

USER MANUAL

Model:

DPP10 DPP15

DPP20 DPP25

DPP35

Language: English

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ENGLISH

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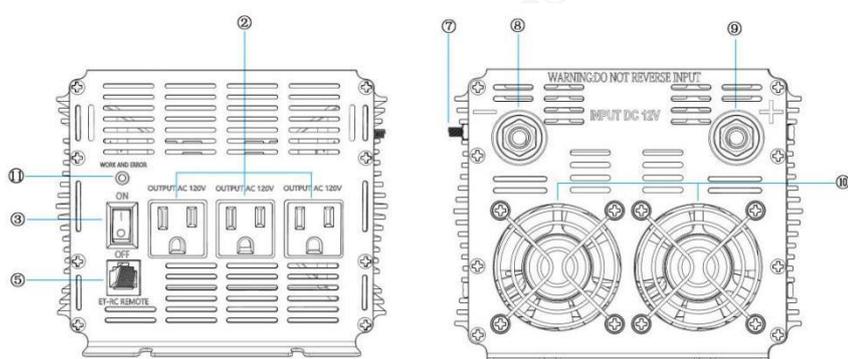
1. WHAT IS THE POWER INVERTER?

The power inverter converts direct-current (DC) low voltage (12V model, 24V model, 48V model) power to 120V alternating-current (AC) that you can use to operate all kinds of devices, like kitchen appliances, microwave, air conditioner, TV, computer or work tools. You just connect the battery and devices to the inverter. Then you've got portable power. It is simple and you can use it anywhere, anytime, you will always be able to run your devices from battery.

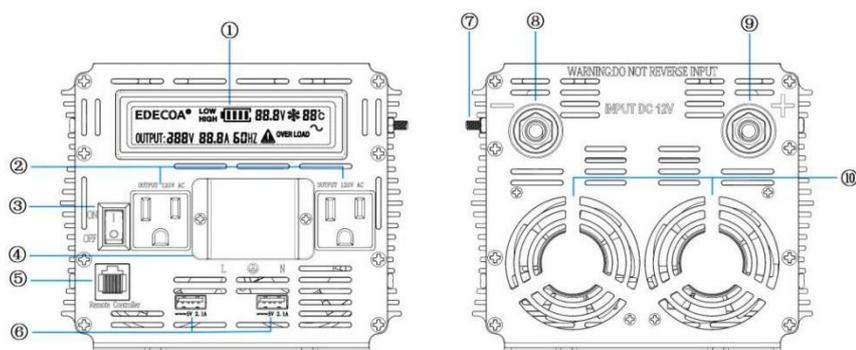


2. INVERTER APPEARANCE DESCRIPTION

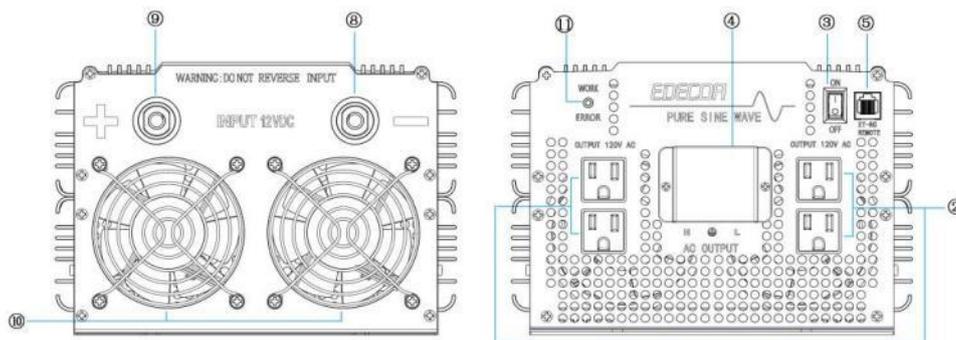
Pure Sine wave Inverter 1000-2000W

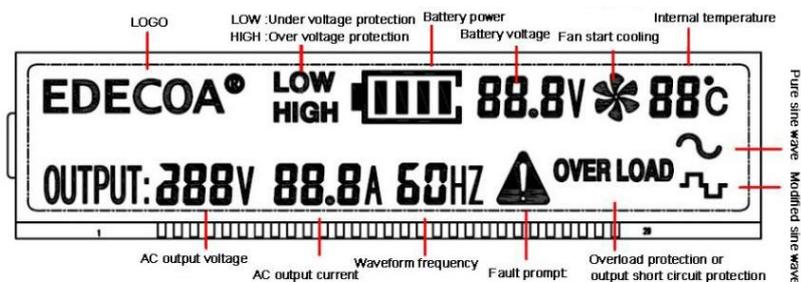


Pure Sine wave Inverter 2500W



Pure Sine wave Inverter 3500W





- ① LCD Display
- ② Outlets:15A/120VAC
- ③ Power ON/OFF Switch
- ④ AC Output : 3P Terminals
- ⑤ Remote Control Port
- ⑥ Dual USB Charging
- ⑦ GND Terminal
- ⑧ Battery input -
- ⑨ Battery input +
- ⑩ Fans
- ⑪ LED Status Display

3. INTENDED USE

This inverter is used to convert low voltage (Direct Current-DC) into alternating voltage of 120VAC, for example, from battery (preferably deep-cycle) or in photovoltaic-island systems.

A very simple way to use an inverter for emergency power (such as during a power outage), is to use a car battery (with the engine running), and an extension cord running into the house, where you can then plug in electrical appliances.

