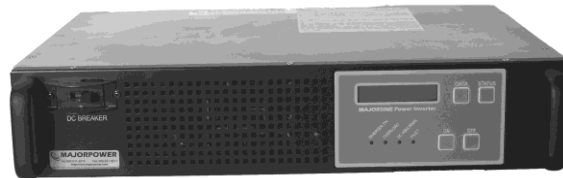


NEWMAR[®]

Powering the NetworkSM

INSTALLATION & OPERATION MANUAL



MODELS:

24-1000RM

48-1000RM

48-1000IRM

48-2000RM

48-2000IRM

125-1000RM

125-2000RM

Newmar

15272 Newsboy Circle
Huntington Beach, CA 92649
Tel: 714.751.0488
www.PoweringTheNetwork.com

M-RACKMNTINV2U-LF
As of 071117

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1. INTRODUCTION

1-1 General Information

Thank you for choosing NEWMAR as the power products supplier to your company. NEWMAR's Rackmount Pure Sine Wave Power Inverters are designed and built for full reliability at multiple locations and variety of applications. These intelligent, dependable inverters provide economical AC Power for all your network needs. Operators spanning global continents have deployed the Rackmount Pure Sine Wave Power Inverters as the choice for high availability AC power support from a DC source.

This manual contains information and technical details for all models in the Rackmount Pure Sine Wave Power Inverter family. The general operation procedures are common, however in some instances, all or part of the information will not apply to the specific model purchased. Refer to the specific model details page in Chapter 8: Technical Specifications.

This user's manual contains important technical instructions to be followed by qualified personnel responsible for the installation, start-up and maintenance of this unit. We recommend that this manual be read attentively to insure safe and reliable operation of this equipment.

Should you require any assistance, please call our Application Engineering department at:



Tel: 800.854.3906 or 714.751.0488

Email: techservice@newmarpower.com

2. IMPORTANT SAFETY INSTRUCTIONS

2-1 UL Safety Statement

SAVE THESE INSTRUCTIONS - This manual contains important inverter instructions that should be followed during installation and maintenance of the Rackmount Pure Sine Wave inverter unit.

To reduce the risk of electric shock, install the inverter in a temperature and humidity controlled indoor environment, free of conductive contaminants. Ambient temperature should not exceed 50°C (122°F).

- Depending on use, the AC output of the inverter may require a customer installed disconnect or fusing. For telecom use, a GFCI has not been provided. The inverter offers standard AC short circuit protection.
- The following precautions should be respected when working on the inverter:
 - Remove watches, rings, or other metal objects.
 - Use tools with insulated handles.
 - Wear rubber gloves and boots.

2-2 Other Safety Notes

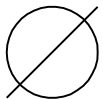
- Upon receipt, examine the shipment box for damage. Notify the carrier immediately, before opening if damage is evident.
- Do not open or disassemble the inverter, warranty will be voided.
- Do not operate near water or in excessive humidity.

- Keep liquid and foreign objects from entering the inverter.
- Install the inverter in a well-ventilated area. Do not block front air vents, or rear air exhausts of the unit.
- Do not operate the inverter close to combustible gas or open fire.
- Do not plug appliances with surging loads, or half bridge rectified loads, into the inverter.
- Do not operate the inverter if the unit is leaking any liquid or if a white powdery residue is found to be present.
- Temperature: The inverter should be operated in an ambient temperature range of 0°C to +50°C or output efficiency may be affected. Air flow to the inverter must not be impeded.
- Reduced air flow: Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
- Mechanical loading: Mounting of the inverter in a rack should be level and balanced.
- Wiring: Adequate input power must be supplied to the inverter for proper use; correct wiring sizes must be respected.
- Grounding: Reliable grounding of rack-mounted equipment should be maintained.
- Inverter DC power connection must be from a VDC source within the technical specifications of the unit under installation.

2-3 Symbols



PROTECTIVE GROUNDING TERMINAL: A terminal, which must be connected to earth ground prior to making any other connection to the equipment.



This symbol indicates the word "phase".

3. PRODUCT OVERVIEW

3-1 System Features

The Rackmount Pure Sine Wave series inverter is a highly reliable DC-AC inverter system, designed with advanced power electronics and microprocessor technology offering the following features:

Self-Diagnosis

The Rackmount Pure Sine Wave series inverter is equipped with a self diagnosis microprocessor, able to identify and show all failure messages on the LED/LCD display, with visual/audio alarm.

High Frequency Architecture

With its high frequency architecture design, the Rackmount Pure Sine Wave series inverter features high efficiency, light weight and compact design.

Modular Design

Rackmount Pure Sine Wave inverters use a modular design structure, resulting in easy maintenance, and high MTBF.

High Efficiency

Rackmount Pure Sine Wave series inverters offer advanced soft-switching designs which increase operating efficiency and reduce switching noise.

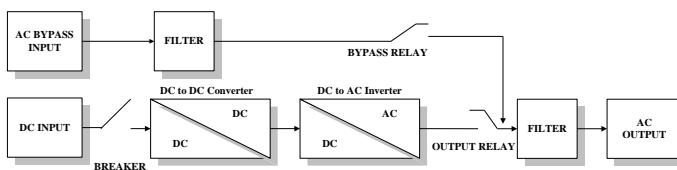
Advanced Protection Features:

- Input reverse polarity-proof protection

- Internal over temperature protection
- Output overload protection
- Output over/under voltage protection
- Output short circuit protection
- DC input short circuit protection: fuse and breaker
- AC input short circuit protection: breaker
- Input over/under voltage protection
- Fan failure detection and protection

3-2 Block Diagram

Rackmount Pure Sine Wave Inverter Block Diagram



Rackmount Pure Sine Wave inverters feature IGBT (Insulated Gate Bipolar Transistor) technology, minimizing weight and dimension, while enhancing output short circuit reliability and overload capacity.

