AIMS Power™

www.aimscorp.net

Operation Manual

Rack type

Contained are important connection tips, safety issues, and warranty information

❖ Contents

❖ Specifications (1000W-DC12V, 24V, 48V 120Vac)

NO.	PARAMETER		PRM1000W12120S	PRM1000W24120S	PRM1000W48120S
1	DC input voltage		DC12V(10.5V~16.0V)	DC24V(21.0V~30.0V)	DC48V(41.0V~59.0V)
2	Output voltage no load		120Vac		
3	Output power continuous		1000W		
4	Surge rating (Surge power)		2000W		
5	Efficiency (output)		88%	91%	91%
6	No load current	no fan	0.75A	0.42A	0.30A
		on fan	0.95A	0.57A	0.42A
7	Low battery shut down		10.2V	20.0V	40.2V
8	Low battery returns on power		11.2V	22.4V	42.5V
9	High battery shut down		17.2V	31.7V	61.0V
10	High battery returns on power		15.2V	30.0V	59.0V
11	Frequency selection (50hz/60hz)		60hz	60hz	60hz
12	Regulation		1200W/120Vac	1200W/121Vac	1200W/121Vac
13	Over temperature protection		-4℉ ~ 172℉ (± 41℉)		
14	Over temperature power on		136℉ (± 41℉)		
15	Output wave form		pure sine wave (D.S.P)		
16	Cooling fan (auto fan)		113℉ (±41℉)		
17	Isolation transformer tested (withstand voltage)		2KV ~ 2.5KV (± 0.5KV)		
18	Overload protection	input fuse	30A(1EA) 40A(2EA)	30A(2EA)	30A(1EA)
		output sensor	Included		
		output circuit breaker	10A(SS-001)		
		output power 120Vac	2P outlet 15A		
19	FCC part 15 subpart 16 B class B			F690501/RF-EMC	F690501/RF-EMC
20	Products blocking noise control		Included		
21	City power input 120Vac (circuit breaker)		10A(SS-001)		
22	Transfer switch : DC Input		12V(10V~17V)	24V(21V~30V)	48V(40V~63V)
23	Transfer switch : load current		0.03A(30mA) / 120Vac 60Hz		
24	Power transfer time (switching time)		16~18 msec(program control)		
25	RS232 communication port		input dc voltage, output ac voltage, Frequency, ac current (pc monitoring)		
26	Dimensions (inch) / Weight (lbs)		19 x 1.7 x 14(inch) / 11lbs		

►Product Use

• Telecom equipment • Audio-video equipment • Router /Hub • Computers

❖ Specifications (2000W-DC12V, 24V, 48V 120Vac)

NO.	PARAMETER		PRM2000W12120S	PRM2000W24120S	PRM2000W48120S
1	DC input voltage		DC12V(10.5V~16.0V)	DC24V(21.0V~30.0V)	DC48V(41.0V~59.0V)
2	Output voltage no load		120Vac		
3	Output power continuous		2000W		
4	Surge rating (Surge power)		4000W		
5	Efficiency (output)		88%	91%	91%
6	No load current	no fan	0.83A	0.50A	0.35A
		on fan	1.30A	0.77A	0.55A
7	Low battery shut down		10.2V	20.0V	40.2V
8	Low battery returns on power		11.2V	22.4V	42.5V
9	High battery shut down		17.2V	31.7V	61.0V
10	High battery returns on power		15.2V	30.0V	59.0V
11	Frequency selection (50hz/60hz)		60hz	60hz	60hz
12	Regulation		2200W/118Vac	2200W/119Vac	2200W/120Vac
13	Over temperature protection		-4℉ ~ 172℉ (± 41℉)		
14	Over temperature power on		136℉ (± 41℉)		
15	Output wave form		pure sine wave (D.S.P)		
16	Cooling fan (auto fan)		113℉ (±41℉)		
17	Isolation transformer tested (withstand voltage)		2KV ~ 2.5KV (± 0.5KV)		
18	Overload protection	input fuse	40A(6EA)	40A(3EA)	30A(2EA)
		output sensor	Included		
		output circuit breaker	20A(SS-001)		
		output power 120Vac	2P outlet 15A/terminal (20A-3P)		
19	FCC part 15 subpart 16 B class B		F690501/RF-EMC		
20	Products blocking noise control		Included		
21	City power input 120Vac (circuit breaker)		20A(SS-001)		
22	Transfer switch : DC Input		12V(10V~17V)	24V(21V~30V)	48V(40V~63V)
23	Transfer switch : load current		0.03A(30mA) / 120Vac 60Hz		
24	Power transfer time (switching time)		16~18 msec(program control)		
25	RS232 communication port		input dc voltage, output ac voltage, Frequency, ac current (pc monitoring)		
26	Dimensions (inch) / Weight (lbs)		16.5 x 3.5 x 17.3(inch) / 22lbs		

