



48-3000RM

2U 19", 2 Post Rack Mount & 4 Post Open Frame Cabinet Mount Pure Sine Wave Inverter User Manual

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M-483000RM As of 072216

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Qty	/. (1) A	IC Input Box				
Fo	ur Pos	t/Cabinet Mount:				
Qty	/. (2)	Front ears with handle				
Q() _	/. (z) C					
Tw Qty	o Pos /. (2) ℕ	t Rackmount: Iounting brackets (flush or 6" offset) - see Section 8-0				
На	rdwar	2:				
Qty Qty	 Ity. (4) Flat head screws for mounting front ears with handle (pre-installed), M4x8mm Black button head screws to mount AC input box to stand-offs, M3x6mm 					
Qty	y. (10)	Pan nead Philips screw for side rails (Four Post mounting) or 1 wo Post m	iounting prackets			

(see Section8-0),M4x6mm

- **Qty. (2)** Bolts and nuts to attach DC inputs, M8x20
- **Qty. (8)** Button head Philips screw for DC input covers, M3x10mm
- Qty. (2) Input terminal insulating boots: 1 x Red, 1 x Black

1. Features

- Pure sine wave output (THD < 3%) R Load
- By pass function
- Inverter mode / UPS mode
- Output frequency: 50 / 60Hz switch
- RS 232 interface / remote controls port / Wire connection to PC
- Wired Remote control
- Thermostatically controlled cooling fan
- Protection : Input low voltage Overload Short circuit
 Low battery alarm Input over voltage Over temperature

1-1 Electrical Performance

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Specification		Model				
Item		48-3000RM				
Continuous Output Power		3000W				
Surge Dating 3Min.		3200W				
Surgervaling	3Sec.	3500W				
Peak		6000W				
Input Volta	ge	48V				
Frequenc	су (50/60Hz ± 0.05% (Switch Selectable)				
Output Volta Adjustmer	age nt	100~120VAC (Tune VR); Factory Default: 115 VAC, +/- 1/2 Volt				
Peak Output C	Current	54A				
Efficiency (ful	l load)	89%				
No load Curren	nt Draw	0.39A				
Output Wave	eform	Pure Sine Wave < 3% THD				
P.F.		1.0				
Input Voltage I	Range	42-62 VDC				
DC Input over v alarm	voltage	61.0VDC				
DC Input over shut-dow	voltage n	62.0VDC				
DC Input under alarm	voltage	43.0VDC				
DC Input under shut-dow	voltage n	42.0VDC				
Protection	n	Overload, Short Circuit, Reverse Polarity (Fuse), Over/Under Input Voltage, Over Temperature				
Digital Disp	lay	OVP, UVP, OTP, OLP, VAC, AMP, WATT, VDC, TEMP, Hz				
Safety		EN60950-1				
EMC		FCC Class A				
Interface Control Port		RS-232 With Baud Rate 2400, 4800, 9600, 19200 (Switch Selectable)				
AC Input		110V AC (90 ~ 130V)				
AC Frequency		(50Hz ~ 60 Hz) ± 3%				
Bypass		4~6ms				
		Inverter mode or UPS mode by selector switch				
Operating Temperature Range		-20℃ to 50℃				
Storage Temperature Range		-30℃ to 70℃				
Dimensions		17.5"(L) ×16.7"(W) ×3.5"(H)				
Weight		31.5 Lbs				

Specifications are subject to change without notice.



For installation of two post mounting brackets, refer to page 19 section 8.0 Mounting Bracket Installation Two Post Relay Rack.

2. Introduction:

Please read the instructions in this manual before installing and using this model.

2-1 Front Panel Operation:



2-1-2 ON / OFF switch :

Power ON / OFF switch, leave in the OFF position during installation.

2-1-3 Function Key

By sequentially pushing "Function Key", the display willshowsystem status such as VAC, Amp, Watts. When a malfunction occurs, the display will flash and indicate problem (ex. UVP=Under Voltage Protection) on the screen. See page 12 & 13 for details.

2-1-3.1 System Status Numeric Display Panel

LED display provides system status and problem modes.

2-1-4 UPS/INV Mode Switch:

UPS Mode: External AC source (ex. utility power) is primary and unit switches to inverter power if external AC source is interrupted. INV Mode: Unit operates as an inverter continously. External AC is not passed through the unit

2-1-5 Operating Mode Indicators and Baud Rate Selector & Voltage Adjustment

2.2 Rear Panel Functions:



- 2-2-1 Ventilation openings : Do not obstruct, allow at least 3 inches of clearance for air flow.
- 2-2-2 Battery terminals :

Connect to 48V DC Power Source.

[+] is positive, [-] is negative. Reverse polarity connection will blow internal fuse and may damage inverter permanently.

