

SIGMAWATT

DC to AC

Pure Sine Wave Inverter

User Manual

After-Sales Service Email:

sigmawatt@outlook.com

Important Safety Instructions

General Safety Information

- Installation and wiring must comply with the Local and National Electric Codes (NEC) and must be done by a certified technician.
- Read all of the instructions and cautions in the manual before beginning the installation.
- There are no serviceable parts for this inverter. Do NOT disassemble or attempt to repair the inverter.
- Make sure all connections going into and from the inverter are tight. There may be sparks when making connections, therefore, make sure there are not flammable materials or gases near installation.

Inverter Safety

- The inverters are suitable for 12V/24V/48V battery banks; Please choose correct voltage inverters and battery to connect!
- Always make sure inverter is in OFF position and disconnect all AC and DC connecting when working on any circuit associated with the inverter.
- Never connect the AC output of the unit directly to an Electrical Breaker Panel/ Load Centre which is also fed from the utility power / generator.
- When connecting battery terminals, ensure the polarity of the battery connections is correct. Incorrect polarity may cause permanent damage to the unit.
- Be careful when touching bare terminals of capacitors as they may retain high lethal voltages even after power is removed.

Battery Safety

- Do NOT let the positive (+) and negative (-) terminals of the battery touch each other.
- Use only sealed lead-acid, flooded, lithium battery, or gel batteries which must be deep cycle.
- Explosive battery gases may be present while charging. Be certain there is enough ventilation to release the gases.
- Be careful when working with large lead acid batteries. Wear eye protection and have fresh water available in case there is contact with the battery acid.
- Over-charging and excessive gas precipitation may damage the battery plates and activate material shedding on them. Too high of an equalizing charge or too long of one may cause damage. Please carefully review the specific requirements of the battery used in the system.

Installation Safety

- The unit should be installed in a well-ventilated, cool, and dry environment. Make sure the fans of the unit and the ventilation holes are not blocked.
- Do not expose the unit to rain, moisture, snow, or liquids of any type.

Key Features

- Robust and sleek design
- Clean and Green power for safe operation of sensitive electronics
- Easy-to-read Dual LED screen display and LED indicator light
- Multiple protection features
- Pure sine wave - more stable power conversion and output
- AC output and 5V/3.1A USB port and 30W USB-C port
- Remote controller with LED screen display
- Excellent Surge Rating : 2x the Power Rating

Pure Sine Wave

- The **SIGMAWATT** power inverters output a pure sine wave, similar to the waveform of the grid power. In a pure sine wave, the voltage rises and falls smoothly with very low harmonic distortion, providing cleaner utility-like power.
- This provides users with stable enough power to operate tools, fans, lights, computers, and other electronics without any interference. Pure sine wave inverters are, in many cases, more efficient, enabling users to consume less energy and accommodate more device capabilities. The primary advantage of pure sine wave inverters is their ability to power sensitive electronic devices that require a high-quality waveform with minimal harmonic distortion. Virtually any electronic device can be powered using a pure sine wave inverter.

