



# Inverter/charger

## USER MANUAL

PRO LCD - 1012B PRO LCD - 1024B PRO LCD - 1512B PRO LCD - 1524B PRO LCD - 2012B PRO LCD - 2024B PRO LCD - 2048B  
PRO LCD - 3012B PRO LCD - 3024B PRO LCD - 3048B PRO LCD - 4024B PRO LCD - 4048B PRO LCD - 5024B PRO LCD - 5048B  
PRO LCD - 6024B PRO LCD - 6048B

# POWER INVERTER

Figures of Unit:

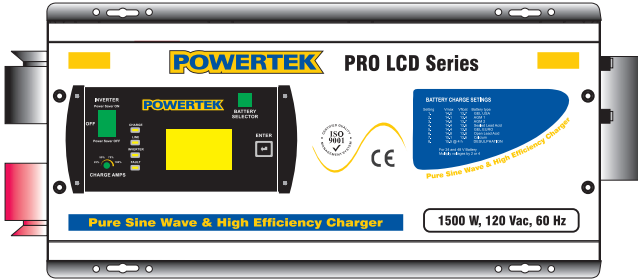


Figure 1 top view

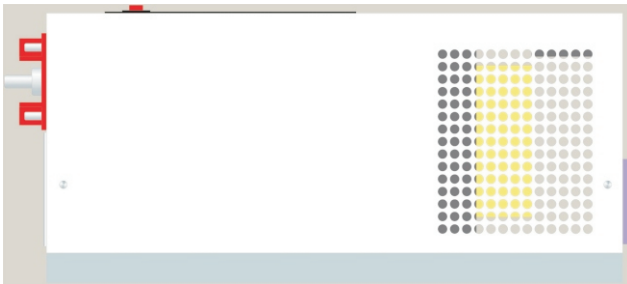


Figure 2 side

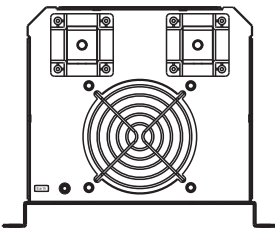


Figure 3 DC side

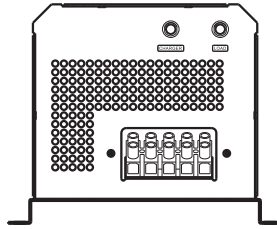
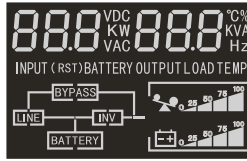


Figure 4 AC side

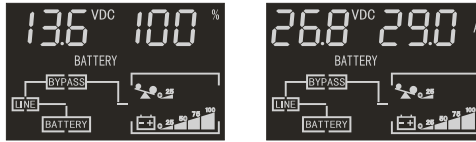
# POWER INVERTER

## LCD Display



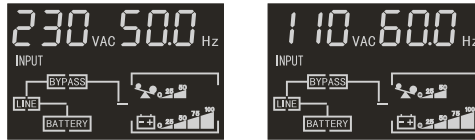
### 1) Charge Mode

When utility is on, LCD indicate charge current:



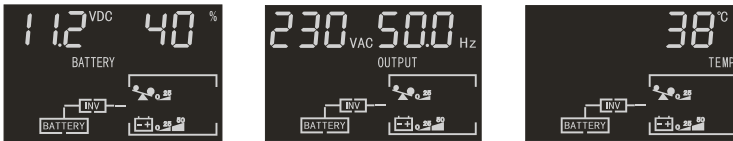
### 2) Utility Mode

On utility mode, the indication and displays are as following figures:



### 3) Battery Mode

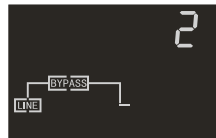
On battery mode, LCD indicate battery capacity:



### 4) Fault Mode

When inverter fault, the indication and displays are as following figures:

- 1: fan jam
- 2: overload
- 3/6/7: output short circuit
- 4: over temperature
- 8/9: battery overvoltage.