Output voltage is provided in one of two ways:

- 1) From AC input bypass mode: (Off-Line Mode)
- 2) From DC to AC inverter mode: (On-Line Mode)

Either mode is front panel programmable; the selected operational mode will predetermine the “default” output.

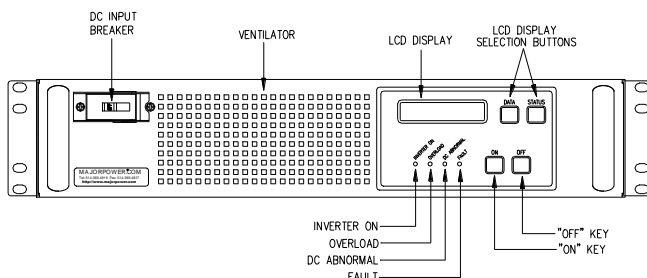
In the first option, **Off-Line mode**, AC output power will be supplied through the AC bypass mode in its “normal” operation. Upon AC input failure, output power will be diverted through the DC to AC inverter mode. Once AC mains are restored, the unit will revert from inverter mode to bypass mode.

In the second option, **On-Line mode**, AC output power will be provided directly by the inverter from the VDC source. Should the DC source or inverter fail, the system will transfer its output power through the bypass mode. Once the DC power source is restored, the system will revert to “inverter” mode.

Transfer time from inverter to bypass, or bypass to inverter is < 4 ms.

The Off-line/On-line mode is changed from one to the other by pressing the ON button for less than 3 seconds when normal output is available. The operational mode cannot be changed during an abnormal or fault condition.

3-3 Front Panel



- **ON/OFF buttons:**

These are the two power buttons for turning on or turning off the inverter.

Once the inverter is on, the “ON” button works as the On-Line <=> Off-Line mode switching button.

- **INVERTER ON** Indicates the INVERTER has been turned on and is working normally (output is available to support load equipment).
- **OVERLOAD** Means that the inverter is in overload condition, or that there is an output short circuit.
- **DC ABNORMAL** Means that the input DC voltage is “abnormal” and requires verification.
- **FAULT** Indicates that the inverter is in “fault” condition. See Section 6-3 *Alarms*

**** If utility bypass is not being used, and AC input is not present, the fault LED will remain on. Refer to section 5-3a to disable AC Input fault LED. “Bypass: Fault” will still be displayed on LCD.**

➤ **LCD Display Selection Buttons**

The following data: (output voltage, output frequency, load, input dc voltage, bypass ac voltage, bypass ac frequency, etc.) and system status can be shown sequentially on the LCD display by pressing these two buttons. For more information – Refer to Section 5 Operation

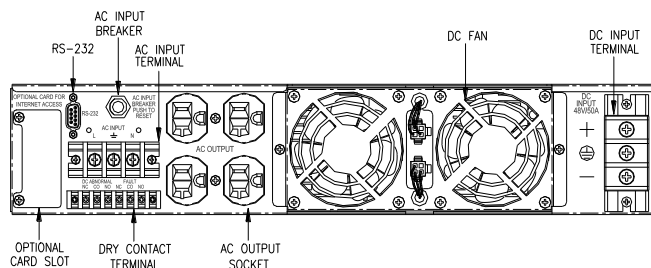
➤ **Ventilator**

The ventilator on the front panel provides inverter cooling. Do NOT obstruct this vent or the fan exhaust in the back of the unit!

➤ **Circuit Breaker (DC Input Breaker)**

The DC circuit breaker will be tripped if there is a “short circuit” condition within the inverter. Reverse polarity protection (input) and overload protection are integrated within the internal circuitry and neither of these faults should trip the DC breaker.

3-4 Rear Panel



➤ **Communication Interface**

Rackmount Pure Sine Wave inverter provides two standard and integrated communication interfaces

- a) RS-232 interface.
- b) Dry Contact interface.

Option) SNMP/Web Adapter card is available; please contact your Sales Distributor for information.

➤ **FAN**

Inverter cooling is provided by DC fans. Forced air flow is from front-to-back.

➤ **AC Output Receptacles**

NEMA 5-20R/5-15R × 4 or IEC-320 x 4

➤ **AC Input Terminal**

Terminal for bypass VAC input voltage. A 115 VAC, 20 amp circuit is recommended for full power operation.

➤ **AC Input Breaker**

Breaker for AC input

➤ **DC Input Terminal**

Terminal for VDC input voltage

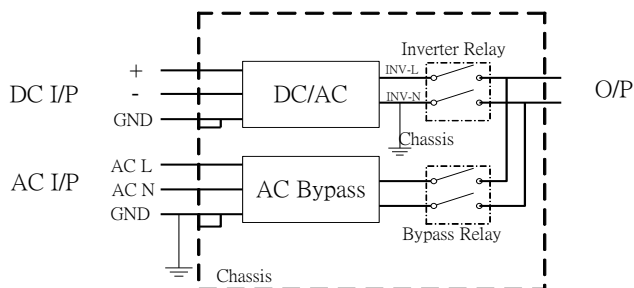
➤ **Dry Contact Terminal**

Dry contact terminal is connected to two Form C relays. One is for “DC abnormal” and the other one is for “FAULT”.

When input DC voltage or fault occurs, the internal contact relay will open/close.

The terminal can support 5A / 250VAC

3-5 Bypass Switching and Grounding



Operation = Off – Line Mode:

AC input supplied from local service panel,
AC I/P neutral to earth connection provided externally.
(Usually service panel)

Operation = On– Line Mode:

DC input supplied from battery/DC power system
Inverter originated AC, therefore neutral to earth connection provided internally to chassis.