Multiple Protection

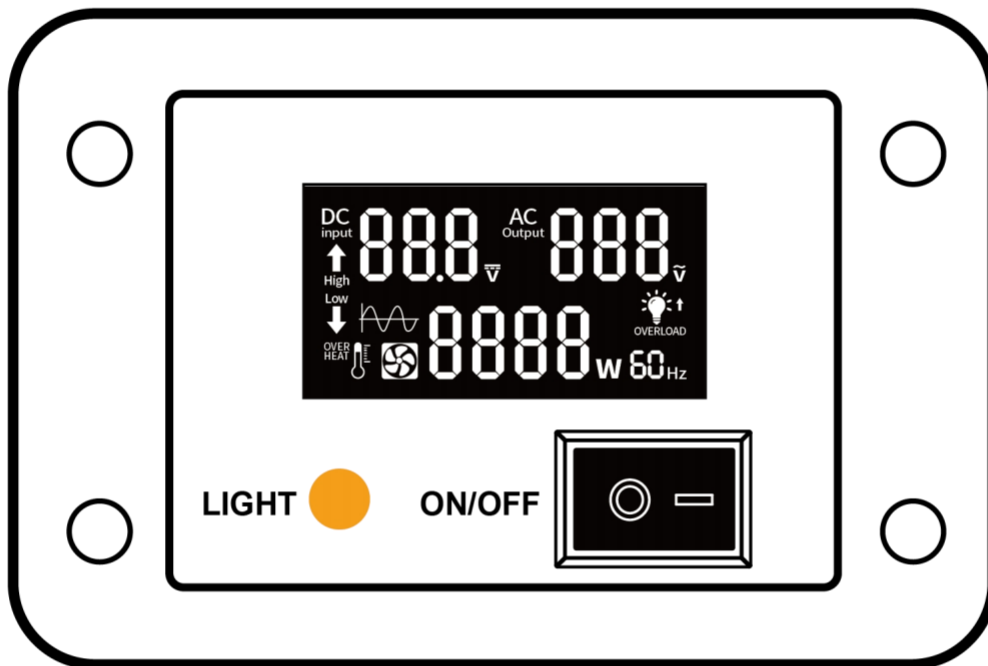
- The LCD screen displays content, LED indicators, and an alarm sound for input under/over voltage protection/input overload/short-circuit protection, and device over-temperature protection. A smart cooling fan system with temperature control enables the device to run smoother, cooler, and quieter.

Remote Controller with LED Screen Display

- The remote control allows you to observe and control from a distance with LCD screen display. The equipment comes with long cable of remote controller, which can be installed in RVs and homes according to user needs.

Remote Control(LCD Display)

1. This **SIGMAWATT** power inverter comes with a remote control that allows you to turn the inverter on and off. The remote's LCD screen displays input voltage, output voltage, power consumption, output frequency, a pure sine waveform, overheating alarms, and fault alarms. This allows you to track any equipment problems using the remote's LCD display.
2. Round white button — Turns the LCD backlight on or off.
3. Black ON/OFF switch - turns the inverter on and off. **The switches on the main unit and the remote control cannot be used at the same time.** The switch on the remote control LCD will only work when the switch on the main unit is off. The ON/OFF switch on the main unit will only work when the ON/OFF switch on the remote control LCD is off.



Wire length: about 4.5M(14.76ft)

Notes:

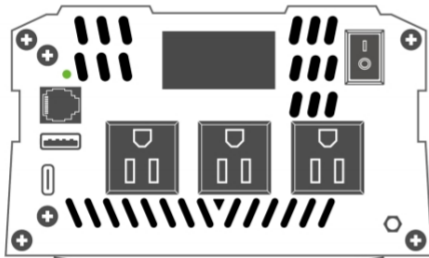
1. **Undervoltage Warning** - When the input voltage falls below value, the inverter buzzer will sound continuously, with a beep for 1s, stop for 1s, and work in a cycle. The inverter will continue to provide output, indicating low external battery power or input voltage failure.
2. **Undervoltage Protection** - When the input voltage falls below value, the inverter buzzer will beep three times, then stop for three seconds, repeating the cycle. The inverter will shut off the output AC voltage, and the **Low (red down arrow)** on the remote control will flash. When the input voltage falls below value, the LCD screen will turn off and the buzzer will stop. You need check the battery, cables, and inverter.
3. **Release Undervoltage Protection** - After undervoltage protection occurs, when the input

voltage is higher than value, the inverter will output AC voltage normally.

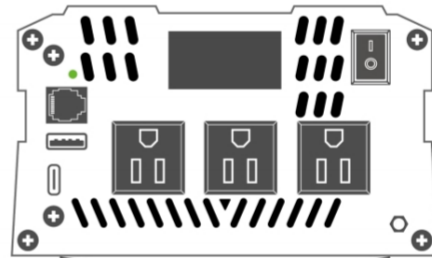
4. **Overvoltage Protection** - If the input voltage exceeds value, the inverter buzzer will beep three times in a row, then stop for three seconds, repeating the cycle. The **High (red up arrow light)** on the remote control will flash, and the inverter will shut down and stop to output voltage.
5. **Releasing Overvoltage Protection** - After overvoltage protection occurs, when the input voltage is lower than value, the inverter will output AC voltage normally.
6. **Other Faults** - Please refer to the troubleshooting methods in the manual to solve them.