Please use the inverter according to the following instruction and in accordance with the standards and guidelines applicable locally. Any other use may cause injury or property damage. These inverters are not suitable for the supply of life support and / or medical equipment. The inverters are no Uninterruptible Power Supply!

4. INSTALLATION

4.1 Caution: IMPORTANT NOTICE PRIOR TO USING



- Do not install the inverter on flammable building materials.
- Do not install the inverter in areas where flammable or explosive materials are stored.
- The inverter must only be installed by sufficient trained personnel in compliance with local safety regulations.
- When the inverter is running, the temperature of the chassis and the heat sink can be high. Do not install the inverter in locations where it can be inadvertently touched.
- Ambient temperature should be kept below 50 °C, to ensure the best inverter operating conditions, and extend its service life.
- Inverter should be installed in a well-ventilated environment to ensure good heat dissipation.
- Avoid placing the inverter in direct sunlight, rain and snow. This can extend the life of the inverter. It is advisable to select the installation site with occlusion but ensure proper air-circulation.
- Inverter protection class IP65, indoor and outdoor environment can be used.
- The mounting method and position must be suitable for the weight and dimensions of the inverter, please refer to the technical data.

4.1.1 CHECKING ACCESSORIES

After unpacking the inverter package, check that the delivery unit is complete and that there is no visible external damage. If any items are missing or if there is any damage, contact your dealer.

Check that the package contains the deliveries as listed below:

- 1) Power Inverter ×1
- 2) One pair of screw cap (Red and Black)

- 3) One pair of DC input terminal ring (For backup ,Some models)
- 4) User manual ×1
- 5) Ground Cable×1
- 6) Battery cable
- 7) Remote controller and connecting cable
- 8) Spare fuse (Some models)

You need to choose the appropriate location to install the inverter to ensure that the inverter can work properly and efficiently.

4.2 Install carrier requirements

- The inverter mounting carrier must be fire-resistant.
- Do not install the inverter on flammable building materials.
- Please ensure that the mounting surface is strong enough to meet the load requirements of the inverter.
- In a residential area, do not install the inverter on a plasterboard wall or similar sound-poor wall to avoid interference with the noise in the work area.

4.3 Installation requirements:

Install it vertically or tilt it back up to 15° to allow the fan to cool the machine.

Figure 3-1 Proper installation

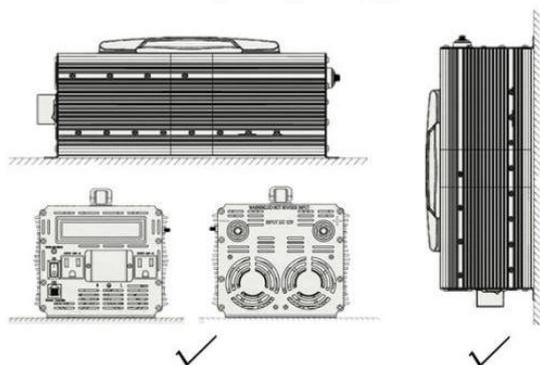
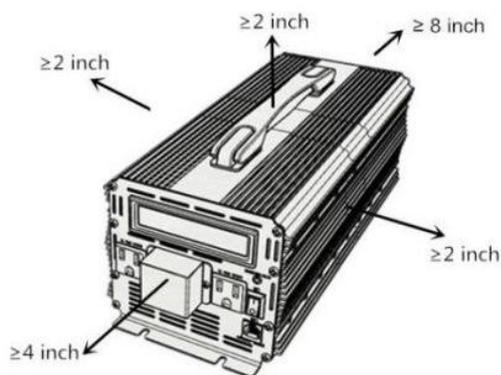


Figure 3-2 Installation Space (Unit: inch)



Do not install the inverter in an inclined position (forward, backward, overturned), horizontally mounted or inverted.

4.4 Installation space requirements

- It is recommended that the inverter be mounted at an adequate height for easy operation and subsequent maintenance.
- When installing the inverter, make sure that there is enough space around the inverter to ensure adequate installation and cooling space, as shown in Figure 3-2.

5. OPENING THE DEVICE

Non-professional personnel must not open the inverter as there is high voltage inside. Before opening the device, please remove cables of both DC and AC sides, turn on the switch and leave the inverter alone for 1 hour.

6. CONNECTION

6.1 Battery connection

1. Please read the manual carefully and install the inverter properly. If you have questions, please contact our service team. It may cause damage to the inverter or cause injury if you do not act in accordance with the instructions from the manual.
2. Set the switch to the "OFF" position when connecting the inverter to the power source. The energy source may be a battery or other stable DC power supply. It must be ensured that the DC voltage of the power source is matched to the rated DC voltage of the inverter. Higher voltages can cause damage the inverter.

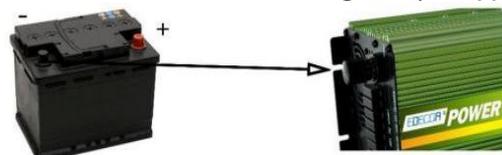
3. The load power should not exceed the rated power of the inverter.

The two DC-input connectors of the inverter are color-coded:

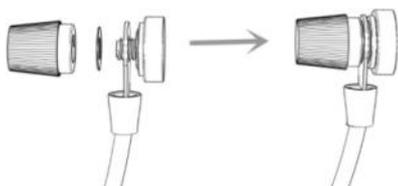
The red terminal for the positive pole (+)



The black terminal for the negative pole (-).



