Voltage	12V	24V	48V	12V	24V	48V
Output Voltage	100 / 110 / 120V ± 5%			220 / 230 / 240V ± 3%		
Frequency (Switch Selectable)	50 / 60Hz					
Output Waveform	Pure Sine Wave (THD < 3%)					
Efficiency (full load)	88%	90%	92%	90%	93%	94%
No Load Current Draw	1.43A	0.75A	0.38A	1.25A	0.65A	0.35A
Stand-By Current Draw	0.25A	0.15A	0.09A	0.25A	0.15A	0.09A
Input Voltage Regulation	10.5-15 VDC	21.0-30 VDC	42.0-60 VDC	10.5-15 VDC	21.0-30 VDC	42.0-60 VDC
Input Level Indicator	Red / Orange / Green LED					
Load Level Indicator						
Failure Indicator	Red LED					
Protection	Overload, Short Circuit, Reverse Polarity (Fuse), Over Temperature Over/Under Input Voltage, AC Input Circuit Breaker					
Circuit Breaker	30 Amp			6 Amp		
Remote Control Unit	CR6 / CR8 Optional					
Synchronous AC transfer	YES					
Transfer switch	30 Amp			16 Amp		
Transfer Time	Inverter to utility AC : 8 ~ 10msec. ; Utility AC to inverter : 16 ~ 50 msec					
Safety	Meet UL458			------		
EMC — EMI Conduction&Radiation	Compliance to FCC Class A			Compliance to EN55022 classA		
EMC — EMS Immunity	------			Compliance to EN61000-3-2,3		
EMC — LVD	------			Compliance to EN60950-1		
EMC — e-MARK	------			Compliance to e-13*72/245/ECC,95/54 EC		
Operating Temperature Range	0 – 40 ~					
Storage Temperature Range	-30 ~ to 70 ~					
Cooling	Loading controlled cooling fan					
Dimensions	373(L)*236(W)*115(H) mm / 14.7(L)*9.29(W)*4.53(H) Inch					
Weight	6.2 kg / 13.6 Lbs.					

Note: The specifications are subject to change without notice.

2-4. Electrical Performance

Specification		Model No.					
Item		ST1500-112	ST1500-124	ST1500-148	ST1500-212	ST1500-224	ST1500-248
Continuous Output Power		1500W					
Maximum Output Power (3Min.)		1725W					
Surge Rating		3000W					
Input Voltage		12V	24V	48V	12V	24V	48V
Output Voltage		100 / 110 / 120V ± 5%			220 / 230 / 240V ± 3%		
Frequency (Switch Selectable)		50 / 60Hz					
Output Waveform		Pure Sine Wave (THD < 3%)					
Efficiency (full load)		88%	91%	92%	92%	93%	94%
No Load Current Draw		1.45A	0.75A	0.40A	1.40A	0.70A	0.40A
Stand-By Current Draw		0.28A	0.15A	0.09A	0.28A	0.15A	0.09A
Input Voltage Regulation		10.5-15 VDC	21.0-30 VDC	42.0-60 VDC	10.5-15 VDC	21.0-30 VDC	42.0-60 VDC
Input Level Indicator		Red / Orange / Green LED					
Load Level Indicator							
Failure Indicator		Red LED					
Protection		Overload, Short Circuit, Reverse Polarity (Fuse), Over Temperature Over/Under Input Voltage, AC Input Circuit Breaker					
Circuit Breaker		30 Amp			10 Amp		
Remote Control Unit		CR6 / CR8 Optional					
Synchronous AC transfer		YES					
Transfer switch		30 Amp			10Amp		
Transfer Time		Inverter to utility AC : 8 ~ 10msec. ; Utility AC to inverter : 16 ~ 50 msec					
Safety		Meet UL458			------		
EMC	EMI Conduction&Radiation	Compliance to FCC Class A			Compliance to EN55022 classA		
	EMS Immunity	------			Compliance to EN61000-3-2,3		
	LVD	------			Compliance to EN60950-1		
	e-MARK	------			Compliance to e-13*72/245/ECC,95/54 EC		
Operating Temperature Range		0 - 40 ~					
Storage Temperature Range		-30 ~ to 70 ~					
Cooling		Loading controlled cooling fan					
Dimensions		403(L)*236(W)*115(H) mm / 15.9(L)*9.29(W)*4.53(H) Inch					
Weight		7.0 kg / 15.4 Lbs.					

Note: The specifications are subject to change without notice.

2-4. Electrical Performance

Specification		Model No.					
Item		ST2000-112	ST2000-124	ST2000-148	ST2000-212	ST2000-224	ST2000-248
Continuous Output Power		2000W					
Maximum Output Power (3Min.)		2300W					
Surge Rating		4000W					
Input Voltage		12V	24V	48V	12V	24V	48V
Output Voltage		100 / 110 / 120V ± 5%			220 / 230 / 240V ± 3%		
Frequency (Switch Selectable)		50 / 60Hz					
Output Waveform		Pure Sine Wave (THD < 3%)					
Efficiency (full load)		88%	91%	92%	90%	93%	94%
No Load Current Draw		2.6A	1.50A	0.70A	2.3A	1.1A	0.65A
Stand-By Current Draw		0.60A	0.30A	0.2A	0.60A	0.3A	0.15A
Input Voltage Regulation		10.5-15 VDC	21.0-30 VDC	42.0-60 VDC	10.5-15 VDC	21.0-30 VDC	42.0-60 VDC
Input Level Indicator		Red / Orange / Green LED					
Load Level Indicator							
Failure Indicator		Red LED					
Protection		Overload, Short Circuit, Reverse Polarity (Fuse), Over Temperature Over/Under Input Voltage, AC Input Circuit Breaker					
Circuit Breaker		30Amp					
Remote Control Unit		CR6 / CR8 Optional					
Synchronous AC transfer		YES					
Transfer switch		30Amp			25 Amp		
Transfer Time		Inverter to utility AC : 8 ~ 10msec. ; Utility AC to inverter : 16 ~ 50 msec					
Safety		Meet UL458			------		
EMC	EMI Conduction&Radiation	Compliance to FCC Class A			Compliance to EN55022 classA		
	EMS Immunity	------			Compliance to EN61000-3-2,3		
	LVD	------			Compliance to EN60950-1		
	e-MARK	------			Compliance to e-13*72/245/ECC,95/54 EC		
Operating Temperature Range		0 - 40 ~					
Storage Temperature Range		-30 ~ to 70 ~					
Cooling		Loading controlled cooling fan					
Dimensions		433(L)*332(W)*115(H) mm / 17(L)*13(W)*4.53(H) Inch					
Weight		11.2 kg / 24.6 Lbs.					

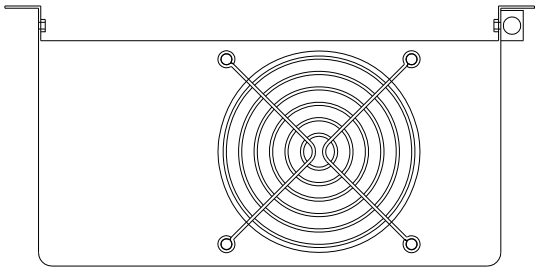
Note: The specifications are subject to change without notice.