## POWER INVERTER

### *Line Mode Specifications:*

<b>MODEL</b>	<b>Model</b>															
	1012	1024	1512	1524	2012	2024	2048	3012	3024	3048	4024	4048	5024	5048	6024	6048
<b>Input Voltage Waveform</b>	Sinusoidal (utility or generator)															
<b>Nominal Input Voltage</b>	110Vac / 120Vac / 220Vac / 230Vac															
<b>Low Line Disconnect</b>	85Vac $\pm$ 4% / 154Vac $\pm$ 4%															
<b>Low Line Re-connect</b>	90Vac $\pm$ 4% / 164Vac $\pm$ 4%															
<b>High Line Disconnect</b>	135Vac $\pm$ 4% / 253Vac $\pm$ 4%															
<b>High Line Re-connect</b>	130Vac $\pm$ 4% / 263Vac $\pm$ 4%															
<b>Max AC Input Voltage</b>	140Vrms / 270Vrms															
<b>Nominal Input Frequency</b>	50Hz/ 60Hz (Auto detection)															
<b>Low Line Frequency Re-connect</b>	42 $\pm$ 0.3Hz for 50Hz;															
<b>Low Line Frequency Disconnect</b>	40 $\pm$ 0.3Hz for 50Hz;															
<b>High Line Frequency Re-connect</b>	68 $\pm$ 0.3Hz for 50Hz;															
<b>High Line Frequency Disconnect</b>	70 $\pm$ 0.3Hz for 50Hz;															
<b>Output Voltage Waveform</b>	As same as Input Waveform															
<b>Over-Load Protection (SMPS load)</b>	Circuit breaker															
<b>Output Short Circuit Protection</b>	Circuit breaker															
<b>Efficiency (Line Mode)</b>	>95%															
<b>Transfer Time (Ac to Dc)</b>	10ms (typical)															
<b>Transfer Time (Dc to Ac)</b>	10ms (typical)															
<b>Pass through without Battery</b>	Yes															

## POWER INVERTER

### *Inverter Mode Specifications:*

MODEL	Model															
	1012	1024	1512	1524	2012	2024	2048	3012	3024	3048	4024	4048	5024	5048	6024	6048
Output Voltage Waveform	Pure Sine wave															
Rated Output Power (VA)	1200		1800		2400		3500		4700		6000		7000			
Rated Output Power (W)	1000		1500		2000		3000		4000		5000		6000			
Power Factor	0.85															
Nominal Output Voltage (V)	110Vac / 120Vac / 220Vac / 230Vac ±10%															
Nominal Output Frequency (Hz)	60Hz ± 0.3Hz / 50Hz ± 0.3Hz															
Auto tracking Main Frequency (Hz)	Yes (Following Main first connection) 50Hz @40-70Hz 60Hz @40-70Hz															
Output Voltage Regulation	±10% rms															
Nominal Efficiency	>80%															
Over-Load Protection (SMPS load)	(110%<load<125%) ±10%: Fault (shutdown output) after 15 minutes; (125%<load<150%) ±10%: Fault (shutdown output) after 60s; Load>150% ±10%: Fault (shutdown output) after 20s															
Surge rating	3000VA		4500VA		6000VA		9000VA		12000VA		15000VA		18000VA			
Capable of starting electric motor	1 HP						2 HP						3 HP			
Output Short Circuit Protection	Current limit															
Nominal DC Input Voltage	12V	24V	12V	24V	12V	24V	48V	12V	24V	48V	24V	48V	24V	48V	24V	48V
Min DC start voltage	10.5Vdc/21Vdc/42Vdc															
Low Battery Alarm	10.5Vdc ± 0.3Vdc for 12V battery 21.0Vdc ± 0.6Vdc for 24V battery 42.0Vdc ± 1.2Vdc for 48V battery															
Low DC input Shut-down	10.0Vdc ± 0.3Vdc for 12V battery 20.0Vdc ± 0.6Vdc for 24V battery 40.0Vdc ± 1.2Vdc for 48V battery															
High DC input Alarm & Fault	16Vdc ± 0.3Vdc for 12V battery 32Vdc ± 0.6Vdc for 24V battery 64Vdc ± 1.2Vdc for 48V battery															
High DC input Recovery	15.5Vdc ± 0.3Vdc for 12V battery 31.0Vdc ± 0.6Vdc for 24V battery 62.0Vdc ± 1.2Vdc for 48V battery															
Power saver	Load ≅50W															