Inverter DC input installation method:

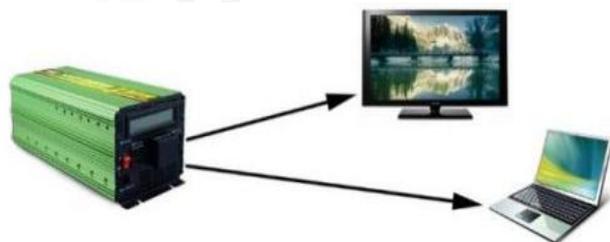


Danger

Please fix the battery cables on the positive and negative terminals of the inverter tightly. Otherwise, there will be large current which will result in severe heating problem and parts damaged.

6.2 Load connection

1. Connect your device into power inverter AC outlet. (Make sure your device's rated power is less than the inverter's, and the working voltage is 120VAC \pm 5%)



2. The connections between power source (battery) and inverter cable terminals must be securely mounted.

3. Set the switch to the "ON" position

Tips:

- The battery must be able to deliver necessary amperage according to the power of the inverter and load. For example, for a 24v inverter to drive 1000W resistive load, the battery should be able to provide more than 45 amps! (On a 12V inverter it will be >90 amps!)
- Please do not connect the AC output side to other power source (i.e. electric supply) as this is not a grid interactive inverter.
- The cover should be connected to protective ground before usage. Please switch off the inverter and only on as necessary to avoid power consumption from the batteries without load when it is not being used.
- Use the supplied cable from the manufacturer or at least those with the same or larger cross-section.
- Keep these connections as short as possible, it will flow considerable current depending on power extraction!
- The inverter should be installed in a dry and well-ventilated area. The air inlet may not be blocked, and it should be kept 20cm away from the wall.
- Do not install the inverter near flammable or explosive material. Please use dry cloth to clean the inverter. Do not stack multiple inverters in operation above another so as the cooling is not guaranteed.

6.3 Grounding wire installation:

The connection method of the ground wire is different based on the different using environment (vehicle, boat, home, outdoors). You could find where to connect the ground cable in the power inverter following that icon “

- When using the power inverter in a vehicle, please connect the ground wire to the chassis of the vehicle.

- When using the power inverter on a boat, please connect it to the boat's ground system.
- When using the power inverter at home, please connect it to the home ground wire system. If there is no ground wire system at home, please connect it to the negative terminal of the battery.
- When using the power inverter outdoors, please connect it to the negative terminal of the battery. It will not affect the normal working of the power inverter without connecting the ground wire.

6.4 GFCI breaker or GFCI Outlet installation and GFCI Receptacle Tester

⚠ Danger Electronic experience required. Please contact our customer service team for a detailed introduction.

6.5 Please pay attention when the power inverter works for the main power system in RV or at home

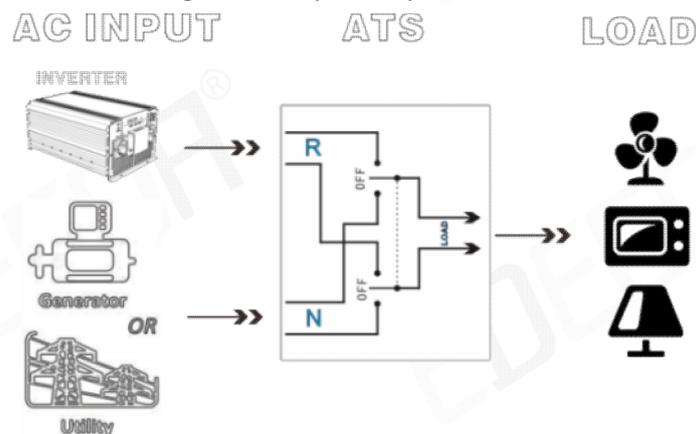
⚠ Danger When the power inverter is connected to the RV power system or home power system for power supply, the inverter could be damaged if the shore power or alternator is connected at the same time by mistake when the power inverter is working. The AC input voltage is not accepted by the power inverter.

To prevent this case, we recommend installing a Dual Power Automatic Transfer Switch (ATS).

The ATS mainly used for testing whether normal(N) or spare(R) power is normal or not. Here is the compatible specification:

- ① 2P;
- ② 120V/60HZ;
- ③ Travel switch includes shutdown function

ON (R)-OFF-ON(N), Here is the schematic diagram of RV power system.



Note:

The ATS must contain an intermediate disconnect setting to prevent the generator or grid from being connecting at the same time as the inverter, resulting in the inverter being burnt.

The switching time of the ATS is 1-2s, and the electrical device will stop working in a short time.

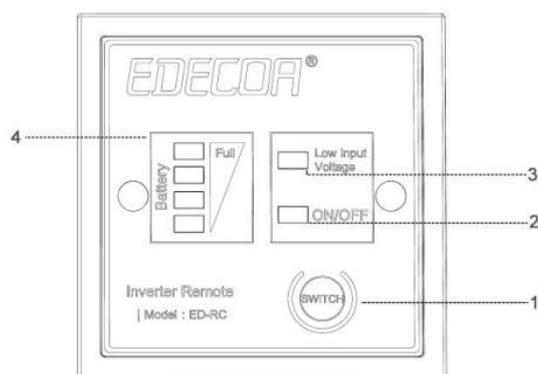
7.ABOUT THE REMOTE CONTROLLER

Tips: The switch of the remote control and the switch of the inverter is parallel.