►Product Use

• Telecom equipment • Audio-video equipment • Router /Hub • Computers

❖ Specifications (3000W-DC12V, 24V, 48V 120Vac)

NO.	PARAMETER		PRM3000W12120S	PRM3000W24120S	PRM3000W48120S
1	DC input voltage		DC12V(11.0V~16.0V)	DC24V(21.0V~30.0V)	DC48V(41.0V~60.0V)
2	Output voltage no load		120Vac		
3	Output power continuous		3000W		
4	Surge rating (Surge power)		6000W		
5	Efficiency (output)		88%	91%	91%
6	No load current	no fan	1.03A	0.60A	0.50A
		on fan	1.95A	1.15A	0.95A
7	Low battery shut down		10.2V	20.0V	40.2V
8	Low battery returns on power		11.2V	22.4V	42.5V
9	High battery shut down		17.2V	31.7V	61.0V
10	High battery returns on power		15.2V	30.0V	59.0V
11	Frequency selection (50hz/60hz)		60hz	60hz	60hz
12	Regulation		3500W/118Vac	3500W/119Vac	3500W/120Vac
13	Over temperature protection		-4℉ ~ 172℉ (± 41℉)		
14	Over temperature power on		136℉ (± 41℉)		
15	Output wave form		pure sine wave (D.S.P)		
16	Cooling fan (auto fan)		113℉ (±41℉)		
17	Isolation transformer tested (withstand voltage)		2KV ~ 2.5KV (± 0.5KV)		
18	Overload protection	input fuse	40A(9EA)	40A(5EA)	40A(2EA)
		output sensor	Included		
		output circuit breaker	34A DCP-HS		
		output power 120Vac	2P outlet 15A/terminal (30A-3P)		
19	FCC part 15 subpart 16 B class B		F690501/RF-EMC		
20	Products blocking noise control		Included		
21	City power input 120Vac (circuit breaker)		34A DCP-HS		
22	Transfer switch : DC Input		12V(10V~17V)	24V(21V~30V)	48V(40V~63V)
23	Transfer switch : load current		0.03A(30mA) / 120Vac 60Hz		
24	Power transfer time (switching time)		16~18 msec(program control)		
25	RS232 communication port		input dc voltage, output ac voltage, Frequency, ac current (pc monitoring)		
26	Dimensions (inch) / Weight (lbs)		16.5 x 3.5 x 20.9(inch) / 27.6lbs		

►Product Use

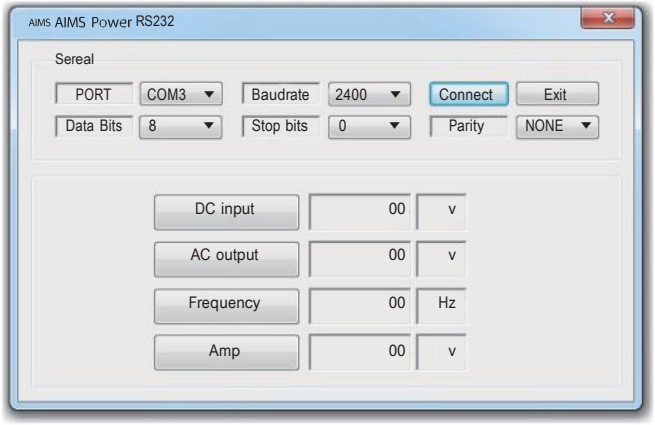
• Telecom equipment • Audio-video equipment • Router /Hub • Computers

❖ RS232 communication port and communication program operation method

- RS232 communication port controls with non-synchronous serial transmission (ASCII cord) method.
- RS232 communication program is real time operation, and status can be monitored through serial function of PC screen by program connected with and provided by computer (PC) application port.