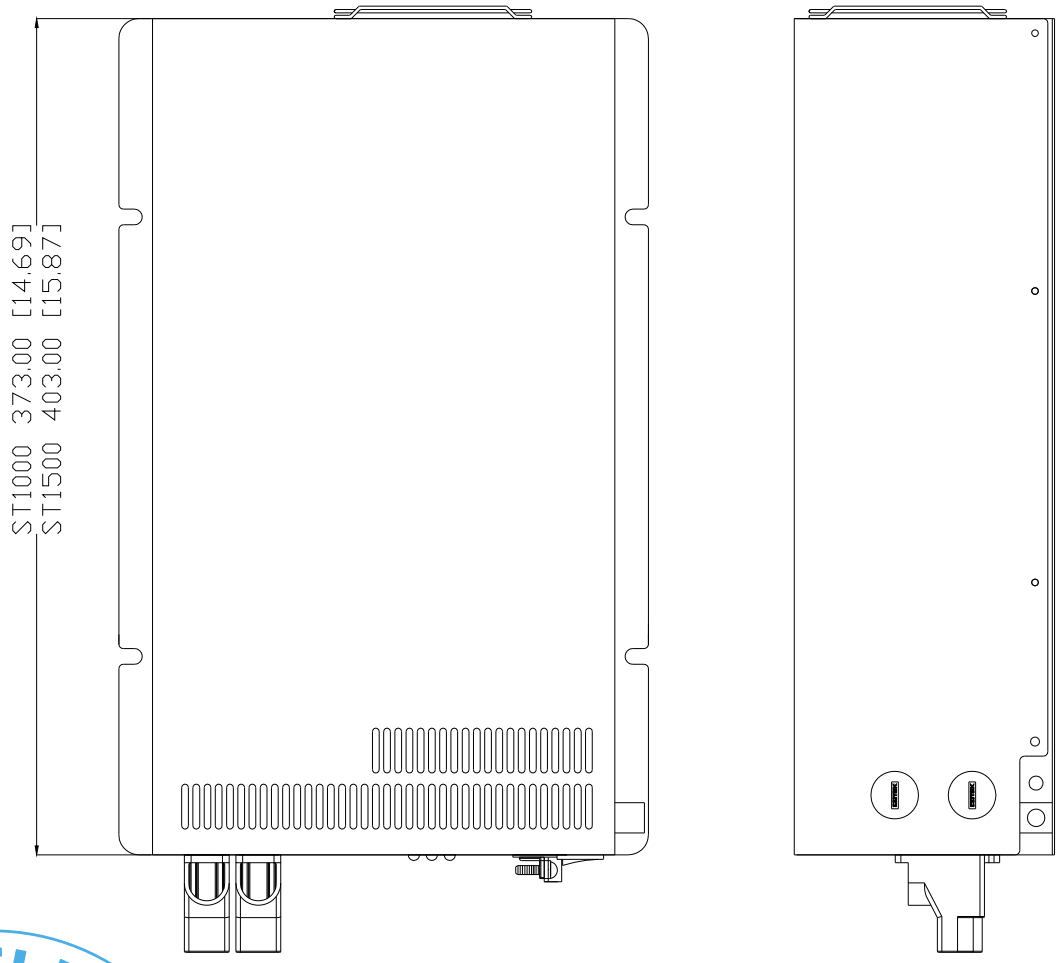
2-4. Electrical Performance

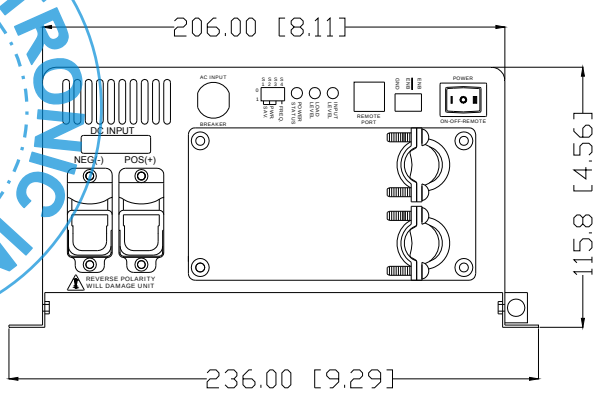
Specification	Model No.					
Item	ST2500-112	ST2500-124	ST2500-148	ST2500-212	ST2500-224	ST2500-248
Continuous Output Power	2500W					
Maximum Output Power (3Min.)	2875W					
Surge Rating	5000W					
Input Voltage	12V	24V	48V	12V	24V	48V
Output Voltage	100 / 110 / 120V ± 5%			220 / 230 / 240V ± 3%		
Frequency (Switch Selectable)	50 / 60Hz					
Output Waveform	Pure Sine Wave (THD < 3%)					
Efficiency (full load)	88%	91%	92%	90%	93%	94%
No Load Current Draw	2.62A	1.53A	0.72A	2.32A	1.15A	0.68A
Stand-By Current Draw	0.60A	0.30A	0.2A	0.60A	0.3A	0.15A
Input Voltage Regulation	10.5-15 VDC	21.0-30 VDC	42.0-60 VDC	10.5-15 VDC	21.0-30 VDC	42.0-60 VDC
Input Level Indicator	Red / Orange / Green LED					
Load Level Indicator						
Failure Indicator	Red LED					
Protection	Overload, Short Circuit, Reverse Polarity (Fuse), Over Temperature Over/Under Input Voltage, AC Input Circuit Breaker					
Circuit Breaker	30 Amp					
Remote Control Unit	CR6 / CR8 Optional					
Synchronous AC transfer	YES					
Transfer switch	30Amp			25 Amp		
Transfer Time	Inverter to utility AC : 8 ~ 10msec. ; Utility AC to inverter : 16 ~ 50 msec					
Safety	Meet UL458			------		
EMC — EMI Conduction&Radiation	Compliance to FCC Class A			Compliance to EN55022 classA		
EMC — EMS Immunity	------			Compliance to EN61000-3-2,3		
EMC — LVD	------			Compliance to EN60950-1		
EMC — e-MARK	------			Compliance to e-13*72/245/ECC,95/54 EC		
Operating Temperature Range	0 - 40 ~					
Storage Temperature Range	-30 ~ to 70 ~					
Cooling	Loading controlled cooling fan					
Dimensions	463(L)*332(W)*115(H) mm / 18.2(L)*13(W)*4.53(H) Inch					
Weight	12 kg / 26.4 Lbs.					

Note: The specifications are subject to change without notice.