Therefore, when any one controls the inverter, the other switch must keep the "OFF" state.

According to different models, we have two models of remote control (ED-RC, ET-RC). However, it is not possible to replace each other.

□ ED-RC remote controller



1.ON/OFF switch

2.Status light: If it is green, it means the inverter is on. If it is off, then the inverter is off.

3.Low input voltage indicator light: If the DC input voltage of the inverter is too low, it will be yellow

4.Battery power indicator light:

If DC voltage $\geq 12.5V$, 4 LED lights will be green

If $12V \leq DC \text{ voltage} \leq 12.5V$, 3 LED lamps will be green

If $10.8V \leq DC \text{ voltage} \leq 12V$, 2 LED lamps will be green

If $10V \leq DC \text{ voltage} \leq 10.8V$ only 1 LED lamp will be green

Note: If your inverter is 24v, please multiply the above DC input voltage by 2.

About ED-RC remote cable

ED-RC remote cable is 6.5ft or 13ft long standard RJ45 network cable, it is easy for you to extend the length of it. When working, the voltage drop through this 6.5ft cable is about 0.02V, you can ignore it. If it is a 33ft long cable, the voltage drop will be about 0.1V. If you use very long remote cable, please note that the battery power indicator light maybe not correct.

If the remote cable has problem, it may cause the following problems:

1.The inverter can't be turned ON/OFF by the remote controller, only the battery power indicator light works.

2.After connecting the remote controller, the inverter will be always on, the inverter can't be turned off, the battery power indicator light can't indicate the actual power.

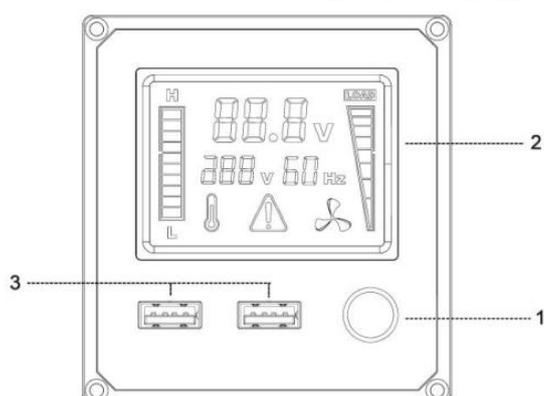
3.After connecting the remote cable, the inverter will be always on, all LED lights on the remote controller are off, the inverter can't be turned off.

4.After connecting the remote controller, all LED lights on the remote controller are off, the inverter can't be turn on.

5.After connecting the remote controller, the status light sometimes work, sometimes not, the inverter maybe turn off automatically.

Note: If the remote controller can't work properly, please try to replace the remote cable first.

□ ET-RC remote controller



1. ON/OFF switch(press 3s),Backlight switch(press once)
2. LCD display
3. USB charging: 5VDC/2.1A * 2

About ET-RC remote cable

ET-RC remote cable is 13ft long standard RJ45 network cable,In order not to affect the display signal transmission, it is recommended to use network lines within 16.5ft.

Note: If the remote controller can't work properly, please try to replace the remote cable first.

8.SERVICE ENVIRONMENT

Ambient temperature: -20~+50°C

Storage temperature: -40~+85°C

Relative humidity: 0~85% Non-condensing

9.TECHNICAL DATA: (PURE SINE WAVE)

Model	DPP10		DPP15		DPP20		DPP25		DPP30		DPP35		DPP40	
Rated Output Power	1000W		1500W		2000W		2500W		3000W		3500W		4000W	
Peak Output Power (<10ms)	2000W		3000W		4000W		5000W		6000W		7000W		8000W	
AC Output Voltage (RMS)	110-120VAC±5%		110-120VAC±5%		110-120VAC±5%		110-120VAC±5%		110-120VAC±5%		110-120VAC±5%		110-120VAC±5%	
AC Output Frequency	60Hz±1%		60Hz±1%		60Hz±1%		60Hz±1%		60Hz±1%		60Hz±1%		60Hz±1%	
AC Output Wave Form	Pure sine wave													
Waveform distortion	THD<5% (Linear load)													
AC Output Plug	2*US		3*US		3*US		2*US+3P terminal		2*US+3P terminal		4*US+3P terminal		4*US+3P terminal	
Efficiency (>90% Load)	>85%		>85% >87%		>85% >87%		>85% >87%		>85% >87%		>85% >87%		>87%	
DC Input Voltage	12VDC		12VDC 24VDC											
DC Input Voltage Range	10-15.5VDC		10-15.5VDC 20-31VDC											
Input Low-Voltage Alarm	10.5VDC±0.3		10.5VDC±0.3 21VDC±0.5											
Under-voltage Cut-Off Voltage	10VDC±0.3		10VDC±0.3 20VDC±0.5											
Input Over-voltage Cut-Off Voltage	15.5VDC±0.3		15.5VDC±0.3 31VDC±0.5											
No Load Current	<0.7A		<0.7A <0.4A		<0.8A <0.4A		<1.2A <0.6A		<0.8A <0.4A		<1.0A <0.5A		<0.8A	
Fan starting condition	Inveter internal temperature ≥ 45 ℃													
Temperature Protection	Inveter internal temperature ≥ 65 ℃													
Protect Function	Over loaded protection; Short loaded protection; Over Temperature Protection; Input under-voltage protection, input over-voltage protection;													
Soft Start Function	Yes													
1-5 sounds intelligent alarm	Yes													
Remote control	Yes													

10. HOW TO SELECT THE PROPER INVERTER YOU NEED?

Dependent of the devices you want to operate, you must pay attention in the wattage of each device and calculate the total watts. We recommend you to buy an inverter higher than the power you think you need – good practice is around 30% - 50% more.