AIMS Power RS232 program execution

① AIMS_Power_RS232.exe Run program execution file in figure AIMS Power232.exe

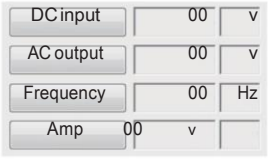


② When you start the program, it will run as shown in the figure. Check once more if inverter cable is well connected before running program.
Once connection is made, user's PC port connected with inverter should be set. When clicking on PORT COM3 port in program screen, it will show choices of 1 to 10. Find and select inverter and PC port from the choices.

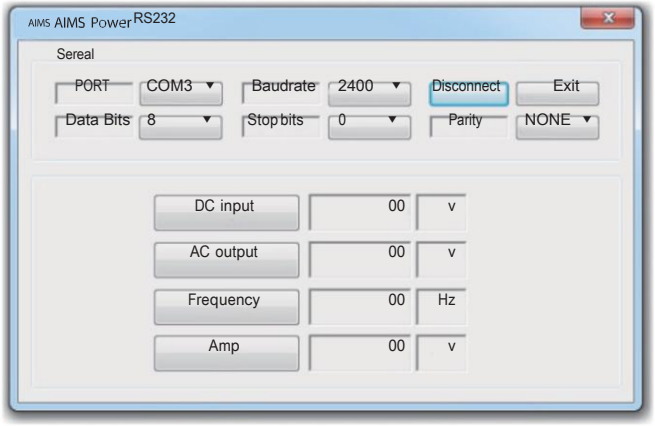
③ When port selection is made, click on Connect to start communication between inverter and PC.
If port is not properly selected or cable connection is made incorrectly, or inverter power is off, message fail Port open will appear along with confirmation window. In this case, press OK to close window, select a correct port or double check the cable connection status.

④ If connection is established normally, Connect button turns into Disconnect button indicates connection between inverter and PC is established normally.
If connection is made completely, inverter DC input voltage, AC output voltage, frequency, and output current can be verified using buttons at the lower part of the program screen.

❖ RS232 communication port and communication program operation method



⑤ DC input Click on DC input button, DC input voltage details are shown.
AC output Click on AC output button, AC output voltage details are shown.
Frequency Click on Frequency button, frequency details are shown.
Amp Click on Amp button, output current details are shown.



⑥ For disconnection between inverter and PC after usage, click on Disconnect button, this button turns into Connect button, and indicates disconnection of devices.
For reconnection, repeat ③ details once more.
To completely close program, use X button on program window or click on Exit button to end the program.

- When using RS232 communication programs other than ones provided by our company, data in each mode can be verified using following command through PC connection.
  Input voltage indication command: BAT?
  Output voltage indication command: VOL?
  Frequency indication command: FRQ?
  Output current indication command: AMP?

When entering commands in the command window, even question marks should be typed accurately, and make sure to use upper case as it distinguishes upper and lower cases.

❖ Transfer switch system

This product was developed using digital circuit design based on a patented technology DSP (digital signal processor), and is a very reliable, high performance, light weight inverter.

- 120Vac is either supplied by city power(by pass mode) or inverter(DC or backup mode). A program will control this automatically or it may be manually controlled(by city power circuit breaker)
- By pass mode
  Standard operation is for the city power to provide ac out
  Upon AC city power mode failure, output is converted to inverter mode through DC conversion.
  If AC city power is restored, unit will revert back to bypass mode (city power) automatically by the transfer switch program.
- DC or backup mode.
  In DC mode (city power circuit breaker OFF) the inverter will supply ac out power as long as the dc supply provides enough voltage to inverter.

❖ LED display

●UP, DOWN switch
Using UP/DOWN switches on panel, information in each mode of inverter can be verified through the LED display. If power is turned on, output voltage is displayed first. When using UP button, output voltage -> output current -> frequency -> input voltage shows in display in order. When using DOWN button, output voltage -> input voltage -> frequency -> output current shows in display in order.