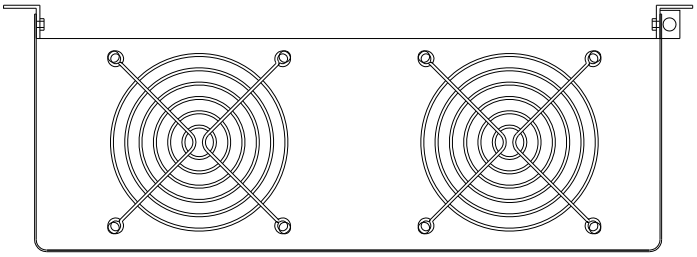
2-5. Mechanical drawings

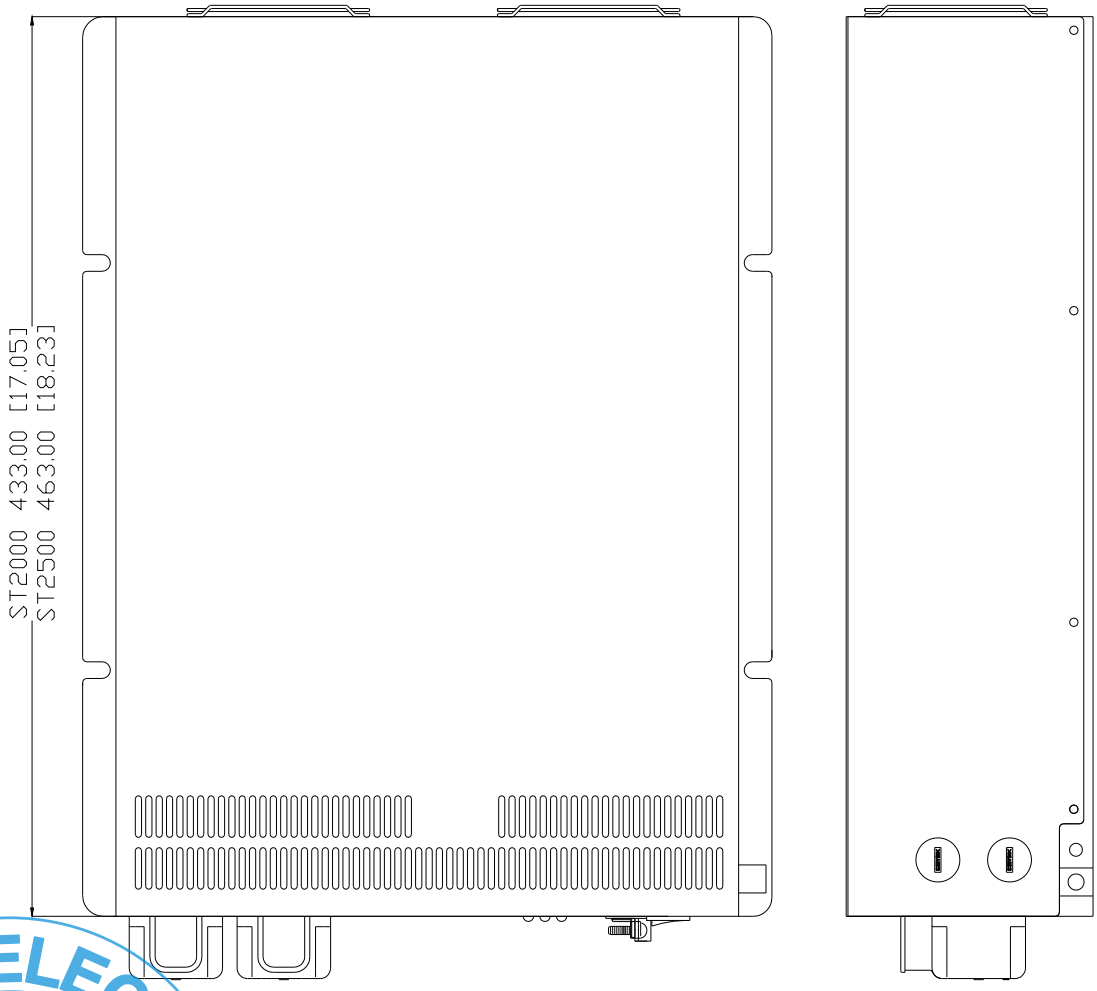


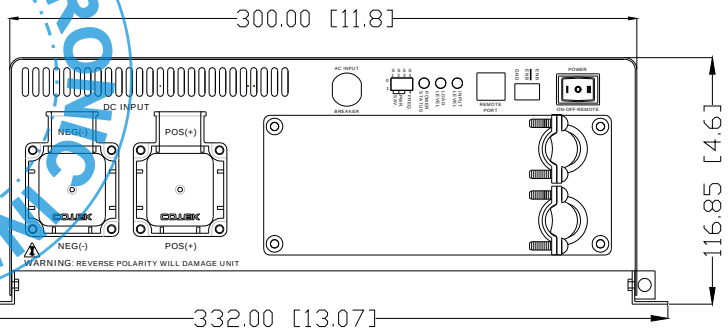




2-5. Mechanical drawings



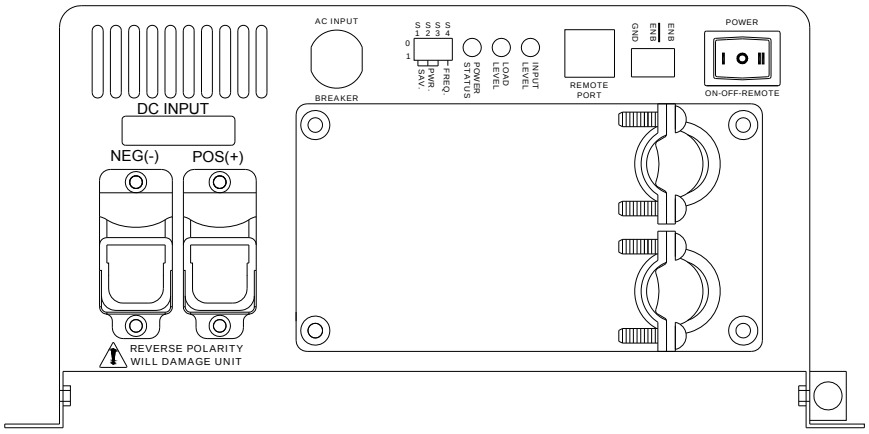




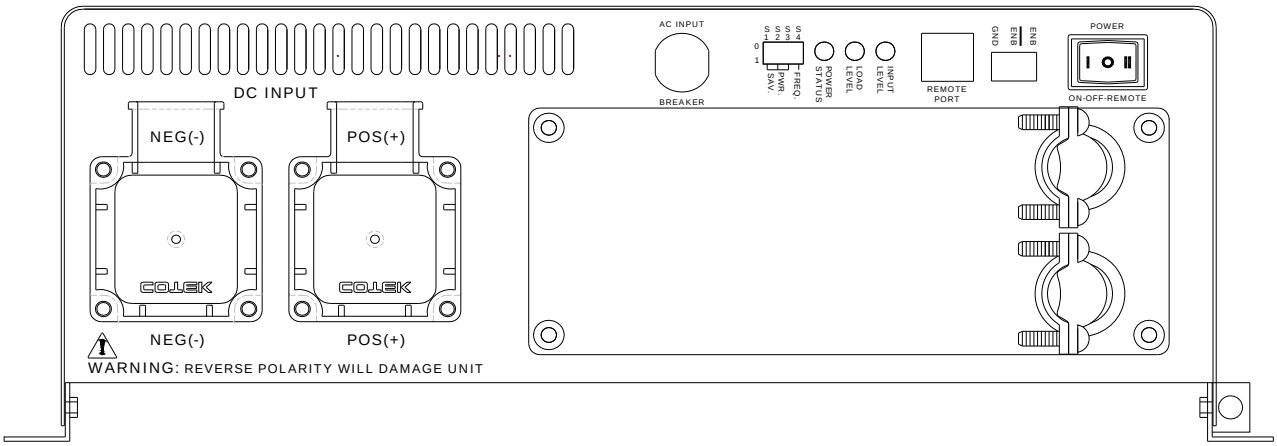
3. Introduction

3-1. Front Panel Operation

Front view



ST-1000/ST-1500



ST-2000/ST-2500

3-1-1. Power ON / OFF / REMOTE (Main) switch:

a. Before installing the inverter, you need to ensure the main switch is in the OFF position.

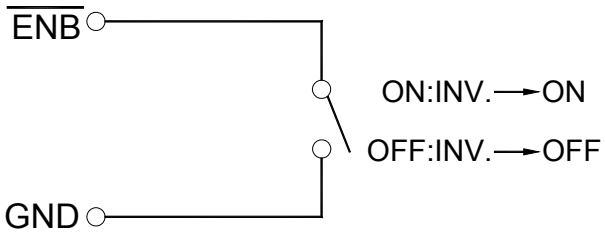
b. Before using the remote unit, you need to ensure the main switch is in the REMOTE position.