For example:

	150 watts
	75 watts
	550 watts (+700 watts avviamento)
TOTAL	775 watts (+700 watts) = 1475 watts

We recommend you to buy the power inverter 1500w. We should give some thought to a larger one, as there will likely be a time when you wish you'd bought a bigger model... in this example, you might decide you'd like to run a fan while you compute, or let the kids watch TV.

Sometimes devices like a motor, it need more power at start-up (peak power) although after the motor is running use continuous power. This is important to consider. For example, an air conditioner, refrigerator may need startup-power from 3 to 7 times of the continuous power. The best procedure is to find out about the current requirement of the device to be connected to the inverter. Normally this information is in the device specifications.

What is meant by the terms "continuous-2000 watts" and "peak surge-4000 watts" is that some appliances or tools, such as ones with a motor, require an initial surge of power to start up ("starting load" or "peak load"). Once started, the tool or appliance requires less power to continue to operate ("continuous load")

Example:

If you have a refrigerator with a continuous load of 3 amps and a start-up load of 8 amps:

3 amps x 120 volts = 360 watts continuous

8 amps x 120 volts = 960 watts continuous

In this case you should use an inverter with 1500W.

11. HOW TO CHOOSE THE PROPER CABLE?

Inverters should be attached directly to the battery. The wire size depends on the distance between the battery and inverter.

The following is a reference to the cable size of the battery recommended by the DC12V system inverter. (DC24V system inverter Cable Section Area /2)

<u>800W continuous load</u> 1 – 3ft Cable 7AWG 3.5 – 5ft Cable 6AWG 5.5 – 13ft Cable 4AWG	<u>1000W continuous load</u> 1 – 3ft Cable 6AWG 3.5 – 5ft Cable 5AWG 5.5 – 13ft Cable 3AWG	<u>1200W continuous load</u> 1– 3ft Cable 5AWG 3.5 – 5ft Cable 4AWG 5.5 – 13ft Cable 3AWG
<u>1500W continuous load</u> 1 – 3ft Cable 5AWG 3.5 – 5ft Cable 4AWG 5.5 – 13ft Cable 2AWG	<u>2000W continuous load</u> 1 – 3ft Cable 5AWG 3.5 – 5ft Cable 2AWG 5.5 – 13ft Cable 1/0AWG	<u>2500W continuous load</u> 1 – 3ft Cable 3AWG 3.5 – 5ft Cable 2AWG 5.5 – 13ft Cable 2*2AWG
<u>3000W continuous load</u> 1 – 3ft Cable 3AWG 3.5 – 5ft Cable 0AWG 5.5 – 13ft Cable 2/0AWG	<u>3500W continuous load</u> 1 – 3ft Cable 2AWG 3.5 – 5ft Cable 0AWG 5.5 – 13ft Cable 2*1AWG	<u>5000W continuous load</u> 1 – 3ft Cable 2/0AWG 3.5 – 5ft Cable 2*1AWG >5ft Not recommended

12. BATTERIES USING TIME

Type of Battery(AH)	Battery of VOLT (V)	Number of batteries	Power of Batteries (WH)	Power drawn (W)	Running time (H)
36	12	1	432	30	12 h 12 min
				65	5 h 36 min
				150	2 h 24 min
		2	864	450	1 h 36 min
				650	1 h 12 min
45	12	1	540	80	5 h 42 min
				125	3 h 42 min
				300	1 h 30 min
		2	1080	550	1 h 42 min
				800	1 h 6 min
60	12	1	720	150	4 h 6 min
				200	3 h 6 min
				500	1 h 12 min
		2	1440	750	1 h 36 min
				1200	1 h
80	12	1	960	250	3 h 18 min
				550	1 h 30 min
				800	1 h
		2	1920	900	1 h 48 min
				1600	1 h
100	12	1	1200	400	2 h 36 min
				650	1 h 36 min
				1000	1 h
		2	2400	1300	1 h 36 min
				1650	1 h 12 min
120	12	1	1440	600	2 h
				900	1 h 24 min
				1200	1 h
		2	2880	1500	1 h 36 min
				2200	1 h 6 min
200	12	1	2400	750	2 h 42 min
				1300	1 h 36 min
				1800	1 h 6 min
		2	4800	2000	1 h 6 min
				1600	2 h 36 min
				2200	1 h 54 min

You can calculate that the storage battery's use-time by this formula:

$$UsingTime(Hours) = \frac{BatteryCapability(AH)}{load\ general\ power(W)/0.85/Battery\ voltage(V)}$$

Attention:

If batteries of the same size are connected in parallel, the time is multiplied by the number of parallel batteries. For example, four 12V 60AH batteries are connected in parallel, and 500W of load can be used continuously for 1 h 12 min*4=4 h 48 min

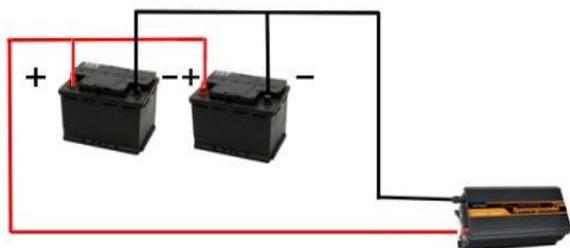
The above is the time that can be used when the new battery is fully charged. If it is an old battery, use it for more than half a year and multiply it by 0.8. The battery has been used for more than one year. It needs to multiply the usage time by 0.5. For example, a 12V 100A battery has been used for half a year. If a 1000W load is used, it can be used continuously for 1h*0.8=48 min.