- When using UP button

① Output voltage display ② Output current display ③ Frequency display ④ Input voltage display
(DC12V/24V/48V)

Features and benefits

- By using a D.S.P. (digital signal processor) driver this inverter can safely generate its pure sine wave at a high quality 120Vac output.
- The product responds to the high and low battery voltage changes and adapts its output perfectly to ensure a stable 120Vac.
- The innovative technology of this pure sine wave inverter will support the usage of sensitive loads.

Note : This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

- FCC part 15 subpart 16 B class B

Features and benefits

- All DC to AC operations are automatically controlled by the D.S.P. program.
- The improved efficiency of this inverter ensures nominal output voltage even at low input DC voltage.
- Since output voltage is within 3% of the variation input voltage (12V, 24V and 48V) stable power will always be produced for your AC loads.
- This product has excellent driving power with a surge output that's 2 times higher than the output capacity. This allows you to exceed the inverters listed output for a short period of time (500 milliseconds) to power some devices with quick startup surges.
- With various protection circuits built in, this product will automatically shut down at low voltage or in the event of a sudden change of input/output power. The inverter also shows excellent performance and reliability control during rapid environmental changes such as ambient temperature.
- This inverter is designed with the most advanced circuitry available in order to suppress most RF noise produced by inverting DC voltage to 120Vac.

❖ Reference

This product is a Digital Signal Processed inverter that utilizes DC 12V, 24V or 48V to generate the 120Vac power. When the 120Vac pure sine wave inverter is properly used within the capacity listed on various electronic devices. Please follow all connection instructions to avoid damage or injury to the inverter and yourself. Failure to follow the warning messages and to connect the inverter properly will cause malfunction of the inverter and may void the warranty.

❖ **Prior to using this product please read this operation manual thoroughly. Inappropriate use may cause damage to the product! Please check through this manual on your new inverter before operating.**

I. Use of battery (DC power)

- 12V Battery : When using 500 watts of output (120Vac) with a 100A battery, you can use this product for 2 hours (8.3A used under 100W) in optimal conditions.
- 24V Battery : When using 500 watts of output (120Vac) with a 100A battery, you can use this product for 4 hours (4.2A used under 100W) in optimal conditions.
- 48V Battery : When using 500 watts of output (120Vac) with a 100A battery, you can use this product for 8 hours (2.1A used under 100W) in optimal conditions.

II . Use of AC power outlet (120Vac)

The product has an output function of 120Vac.
Although the output AC cord is different based on thickness, 150 Ft. length can be used in general conditions.