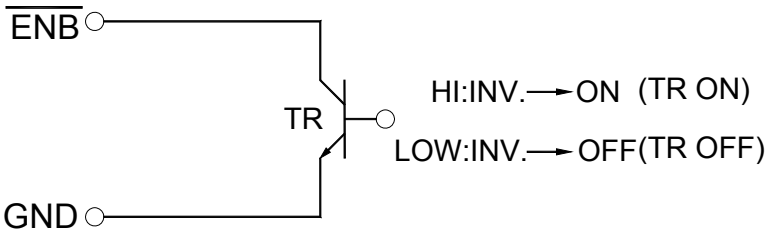
3-1-2. AC input Circuit Breaker:

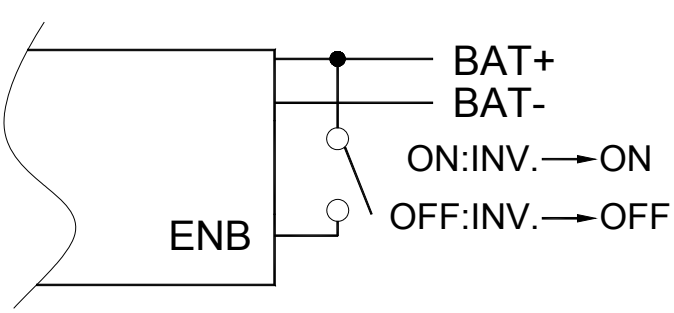
The AC input circuit breaker protects the model from overload. When an overload condition exists, the circuit breaker stops to supply output AC grid power. To reset it, push the circuit breaker switch then the model will be back in normal operation. The source fault should be corrected before you reset it.

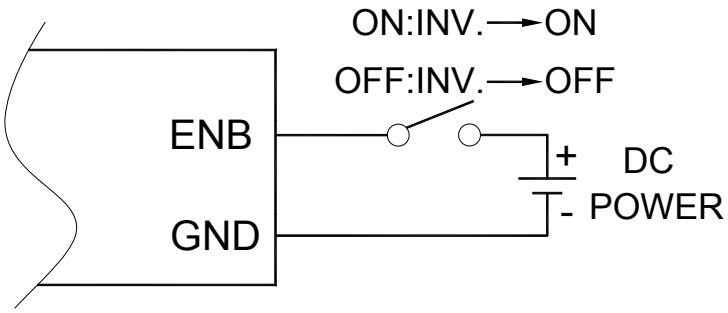
3-1-3 Green terminal

1) Before installing the inverter, you need to ensure the main switch must be ”OFF”.
2) Before using the remote control terminal, you need to ensure the main switch muse be “REMOTE”.
3) Ensure the remote contacts off.
4) Use 20 ~ 24 #AWG wire to connect the remote control terminal.
5) Remote control ON/OFF inverter setup status:









NOTE: At the same time, only can use one model to control the inverter. The maximum level is the same as input DC voltage.

3-1-4. Remote Port:

The ST Series Inverter is compatible with any of these remote controllers: CR-6 or CR-8.

3-1-5. Input Level：Display Input Voltages

LED Status	DC 12V	DC 24V	DC 48V
RED Blink (slow)	10.3~10.6	20.5~21.2	40.8~42.4
RED	10.6~11.0	21.2~21.8	42.4~43.5
ORANGE	11.0~12.1	21.8~24.1	43.5~48.1
GREEN	12.1~14.2	24.1~28.6	48.1~56.3
ORANGE Blink	14.2~15.0	28.6~30.0	56.3~59.6
OVER RED BLINK	15.0↑	30.0↑	59.6↑

3-1-6. Load Level：Display AC Loads (Watts)

LED Status	DARK	GREEN	ORANGE	RED	BLINKING RED
ST1000	0 ~ 80W	80 ~ 330W	330 ~ 750W	750 ~ 960W	Over 960W
ST1500	0 ~ 120W	120 ~ 495W	495 ~ 1125W	1125 ~ 1450W	Over 1450W
ST2000	0 ~ 160W	160 ~ 660W	660 ~ 1500W	1500 ~ 1920W	Over 1920W
ST2500	0 ~ 200W	200 ~ 825W	825 ~ 1875W	1875 ~ 2390W	Over 2390W

3-1-7. Power Status：Display Power & Fault Status

Orange LED	LED Signal	Status
Solid	———————	Power OK
Slow Blink	– – – –	Power Saving
Red LED	**LED Signal**	**Status**
Fast Blink	– – – – – – – – – –	OVP
Slow Blink	– – – –	UVP
Intermittent Blink	- - - - - -	OTP
Solid	———————	OLP
Green LED	**LED Signal**	**Status**
Solid	———————	AC GRID INPUT OK

3-1-8. AC Frequency：Selected by “S4” Dip Switch

Frequency	S4
50 HZ	OFF
60 HZ	ON

3-1-9. Power Saving Mode: Power Saving Mode is adjustable and set by the Dip Switches, S1, S2 and S3 on the front panel.
Example: The load should be set above15W. If the load is below15W, the power saving mode will be activated.

ST1000 ST1500	ST2000 ST2500	S1	S2	S3
DISABLE	DISABLE	OFF	OFF	OFF
20W	40W	ON	OFF	OFF
40W	80W	OFF	ON	OFF
55W	125W	ON	ON	OFF
75W	170W	OFF	OFF	ON
95W	210W	ON	OFF	ON
115W	245W	OFF	ON	ON
135W	280W	ON	ON	ON

3-1-10. DC Input Terminals:

Connect DC input terminals to 12V / 24V / 48V battery or other power sources.

[+] represents positive, [-] represents negative. Reverse polarity connection can blow the internal fuse and may damage the inverter permanently.

Model	DC Input Voltage	
	Minimum	Maximum
12V	10.5V	15.0V
24V	21.0V	30.0V
48V	42.0V	60.0V

3-1-11. Chassis Ground: Connect the wire # 8 AWG to vehicle chassis.

WARNING!

Operating the inverter without a proper ground connection may cause electrical safety hazard.

3-2. Protections Features

Model	DC Input (VDC)					Over Temperature Protection			
	Over Voltage		Under Voltage Alarm	Under Voltage		INTERIOR		HEAT SINK	
	Shut-down	Restart		Shut-down	Restart	Shut-down	Restart	Shut-down	Restart
12V	15.3	14.3	11.0	10.2	12.7	70℃	45℃	90℃	60℃
24V	30.6	28.6	22.0	20.3	25.2				
48V	61.2	57.2	44.0	40.8	49.7				

3-3 DC Wiring Connections

Follow the instructions to connect the battery cables to DC input terminals of the Inverter. The cable should be as short as possible (less than 6 feet / 1.8 meters ideally) so that it can handle the required current in accordance with the electrical codes or regulations application. Inappropriate length of cables will deteriorate the inverter performance such as poor surge capability, frequent low-input voltage warnings, and shutdown. UVP warning occurs when DC voltage drops across the cables from the inverter to the batteries. The longer or narrower the cables, the more the voltage drop.
Increasing your DC cable size will help improve the situation.
The following recommended cables are for the best performance of the inverter. (Apply both 120V and 230V versions)