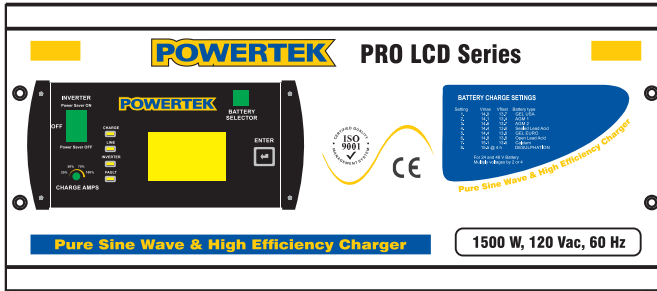
**POWER INVERTER**


<b>Charge Mode Specifications:</b>																
MODEL	Model															
	1012	1024	1512	1524	2012	2024	2048	3012	3024	3048	4024	4048	5024	5048	6024	6048
Nominal Input Voltage	110Vac/120Vac/220Vac/230Vac															
Input Voltage Range	90~130Vac/164~253Vac															
Nominal Output Voltage	Same as input voltage															
MAX Charge Current	45A	25A	45A	25A	70A	35A	20A	90A	45A	30A	55A	35A	75A	45A	80A	55A
Charge Current Regulation	Charge current adjustable: 25%, 50%, 75%, 100%. (Optional)															
Over Charge Protection	Bat. V ≥15.7Vdc / 31.4Vdc/62.8Vdc, beeps 0.5s every 1s & fault after 60s															
<b>Charge Algorithm</b>																
Algorithm	<p><b>Three stage:</b>  <b>Boost CC</b> (constant current stage) → <b>Boost CV</b> (constant voltage stage) → <b>Float</b> (constant voltage stage)</p>															
Charge Stage Transition Definitions	<ul style="list-style-type: none"> <li>◆ <b>Boost CC Stage:</b> If A/C input is applied, the charger will run at full current in CC mode until the charger reaches the boost voltage.</li> <li>◆ Software timer will measure the time from A/C start until the battery charger reaches 0.3V below the boost voltage, then take this time as T<sub>0</sub> and T<sub>0</sub> × 10 = T<sub>1</sub>.</li> <li>◆ <b>Boost CV Stage:</b> Start a T<sub>1</sub> timer; the charger will keep the boost voltage in Boost CV mode until the T<sub>1</sub> timer has run out. Then drop the voltage down to the float voltage. The timer has a minimum time of 1 hour and a maximum time of 12 hours.</li> <li>◆ <b>Float Stage:</b> In float mode, the voltage will stay at the float voltage.</li> <li>◆ If the A/C is reconnected or the battery voltage drops below 12Vdc/24Vdc, the charger will reset the cycle above.</li> <li>◆ If the charge maintains the float state for 10 days, the charger will reset the cycle.</li> </ul>															

## POWER INVERTER

### Front Panel

#### AC Priority



Switch	Power saver auto	Power on with saver mode (power saver $\leq 50W$ )
	Unit Off	Power totally off (If there is AC power, inverter have charger function)
	Power saver off	Power on without saver mode
	Charge current adjustable: 25%, 50%, 75%, 100%. (Optional)	

#### Audible Alarm

Battery Voltage Low	Inverter green LED Lighting, and the buzzer beep 0.5s every 5s.
Battery Voltage High	Inverter green LED Lighting, and the buzzer beep 0.5s every 1s, and Fault after 60s.
Inverter Mode Over-Load	110% < load < 125%, no audible alarm in 14 minutes, beeps 0.5s every 1s in 15 <sup>th</sup> minute, and Fault after 15 minutes. 125% < load < 150%, beeps 0.5s every 1s, and Fault after 60s. Load > 150%, beeps 0.5s every 1s, and Fault after 20s.
Over Temperature	Heat sink temp. $\geq 105^{\circ}C$ , Over temp red LED Lighting, beeps 0.5s every 1s;