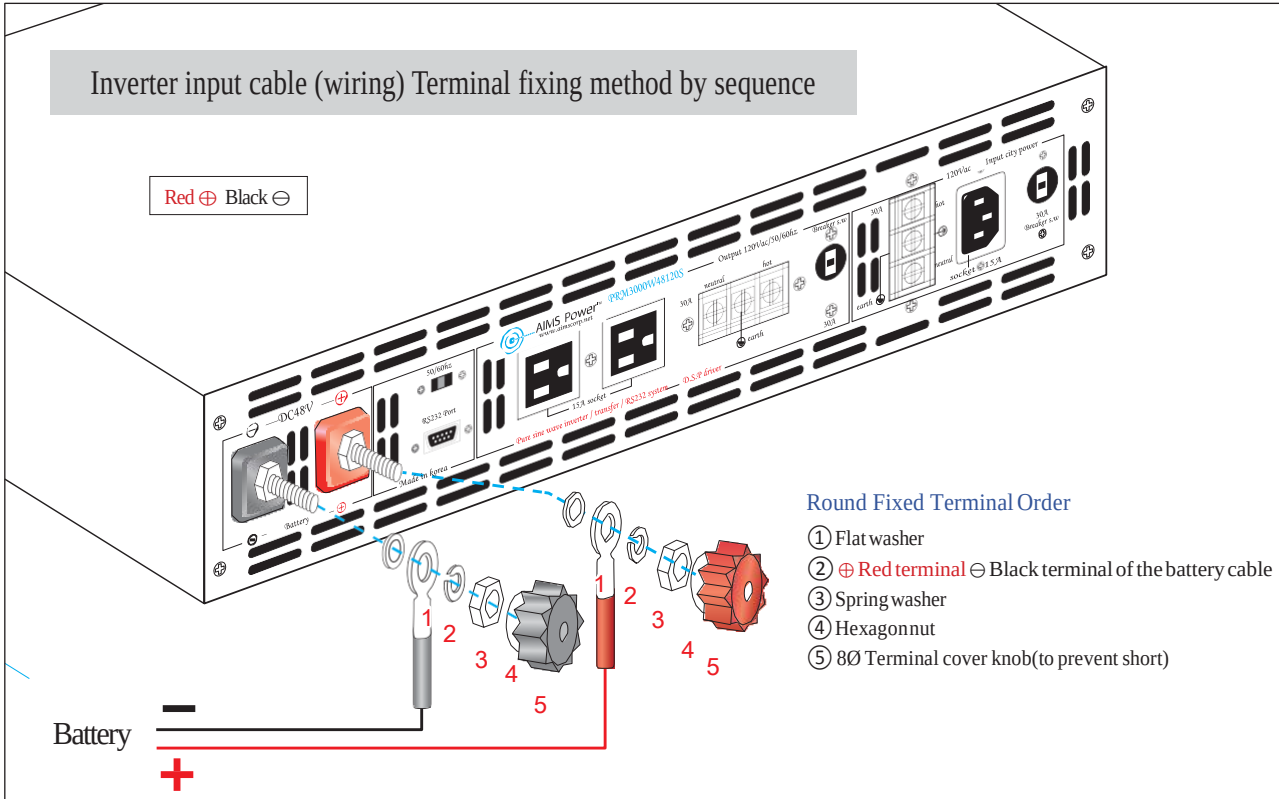
III. Alarm display function (red LED)

- Output short circuit
- Output overload
- Over temperature protection
- Battery low voltage (alarm/LED)
- Battery high voltage (alarm/LED)

IV. Fan operation

Based on the 120Vac load of this product the fan automatically operates when the temperature increases.
Thermal fan engages at 104˚F~113˚F

Inverter input cable (wiring) Terminal fixing method by sequence

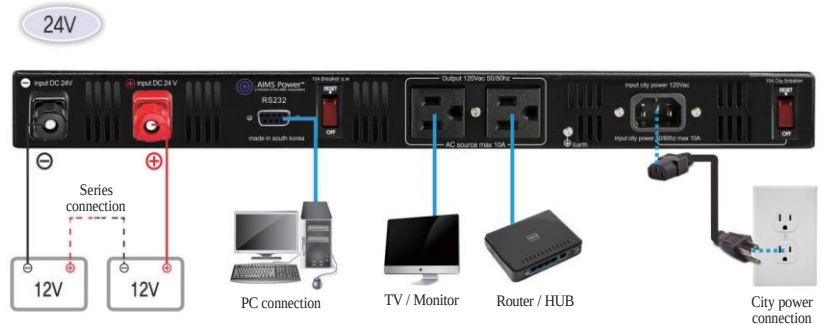


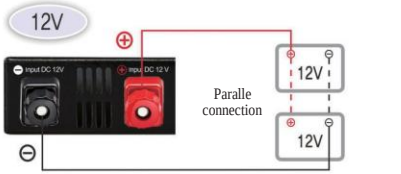
Round Fixed Terminal Order

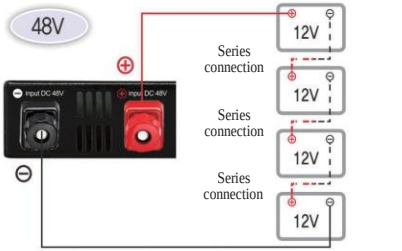
① Flat washer
② ⊕ Red terminal ⊖ Black terminal of the battery cable
③ Spring washer
④ Hexagon nut
⑤ 8Ø Terminal cover knob(to prevent short)

- Please use to select the input wiring specifications that meet the criteria, depending on the installation location and position.
- Hexagon nuts with the terminal and perfectly fixed.
- Should be used to add a secondary battery in accordance with the output of the equipment used.