Identification of Parts (AC Side)

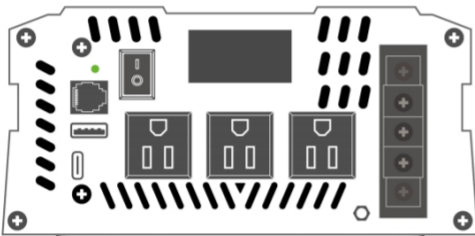
Model: 1000W inverter



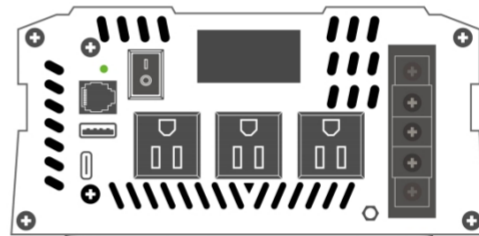
Model: 1500W inverter



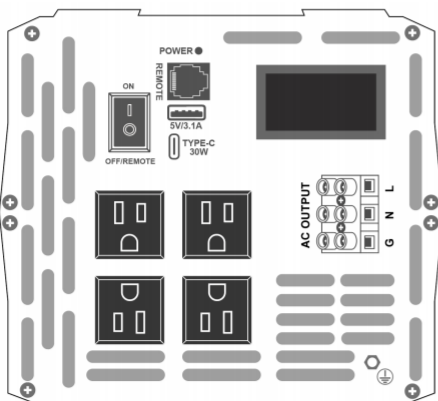
Model: 2000W inverter



Model: 3000W inverter



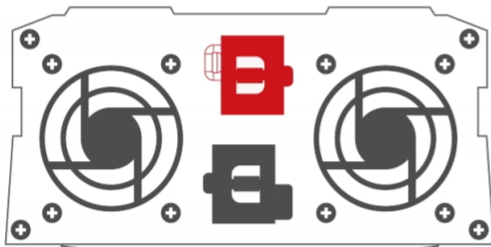
Model: 4000W inverter



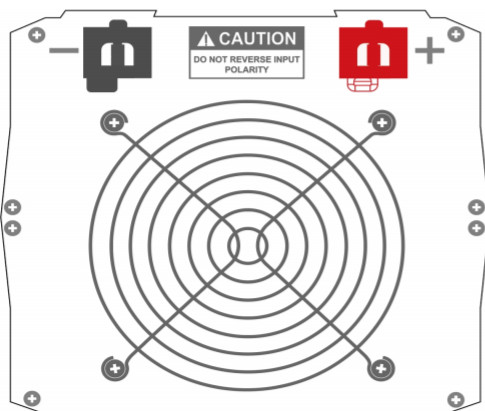
-
- **Inverter LCD Display** — Displays input voltage, output voltage and power consumption of the product. When any problem occurs with the inverter, the LCD screen will display the corresponding fault indication.
- **AC Output Socket** — The AC voltage is $120V \pm 10\%$, ensuring that the total output does not exceed the rated power of the inverter.
- **USB Port** — Outputs 5V/3.1A for fast charging of tablets, smartphones, and other small electronic devices faster than most inverters.
- **30W Type-C Port** — An interface that provides 30W charging power for smartphones or electronic devices.
- **Power LED Light (green)** — When this green LED is on, the inverter is operating normally.
- **Fault LED Light (red)** — When the inverter is in overheat, overload, undervoltage or overvoltage protection, the red indicator light will light up.
- **Remote Controller** — Plug the wired remote controller into this connection port.
- **L, N, G** — AC hard-wired output terminal. "L" is the live wire, "N" is the neutral wire, and "G" is the ground wire. (Only connect output devices, do not connect them to input voltage.)
- **Black ON/OFF Switch** — The inverter can be turned on or off.

Identification of Parts (DC Side)

Example Image: 2000W



Example Image: 4000W



Key Parts

1. Positive Terminal — DC Input Positive (Red)
2. Cooling Fan — Thermal Control + Load Power Control
3. Negative Terminal — DC Input Negative (Black)

Notes:

The intelligent cooling fan is temperature-controlled.

1. When the inverter's internal temperature exceeds 113° F or the power output exceeds 40%, the cooling fan automatically operates.
2. When the inverter's internal temperature falls below 108° F or the power output falls below 30%, the cooling fan automatically stops.