#### Protection

Over Temperature Protection	Heat sink temp. $\geq 105^{\circ}C$ , Fault (shutdown Output) after 30 seconds
Back-Feed Protection	Yes

## POWER INVERTER

### AC Priority

	Switch setting	Description	Boost			Float		
			Voltage			Voltage		
			12V	24V	48V	12V	24V	48V
<b>Battery Type Setting</b> BATTERY TYPE SELECTOR	0	To be used by factory for set up	-		-	-		-
	1	Gel USA	14.0	28.0	56.0	13.7	27.4	54.8
	2	AGM 1	14.1	28.2	56.4	13.4	26.8	53.6
	3	AGM 2	14.6	29.2	58.4	13.7	27.4	54.8
	4	Sealed lead acid	14.4	28.8	57.6	13.6	27.2	54.4
	5	Gel EURO	14.4	28.8	57.6	13.8	27.6	55.2
	6	Open lead acid	14.8	29.6	58.2	13.8	27.6	55.2
	7	Calcium	15.1	30.2	60.4	13.6	27.2	54.4
	8	De sulphation	15.5	31.0	62.0	4 hours then off		
	9	Not used	-		-	-		-
<b>Fault recovery</b>	By restart the machine							

### FAN Operation

Variable speed fan operation is required in invert and charge mode. This is to be implemented in such a way as to ensure high reliability and safe unit and component operating temperatures in an operating ambient temperature up to 50°C.

- Speed to be controlled in a smooth manner as a function of internal temperature and/or current.
- Fan should not start/stop suddenly.
- Fan should run at minimum speed needed to cool unit.
- Fan noise level target <60db.

The fan logic as below:

	Condition	Enter condition	Leave condition	Speed
<b>Fan Operation</b>	<b>HEAT SINK TEMPERATURE</b>	$T \leq 60^{\circ}\text{C}$	$T > 65^{\circ}\text{C}$	OFF
		$65^{\circ}\text{C} \leq T < 85^{\circ}\text{C}$	$T \leq 60^{\circ}\text{C}$ or $T \geq 85^{\circ}\text{C}$	50%
		$T > 85^{\circ}\text{C}$	$T \leq 80^{\circ}\text{C}$	100%
<b>Charge Current</b>	$I \leq 15\%$	$I \geq 20\%$	OFF	
	$20\% < I \leq 50\% \text{Max}$	$I \leq 15\%$ or $I \geq 50\% \text{Max}$	50%	
	$I > 50\% \text{Max}$	$I \leq 40\% \text{Max}$	100%	
<b>Load% (Invert mode)</b>	Load < 30%	Load $\geq$ 30%	OFF	
	$30\% \leq \text{Load} < 50\%$	Load $\leq$ 20% or Load $\geq$ 50%	50%	
	Load $\geq$ 50%	Load $\leq$ 40%	100%	