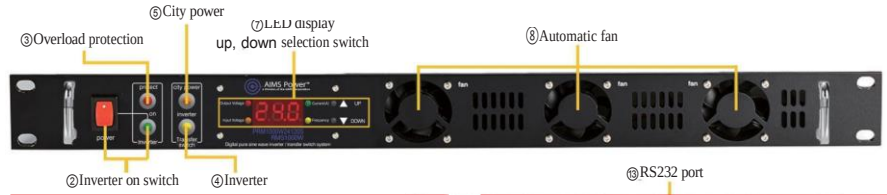
- Input / Output connection diagram

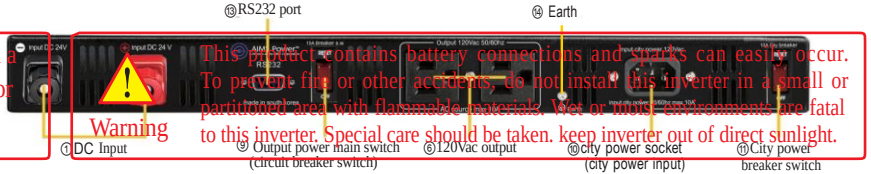






- Each section and name





Caution

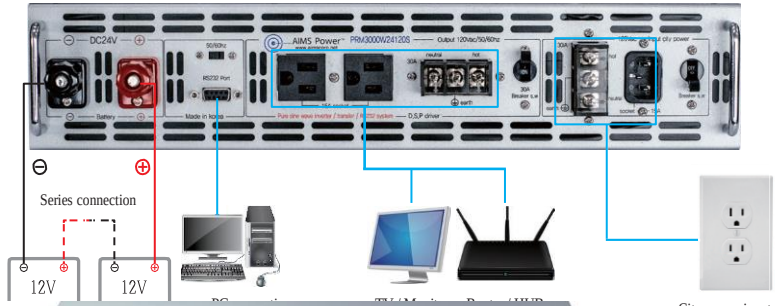
Avoid installing this inverter in a sealed area, or an area with poor ventilation/excessive heat

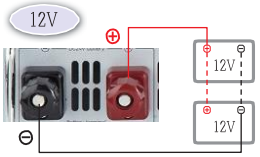
Warning

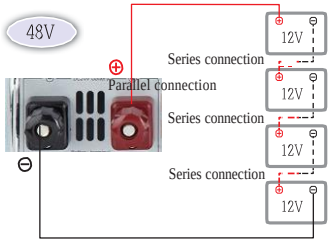
This product contains battery connections and sparks can easily occur. To prevent fire or other accidents, do not install this inverter in a small or partitioned area with flammable materials. Wet or moist environments are fatal to this inverter. Special care should be taken. keep inverter out of direct sunlight.

24V

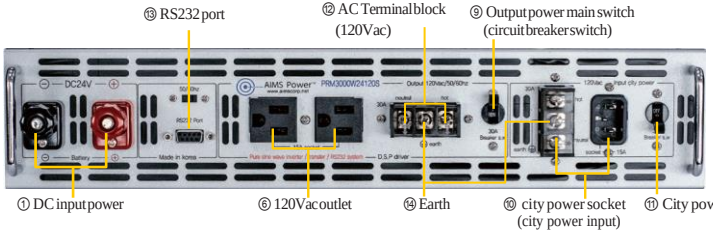
- Input / Output connection diagram







- Each section and name



❖ Important

1) Input Terminal (12V, 24V or 48V)

Prior to any connections make sure you match the battery voltage to the inverter input voltage. You will probably notice an arc when connecting a discharged or new power inverter to your batteries. Make sure to connect battery(⊖) to Black and battery(⊕) to Red. Tighten terminals. In case of extreme vibration, go back and verify terminals are tight.

2) Inverter on switch/LED

This is the main unit power switch. When this is turned off, the inverter is off. When turned on, the inverter is on.
This LED always lights up when the power switch is on or this inverter is in operation.

3) Overload protection LED's

This LED should not illuminate unless an error occurs. The error may be temporary, such as an overload. It may also indicate a permanent failure. If it is lit, try disconnecting all loads, and reset inverter.

4) Inverter

This lamp is on whenever unit is connected to battery and not in city power mode.
Even when inverter on switch is off and no city power is present.

5) City power

This lamp is always turned on when using city power.