DC12V Series-Specifications

| Model | 12V-1000W | 12V-1500W | 12V-2000W | 12V-3000W | 12V-4000W |
|---|---|-----------|-----------|-----------|-----------|
| Rated Input Voltage | 12V DC | | | | |
| Input Voltage Range | 9.5-16V DC | | | | |
| Output Voltage Range | 110 / 120V AC±10% (Reference Tags) | | | | |
| Continuous Power | 1000W | 1500W | 2000W | 3000W | 4000W |
| Peak Power | 2000W | 3000W | 4000W | 6000W | 8000W |
| Overvoltage Protection (output shutdown) | 16V DC | 16V DC | 16V DC | 16V DC | 16V DC |
| Undervoltage Protection (output shutdown) | 9.5V DC | 9.5V DC | 9.5V DC | 9.5V DC | 9.5V DC |
| Undervoltage Protection Alarm | 10V DC | 10V DC | 10V DC | 10V DC | 10V DC |
| No-load Current | 0.8A | 0.5A | 0.6A | 0.7A | 0.7A |
| Overload Protection | 1200W | 1700W | 2200W | 3200 W | 4100 W |
| Efficiency | ≥90% | | | | |
| Output Frequency | 60Hz ±1Hz | | | | |
| Output Waveform | Pure Sine Wave | | | | |
| Overheat Protection | 149°F±8°F | | | | |
| Short-circuit Protection | Output Short-circuit Protection | | | | |
| Display | LCD | | | | |
| USB Output | 5V/3.1A | | | | |
| Type-C Port | Maximum Power 30W (5V / 3.1A、7V / 2.4 A、9V / 2 A、12V / 1.5 A) | | | | |
| Cooling Fan | Temperature control, only works when the inverter case temperature reaches 113° F | | | | |
| Operating Temperature | 14°F - 113°F | | | | |
| Storage Temperature | -4°F - 158°F | | | | |
| AC Output Socket | 3 for 12V-1000W,12V-1500W,12V-2000W,12-3000W; 4 for 12V-4000W | | | | |

DC24V Series-Specifications





| Model | 24V-1500W | 24V-2000W | 24V-3000W | 24V-4000W |
|---|---|-----------|-----------|-----------|
| Rated Input Voltage | 24V DC | | | |
| Input Voltage Range | 19-32V DC | | | |
| Output Voltage Range | 110 / 120V AC \pm 10% (Reference Tags) | | | |
| Continuous Power | 1500W | 2000W | 3000W | 4000W |
| Peak Power | 3000W | 4000W | 6000W | 8000W |
| Overvoltage Protection (output shutdown) | 32V DC | 32V DC | 32V DC | 32V DC |
| Undervoltage Protection (output shutdown) | 19V DC | 19V DC | 19V DC | 19V DC |
| Undervoltage Protection Alarm | 20V DC | 20V DC | 20V DC | 20V DC |
| No-load Current | 0.3A | 0.3A | 0.4A | 0.4A |
| Overload Protection | 1700W | 2200W | 3200W | 4100W |
| Efficiency | \geq 90% | | | |
| Output Frequency | 60Hz \pm 1Hz | | | |
| Output Waveform | Pure Sine Wave | | | |
| Overheat Protection | 149°F \pm 8°F | | | |
| Short-circuit Protection | Output Short-circuit Protection | | | |
| Display | LCD | | | |
| USB Output | 5V/3.1A | | | |
| Type-C Port | Maximum Power 30W (5V / 3.1A、7V / 2.4 A、9V / 2 A、12V / 1.5 A) | | | |
| Cooling Fan | Temperature control, only works when the inverter case temperature reaches 113° F | | | |
| Operating Temperature | 14°F - 113°F | | | |
| Storage Temperature | -4°F - 158°F | | | |
| AC Output Socket | 3 for 24V-1500W,24V-2000W,24-3000W; 4 for 24V-4000W | | | |