Model No	Wire AWG	Inline Fuse
ST1000-112 / 212	# 2	150 A
ST1000-124 / 224	# 4	80 A
ST1000-148 / 248	# 6	40 A
ST1500-112 / 212	# 2	200 A
ST1500-124 / 224	# 4	100 A
ST1500-148 / 248	# 6	50 A
ST2000-112 / 212	# 2/0	250 A
ST2000-124 / 224	# 1/0	125 A
ST2000-148 / 248	# 2	70A
ST2500-112 / 212	# 4/0	400 A
ST2500-124 / 224	# 2/0	200 A
ST2500-148 / 248	# 1/0	100 A

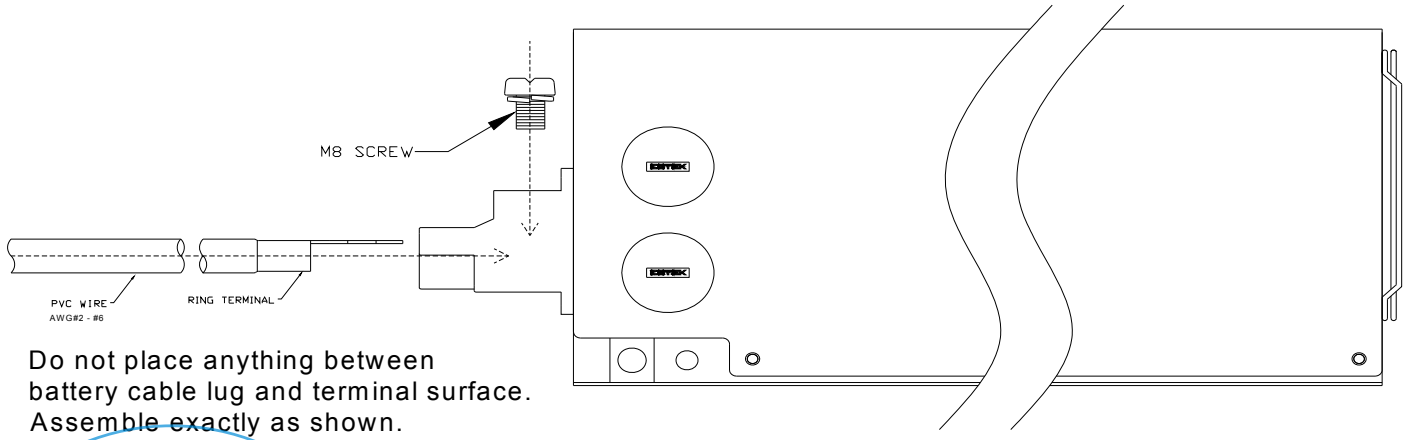
3-3-1. Connect the cables to the power input terminals on the front panel of the inverter. The red terminal is positive (+) and black terminal is negative (-). Insert the cables into the terminals and tighten screw to clamp the wires securely.

WARNING!
Make sure all the DC connections are tight (torque to 9 – 10 ft-lbs, 11.7 – 13 Nm). Loose connections could result overheat in a potential hazard.

WARNING!
The installation of a fuse must be on positive cable. Failure to place a fuse on “+” cables running between the inverter and battery may cause damage to the inverter and will void warranty.

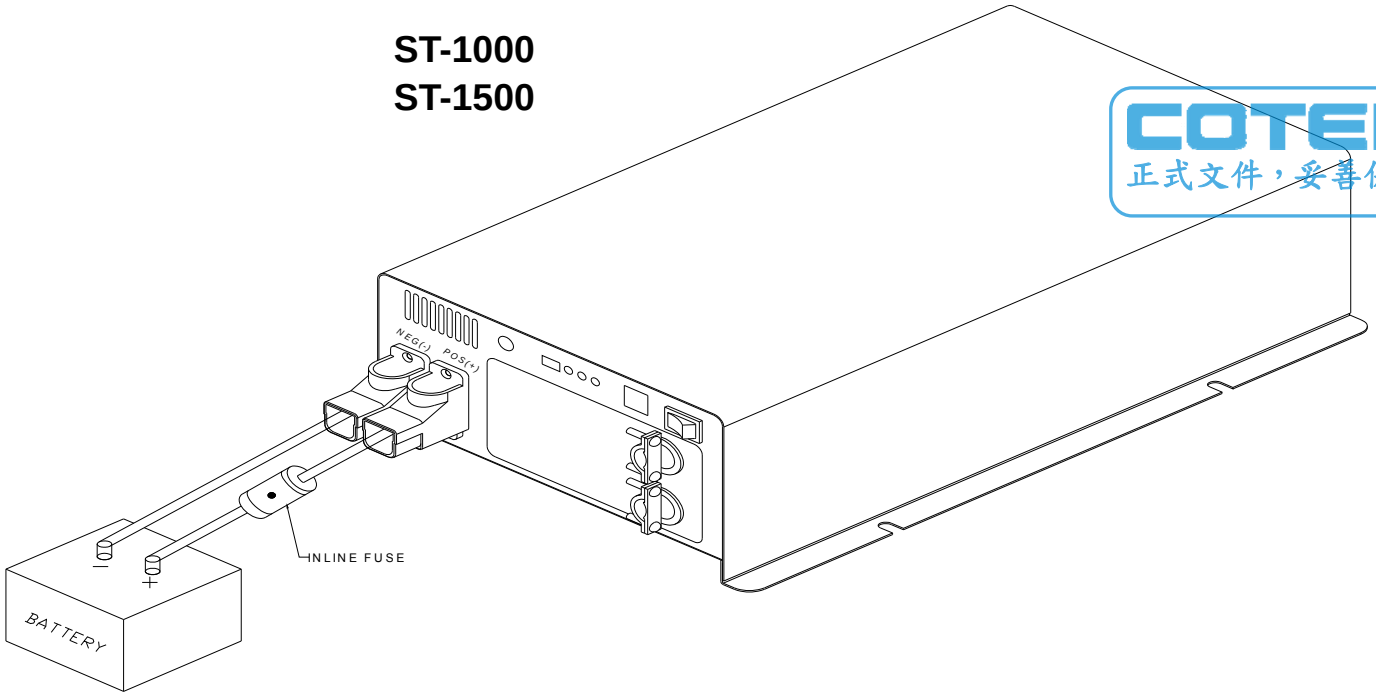
Also, only use high quality copper wire and keep the cable length short which is a maximum of 3 - 6 feet.