6) 120Vac outlet

It is 120Vac power outlet.

Warning This product uses city power as an optional input. Ensure city power is not connected to the output of this inverter or it will be permanently damaged and may pose a shock or fire hazard. Refer to the manual for proper installation and operation

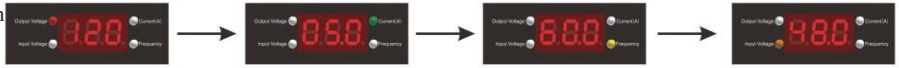
❖ Important

7) LED display / UP, DOWN selection switch

Using UP/DOWN switches on panel, information in each mode of inverter can be verified through the LED display.

If power is turned on, output voltage is displayed first. When using UP button, output voltage -> output current -> frequency -> input voltage shows in display in order. When using DOWN button, output voltage -> input voltage -> frequency -> output current shows in display in order.

• When using UP button



① Output voltage display ② Output current display ③ Frequency display ④ Input voltage display (DC12V/24V/48V)

8) Automatic fan operation

These fans are thermally controlled and will turn on automatically when needed.

9) Output power main switch / circuit breaker switch

Main circuit breaker switch of output power.

10) City power socket / City power input (120Vac)

When this input power is available, city power may pass through to output.

11) City power breaker switch

Reset position : default power out will be city, inverter power out if city power unavailable

OFF position : Inverter only mode.

12) AC Terminal Block(120Vac)

This Terminal Block is a convenient way of direct connecting equipment to achieve the full output power of the inverter.

Be very careful as these may be "hot" and if touched may cause severe injury and electrical shock.

Warning : It is recommended to have a professional electrician wire to these terminals.

If they are touched, they may cause severe shock and if wired incorrectly may cause permanent damage to the inverter and equipment, voiding warranty and in extreme cases may cause fire.

13) RS232 communication port

(Please refer to page6~7 display operation method for details.)

14) Earth

❖ Operating Procedure

A. Verify the battery operating voltage and protection switch is on (inverter off).

B. Tum protection switch "off "(circuit breaker) once the battery connection has been verified.

C. The length of the cable may vary slightly, but should preferably be less than 10 Ft. The shorter the length of the cable the better the batteries will perform.
If a longer distance is needed, a larger gauge cable is required.
minimum cable size recommendations : 12Vdc / 4Awg, 24Vdc / 6Awg, 48Vdc / 8Awg

D. Connect the Red cable lug to the positive ⊕ on the battery and Black lug to the negative ⊖ of the battery.
Arrange the battery cables to the safest angles. Turn inverter on and confirm inverter is operating properly.

E. Turn protection switch "off " If the buzzer is sounding, turn the connected AC devices off and toggle the power switch off then on.
The buzzer should stop.

F. Now you should connect and turn the AC devices on. Most equipment using motors, have a higher startup requirement.
This may cause the inverter to buzz and go into overload or pop the circuit breakers. This should not damage the inverter;
however you should not continue to try and power up the equipment. Repeated overloads will cause damage to the inverter Call AlMS Power Tech support and verify startup requirements.

G. The frequency of the inverter is fine-tuned at 60Hz from the manufacture.

H. The inverter may operate in overload for a short period of time. If you continue the use in overload, the inverter may overheat and shut down. You will then be required to turn the inverter off and on again.

❖ Troubleshooting

For red LED and Protection switch

Symptoms	Possible problem	Possible solution
Warning red LED is illuminated and has low output voltage	Your device requires more power than the inverter is able to produce. The inverter has been overloaded.	Stop the operation of the connected devices Use the inverter under a lower condition than the specified output capacity (refer to instructions)
The output voltage is low or has no output voltage with small AC loads	Check the charging status of the battery with a meter Check the durability of the battery with a meter Check all connections between battery and inverter	Check to see if the battery is fully charged with a meter. Check to ensure the correct wire gauge is connected between battery and inverter and AC output.
The warning red LED illuminates the overload alarm is beeping	Check for abnormalities on the devices connected to the inverter Check if the consumption power of the devices are normal with a meter	Remove devices operating abnormally. Check the inrush surge of all connected devices. MAX surge ability of the inverter is 200% of the output capacity for 500 milliseconds
Fuse breaks Protection switch has been tripped	Check all wiring connections. Check the devices connected to the inverter	Check the + (Pos.) and - (Neg.) connections are made properly. Make sure the connected device does not exceed the capacity of the inverter
High output voltage is present output of the inverter has increased drastically	Check if the input voltage of the battery is correct at 12V, 24V or 48Vdc	Turn off the devices connected to the 120Vac output of the inverter Check the voltage of the battery with an external multi meter.