Grounding:

Chassis to Earth Ground connection should be made per customer installation specifications or prevailing safety jurisdiction authority.

The inverter external safety ground plane is not switched by operation in any mode. Typically - the chassis is mounted in a rack or a conductor to ground plane is installed.

4. INSTALLATION

4-1 Delivery

Upon receipt of goods, check the condition of the package. Should the package or unit be damaged, refuse receipt and/or contact your shipper immediately to initiate your claim.

4-2 Installation Procedures

- Mount unit using the brackets and screws supplied in the hardware kit.

- Please check that the input DC voltage meets the VDC specification of the inverter, and verify the correct DC polarity connections have been made to the inverter.
- Connect the DC input voltage cables before engaging the front panel DC breaker.
- Use the following recommended cable sizes when connecting power to the inverter.

| <u>Model</u> | <u>Capacity</u> | <u>DC Input</u> | <u>AC Input</u> | <u>AC Output</u> |
|--------------|-----------------|-----------------|-----------------|------------------|
| 24-1000RM | 1 KVA | #6 AWG | #12 AWG | NEMA 5-15R |
| 48-1000RM | 1 KVA | #10 AWG | #16 AWG | NEMA 5-15R |
| 48-2000RM | 2 KVA | #6 AWG | #12 AWG | NEMA 5-20R/5-15R |
| 48-1000IRM | 1 KVA | #10 AWG | #16 AWG | IEC-320 |
| 48-2000IRM | 2 KVA | #6 AWG | #12 AWG | IEC-320 |
| 125-1000RM | 1 KVA | #12 AWG | #16 AWG | NEMA 5-15R |
| 125-2000RM | 2 KVA | #12 AWG | #12 AWG | NEMA 5-20R/5-15R |

4-3 Installation Tool Kit

Contents of the tool kit include:

- Poly zip bag containing twelve M4 screws and two 6-32 screws,
- Two large mounting brackets (23" or 24" rack mount),
- Two small mounting brackets (19" rack mount),
- One protective cover for AC input,
- One RS232 Cable.

4-4 Locking Hardwire Adapter

- The optional adapter is a reliable locking NEMA 5-15 plug on one end and terminal screws on the other end. The plug-to-terminal conversion is used to secure bare wire load circuit wiring to the output sockets of the inverter. The adapter includes strain relief for the wires being connected to the terminals.

Documents Also Available: Application Note # AN-001

5. OPERATION

5-1 Connecting to the Input Power

- Turn off the DC breaker before connecting the DC voltage to the input terminal. The DC terminal strip will accommodate ring terminals with wire sizes recommended in Chapter 4-2.
- **NOTE:** Sparks will occur if the breaker is "on" when connecting the input DC voltage. This is a normal condition due to the charging current draw from the DC voltage charging the internal capacitor of the inverter.
- Once the DC power has been connected, engage the DC breaker to operate the inverter.
- If no AC input is to be used set AC I/P Alarm = E to AC I/P Alarm = D. (see section 5-3a)
Note: E = Enabled, D = Disabled

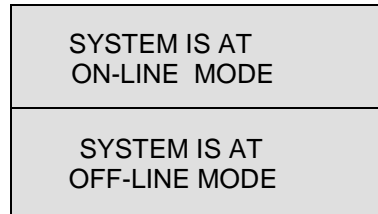
5-2 Connecting the Loads

- Calculate the total power consumption (VA) of the load being attached to the output. Make sure that the total power consumption does not exceed the rated load of the inverter.
- The load consumption can be monitored on the front screen of the inverter using the data button.

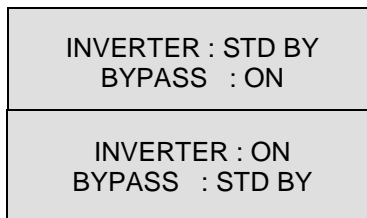
- Should the total load exceed the capacity of the inverter, remove uncritical loads until the total load is within the capacity of the inverter. Distribute removed loads to alternate sources or additional inverters
- Only two hardwire adapters will fit on the integrated NEMA duplex outlets of the inverter. Loads should be distributed so not to exceed current ratings of hardware and cable.

5-3 Front Panel Operation of Sequence

1. Make sure that the complete installation has been carried out correctly. When the breaker is turned on or the utility input is available, the LCD of the inverter will display either following message:

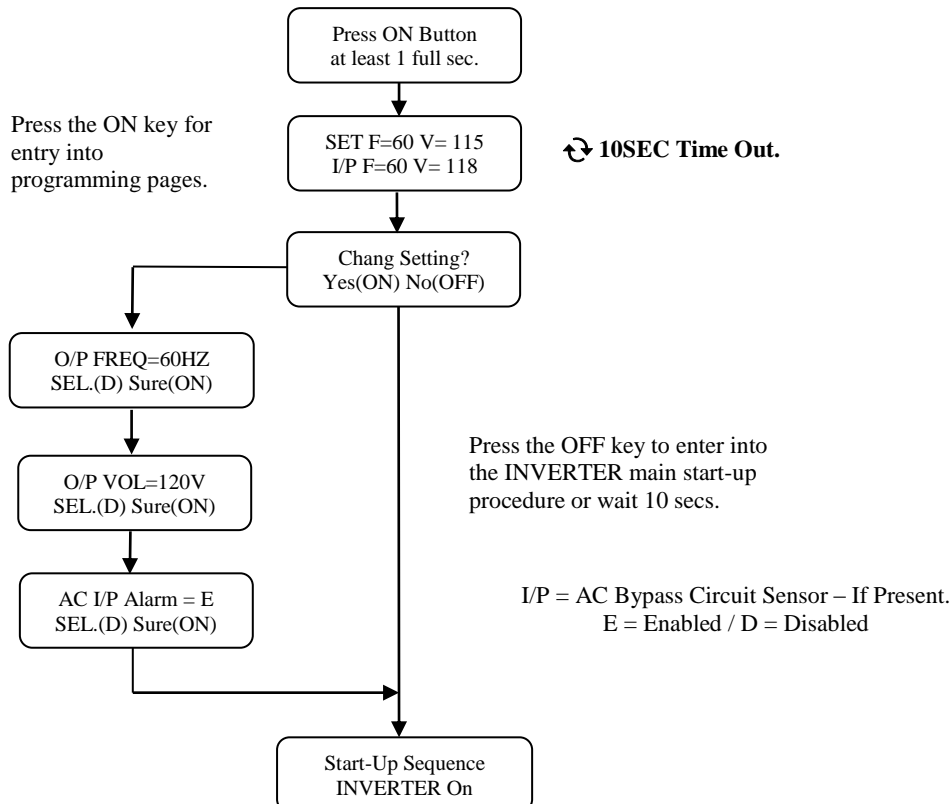


2. Press the “**ON**” button for a minimum of one full second (and Release within **10** seconds) to start the system power. (if you press the **ON** key less than **1** second, the CPU will not start up correctly). The inverter is in a normal operation condition when either of the following messages appear on the LCD screen:



5-3a Programming the Inverter

The INVERTER will automatically initiate self-checks and start-up after 10 seconds.



5-4 "DATA" button

You can use the "DATA" button to select the following information which is displayed on the LCD screen:

A) Output voltage:

Shows present output voltage.

OUTPUT VOLT.
*** □□.□V ***

B) Inverter voltage:

Shows present "inverter" voltage.

INVERTER VOLT.
*** □□.□V ***

C) Output frequency:

Shows present output frequency.

OUTPUT FREQ.
*** □□.□ Hz ***

D) Bypass AC voltage:

Shows present input bypass AC voltage.

BYPASS AC VOLT
*** □□.□V ***

E) Bypass AC frequency:

Shows present input bypass AC frequency.

BYPASS AC FREQ
*** □□.□Hz ***

F) Input DC voltage:

Shows the input DC voltage.

INPUT DC VOLTAGE
*** □□.□V ***

G) Output current:

Shows present output current.

OUTPUT CURRENT
*** □□.□ A ***

H) Output VA:

Shows present output Volt-Amp

OUTPUT VA
*** □□□□ VA ***

I) Output power:

Shows present output power (Watt)

OUTPUT POWER
*** □□□□ W ***

J) Temperature:

Shows the temperature inside the INVERTER

TEMPERATURE
*** □□.□ ° C ***

K) Firmware Version:

Shows the CPU firmware version

FIRMWARE VERSION
*** V □.□ ***

5-5 "STATUS" button

You can use the "**STATUS**" button to select the following information which is displayed on the LCD screen:

A) Output status:

- a) When the input bypass voltage is normal and INVERTER output voltage is from DC to AC inverter, LCD shows

INVERTER : ON
BYPASS : STD BY

- b) When the output is from input bypass AC, LCD shows

INVERTER : STD BY
BYPASS : ON

- c) When the INVERTER is turned off by firmware, LCD shows

** OUTPUT **
OUTPUT OFF

- d) When the INVERTER is turned off, LCD shows

** OUTPUT **
SCHEDULE OFF

B) DC to AC inverter status

a) When the INVERTER is normal, LCD shows

** INVERTER **
NORMAL

b) When the inverter is over temperature (may be caused by overload, high ambient temperature or fan failure), LCD shows.

** INVERTER **
OVER TEMPERATURE

c) When the temperature inside the INVERTER is too high, LCD shows.

** AMBIENT **
OVER TEMPERATURE

d) When the INVERTER output is in “short circuit” detection mode, LCD shows.

** INVERTER **
SHORT CIRCUIT

e) When the INVERTER output is overloaded beyond rated capacity, LCD shows.

** INVERTER **
OVERLOAD

f) When the fan is in “fault”, LCD shows.

** INVERTER **
FAN FAILURE

g) When the INVERTER voltage is “too high”, LCD shows.

** INVERTER **
OVER VOLTAGE

h) When the INVERTER voltage is “low”, LCD shows.

** INVERTER **
UNDER VOLTAGE

C) Bypass AC status

a) When the input bypass voltage is normal, LCD shows.

** BYPASS AC **
NORMAL

b) When the input bypass voltage is normal and INVERTER output is in “bypass mode”, LCD shows

INVERTER : STD BY
BYPASS : ON

c) When the input bypass voltage is “too low”, LCD shows.

** BYPASS AC **
UNDER VOLTAGE

d) When the input bypass voltage is “too high”, LCD shows.

** BYPASS AC **
OVER VOLTAGE

e) When the input bypass is “over” normal frequency range, LCD shows.

** BYPASS AC **
OUT OF FREQ.

f) When the output is overloaded, LCD shows.

** BYPASS AC **
OVER LOAD

D) Input DC status

a) When the input DC voltage is normal.

** INPUT DC **
NORMAL

b) When the input DC voltage is under threshold, the LCD shows.

** INPUT DC **
LOW VOLTAGE

c) When the input DC voltage is over threshold, the LCD shows.

** INPUT DC **
HIGH VOLTAGE

- d) When the input DC voltage is under voltage, the INVERTER will switch to bypass mode (if bypass AC is available) and LCD shows.

DC UNDER VOLT
INVERTER OFF

- e) When the input DC voltage is over voltage, INVERTER will switch to bypass mode (if bypass AC is available) and LCD shows.

DC OVER VOLT
INVERTER OFF

5-6 Error message

If the following messages appear on the LCD screen, contact Majorpower at once.