# POWER INVERTER

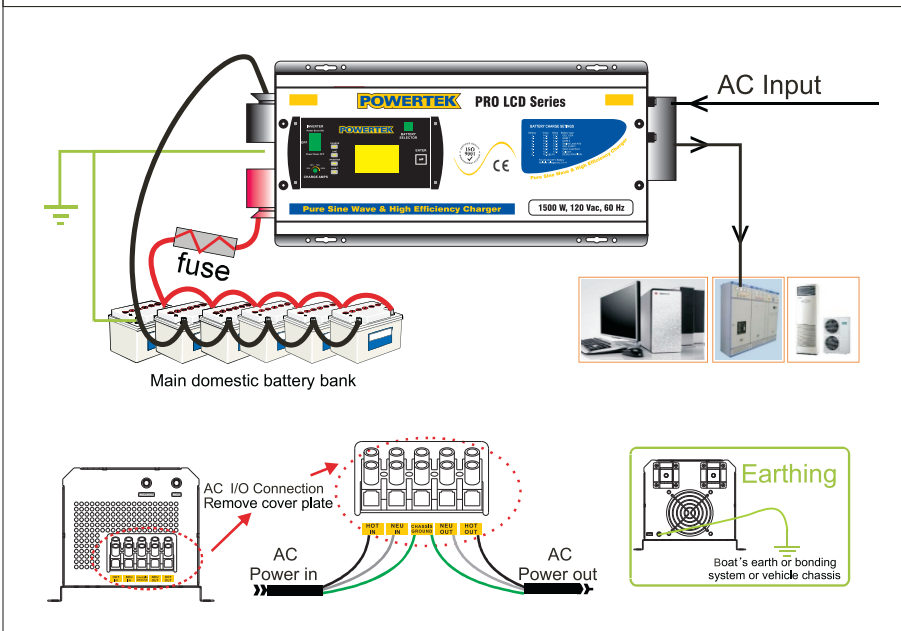
## General Specifications

Safety Certification	CE
Operating Temperature Range	0°C to 40°C
Storage temperature	-15°C ~ 60°C
Operation humidity	5% to 95%
Audible Noise	60dB max
Cooling	Forced air, variable speed fan
Size	1012 /1024/1512/1524/2012/2024/2048/3012/3024/3048 :585mm*320mm*310mm 4024 /4048/5024/5048/6024/6048 : 740mm*320mm*298mm

## AC Input wiring:

Selecting the proper wire (cable) size is very important for performance and safety. The Internal wire resistance varies according to amperage and temperature. It is recommended to keep voltage drop in all circuit under 3%.