Tip: Use the inverter in your car. Engine start batteries should not be discharged below 90% charged state, and marine deep cycle batteries should not be discharged below 50% charged state. Doing so will shorten the life of the battery based on most battery manufacturers recommendations.

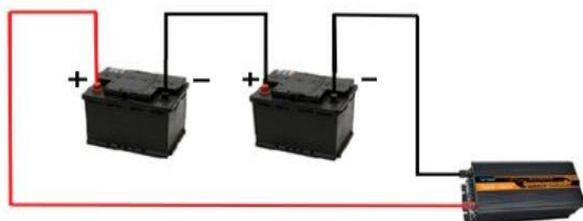
Note: If you intend to use power tools for commercial use, or any load of 200W for more than 1 hour regularly (between battery recharging) we recommend installing an auxiliary battery to provide power to the inverter. This battery should be a deep cycle type and sized to meet your run time expectations with the engine off. The auxiliary battery should be connected to the alternator through an isolator module to prevent the inverter from discharging the engine start battery when the engine is off.

13.HOW TO CONNECT TWO OR MORE BATTERIES?

Parallel connected = same voltage doubled AH (TWO 12V batteries connect in paralleled will provide 12V output but double the using time)



Connected in series = double voltage same AH (Two 12V batteries connect in series will provide 24V output)



14.PROTECTION FEATURES

Low voltage Protection:when the battery is in discharged condition, the inverter will shut down, at the same time, an alarm will sound and the indicator light will turn on.

Over-voltage protection: when the input voltage exceeds rated voltage, the inverter will shut down, at the same time, an alarm will sound and the indicator light will turn on. A substantial excess of the rated voltage, for example, at 48V on a 24V inverter will destroy the inverter!

Reverse polarity protection: when the inverter is connected reversely, inverter’s fuse will blow out to protect the inverter. The DC input side with MOSFET protection will not work. You have to replace all burnt fuses.

Over-load protection:when the continuous draw exceeds rated Watts, the inverter will shut down, at the same time, an alarm will sound and the indicator light will turn on.

Short circuit protection: when the output side is short circuited, the inverter will shut down, an alarm will sound and the indicator light will turn on.

Temperature control: If the temperature in the unite reaches 45°C the fan will start and cool down the device.

Over-temperature protection:when the inside temperature is over 75°C, the inverter will shut down, an alarm will sound and the indicator light will turn on.

15.PROBLEM CAUSES

PROBLEM	POSSIBLE CAUSE	SOLUTION
The inverter is ON but the LED does not work. No response. No alarm	Open circuit. No DC input. Fuse faulty.	1.Check entry circuit continuity 2.Check that the battery fuse is right. 3.Check all circuit connections are correct. 4.Check the ON/OFF button wiring.
The inverter is switched on and the LED works. No AC output. No alarm.	Reversed of polarity connection on input side and internal fuses have been burnt.	1. Check and correct the polarity of input connections and replace the internal fuse. (NOTE: Reversing the polarity may cause irreversible damage to the fuse circuit)

<p>Unusual Low output AC voltage</p>	<p>Poor battery. Internal MOSFET faulty. Drive circuit faulty.</p>	<ol style="list-style-type: none"> 1.Reverse the potentiometer on drive panel to get right output voltage. 2.Ensure the battery is enough and full. 3.Contact the technical support.
<p>The alarm sounds 1 time per time, after 2 seconds, same beeps again.</p>	<p>The input voltage is very low. DC12V inverter: 10-10.5V DC24V inverter: 20-21V</p>	<ol style="list-style-type: none"> 1.Ensure the battery is enough and full. 2.Check that the battery cables are suitable for transporting the DC voltage. Use a thicker or shorter cable. 3.Setting DC input circuit connections. 4.The inverter loads the electrical power exceeding the power provided by the battery, increasing the battery specification.
<p>The alarm sounds 2 times per time, after 2 seconds, same beeps again.</p>	<p>The input voltage is too low and the inverter stop working.</p>	<ol style="list-style-type: none"> 1.Ensure the battery is enough and full. 2.Check that the battery cables are suitable for transporting the DC voltage. Use a thicker or shorter cable. 4.The inverter loads the electrical power exceeding the power provided by the battery, increasing the battery specification.
<p>The alarm sounds 3 times per time, after 2 seconds, same beeps again.</p>	<p>The input voltage is too high. DC12 inverter: higher than 15.5V;DC24V inverter: higher than 30V</p>	<ol style="list-style-type: none"> 1.Check that the voltage at the input DC terminals does not exceed 15V/30V. 2.Check that we are not using a panel or wind turbine not regulated for battery charging, Make sure that the maximum voltage of the battery controller does not supply voltages higher than 15V/30V.
<p>The alarm sounds 5 times per time, after 2 seconds, same beeps again. (The alarm is beeping repeatedly)</p>	<p>The load AC exceeds the nominal power by 120%. Short circuit in connection.</p>	<ol style="list-style-type: none"> 1.The starting power of the electrical equipment is too high and it is confirmed whether the starting power of the electrical appliance exceeds the maximum continuous power of the inverter. 2.Reduce load. 3.Disconnect the electrical outlet from the inverter output outlet and restart the inverter. If you are working normally, you need to check whether there is a short circuit in the connected load appliance or line.
<p>The alarm sounds 4 times per time, after 2 seconds, same beeps again.</p>	<p>Inverter overheating</p>	<ol style="list-style-type: none"> 1.Check that the fan is working correctly, Try again when the inverter has been cool down. 2.Keep the inverter in good ventilation and heat dissipation.
<p>Got 60VAC or so while testing inverter's ground wire and Neutral line ?</p>	<p>This voltage is an electromagnetic induction voltage, there is no current leakage.</p>	<p>This is normal. Inverter output communication does not distinguish hotline and neutral line, if you need to distinguish the hotline and neutral line, please contact customer service or after-sales technology.</p>