** INVERTER **
SOFTSTART FAIL

EEPROM
NOT AVAILABLE

EEPROM
checksum error

6. MAINTENANCE AND TROUBLESHOOTING

6-1 Maintenance

- Make sure that the inverter vents are not blocked.
- Use a vacuum cleaner to clear any dust from the fan area.
- When cleaning the case or front panel, use a soft, dry cloth, only. If the case or front panel is very dirty, use a neutral, non-abrasive detergent. Do **not** use alcohol or ammonia based solutions.
- Regular service, and movement of the inverter, should be performed by a qualified service technician.
- Avoid spilling liquid on the Inverter.

6-2 Troubleshooting

| Problem | Possible cause | Action to take |
|---|---|--|
| LEDs do not light up | The circuit breaker is "off" | Turn on or reset the circuit breaker. |
| | DC cable polarity installation | Apply correct DC polarity. |
| | DC input is "over" or "under" voltage. | Apply correct DC voltage. |
| "FAULT" LED lights up | Bypass AC fail | AC voltage or frequency may be out of range. |
| | | AC I/P Alarm enabled See Section 5-3a to disable |
| | Inverter failure. | Call for service. |
| | Output was "short". | Load may be abnormal |
| "OVERLOAD" LED is ON | The power drawn from the inverter exceeded the load rating of the inverter. | Remove unnecessary loads or redistribute loads to other inverters. |
| Communication fault. | Incorrect transmission rate. | Use 2400 bps baud rate and re-test. |
| | Wrong wire connection. | Refer to the wire connection in chapter 7. |
| "FAULT" LED lights, LCD OVERTEMPERATURE | Temperature inside the inverter is too high. | Check for blocked vents, or non-working fan. |

| DCV Input | 24 V | 48 V | 125 V |
|--------------------------|------|------|-------|
| DC Low Voltage Trigger | 21 | 42 | 101 |
| DC Low Voltage Recovery | 22 | 44 | 103 |
| DC High Voltage Trigger | 29 | 59 | 149 |
| DC High Voltage Recovery | 28.5 | 58.5 | 148.5 |

Bypass Utility AC Alarm Thresholds

For 100VAC system

| | O/P = 100Vac | O/P = 110Vac | O/P = 115Vac | O/P = 120Vac |
|---------------------------------------|-----------------|----------------|----------------|-----------------|
| AC Bypass Voltage Range | 80Vac ~ 120Vac | 90Vac ~ 130Vac | 95Vac ~ 135Vac | 100Vac ~ 140Vac |
| AC Bypass Frequency Range F=50Hz | 45.5Hz ~ 54.5Hz | | | |
| AC Bypass Frequency Range F=60Hz | 55.5Hz ~ 64.5Hz | | | |
| AC Bypass Recovery From Over Voltage | 115Vac | 125Vac | 130Vac | 135Vac |
| AC Bypass Recovery From Under Voltage | 85Vac | 95Vac | 100Vac | 105Vac |

6-3 Alarms

➤ Inverter Alarm Classifications

➤ Fault Alarm Indicator includes:

Bypass AC Input High or Low Voltage

Bypass AC Input Frequency Out of Range

Fan Fail

Inverter Internal Failure

Output Load Sensing "short" condition

High Temperature

➤ Overload Indicator includes:

The AC power drawn from the inverter exceeded the load rating of the inverter.

See Section 8. *TECHNICAL SPECIFICATIONS*

➤ DC Abnormal Indicator includes:

Input Low Voltage

Input High Voltage

For 200VAC system

| | O/P = 208Vac | O/P = 220Vac | O/P = 230Vac | O/P = 240Vac |
|---------------------------------------|-----------------|----------------|----------------|----------------|
| AC Bypass Voltage Range | 188Vac ~228Vac | 200Vac ~240Vac | 210Vac ~250Vac | 220Vac ~257Vac |
| AC Bypass Frequency Range F=50Hz | 45.5Hz ~ 54.5Hz | | | |
| AC Bypass Frequency Range F=60Hz | 55.5Hz ~ 64.5Hz | | | |
| AC Bypass Recovery From Over Voltage | 223Vac | 235Vac | 245Vac | 255Vac |
| AC Bypass Recovery From Under Voltage | 193Vac | 205Vac | 215Vac | 225Vac |

7. COMMUNICATION

7-1 Dry Contact Communication Terminal

The “Dry Contact” terminal is the interface for two Form C relays. The relays are used for switching the voltage provided by the user’s external alarm system.

One contact set is for “DC Abnormal” and the other one is for “FAULT”. When alarms in each classification trigger, the relay switches state. (Ref: Sec. 6-3 Alarms) Connection to the terminal should be made to external sensor circuits with appropriate sized wire. The terminal can support 5A / 250VAC in either NC or NO configurations.

- NC: Normally Closed
- CO: Common
- NO: Normally Open

7-2 SNMP Expansion Card Slot (WEB)

Remote monitoring is a prime consideration and requirement to manage multiple network elements from a central location. SNMP remote access as easy as; installing the plug-n-play card, configuring your network IP address, and attaching the network interface cable.

The SNMP Kit includes:

- Interface electronics card
- Cover plate
- RS-232 to RJ-45 custom cable
- Quick installation guide
- CDROM with utilities and MIB

The integrated expansion card slot is located on the rear of the inverter behind a protective cover plate. [Ref: 3-4 Rear Panel] Installation of the SNMP card and cover plate is easily achieved using a standard #2 cross point screw driver. Card IP address programming required PC interface. Instructions for installation are included in the kit. (kit sold separately)

7-3 RS-232 Communication Port (GUI)

The RS-232 communication port provides the following features using a GUI package:

- 1) Communicates Fault, DC abnormal, Overload, Inverter Fail etc.
- 2) Monitor and display output voltage, output load, input DC voltage and temperature.
- 3) Coupled with PC application port, provides scheduled on/off function for inverter.