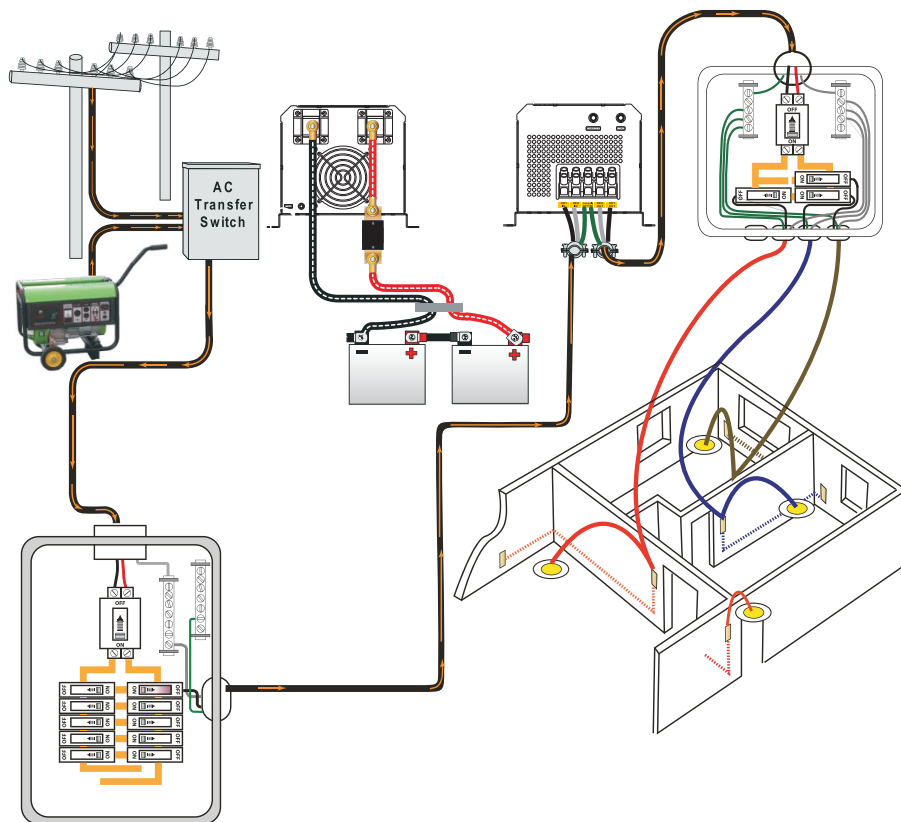
## Connection diagram



## POWER INVERTER

### Installation Procedure:

1. Insure the DC voltage of inverter in accordance with the battery voltage .
2. Insure the positive pole (red) of inverter connect with the positive pole (red) of battery ,and the negative pole (black) of inverter connect with the negative pole (black) of battery ,then tighten the screw.
3. Turn on the inverter and see if it is good ,if good then turn off.
4. Connect with AC power/Ground wire ,turn on the inverter and see if it is working normally (charge the battery ,show charge current) ,if so, turn off the inverter.
5. Connect with the load/ground wire and turn on the inverter ( Power saver auto or Power saver off) .
6. Turn on the Load .



Remark:Used in utility power or solar system.

# POWER INVERTER

## Troubleshooting Guide

Troubleshooting contains information about how to troubleshoot possible error conditions while using the Inverter & Charger.

The following chart is designed to help you quickly pinpoint the most common inverter failures.

### Indicator and Buzzer

Status	Item	Indicator on top cover				Buzzer
		LINE	INVERTER	CHARGE	FAULT	
Line Mode	CC	√	x	blink	x	—
	CV	√	x	blink	x	—
Invert Mode	Float	√	x	√	x	—
	Standby	√	x	x	x	—
Alarm Mode	Inverter on (Power saver OFF)	x	√	x	x	—
	Power saver on	x	blink	x	x	—
Alarm Mode	Battery Low	x	√	x	blink	beep 0.5s every 5s
	Battery High	x	√	x	blink	beep 0.5s every 1s
	Overload on invert mode	x	√	x	blink	Refer to “Audible alam”
	OverTemp on invert mode	x	√	x	blink	beep 0.5s every 1s
	OverTemp on line mode	√	x	√	blink	beep 0.5s every 1s
	Over charge	√	x	√	blink	beep 0.5s every 1s
Fault Mode	Fan lock	x	x	x	√	beep continuous
	Battery High	x	x	x	√	beep continuous
	Inverter mode overload	x	x	x	√	beep continuous
	OverTemp	x	x	x	√	beep continuous
	Over charge	x	x	x	√	beep continuous
	Back Feed Short	x	x	x	√	beep continuous

Remark: √ shows the indicator on. x shows the indicator off. √, blink shows the indicator blinking about 0.5s on and 0.5s off.

## POWER INVERTER

Problem	Possible cause	Solution
battery lowvoltage	run out of battery	continue to charge battery full
	battery lower to 10v at machine off status, baterry damaged	change new battery
battery overvoltage	machine fault/battery connection fault	check machine, and check if battery connection correct.
overload	connected more loads	turned off inverter,remove some loads
	connected big motor load	start power of motor load is huge,3-4 times of load itself,pls choose the correct load
over temperature	The surrounding environment space is small	keep environment unobstructed
	machine does not turn off but overload	check Fan at normal working remove some loads
over charge	machine fault/machine "select" switch at wrong position	set "selcet" switch at correct position
without output	red power button wrong,	check red power button at right place,
	machine inside wire connection not correct	check LED lights if normal to confirm inside wire connection
	machine components damaged	open machine case to check components
without charge	machine "select" switch at wrong position	set "selcet" switch at correct position
	machine inside wire connection not correct	check LED lights if normal to confirm inside wire connection
	machine does not at "AC mode"	set at "AC mode"
load light flashing	at power saver on, load less than 25w	add more loads over 25w , 50w is better until normal
Fan stops run	Fan blocked	check if something block fan, like insect, etc.
	Fan jam	open machine case, find a white probe cable (on cooling fin), let it at short-circuit condition, the small fan should be run (if not,the fan abnormal)
Output short circuit	Load at short circuit	Check load carefully
	Mosfet broken	Check machine inside
Remark: the fan starts to run until temperature reaches 50-60 degree		

...Need any support,contact our customer servicer freely...

技术要求:

1: 成品尺寸:142\*210±2 (mm)

2: 材质:157克铜板纸

3: 印刷:CMYK印刷

4: 印刷效果需保证字体、图片清晰,无多余杂点,毛边