Tips for improving inverter service life

Before using the inverter with heavy motors or appliances, it is wise to verify the startup requirements. This is most often much higher than the listed running requirements at 3 to 5 times the continuous current rating.

To keep the life expectancy of the inverter at its maximum, please ensure plenty of ventilation. Keep dust and foreign debris out of inverter.

❖ General problems:

Audio system noise : Noise may be generated from speakers or amplifier when using the inverter to power low-grade stereo systems and large portable radios. This is due to the interference between the electricity and current running through each device. You are hearing the RF generated by the inverter.

TV interference : The operation of this inverter may cause interference in receiving specific TV channels; in this case perform the following procedure's to try to resolve the problems.

Audio, TV and wireless devices shall be installed in an area as far as possible away from the inverter. Try installing a line filter on affected device.

❖ Cautions during use

- For normal operation, devices with excessive loads applied momentarily such as refrigerators , air conditioners, electric motors, hand tools Etc. Should be within 60% of the maximum output capacity of this inverter. Check the capacity of this inverter as well as the capacity of the intended devices to be used.

- When the rated continuous capacity of the motor is equal to or greater than the rated capacity of the inverter, operation of the intended device may not be available due to the inverters lack of surge ability.

- Devices using heaters will increase the temperature of the inverter drastically. When using devices like this make sure to provide proper ventilation for the inverter. Improper ventilation will cause inverter shutdown and malfunction resulting in irreversible damage.

- Audio and video devices shall be used within the maximum power rating of the inverter. If the rating capacity is exceeded there will be a momentary cut-off. For safe operation use 75%-80% of the listed capacity.

❖ Warnings

- Never allow moisture into or around inverter. This will void your warranty
- Allow plenty of ventilation around inverter. It needs air to keep cool, or it may get extremely hot and shut down
- Avoid placing the inverter in direct sun light
- Always keep inverters away from flammable objects

AIMS Power™ Warranty Instructions:

This product is designed using the most modern digital technology and under very strict quality control and testing guide lines. If however you feel this product is not performing as it should, please call

Techsupport (775)359-6703 ex227
Techsupport@aimscorp.net

We will do our best to resolve your concerns. If the product needs repair or replacement, make sure to keep you receipt/ invoice, as that will need to be sent back along with the inverter prepaid to AIMS. You have a full 1 year from date of purchase warranty

Warranty

For additional products such as:

- Modified sine wave inverters
- Pure sine wave inverters
- Low Frequency Inverters
- Solar Charge Controllers
- Micro Grid Tied Inverters
- Inverter Chargers and Automatic transfer switches
- Converters AC-DC and DC-DC
- Custom cut cables
- Batteries
- Solar Panels & Racks

Please visit our web site : www.aimscorp.net
To find out where to buy any of our products, you may also
e-mail : sales@aimscorp.net
or call (775)359-6703.

AIMS Power™
www.aimscorp.net

AIMS Operating Corp., Inc. dba AIMS Power Warranty Instructions:

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techsupport@aimscorp.net or (775)359-6703

We will do our best to resolve your concerns. If the product needs repair or replacement, make sure to keep your receipt/invoice, as that will need to be sent back along with the package and RA# prepaid to AIMS. You have a full 1 year from date of purchase warranty. This warranty is valid world wide with the exception that freight and duty charges incurred outside the contiguous 48 United States will be prepaid by customer. Except as provided above, AIMS makes no warranty of any kind, express or implied, including without limitation the implied warranties of merchantability and fitness for a particular purpose. In no event shall AIMS be liable for indirect, special or consequential damages. This warranty only applies to AIMS Power branded products. All other name brand products are warranted by and according to their respective manufacturer. Please do not attempt to return non-AIMS Power branded products to AIMS Power.