Inverter data will be transmitted at 2400 baud rate. Signal is 8 bit, 1 stop bit, and no parity bit.

All information is provided in GUI format and intended for local maintenance monitoring.

HARDWARE:

| | |
|-------------|----------|
| BAUD RATE | 2400 bps |
| DATA LENGTH | 8 bits |
| STOP BIT | 1 bit |
| PARITY | NONE |

CABLING:

COMPUTER (female) - INVERTER (male)

| | | |
|---------------|-------|---------------|
| PIN2 (RXD) | ----- | PIN2 (TXD) |
| PIN3 (TXD) | ----- | PIN3 (RXD) |
| PIN4 (PNP) | ----- | PIN4 (PNP) |
| PIN5 (COMMON) | ----- | PIN5 (COMMON) |
| PIN6 (PNP) | ----- | PIN6 (PNP) |
| PIN7 (PNP) | ----- | PIN7 (PNP) |

8. TECHNICAL SPECIFICATIONS

24-1000RM

DC Input

| | |
|---------------|---|
| Voltage | 20-30 VDC |
| Rated Current | 50 Amps |
| Protection | Fuse and DC Breaker |
| Efficiency | >85% (full linear load), 24 VDC I/P, 120 VAC O/P |

AC Output

| | |
|--------------------|-------------------------|
| Capacity | 1KVA / 800W |
| Voltage | 100, 110, 115, 120 VAC |
| Voltage Regulation | ±2% |
| Frequency | 50/60Hz ± 0.2Hz |
| Wave Form | Pure Sine Wave |
| THD (linear load) | 3% 120 V/100% |
| THD (SPS load) | 5% 120 V/100% |
| Crest Factor | 3:1 |
| Receptacles | (4) NEMA 5-20 R outlets |

Utility Power (Bypass)

| | |
|-------------------|--------------------|
| Voltage (Nominal) | 120 VAC |
| Frequency | 50/60± 5 Hz |
| Protection | AC Circuit Breaker |

Protection

| | |
|-------------|---|
| Short | For 1 second; Switch to Bypass, then shutdown |
| Overload | 105-125% for 3 minutes; 126-150% for 3 seconds; >150% for 1 second; Switch to bypass |
| Temperature | 55 ± 5°(Inside the case) |

Safety

| | |
|-----------|-------------|
| Safety | UL / cUL |
| EMI / RFI | FCC Class A |

Mechanical

| | |
|------------|----------------------------|
| Dimensions | 17.32"W x 11.81"D x 3.46"H |
|------------|----------------------------|

(440x300x88mm)

2U Rackmount

Weight

8kg / 17.6lbs

48-1000RM

DC Input

| | |
|---------------|---|
| Voltage | 40-60 VDC |
| Rated Current | 25 Amps |
| Protection | Fuse and DC Breaker |
| Efficiency | >85% (full linear load), 48 VDC I/P, 120 VAC O/P |

AC Output

| | |
|--------------------|-------------------------|
| Capacity | 1KVA / 800W |
| Voltage | 100, 110, 115, 120 VAC |
| Voltage Regulation | ±2% |
| Frequency | 50/60Hz ± 0.2Hz |
| Wave Form | Pure Sine Wave |
| THD (linear load) | 3% 120 V/100% |
| THD (SPS load) | 5% 120 V/100% |
| Crest Factor | 3:1 |
| Receptacles | (4) NEMA 5-15 R outlets |

Utility Power (Bypass)

| | |
|-------------------|--------------------|
| Voltage (Nominal) | 120 VAC |
| Frequency | 50/60± 5 Hz |
| Protection | AC Circuit Breaker |

Protection

| | |
|-------------|--|
| Short | For 1 second; Switch to Bypass, then shutdown |
| Overload | 105-125% for 3 minutes 126-150% for 3 seconds; >150% for 1 second; Switch to bypass |
| Temperature | 55 ± 5°(Inside the case) |

Safety

| | |
|-----------|-------------|
| Safety | UL / cUL |
| EMI / RFI | FCC Class A |

Mechanical

| | |
|------------|--|
| Dimensions | 17.32"W x 11.81"D x 3.46"H (440x300x88mm) 2U Rackmount |
|------------|--|

Weight

7kg / 15.4 lbs

48-2000RM

DC Input

| | |
|---------------|---|
| Voltage | 40-60 VDC |
| Rated Current | 50 Amps |
| Protection | Fuse and DC Breaker |
| Efficiency | >85% (full linear load), 48 VDC I/P, 120 VAC O/P |

AC Output

| | |
|--------------------|-------------------------|
| Capacity | 2KVA / 1600W |
| Voltage | 100, 110, 115, 120 VAC |
| Voltage Regulation | ±2% |
| Frequency | 50/60Hz ± 0.2Hz |
| Wave Form | Pure Sine Wave |
| THD (linear load) | 3% 120 V/100% |
| THD (SPS load) | 5% 120 V/100% |
| Crest Factor | 3:1 |
| Receptacles | (4) NEMA 5-20 R outlets |

Utility Power (Bypass)

| | |
|-------------------|--------------------|
| Voltage (Nominal) | 120 VAC |
| Frequency | 50/60± 5 Hz |
| Protection | AC Circuit Breaker |

Protection

| | |
|-------------|---|
| Short | For 1 second; Switch to Bypass, then shutdown |
| Overload | 105-125% for 3 minutes 126-150% for 3 seconds >150% for 1 second; Switch to bypass |
| Temperature | 55 ± 5°(Inside the case) |

Safety

| | |
|-----------|-------------|
| Safety | UL / cUL |
| EMI / RFI | FCC Class A |