Battery to inverter cable connection

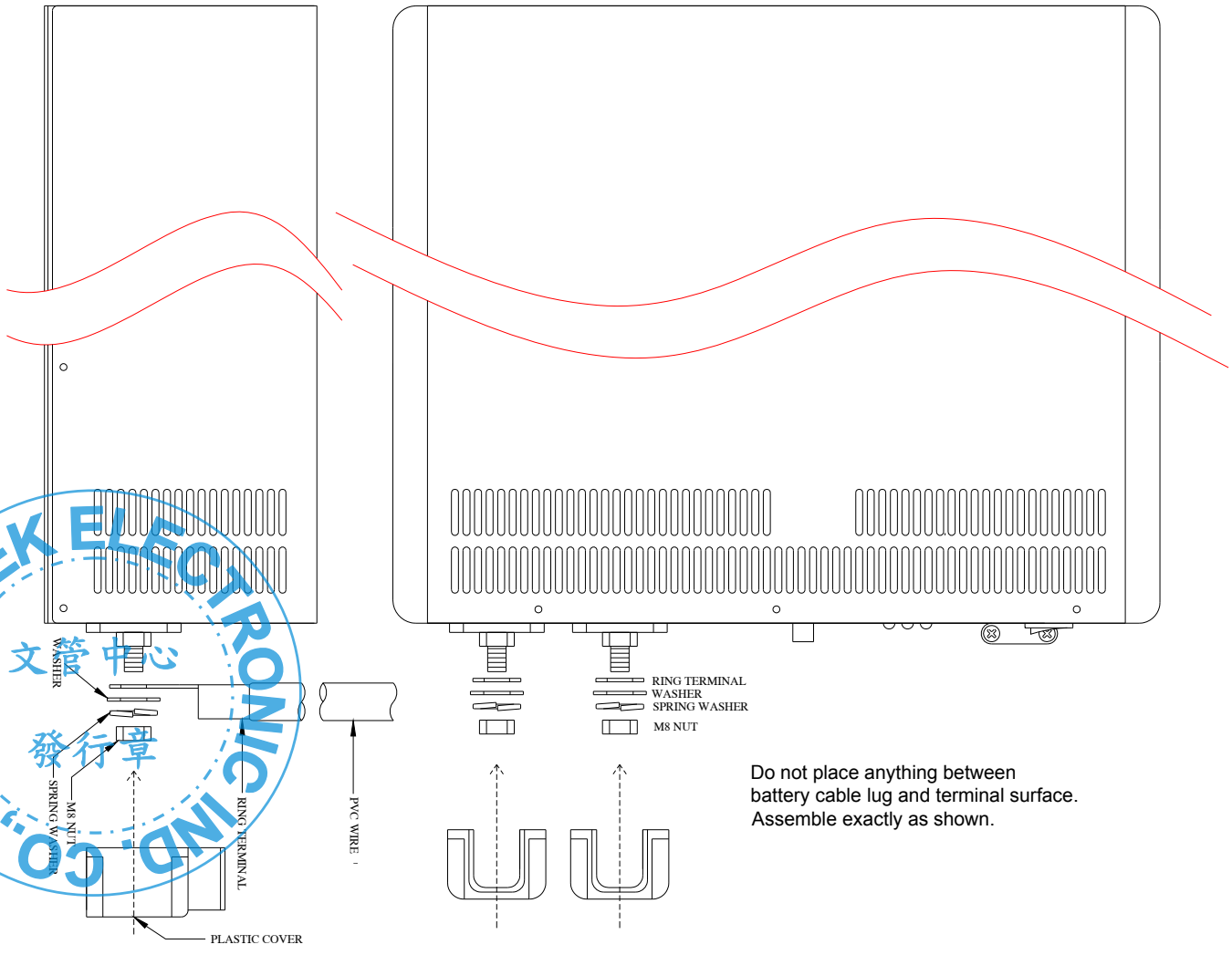


Do not place anything between battery cable lug and terminal surface. Assemble exactly as shown.

ST-1000
ST-1500

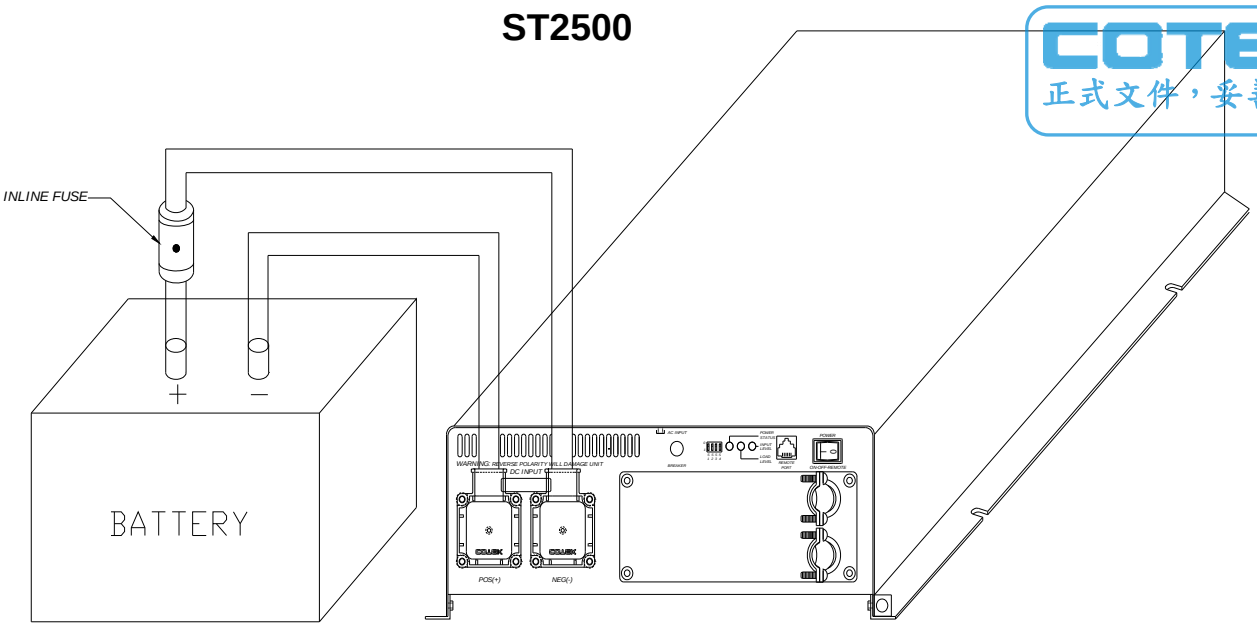


Battery to inverter cable connection



Do not place anything between battery cable lug and terminal surface. Assemble exactly as shown.

ST2000
ST2500



3-4 Hard-wire Installation

AC wiring connections:

3-4-1. The AC wiring compartment is located on the front panel of the ST series. Remove the AC wiring compartment cover to gain access to the AC terminal.