16. HOW MANY WATTS DO YOU NEED?

To select an inverter that has enough power for your application, add the watts for items you may want to run at the same time. Use the total wattage, plus 20%, as your minimum power requirement.

Note: The wattage's given below are estimates. The actual wattage required for your appliances may differ from those listed. Check the nameplate on the appliance to determine the actual wattage required.

* Appliances and tools with induction motors (marked * in tables) may require from 3 to 7 times the listed wattage when starting. The start-up load of the appliance or tool determines whether an inverter has the capability to power it. Be sure to check the specific wattage requirements and operating instructions for appliances / tools to be used. Also, air conditioners are a very difficult load because of the high start-up surge. Use the Locked Rotor Amps to determine the start up surge requirement.

Appliances	Estimated Watts	Appliances	Estimated Watts
Coffee Maker	600-1200	Household Fan	50-120
Keurig	1500 (max) 200-400 (continuous)	Clock Radio	10-50
Blender	300-1000	Stereo	30-100
Microwave(600-1000 Watt Cooking Power)	1000-2000	Phone Charger	10
Waffle Iron	800-1500	Laptop Computer	20-75
Hot Plate	750-1500	Mac Book Pro	85
Electric Skillet	1000-1500	iPad/ Tablet	10-20
Toaster Oven	1200	Desktop with Monitor	200-400
Toaster	800-1500	Inkjet Printer	15-75
Hair Dryer	1000-1875	Laser Printer	2000 (peak)
Clothes Iron	1000-1500	Photographic Strobe	(300 Watt-Second)1200 (peak)
* Refrigerator	500-750	Aquarium	50-1000
* Chest Freezer	600	TV32" LED/LCD	50
* Washing Machine	500-1000	TV42" Plasma	240
Furnace Fan	750-1200		

Appliances	Estimated Watts	Appliances	Estimated Watts
Angle Grinder	900	Circular Saw	1400-1800
Drill (1/4"-1/2")	500-960	Chop/Cut OffSaw	1500-1800
Disc Sander	1200	Shop Vac6.5hp	1440
Jig Saw	300-700	* Electric Chain Saw14"	1200
Band Saw	700-1200	* Airless Sprayer 1/2 hp	750
Table Saw	1800	* Air Compressor 1 hp	2000
Pumps and Air Conditioners	Estimated Watts	Pumps and Air Conditioners	Estimated Watts
* Well Pump 1/3 hp	750 (Running) 1400- 3000 (Starting)	* Sump Pump 1/2 hp	1050 (Running) 2150-4100 (Starting)
* Well Pump 1/2 hp	1000 (Running) 2100-4000 (Starting)	* Air Conditioner (700BTU to 10,000 BTU)	1000-1500 (Running) 2200-5000 (Starting)
* Sump Pump 1/3 hp	800 (Running) 1300-2900 (Starting)		

17. DO I NEED MODIFIED WAVE OR PURE SINE WAVE INVERTER?

Advantages of Pure Sine Wave inverters over modified sine wave inverters:

- a) Output voltage wave form is pure sine wave with very low harmonic distortion and clean power like utility-supplied electricity.
- b) Inductive loads like microwave ovens and motors run faster,
- c) Reduces audible and electrical noise in fans, fluorescent lights, audio amplifiers, TV, Game consoles, Fax, and answering machines.
- d) Prevents crashes in computers, weird print out, and glitches and noise in monitors.
- e) Reliably powers the following devices that will normally not work with modified sine wave inverters:
 - Laser printer, photocopiers
 - Certain laptop computers (you should check with your manufacturer)
 - Some fluorescent lights with electronic ballasts
 - Power tools employing "solid state" power or variable speed control
 - Some battery chargers for cordless tools
 - Some new furnaces and pellet stoves with microprocessor control
 - Digital clocks with radios
 - Sewing machines with speed/microprocessor control
 - X-10 home automation system
 - Medical equipment such as oxygen concentrators

Modified Sine Wave works well for most uses, and is the most common type of inverter on the market, as well as the most economical. Pure Sine Wave inverters (also called True Sine Wave) are more suited for sensitive electrical or electronic items such as laptop computers, stereos, laser printers, certain specialized applications such as medical equipment, a pellet stove with an internal computer, digital clocks, bread makers with multi-stage timers, and variable speed or rechargeable tools (see " **Appliance Cautions**"). If you wish to use those items with an inverter, then choose a Pure Sine Wave inverter. If you mostly want to run lights, TV, microwave oven, tools, etc, a Modified Sine Wave inverter is fine for your needs.