Mechanical

| | |
|------------|--|
| Dimensions | 17.32"W x 11.81"D x 3.46"H (440x300x88mm) 2U Rackmount |
|------------|--|

| | |
|--------|----------------|
| Weight | 7kg / 15.4 lbs |
|--------|----------------|

125-1000RM

DC Input

| | |
|---------------|--|
| Voltage | 100-150 VDC |
| Rated Current | 10 Amps |
| Protection | Fuse and DC Breaker |
| Efficiency | >85% (full linear load), 125 VDC I/P, 120 VAC O/P |

AC Output

| | |
|--------------------|-------------------------|
| Capacity | 1KVA / 800W |
| Voltage | 100, 110, 115, 120 VAC |
| Voltage Regulation | ±2% |
| Frequency | 50/60Hz ± 0.2Hz |
| Wave Form | Pure Sine Wave |
| THD (linear load) | 5% 120 V/100% |
| THD (SPS load) | 3% 120 V/100% |
| Crest Factor | 3:1 |
| Receptacles | (4) NEMA 5-15 R outlets |

Utility Power (Bypass)

| | |
|-------------------|--------------------|
| Voltage (Nominal) | 120 VAC |
| Frequency | 50/60± 5 Hz |
| Protection | AC Circuit Breaker |

Protection

| | |
|-------------|--|
| Short | For 1 second; Switch to Bypass, then shutdown |
| Overload | 105-125% for 3 minutes 126-150% for 3 seconds; >150% for 1 second; Switch to bypass |
| Temperature | 55±5° (Inside the case) |

Safety

| | |
|-----------|-------------|
| Safety | UL / cUL |
| EMI / RFI | FCC Class A |

Mechanical

| | |
|------------|--|
| Dimensions | 17.32"W x 11.81"D x 3.46"H (440x300x88mm) 2U Rackmount |
|------------|--|

Weight

7kg / 15.4 lbs

125-2000RM

DC Input

| | |
|---------------|--|
| Voltage | 100-150 VDC |
| Rated Current | 20 Amps |
| Protection | Fuse and DC Breaker |
| Efficiency | >85% (full linear load), 125 VDC I/P, 120 VAC O/P |

AC Output

| | |
|--------------------|-------------------------|
| Capacity | 2KVA / 1600W |
| Voltage | 100, 110, 115, 120 VAC |
| Voltage Regulation | ±2% |
| Frequency | 50/60Hz ± 0.2Hz |
| Wave Form | Pure Sine Wave |
| THD (linear load) | 5% 120 V/100% |
| THD (SPS load) | 3% 120 V/100% |
| Crest Factor | 3:1 |
| Receptacles | (4) NEMA 5-20 R outlets |

Utility Power (Bypass)

| | |
|-------------------|--------------------|
| Voltage (Nominal) | 120 VAC |
| Frequency | 50/60± 5 Hz |
| Protection | AC Circuit Breaker |

Protection

| | |
|-------------|---|
| Short | For 1 second; Switch to Bypass, then shutdown |
| Overload | 105-125% for 3 minutes 126-150% for 3 seconds >150% for 1 second; Switch to bypass |
| Temperature | 55±5°(Inside the case) |

Safety

| | |
|-----------|-------------|
| Safety | UL / cUL |
| EMI / RFI | FCC Class A |

Mechanical

| | |
|------------|--|
| Dimensions | 17.32"W x 11.81"D x 3.46"H (440x300x88mm) 2U Rackmount |
|------------|--|

| | |
|--------|----------------|
| Weight | 8kg / 17.6 lbs |
|--------|----------------|

48-1000IRM

DC Input

| | |
|---------------|---|
| Voltage | 40-60 VDC |
| Rated Current | 25 Amps |
| Protection | Fuse and DC Breaker |
| Efficiency | >85% (full linear load), 48 VDC I/P, 230 VAC O/P |

AC Output

| | |
|--------------------|---------------------------|
| Capacity | 1KVA / 800W |
| Voltage | 208, 220, 230, 240 VAC |
| Voltage Regulation | ±2% |
| Frequency | 50/60Hz ± 0.2Hz |
| Wave Form | Pure Sine Wave |
| THD (linear load) | 3% 120 V/100% |
| THD (SPS load) | 5% 120 V/100% |
| Crest Factor | 3:1 |
| Receptacles | (4) IEC 320 outlets – C13 |

Utility Power (Bypass)

| | |
|------------|--------------------|
| Voltage | Nominal 230 VAC |
| Frequency | 50/60± 5 Hz |
| Protection | AC Circuit Breaker |

Protection

| | |
|-------------|--|
| Short | For 1 second; Switch to Bypass, then shutdown |
| Overload | 105-125% for 3 minutes 126-150% for 3 seconds; >150% for 1 second; Switch to bypass |
| Temperature | 55±5°(Inside the case) |

Safety

| | |
|-----------|-------------|
| Safety | CE Approved |
| EMI / RFI | FCC Class A |

Mechanical

| | |
|------------|--|
| Dimensions | 17.32"W x 11.81"D x 3.46"H (440x300x88mm) 2U Rackmount |
|------------|--|

Weight

7kg / 15.4 lbs

48-2000IRM

DC Input

| | |
|---------------|---|
| Voltage | 40-60 VDC |
| Rated Current | 50 Amps |
| Protection | Fuse and DC Breaker |
| Efficiency | >85% (full linear load), 48 VDC I/P, 230 VAC O/P |

AC Output

| | |
|--------------------|---------------------------|
| Capacity | 2KVA / 1600W |
| Voltage | 208, 220, 230, 240 VAC |
| Voltage Regulation | ±2% |
| Frequency | 50/60Hz ± 0.2Hz |
| Wave Form | Pure Sine Wave |
| THD (linear load) | 3% 120 V/100% |
| THD (SPS load) | 5% 120 V/100% |
| Crest Factor | 3:1 |
| Receptacles | (4) IEC 320 outlets – C13 |