DC48V Series-Specifications

| Model | 48V-2000W | 48V-3000W | 48V-4000W |
|---|---|-----------|-----------|
| Rated Input Voltage | 48V DC | | |
| Input Voltage Range | 39-62V DC | | |
| Output Voltage Range | 110 / 120V AC \pm 10% (Reference Tags) | | |
| Continuous Power | 2000W | 3000W | 4000W |
| Peak Power | 4000W | 6000W | 8000W |
| Overvoltage Protection (output shutdown) | 62V DC | 62V DC | 62V DC |
| Undervoltage Protection (output shutdown) | 39V DC | 39V DC | 39V DC |
| Undervoltage Protection Alarm | 40.9V DC | 40.9V DC | 40.9V DC |
| No-load Current | 0.3A | 0.4A | 0.4A |
| Overload Protection | 2200W | 3200W | 4100W |
| Efficiency | \geq 90% | | |
| Output Frequency | 60Hz \pm 1Hz | | |
| Output Waveform | Pure Sine Wave | | |
| Overheat Protection | 149°F \pm 8°F | | |
| Short-circuit Protection | Output Short-circuit Protection | | |
| Display | LCD | | |
| USB Output | 5V/3.1A | | |
| Type-C Port | Maximum Power 30W (5V / 3.1A、7V / 2.4 A、9V / 2 A、12V / 1.5 A) | | |
| Cooling Fan | Temperature control, only works when the inverter case temperature reaches 113° F | | |
| Operating Temperature | 14°F - 113°F | | |
| Storage Temperature | -4°F - 158°F | | |
| AC Output Socket | 3 for 48V-2000W,48-3000W; 4 for 48V-4000W | | |

Inverter Troubleshooting (Inverter Shutdown)

| Fault Display | Question | Inverter Performance | Solution |
|---------------|--------------------------|--|--|
| | Inverter Overheat | -When overheating occurs,the temperature icon and fan icon on the LCD screen remain on, and the inverter has no AC output. | <ul style="list-style-type: none"> · Turn off the load, allow the cooling fan to operate to return the temperature to normal, and then restart the unit after the overheating protection is released. ·Disconnect the DC input and allow the unit to |

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|  | | | <p>cool naturally for 10 to 30 minutes. Restart the unit after the temperature returns to normal.</p> <ul style="list-style-type: none"> · Reduce or optimize the load configuration. <p>Unblock the ventilation openings and improve ventilation.</p> |
|  | <p>Inverter Overload or Output Short-circuited</p> | <p>-When a short circuit occurs, the LCD screen displays SC-P and the overload icon flashes, and the inverter has no AC output.</p> | <ul style="list-style-type: none"> · Turn off the inverter, disconnect the inverter output load (electronic equipment), restart the inverter, and check if the fault still exists. If the fault disappears, check if the electronic equipment is damaged or if there is a short circuit in the load circuit. · If the problem persists, please contact us through email. |
|  | <p>Inverter Overheat</p> | <p>When an overload occurs, the overload icon on the LCD flashes, the fan icon stays on, and the inverter has no AC output.</p> | <ul style="list-style-type: none"> · Reduce the load power. · Select a higher-power inverter. |
|  | <p>Low Input Voltage</p> | <p>- When the input voltage is lower than range value, the inverter buzzer will beep 3 times in succession and stop beeping for 3 seconds, working in a cycle. The red "low" down arrow icon on the remote control will flash and the inverter will have no AC output.</p> | <ul style="list-style-type: none"> · It is recommended to disconnect the inverter input and charge the battery. · The battery capacity may be too small. Please contact us for recommended battery specifications. · Check the cable connections to ensure they are of sufficient size. Use the manufacturer's recommended cables; the shorter and thicker the better. · One or more batteries in the battery pack may be faulty. Remove any |

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|  | High Input Voltage | <p>If the input voltage is higher than the range value, the inverter buzzer will beep 3 times in a row, stop beeping for 3 seconds, and then work in a loop. The high up arrow icon on the remote control will flash, and the inverter has no AC output.</p> | <p>faulty batteries.</p> <ul style="list-style-type: none"> · Check that the battery charger is connected to the battery. · Do not use the inverter while the battery is charging. · Disconnect the solar panel when the battery is fully charged. · Confirm that the battery voltage is correct for the inverter input voltage. |
|---|---------------------------|--|--|