We often are asked if computers will work with Modified Sine Wave. It's been our experience that most (with the exception of some laptops) will work (though some monitors will have interference such as lines or a hum). However, if you have any doubt about any appliance, tool or device, particularly laptop computers and medical equipment such as oxygen concentrators, we recommend that you check with its manufacturer to be sure it is compatible with a Modified Sine Wave inverter. If it is not, choose one of our Pure Sine Inverters instead.

The difference between them is the Pure Sine Wave inverter produces a better and cleaner current. They are also considerably more expensive. You might find it practical to get as small Pure Sine Wave inverter for any "special need" you may have, and also a larger Modified Sine Wave inverter for the rest of your applications.

18. WHAT IS AN OVER CURRENT PROTECTION DEVICE AND WHY DO YOU NEED ONE

Batteries are capable of supplying large amounts of current, and thousands of amperes could be present if a short circuit were to occur. A short circuit can damage your system, cause a fire and be hazardous to your health. Incorporating an over current device is an effective line of defense against a short circuit occurrence.

An over current protection device is typically a fuse or circuit breaker that goes inline on the positive cable, between the inverter and battery, to protect your system. A fast-acting fuse or circuit breaker will blow within milliseconds under short circuit conditions, preventing any damage or hazards.

It is important to appropriately size your fuse or circuit breaker for both your inverter and cables. An oversized fuse could result in cables exceeding their ampere capability, resulting in the cables becoming red-hot and dangerous. Consult your owners for the recommended sized fuse or circuit breaker and gauge for a safe installation.

19.SPECIAL USE

Operating a Microwave with a Power Inverter

The power rating used with microwave ovens is the "cooking power" which refers to the power being "delivered" to the food being cooked. The actual operating power requirement rating is higher than the cooking power rating (for example, a microwave with "advertised" rating of 600 watts usually corresponds to almost 1100 watts of power consumption). The actual power consumption is usually stated on the back of the microwave. If the operating power requirement cannot be found on the back of the microwave, check the owner's manual or contact them manufacturer.

Operating a Photographic Strobe with a Power Inverter

A photographic strobe or flash generally requires a pure sine wave inverter capable of surging to at least 4 times the Watt Se crating of the strobe. For instance, a strobe rated at 300 watts requires an inverter capable of surging to 1200 watts or more.

Operating a Laser Printer with a Power Inverter

A laser printer generally requires a pure sine wave inverter capable of surging at least 6.5 times the maximum wattage rating of the printer. For instance, a laser printer rated at 500 watts requires an inverter with a surge rating of at least 3,250 watts.

An inkjet printer does not maintain the same requirements as a Laser printer. Inkjet printers can be operated normally with a modified sine wave inverter rated to handle the printer's wattage requirement.

20.IMPROPER USE OF POWER INVERTER

1. Reverse polarity: For the models which have reverse polarity protection, inverter's fuse will blow out to protect the other part inside the inverter when the inverter is connected reversed. It is possible to damage the part of the positive and negative terminals due to high current after a short circuit. It will not affect the normal use after changing the fuse. For the model which is not equipped with reverse polarity protection, it is possible that the electrolytic capacitor and the MOSFET will burn out. When this occurs, a crack sound can be heard and smoke will be seen coming out.

2. When the input voltage exceeds the allowable voltage range of the inverter, the electrolytic capacitor inside the inverter will burn out. In this case, a crack sound can be heard and smoke will be seen coming out.

3. Heavy overload. The overload protection power of the inverter is 10% higher than the rated Watts, mainly used to start some appliances which require high start current. It doesn't support a long-term use. If customer uses the inverter for long period of overload, it may cause aging of electronic parts and rapid increase of machine temperature. In more serious cases, the electrolytic capacitor inside the inverter will burn out. If so, a crack sound can be heard and smoke will be seen coming out.

4. The power inverter is used outdoor during rainy days or when water gets into the inverter. Because the inverter is not waterproof, water entering any electronic part will cause short circuit and corrosion of such electronic parts. Failure to dry after water entry will cause the electronic components to burn. When this occurs, a crack sound will be heard and smoke will be seen.

5. The inverter output socket or terminal can only be connected to the appliance with the matching voltage. If the customer connects the 110-120V appliance to the 120V inverter outlet, it may cause the appliance to burn out.

6. The AC output can only be connected to the electrical appliances. If connected to grid or generator, it may burn electronic components. When this happens, a crack sound will be heard and smoke will be seen.

Note: should any of above cases occur here is the proper operation: first turn the inverter off; then disconnect the battery cable; finally disconnect the appliances when smoke dissipates. Please feel free to contact Customer Service for technical guide or repair service. (When the part in the inverter burns out, a crack sound will always be heard and smoke seen. Please keep calm and follow the step above. Attention: please don't use water to irrigate the inverter or it will cause more loss.)

21.DISPOSAL

Do not dispose the product in the household waste. Please dispose it according to the disposal regulations for electronic waste in your country.

22. WARRANTY

Warranty for the product is one year starting from the date of purchase. By damage of the unit in case of faulty installation, incorrect connection, misuse or abuse of the equipment will void the warranty. Incorrect repairs by unauthorized persons / workshops on the unit also lead to loss of warranty.

23. COMPENSATION

If not satisfied with the product, the product can be replaced within 7days (from date of delivery). When the casing or packaging of the products is damaged, it will not be replaced for free.

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