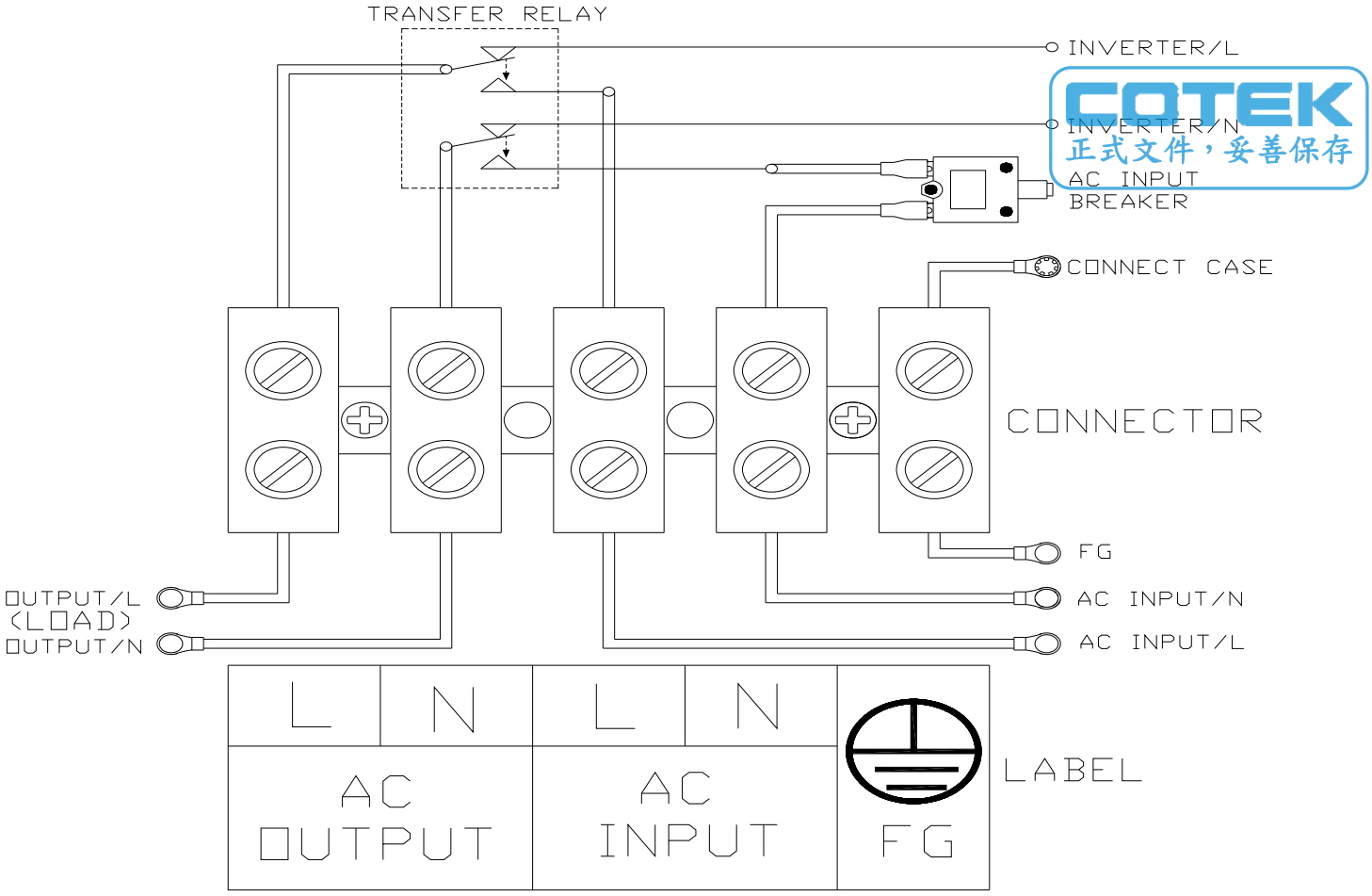
> **WARNING!**
>
> 
>
> Before you connect AC wiring to the terminals of compartment cover, ensure to check the label in the compartment for correct connections. Wrong connection will damage the inverter.

CAUTION !

It is advised that all the electrical installation should conform to the local electrical codes and should be carried out by a certified electrician.

When the unit is feeding the internally inverted voltage (Power Status LED is green, power from the AC input source is not available), the current carrying conductors connected to the “L” and “N” terminals of the AC output will be isolated from the metal chassis of the inverter. Hence, during this condition, when the metal chassis of the inverter is connected to the earth ground, the “N” terminal of the AC output will not be grounded (bonded) to the earth ground. Under this condition, the “N” terminal of the AC output will not be a Neutral in the true sense. Do not touch this terminal as it will be at an elevated voltage(almost half the value the AC output voltage) with respect to the metal chassis / earth ground and may produce an electrical shock when touched!

When the unit is transferring power from the AC input source (Power Source LED is orange), the grounding condition of the “N” terminal of the AC output will be the same as the condition of the “N” terminal of the AC input source. If the AC input source is the power supplied from the utility, the “N” terminal would be a Neutral in the true sense, will normally be bonded to the earth ground and will read almost 0 V with respect to the earth ground. In this case, touching this terminal will not be a shock hazard.



3-4-2. Connect AC output and AC input wiring to the ST series terminals. Please take the following information as your reference.

Terminal		Wire color	Wire length / gauge	
			ST1000&ST1500	ST2000&ST2500
AC OUTPUT	Line (L)	Black	Within 16 feet / AWG# 14~16	Within 16 feet / AWG# 10 ~12
	Neutral (N)	White		
AC INPUT	Line (L)	Brown		
	Neutral (N)	Blue		
Ground		Green / Yellow or Bare copper	26~32 feet / AWG# 12~14	26~32 feet / AWG# 8 ~10

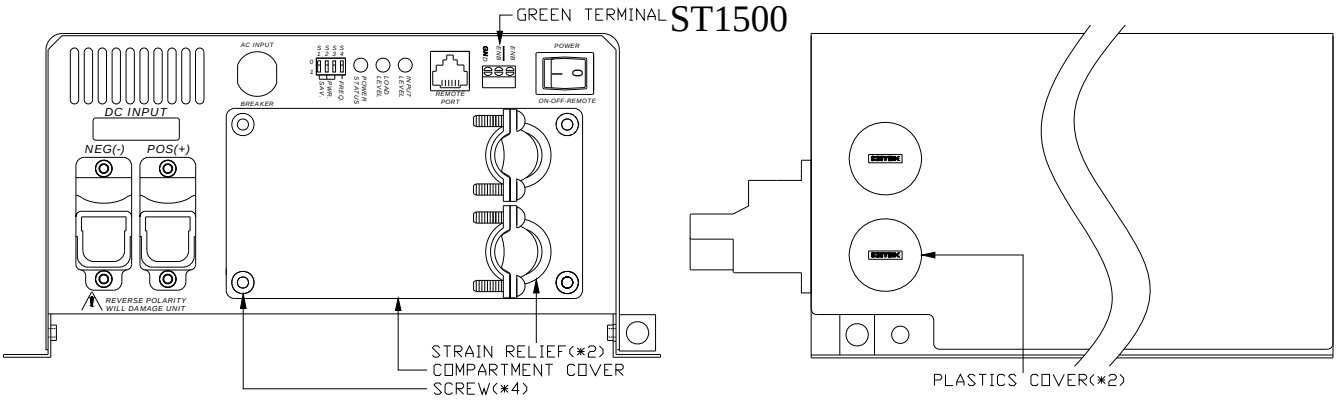
3-4-3. Please double check and review all connections to ensure the wires are in correct terminals and the connections are tight.

3-4-4. Before connecting AC output and AC input terminals of the ST series, you can either use front compartment cover or a side hole to coil out. Both AC input and AC output are coiled out from the front compartment cover when in production. If you want to change the position, you should open the top cover first, and then switch the wire of the front compartment cover and the plastic cover of the side of top cover.