2-2-3 AC outlet : NEMA 5-15R x 4

2-2-4 RS-232:

Connect to remote control unit (option accessory) or connect to computer to remote control working status.







WARNING!

Any damages caused by using incorrect RS232 cable will be outside of our warranty scope. If you are not sure which one is correct RS232 cable, please contact Newmar Technical Support at 714-751-0488.



WARNING!

Operation of the inverter without a proper ground connection may result in an electrical safety hazard.



WARNING!

Shock Hazard. Before proceeding Further, Carefully check that the inverter is NOT connected to any batteries, and that all wiring is disconnected from any electrical sources.

Do not connect the output terminals of the inverter to an incoming AC source.

2.2.6 AC Input Terminal Block

AC box with two screws and strain relief provided (not shown) to make external AC connection to inverter.

2.2.7 AC Input Circuit Breaker

Protects inverter and input wiring from short circuit.

2.2.8 Alarm Contacts

Activates with any alarm condition, ex. under voltage protection (UVP), overload protection (OLP), etc.

2-3 Installation:

The power inverter should be installed in a location that meets the following requirements. Note, for installation of Mounting Ears, refer to section 8-0 on page 19.

- 2-3-1 Dry Do not allow water to drip or splash on the inverter.
- 2-3-2 Cool Ambient air temperature should be between -20 $^{\circ}$ C and 50 $^{\circ}$ C, the cooler the better.
- 2-3-3 Safe Do not install in a battery compartment or other areas where flammable fumes may exist, such as fuel storage areas or engine compartments.
- 2-3-4 Ventilated Allow at least one inch of clearance around the inverter for air flow. Ensure the ventilation openings on the rear and bottom of the unit are not obstructed.
- 2-3-5 Dust-free Do not install the Inverter in a dusty environments where are dust, wood particles or other filings/shavings. The dust can be pulled into the unit when the cooling fan is operating.
- 2-3-6 Close to batteries Avoid excessive cable lengths but do not install the Inverter in the same compartment as batteries.
 Use the recommended wire lengths and sizes (see section 2-6).
 Also do not mount the Inverter where it will be exposed to the gases produced by the battery.
 These gases are very corrosive and prolonged exposure will damage the Inverter.

2-4 Quick hook-Up and Testing:

2-4-1 Unpack and inspect the power inverter, check to see that the power switch is in the OFF position and the AC input circuit breaker on rear panel is also in OFF position.

2-4-2 Connect the DC input cables on the rear of the power inverter. Use #1/0 minimum cable size. DC input cables should have crimp ring lugs attached with 5/16" single hole (not provided). The input bus bar polarities are indicated on the rear panel and colored terminal covers provided with mounting screws. M8 hex head bolts and nuts are provided for attaching the ring lugs to the input bus bars. Use a 13mm nut driver or socket.

WARNING!



You may observe a spark when you make this connection since current may flow to charge capacitors in the power inverter. Do not make this connection in the presence of flammable fumes, explosion or fire may result.



WARNING!

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

2-4-3 Before proceeding further, carefully check that cable you have just connected negative terminal of inverter to the negative output power source.



CAUTION!

Reverse polarity connection will blow a fuse in Inverter and may permanently damage the inverter. Damage caused by reverse polarity connection is not covered by our warranty.

- 2-4-4 Connect the cable from the negative terminal of the inverter to the negative terminal of the power source. Make a secure connection.
- 2-4-5 Set the power switch to the ON position; you will hear the "beep-beep-beep" sound. After that, you will hear the continuous sound from internal alarm. Then, the AC voltage shows on the display. It means the device has completed start-up operation.
- 2-4-6 Set the power switch to the OFF position; the device shut down completely.
- 2-4-7 Use a true RMS power to meter accurately measure the output voltage of inverter

2-5 AC Safety Grounding:

During the AC wiring installation, Ac input and output ground wires are connected to the inverter. The AC input ground wire must connect to the incoming ground from your AC utility source.

The AC output ground wire should go to the grounding point for your loads (for example, a distribution panel ground bus bar).

- 2-5-1 Neutral Grounding (GFCI's) :
 - 2-5-1-1 **120V models:** The neutral conductor of the AC output circuit of the Inverter is automatically connected to the safety ground during inverter operation. This conforms to national electrical code requirements that separately derived AC sources (such as inverter and generators) have their neutral conductors tied to ground in the same way that the neutral conductor from the utility is tied to ground at the GFCI breaker panel. For models configured with a transfer relay, while AC utility power is presenting and the Inverter is in bypass mode, this connection (neutral of the Inverter's AC output to input safety ground) is not present so that the utility neutral is only connected to ground at your breaker panel, as required.



WARNING!

Do not operate the power inverter without connecting it to Ground. Electrical shock hazard may result.