Utility Power (Bypass)

| | |
|------------|--------------------|
| Voltage | Nominal 230 VAC |
| Frequency | 50/60± 5 Hz |
| Protection | AC Circuit Breaker |

Protection

| | |
|-------------|---|
| Short | For 1 second; Switch to Bypass, then shutdown |
| Overload | 105-125% for 3 minutes 126-150% for 3 seconds >150% for 1 second; Switch to bypass |
| Temperature | 55±5°(Inside the case) |

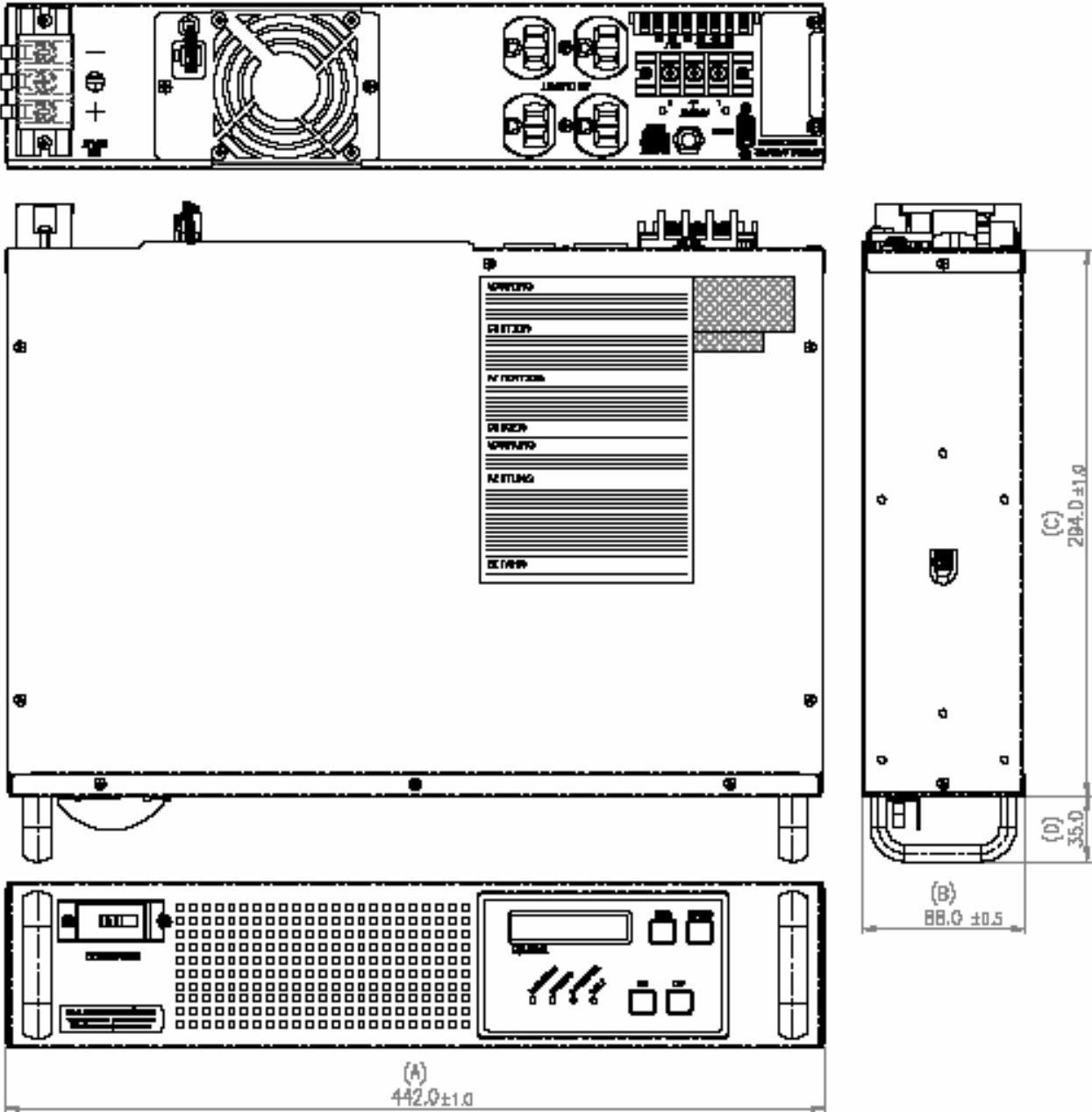
Safety

| | |
|-----------|-------------|
| Safety | CE Approved |
| EMI / RFI | FCC Class A |

Mechanical

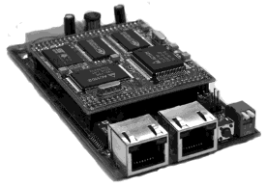
| | |
|------------|--|
| Dimensions | 17.32"W x 11.81"D x 3.46"H (440x300x88mm) 2U Rackmount |
|------------|--|

| | |
|--------|----------------|
| Weight | 8kg / 17.6 lbs |
|--------|----------------|



H= 3.50" (88 mm)
W= 17.4" (442 mm)
D= 11.57" (294 mm)

9. Optional Hardware:



SNMP Remote Communication Card:

Remote monitoring is a prime consideration and requirement to manage multiple network elements from a central location. Remote access is established by simply installing the plug-n-play card, configuring your network IP address, and attaching the network interface cable.



Locking - Hardwire Adapter:

Reliable locking NEMA 5-15 plug to secure load circuits to the output sockets of the inverter. Heavy-duty design locks the plug in place to prevent disconnecting critical loads.

[Note: Only two hardwire adapters will fit on the integrated NEMA duplex outlets of the inverter. Loads should be distributed so not to exceed current ratings of hardware and cable.]