Inverter Troubleshooting

| Problem | Cause | Solution |
|--|--|--|
| There is no output voltage and the buzzer sounds continuously or intermittently or turns off? | Input battery voltage is low | <ul style="list-style-type: none"> · Recharge the battery. · The battery capacity may be too low. Please contact us for recommended battery specifications. · Check the cable connections to ensure they are adequate. If a cable is provided, use it. The shorter and thicker the cable, the better. · One or more cells in the battery pack may be faulty. Remove any faulty cells. |
| | Input battery voltage is high | <ul style="list-style-type: none"> · Do not use the device while the battery is charging. When the battery is fully charged, disconnect the charger and connect the inverter. · Confirm that the battery voltage and the inverter input voltage are correct. |
| | Overload | Reduce the load power or select a larger power inverter. |
| | Overheat | <ul style="list-style-type: none"> · Turn off the load, allow the cooling fan to operate to return the temperature to normal, and then restart after the overheat protection is released. · Disconnect the input voltage and allow the unit to cool naturally for 10 to 30 minutes. Once the temperature returns to normal, reduce or optimize the load configuration and restart. · Avoid blocking the ventilation openings and improve ventilation. |
| | 1. The power switch is off. 2. There is poor contact with | <ul style="list-style-type: none"> · Turn on the inverter power switch or the remote control power switch. |

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| <p>No AC output voltage?</p> | <p>the battery.</p> <p>3. The inverter fuse may be blown.</p> <p>4. The fuse between the battery and inverter may be blown.</p> <p>5. The circuit breaker between the battery and inverter may be tripped or blown.</p> | <ul style="list-style-type: none"> • Check the cables and ensure they are securely connected. • Check the fuse for integrity, or remove the circuit breaker to test the inverter again. |
| <p>The load power is less than the inverter capacity and the inverter cannot drive the load?</p> | <p>1. The load power is too high, or the actual power consumption of the appliance exceeds the maximum power of the inverter.</p> <p>2. The starting power is greater than the rated power (especially for appliances with motors, as these inductive loads require a large surge of power when starting. Even an 80-watt refrigerator may require a 1000-watt inverter).</p> <p>3. The battery charge is too low.</p> | <ul style="list-style-type: none"> • Reduce the load power or turn on the appliance first, then the inverter. • Select a higher-power inverter. • Replace the battery with a larger capacity and ensure it is fully charged. • Select a shorter, thicker cable. |
| <p>Activate alarm?</p> | <p>The main reason is that the instantaneous current is too large, which causes low voltage to be detected and triggers the undervoltage alarm.</p> | <ul style="list-style-type: none"> • Restart the inverter. • Replace the battery with a larger capacity and ensure it is fully charged. |

Installation Tips

Warning:

1. Before connecting any equipment, ensure the inverter is off.
2. Verify that the battery voltage and the inverter input voltage are correct.
3. Never connect the AC output of this unit directly to a utility or generator-powered circuit breaker.

Note: Do not over-twist or tighten the terminals. This may damage the device.

Installation Location Recommendations : Never install the inverter together with

flooded batteries in a sealed enclosure. Gas may accumulate, creating a risk of explosion.

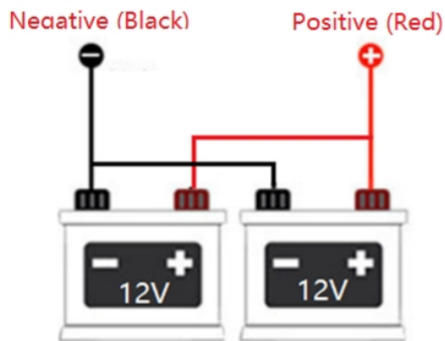
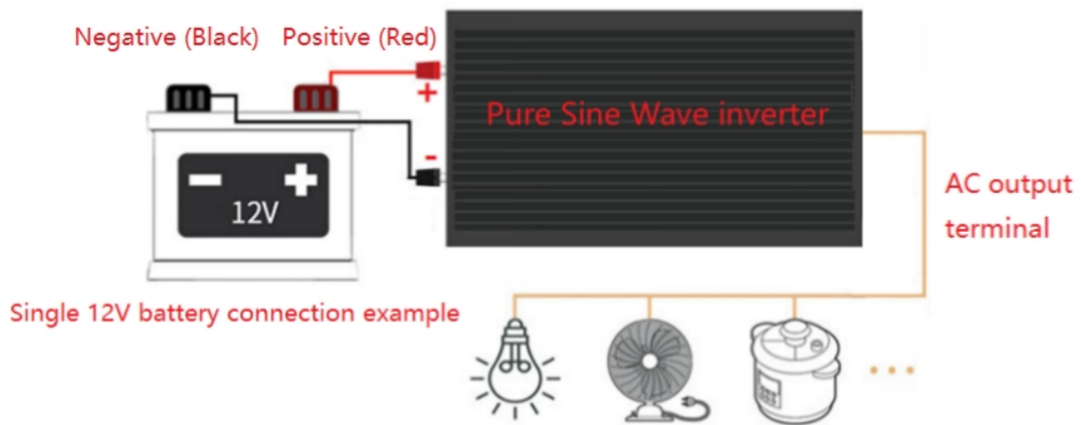
Ensure installation follows the following guidelines:

1. A cool, dry, well-ventilated area - Heat is the biggest enemy of electronic equipment. The inverter must be installed in an area where the fan is not blocked or in direct sunlight. The installation area should be free of moisture and allow at least 10 inches of clearance around the device to ensure adequate ventilation.
2. Fire Protection - The device should be kept away from any flammable materials, liquids, or other combustible materials. Sparks may occur when connecting the device, and the consequences could be serious.
3. Close to the Battery Bank - Prevent excessive voltage drops by placing the device close to the battery bank and using appropriately sized wires from the battery bank to the inverter.
4. Do not install the inverter in the same compartment as the battery bank, as this may create a fire hazard.
5. Limiting Electromagnetic Interference (EMI) - Ensure the inverter is securely grounded to the building, vehicle, or earth. Keep the inverter away from EMI receivers, such as televisions, radios, and other audio and video electronics, to prevent damage/interference to the equipment.
6. Securing the Inverter - The inverter can be freestanding or mounted using the external terminals on the inverter.
7. Never install the DC side of the inverter close to a horizontal surface, as this will pose a danger to the fan cooling holes, which are essential for cooling the inverter.

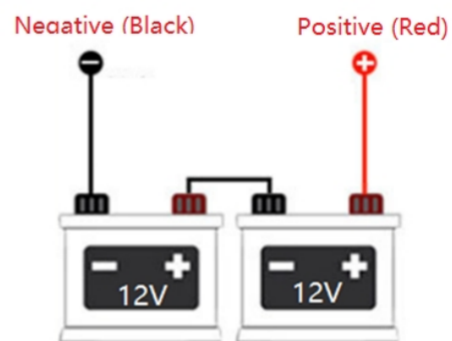
Note: About Connection

If you have multiple 12V batteries, connect them in series or parallel depending on the model you ordered (parallel for 12V, series for 24V or 48V; refer to the battery connection instructions below).

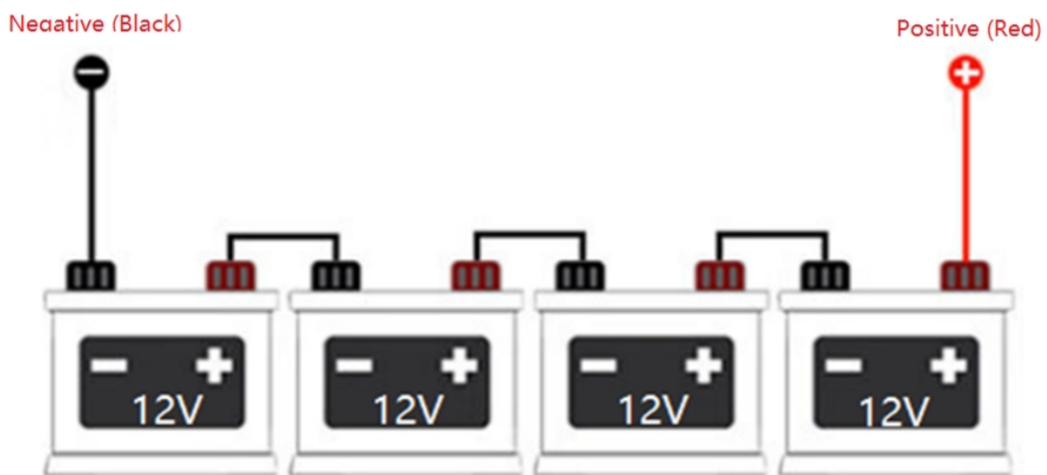
Note: Connecting the positive (+) and negative (-) terminals incorrectly can cause malfunction. Ensure the positive (+) and negative (-) terminals are connected correctly.