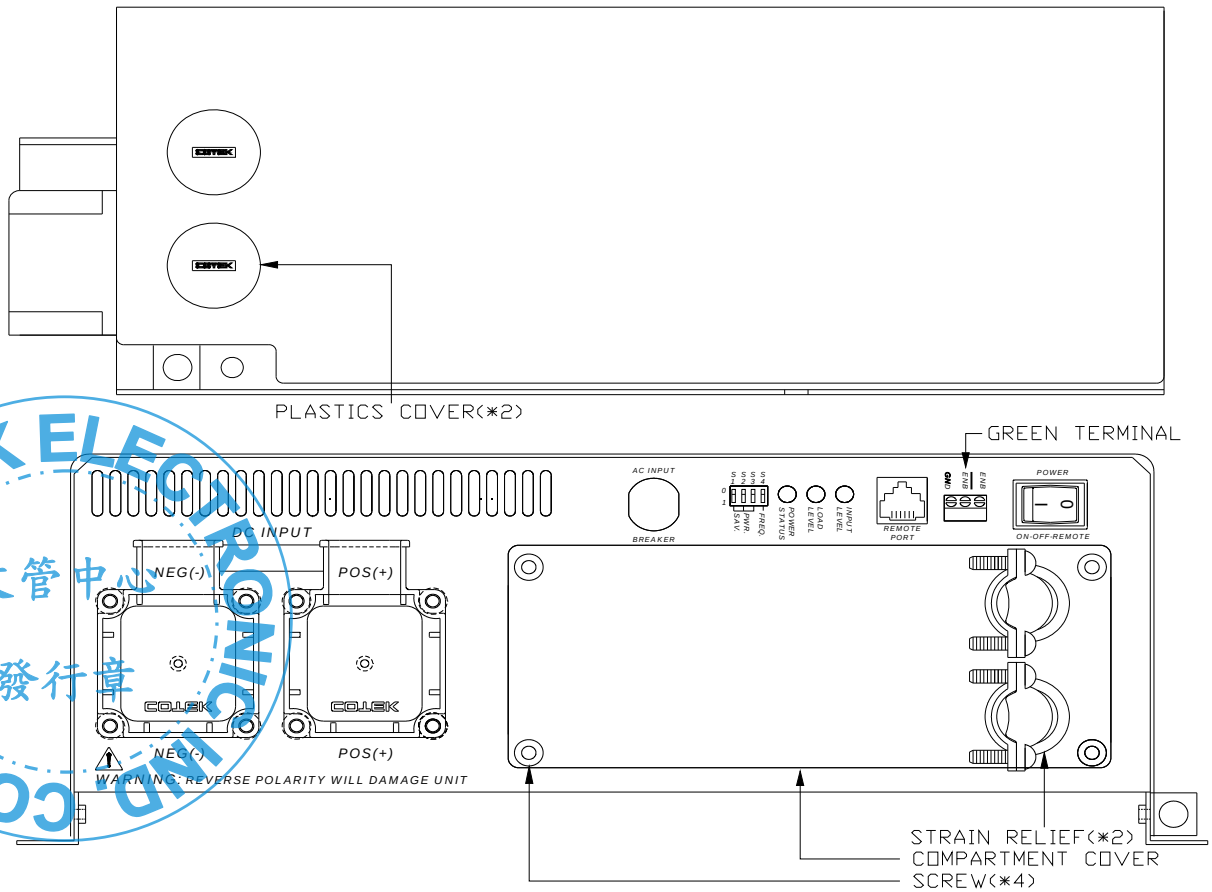
WARNING !

If the connection distribution of the frond panel is not feasible for your appliances, ST series also provides another distribution on the side panel, to utilize it please be ensured to remove the plastic covers before installing the strain relief; moreover, replace the empty hole of front panel with removed plastic covers for safety purpose.

ST1000
ST1500

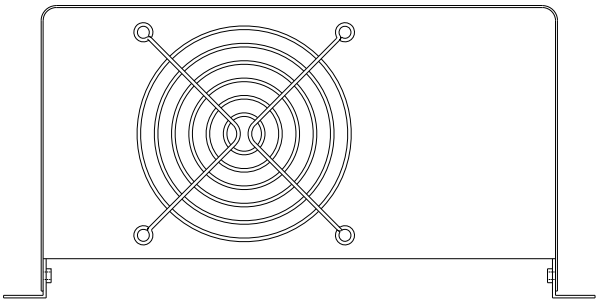


ST2000
ST2500

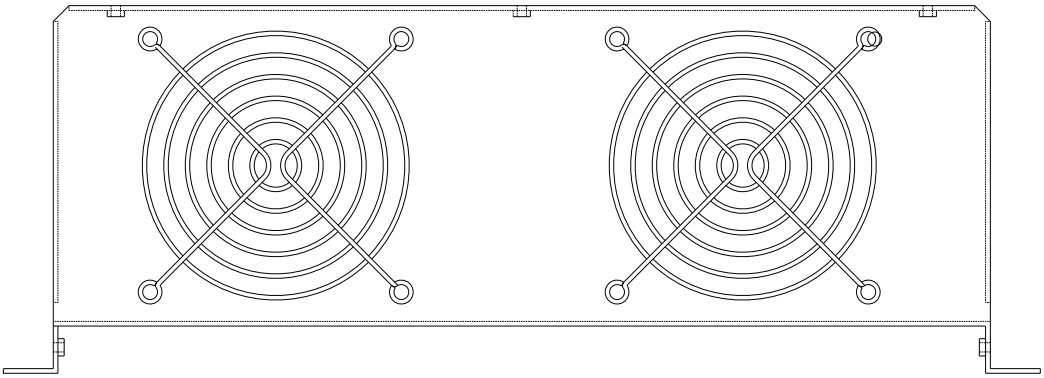


3-5. Rear Panel Operation

Rear view



ST-1000/ST-1500



ST-2000/ST-2500

3-5-1. Fan Ventilation:

Be sure to keep it a distance (at least 1 inch) form surrounding things.

3-6. Installation

The power inverter should be installed in a location that meets the following requirements:

3-6-1. Dry – Do not allow water to drip or splash on the inverter.

3-6-2. Cool – Ambient air temperature should be between 0℃ and 40℃, the cooler the better.

3-6-3. Safety – Do not install batteries in compartment or other areas where flammable fumes existence such as fuel storage areas or engine compartments.

3-6-4. Ventilated – Allow at least one inch of clearance around the inverter for air flow. Ensure the ventilation shafts on the rear and bottom of the unit are not obstructed.

3-6-5. Dust-free – Do not install the Inverter in a dusty environments where dust, wood particles or other filings/shavings are present. The dust can be pulled into the unit when the cooling fan is operation.

3-6-6. Close to batteries – Avoid excessive cable lengths but do not install the inverter in the same compartment as batteries.
Use the recommended wire lengths and sizes (see section 4-3).
Do not mount the inverter at the place where it is exposed to the gases produced by the battery.
These gases are very corrosive and prolonged exposure will damage the inverter.

WARNING!
Shock Hazard. Before proceeding further, carefully check that the inverter is NOT connected to any batteries, and that all wiring is disconnected from any electrical sources . Do not connect the output terminals of the inverter to an incoming AC source.

3-7. Inverter Operation

Switch the power ON, then the power inverter is ready to supply AC power to the loads. Turn on the loads separately after the inverter is ON to prevent OVP status caused by the surge power.

3-7-1. Switch the power ON, then the buzzer will send out beep sound. At the moment, the inverter is doing self-diagnosis. Then the LED's indicators will also show various colors.

Finally, the buzzer will send out another beep, and the Input Level and Status LED indicators will turn green. Then the inverter will start to work.

3-7-2. Switch the power OFF, then the inverter stops and all the lights that are On will go Off.

3-7-3. Switch the power inverter and the test load ON, then the inverter will supply the power to the load. If you want to measure true RMS voltage output of the inverter, a meter such as FLUKE 45 BECKMAN 4410 or TRIPLETT 4200 must be used.

4. Information

4-1. Troubleshooting

WARNING

Do not open or disassemble the ST series Inverter. Attempting to service the unit may cause the risk of electrical shock or fire.

Problems and Symptoms	Possible Cause	Solutions
No AC Power "Output" ***STATUS illuminates the LED***		
a. Power status light is blinking fast.	Over input voltage. (OVP)	Check input voltage Reduce input voltage.
b. Power status light is Blinking slowly.	Low input voltage. (UVP)	Recharge battery. Check connections and cables.
c. Power status light is blinking Intermittently.	Thermal shutdown. (OTP)	Improve ventilation. Make sure ventilation, shafts of the inverter are not obstructed. Lower ambient temperature.
d. Power status light is glowed steadily.	Short circuit. Wiring error. Over Loading (OLP)	Check AC wiring for short circuit. Reduce load.

4-2. Maintenance

Very little maintenance is required to keep your inverter operating properly. You should clean the exterior of the unit periodically with a damp cloth to prevent accumulation of dust and dirt. At the same time, tighten the screws on the DC input terminals.