2-6. Making DC Wiring Connections:

Follow this procedure to connect the battery cables to the DC input terminals on the Inverter. Your cables should be as short as possible (ideally, less than 10 feet / 3 meters) and large enough to handle the required Current in accordance with the electrical codes or regulations applicable to your installation.

Cables that are not an adequate gauge (too small) or are too long will cause decreased inverter performance such as poor surge capability and frequent low input voltage warnings and shutdowns.

These low input voltage warnings are due to DC voltage drop across the cables from the inverter to the batteries.

The longer and smaller diameter these cables, the greater the voltage drop.



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

Increasing your DC cable size will help improve the situation.

The following size cable and fuse rating is recommended for optimum inverter performance and safety.

Model No	Wire AWG	Inline Fuse	Length
48-3000RM	#1/0	100A	6' Max

2-7 Inverter Operation:

To operate the power inverter, turn it on using the ON/OFF switch on the front panel. The power inverter is now ready to deliver AC power to your loads.

If you are operating several loads from the power inverter, turn them on separately after the inverter has been turned on.

This will ensure that the power inverter does not have to deliver the starting currents for all the loads at once.

2-7-1 Controls and Indicators :

The ON / OFF switch turns the control circuit in the power inverter on and off. Inverter operates from an input voltage ranging from : 42.0 to 62.0 VDC.



Model	DC Input over voltage shut-down	DC Input over voltage alarm	DC Input under voltage alarm	DC Input under voltage shut-down
48-3000RM	62.0VDC	61.0VDC	43.0VDC	42.0VDC

2-7-2 Output Voltage Indicator:

VAC LED illuminates and displays output Voltage value

- 2-7-3 Output Current Indicator: AMP LED illuminates and displays output Current value
- 2-7-4 Output Watts Indicator: WATT LED illuminates and displays output value
- 2-7-5 Input DC Voltage Indicator: VDC LED illuminates and displays input DC Voltage value
- 2-7-6 Temperature Indicator: TEMP LED illuminates and displays internal operating temperature value
- 2-7-7 ON-LINE Indicator: Illuminates when external AC power is available

2-7-8 Bypass Indicator:Illuminates when unit is running from DC power. Either set in Inverter Mode or when set in UPS Mode and AC input is lost.

2-7-7 Output Frequency DC Indictor:

Hz LED illuminates and displays output frequency value



Display Accuracy:

Function	VAC	AMP	WATT	VDC	TEMP	Frequ	iency
Range	100-120 VAC	0-30A	0-3KW	42-62 VDC	0-120 ℃	50Hz	60Hz
Accuracy	± 1%	1%±0.5A	± 3%	± 2%	± 1%	±0.01	±0.01

- 2-7-8 Over Voltage Protection Indicator: (OVP)
 The over voltage indicator indicates that the power inverter has shut down because input voltage exceeded 61VDC. (See page 12)
- 2-7-9 Under Voltage Protection Indicator: (UVP)
 The under voltage indicator indicates that the power inverter has shut down because input voltage fell below 43VDC. (See page 12)

2-7-10 Over Temp Protection Indicator: (OTP)

The over temp indicator indicates that the power inverter has shut itself down because its internal temp has become excessively elevated. The power inverter may overheat because it has been operated at power levels above its rating, because it has been installed in a location which does not allow it to dissipate heat properly or due to blocked ventilation openings on front and/or rear panel. The power inverter will automatically turn back on, once it has cooled.

2-7-11 Overload Protection Indicator: (OLP)

The overload indicator indicates that the power inverter has shut down. When the overload is removed, the inverter will return to normal operation.



2-7-12 Operating Mode Indicators, Baud Rate Selector and AC Votlage Adjust



A: Inverter Fault: This LED will illuminate if any of the fault conditions occur. The LED will also illuminate if AC power is lost and Inverter is running on batteries.

B: Back-Up Mode: This LED will illuminate if either AC power has been lost while in UPS mode. If the switch is in Inverter Mode, the backup LED and Inverter LED will both illuminate.

C: UPS Mode: UPS mode selected (see section 2-1-4 for more info) D: Inverter Mode: Inverter mode selected (see section 2-1-4 for more info)



- (A) AC INPUT SWITCH
- (B) DC TO DC
- (C) DC TO AC
- (D)TRANSFERSWITCH
- (E) UPS MODE & INVERTER MODEUPS MODE: If AC Mains fails the Inverter takes overINVERTER MODE: A C loads are powered continously by the Inverter (from Battery)

2-8 Cooling Fan Working Code:

Cooling fan is load and temperature controlled.

When output power is under 300W, the cooling fan does not operate. Once output power is 300W, the cooling fan will start to operate.

If the ventilation opening is obstructed or has poor ventilation, the inverter will enter over temperature protection mode (OTP). The cooling fan will continue working to reduce the internal temperature. Once the temperature has reduced sufficiently, the inverter will turn on automatically.