Example of connecting multiple 12V batteries in parallel



Example of connecting multiple 24V batteries in series



Example of connecting multiple 48V batteries in series

Determining the Battery Pack's Energy

1. The battery provides the DC input voltage for the inverter. Its rated voltage should be the

same as the rated input voltage of the **SIGMAWATT** inverter. Any voltage exceeding the inverter's input voltage range may damage the inverter.

2. The battery should provide sufficient energy for the load (electronic device). The inverter's load capacity is related to the voltage and capacity (Ah, ampere-hours) of the battery supplying it. A small battery cannot provide sufficient power for large electrical devices, causing the inverter to undervoltage.

Here is a guide to determining the required battery capacity:

1. Determine the load's power (amperes x volts) (Each appliance has technical specifications indicating the power or voltage and current required to operate).
2. Use the formula: Amps = Power / Volts
3. Inverter consumption = Amps x 10% (Since inverter efficiency is 90%, a 10% estimate is recommended for this calculation).
4. Estimate the load's runtime (The battery's capacity depends on the load's power and runtime. Most loads are not constant, so estimation is crucial).

Determine Ah(Ampere-Hour) of the battery

| | |
|--|---|
| Example: Using 12VDC battery to run a 1200 Watts hotplate for 2 hours needs at least 220Ah battery.(10%Inverter consumption) The calculations are as follows: | |
| Utilize the formula Amps=Watts/Volts | $1200W / 12 V = 100A$ |
| Inverter consumption | $100A \times 10\% = 10 A$ |
| Load runtime = 2 hours | $(100 Amps+10) \times 2 \text{ hours} = 220 Ah$ |
| Conclusion: At least a 220 Ah battery must be selected in order to use the 1200 watts hotplate at 2 hours a day. However, determining the capacity of the battery is also dependent on the battery that is able to handle repeated discharge/charge cycles. | |

- This is just an example. Actual quantities vary by battery capacity and rates.
- Running wattage may fluctuate. To power the hotplate in the example, must use an inverter of at least 1500 watts.

DC Side Connection

1. **SIGMAWATT** pure sine wave inverters are only compatible with 12V/24V/48V input voltages (different input voltage inverters use corresponding battery pack systems). If the DC voltage input to the inverter exceeds the maximum limit, it will cause irreversible damage to the inverter.
2. Pay attention to the positive and negative polarity - Reverse polarity may cause permanent damage to the inverter and will definitely blow the internal fuse. Inverter damage caused by reverse polarity is not covered by the warranty.



3. The inverter input terminals are connected to a large-capacity capacitor. Once the positive and negative wires are connected to the terminals, the circuit is completed and a high current begins to be drawn instantaneously. Therefore, sparks may occur even when the inverter is turned off.

AC Side Operation

- (1) Connect electronic devices to electrical socket (s) on inverter. Flip inverter power to ON position (on AC side)
- (2) When finished, switch AC devices off first, then turn off inverter switch.

- **CAUTION** : Avoid switching on the inverter with the load (electronic devices) already switched on. This may trigger an overload since some electronic devices have an initial high power surge to start.

- **CAUTION** : When switching off the inverter, turn off the electronic devices first. Although the inverter is off, the capacitors will still have a charge, so the DC and AC terminals must be disconnected if altering the circuitry.

Warranty

- Thank you for purchasing **SIGMAWATT** power inverter, your trust will encourage us to produce more high quality items. We always provide the best customer service to our each customer.
- We provide 12 months warranty for **SIGMAWATT** product. Any problems please feel free to reach out to our after-sales service. Our **SIGMAWATT** support will reply you in 12 hours.
- To better service you , please send us email with your order number, problem details, problem pictures or videos, which can help us solve your problems faster.

After-Sales Service Email: sigmawatt@outlook.com