3. Maintenance:

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

4. Troubleshooting Guide:



WARNING!

Do not open or disassemble the Inverter, attempting to service the unit yourself may result in a risk of electrical shock or fire.

Common problems – television interference:

Operation of the power inverter can interfere with over the air television reception on some channels, If this situation occurs, the following steps may help to alleviate the problems.

- Make sure that the chassis ground lug on the back of the power inverter is solidly connected to the ground system of your site or vehicle ground.
- Do not operate high power loads with the power inverter while watching television.
- Make sure that the antenna feeding your television provides an adequate (" snow free") signal and that you are using good quality cable between the antenna and the television.
- Move the television as far away from the power inverter as possible.
- Keep the cables between the battery and the power inverter as short as possible and twist them together about 2 to 3 twists per foot. This will reduce radiated noise from the cables.

Problem & Symptoms	Possible Cause	Solution
Low output voltage (110V: 95-105VAC)	Using average reading voltmeter	Use true RMS reading meter (Ref. point 2-4-7)
OLP Indicator	Over load	Reduce load.
No output voltage: UVP or OVP Indicator	Low/High input voltage	Rechargebattery,check connections and cable. (Ref. point 2-7-1) OVP: Check for charger fault
No output voltage Over Temp indicator Load less than 1000W	Thermal shutdown	Improve ventilation , Make sure ventilation openings in inverter are not obstructed, Reduce ambient temperature.
No output voltage, Over load indicator	Short circuit or wiring error very high power load	Check AC wiring for short circuit or improper polarity (hot and neutral reversed) Remove load.

5. Warranty:

We warrant this product against defects in materials and workmanship for a period of 2 years from the date of purchase and will repair or replace any defective power inverter when directly returned (freight paid) to us.Please call Technical Service for an RMA number.

This warranty will be considered void if the unit has suffered any obvious damage by natural and man-made factors, or alteration either internal or external and does not cover damage arising from improper use such as plugging the unit into an unsuitable power sources attempts to operate products with excessive power consumption requirement, or use in unsuitable environments.

If you have a problem with your 48-3000RM, or have any questions about the installation and proper operation of the unit, please contact NEWMAR's Technical Services Department: Phone: 714-751-0488 - From the hours of 7:30 a.m. to 5:00 p.m. weekdays, P.S.T. Fax: 714-957-1621 E-mail: techservice@newmarpower.com

6. Important Safety Instructions



WARNING! Before you install and use your Inverter, read and save these safety instructions.

6-1 General Safety Precautions

- 6-1-1 Do not expose the Inverter to rain, snow, spray, or heavy dust. To reduce risk of hazard, do not cover or obstruct the ventilation openings. Do not install the Inverter in a zero-clearance compartment. Overheating may result.
- 6-1-2 To avoid a risk of fire and electronic shock. Make sure that existing wiring is in good electrical condition; and that wire size is not undersized. Do not operate the Inverter with damaged or substandard wiring.
- 6-1-3 This equipment contains components which can produce arcs or sparks. To prevent fire or explosion do not install in compartments containing batteries or flammable materials or in locations where require ignition protected equipment. This includes any space containing gasoline-powered machinery, fuel tanks, or joints, fittings, or other connection between components of the fuel system.

6-2 Precautions When Working with Battery bank

- 6-2-1 If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eye, immediately flood eye with running cold water for at lease 20minutes and get medical attention immediately.
- 6-2-2 NEVER smoke or allow a spark or flame in vicinity of battery or engine.
- 6-2-3 Do not drop a metal tool on the battery. The resulting spark or short-circuit on the battery or other electrical part may cause an explosion.
- 6-2-4 Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a lead-acid battery.A lead-acid battery produces a short-circuit current high enough to weld a ring or the like to metal, causing a severe burn.

7. Appendices A

7-1. DIP Switch (Center of Inverter Front Panel)

S1	FREQ (Hz)	S2	S 3	BAUD RATE	ACV-ADJ (VAC)
ON	60	ON	ON	2400	240 🐨 200
OFF	50	OFF	ON	4800	120 🕀 100
<u> </u>	5	ON	OFF	9600	
<u></u>	-	OFF	OFF	19200	8 -

S1: Freq (Hz)

S2/S3: Baud Rate

When you set up S1~S3, please reset the inverter and let it update data through CPU. Factory Default: S1-S3 all ON

7-2 Tune VR (Potentiometer)

Tune VR (VAC) output voltage from 100 – 120 VAC or 200 – 240 VAC (220V models). The VAC value will gradually increase when rotating potentiometer; from right to left.

8-0 Mounting Bracket Installation: Two Post Relay Rack

The two post mounting brackets supplied can be utlized for both flush and center mount 6" recess or installation.



8.1 4 Post Bracket Install:

