DIMENSIONS™

24/6000H-3PH

3-Phase Inverter

Owner's Manual

DMX POWER

Disclaimer of Liability

The use of this manual and the conditions or methods of installation, operation, use, and maintenance of the 3-Phase Series inverter is beyond the control of DMX Power. Therefore, this company assumes no responsibility and expressly disclaims any liability for loss, damage, or expense whether direct, indirect, consequential, or incidental that may arise out of or be in anyway connected with such installation, operation, use, or maintenance.

Due to continuous improvements and product updates, the images shown in this manual may not exactly match the unit purchased.

Restrictions on Use

The 3-Phase Series inverter may only be used in life support devices and systems with the express written approval of DMX Power. Failure of this inverter can reasonably be expected to cause failure of that life support device or system, or to affect the safety or effectiveness of that device or system. If the 3-Phase Series inverter fails, it is reasonable to assume the health of the user or other persons may be endangered.

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The entire manual is available for download—with many of the diagrams available in color—from our website at: www.dmx-power.com

Contact Information

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Statement of Appreciation

Thank you from all of us at DMX Power for purchasing this 3-Phase Series inverter. At DMX Power, we are committed to providing you with quality products and services, and hope that your experience with us is pleasant and professional.

Record the inverter model and serial number in case you need to provide this information in the future.	
Model:	**Serial Number:**
24/6000H-3PH	

IMPORTANT SAFETY INSTRUCTIONS
SAVE THESE INSTRUCTIONS

THIS MANUAL CONTAINS IMPORTANT INSTRUCTIONS FOR THE L-CASE N SERIES INVERTER THAT SHALL BE FOLLOWED DURING THE INSTALLATION AND OPERATION OF THIS PRODUCT. Before using the 3-Phase Series inverter, read all instructions and cautionary markings. Always be sure to review the individual manuals provided for each component of the system. The installation instructions are for use by qualified personnel only. Do not perform any installation or servicing other than that specified in this owner's manual unless you are qualified to do so. Incorrect installation or servicing may result in a risk of electric shock, fire, or other safety hazard.

Safety Symbols

The following safety symbols have been placed throughout this manual to indicate dangerous and important safety instructions.

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury. This symbol may also be used to indicate equipment damage can result.

Draws the reader's attention to important or unusual information not directly related to safety.

Safety Precautions

- All electrical work must be performed in accordance with local and national electrical codes.
- There are no user serviceable parts inside the product. Do not remove the cover.
- This product should not be exposed to rain, moisture, or liquids of any type.
- Do not install the product in a **zero clearance closure.**
- Listed or labeled equipment shall be installed and used in accordance with any instructions included in the listing or labeling.
- Power inverters contain a circuit breaker and a capacitor that may produce a spark upon connection or during normal operation.
- Always verify proper wiring prior to starting the inverter.

⚠WARNING

- Power inverters produce harzardous voltages. To avoid risk of harm or fire, the unit must be properly installed.
- Do not mount in a confined battery or gas compartment.
- Live power may be present at more than one point since an inverter utilizes both DC (batteries) and AC (generator) power. To reduce risk of personal injury and/or damage to the inverter, ensure all DC and AC wiring is disconnected prior to installing or performing maintenance on the inverter. Turning off the inverter will not reduce this risk, the inverter must be totally disconnected from all sources.
- Working near lead-acid batteries is dangerous. There is a risk of acid exposure.

⚠CAUTION

- Use insulated tools to reduce the chance of electrical shock or accidental short circuits.
- Damage to the power inverter will occur if correct polarity is not observed when installing the inverter's DC input cables
- Damage to the power inverter will occur if an external AC power source is applied to the inverter's AC hardwire output.
- Overcurrent protection for the battery supply is not provided as an integral part of this inverter. Overcurrent protection of the battery cables must be provided as part of the system installation.
- The AC output should be protected by a branch rated breaker external to the inverter if required to comply with the National Electric Code, NFPA 70, or the Canadian Electrical Code, C22.1.

Battery Safety

- Batteries are sensitive to changes in temperature. Never charge a frozen battery.
- Provide at least one inch (2.5 cm) of air spave between batteries to provide optimum cooling.
- Install batteries in a stable environment. Installation area should be a clean, dry, ventilated environment where batteries are protected from high and low temperatures. The location must be fully accessible and protected from exposure to heat producing devices, and away from any fuel tanks.

⚠DANGER

- Use extreme care and insulated tools working around batteries. If short-circuited, a battery can produce extremely high currents (e.g., dropping a metal tool across the battery terminal), which could cause shock, fire, or explosion.

⚠WARNING

- Read and follow the battery manufacturer's safety precautions before installing the inverter and batteries. Always verify proper polarity and voltage before connecting the batteries to the inverter. Once the batteries are connected to the inverter, ensure the maintenance requirements provided by the battery manufacturer are followed to extend the life of the batteries and to prevent damage to the batteries.

⚠WARNING

- Batteries generate explosive gases during operation, ensure adequate ventilation. For compartment or enclosure installations, always vent batteries from the highest point to the outside. Design the battery enclosure to prevent accumulation and concentration of hydrogen gas in "pockets" at the top of the compartment. Provide at least one inch of air space between batteries to provide optimum cooling. Batteries generate explosive gases during operation
- To prevent a spark at the battery and reduce the chance of explosion, always connect the cables to the batteries first. Then connect the cables to the inverter.
- Never smoke or allow a spark near batteries.
- A fuse must be installed between the battery and the inverter to protect against shorted cables.

⚠CAUTION

- Always wear eye protection, such as safety glasses, and gloves when working with batteries. Avoid touching your eyes and face to keep any fluid or corrosion on the battery from coming in contact with eyes and skin. Prior to beginning work ensure fresh water and soap are available nearby. In case of battery acid contact with skin or clothing, thoroughly wash. In case of battery acid contact with eyes, flood eyes for at least 15 minutes with running water and seek immediate medical attention. Baking soda neutralizes lead acid battery electrolyte and vinegar neutralizes spilled NiCad and NiFe battery electrolyte; depending on your battery type, keep a supply on hand near the batteries.
- Remove all jewelry such as rings, watches, bracelets, etc., when installing or performing maintenance on the batteries or inverter. A battery can produce a short-circuit current high enough to weld metal jewelry, causing severe burns.Dispose of the batteries according to local regulation.
- Never work alone, always have someone within the range of your voice or close enough to come to your aid when working around batteries.
- Never use old or untested batteries. Check each battery's label for age, type, and date code before use to ensure all batteries are identical.

NOTICE

- Once the batteries are connected to the inverter, ensure the maintenance (i.e., yearly inspections for cracks, leaks and swelling) provided by the battery manufacturer is followed to extend the life of the batteries and to prevent damage to the batteries.
- Never charge a frozen battery.

1.0 General

Dimensions inverters have been designed and manufactured for many user applications and long life. They utilize patented construction methods and high technology electronic parts and circuitry. The inverter is powered by a 24 volt auxilary battery. The remote On/Off control circuitry requires +12 volts to operate.

Inverters produce hazardous voltages, to avoid risk of harm or fire the unit must be properly installed.

There are no user serviceable parts inside, do not remove the cover.

The inverter should not be mounted in a location that may be exposed to rain or spray.

The inverter should not be installed in a zero clearance enclosure.

Damage to the inverter will occur if correct polarity is not observed when installing the DC input cables.

Damage to the inverter will occur if an external AC power source is applied to the inverter’s AC output or it’s hardwire output.

The inverter contains a circuit breaker and capacitor that may produce a spark. Do not mount in a confined battery or gas compartment.

Working in the vicinity of lead acid batteries is dangerous. Batteries generate explosive gases during operation. There is a risk of acid exposure. There is also a risk of high current discharge from shorting the battery that can cause fire and explosion.

Be sure the inverter is turned “OFF” during installation.

2.0 Description

The inverter converts 24 VDC to 220 VAC, 3 phase; or 220 VAC single phase; or 120 VAC, single phase; all at 60 Hz, having a quasi-sine waveform.

The inverter has internal protection against output short circuit, output overload, and high temperature conditions. Also, there are thermally controlled cooling fans.

The inverter is designed to operate almost any 60 Hz appliance, equipment, or tool within their voltage, phase, and power ratings that does not require a pure sine waveform.

3.0 Installation

The following instructions should be thoroughly read and understood before installation.

Inverters produce hazardous voltage, and to avoid risk of harm or fire the unit must be properly installed.

The inverter should not be mounted in a location that may be exposed to rain or spray.

The inverter should not be installed in a zero clerance enclosure.

When working near batteries, safety goggles should be worn.

Be sure the inverter is turned “OFF” during installation.

All wiring must follow the National Electric Code, provincial or other codes in effect at the time of installation, regardless of suggestions in this manual. All wires should be opper conductors.

3.1 Mounting

Locate a suitable, secure, flat mounting surface as close to the 24 volt auxilary batteries as possible without being in the same air tight compartment. The maximum recommended distance between the mounting location and the battery is 10 feet.

The location should provide adequate ventilation and clearance to maintain room temperature while the unit is operation. At least 1/2 inch of clearance is required on all sides.

Secure the unit with 1/4 inch screws or bolts in the mounting holes on the legs of the unit.

3.2 Chassis Bonding Lug

Connect a #8 gauge or greater wire between the bonding lug on the inverter and the system ground or vehicle chassis.

3.3 DC Wiring

Use standed copper cable between the battery and the inverter as indicated. Keep the distance to less than 10 feet. A line fuse must be installed between the battery and the inverter. UL requires that the fuse be within 18 inches of the battery.

Use only an approved fuse holder with a UL listed fuse as indicated. Using a smaller input cable or longer length will greatly degrade the inverter peak performance.

⚠CAUTION

Assure that hydrogen gas does not accumulate near the battery by keeping the area well ventilated. A spark may result when connecting the final battery wiring due to initial charging of the internal input capacitor.

NOTICE

IMPORTANT NOTE FOR VEHICLE INSTALLATION: Do not use the vehicle chassis as the negative return in place of a return cable. Use the same size cable as the positive connectio nand run directly to the battery.

Inverter Model	Cable Gauge, Line Fuse Size
24/6000H- 3PH	4/0 AWG, 600 A Fuse

Install the cables at the battery, inverter, and then fuse holder. Make sure that clean, tight connections are made. Use care not to touch the positive and negative cables together. A violent spark will result and could result in exploding batteries and fire.

The battery input terminals are located in the wiring compartment. A mounting spark may result when connecting the battery wire, due to an initial charging of the internal circuit capacitor.

⚠CAUTION

Connecting the inverter to the wrong polarity of the battery will cuase damage that is not covered under warranty.

3.4 Remote ON/OFF Switch

All material used for the remote switch should be UL listed and installer per low voltage, Class 2, wiring code. The remote switch hookup can not provide additional current to operate an indicating lamp.

The remote switch should be single pole and have at least a 5 amp rating, such as Leviton 1330-2. The wire used should be at least 18 gauge.

The switch should be mounted at a convenient location in a listed outlet box with approved strain relief.

The remote switch should be connected to the vuilet wire marked "Remote Switch Hookup" in the wiring compartment. Positive (+) 12 battery voltage must be connected to the other side of the switch. Cable clamp strain relief should be used to secure the field wires.

NOTICE

The inverter will not switch on unless the violet wire has +12 VDC applied to it.

3.5 220Y/120VAC Output

The AC output is presented at the AC wiring compartment. The 3-phase outputs are labeled "L1", "L2," "L3". There is also an AC neutral labeled "N" and a chassis ground labeled "G".

To obtain a 220 VAC, 3-phase output, a connection must be made to L1, L2, and L3.

To obtain a 220 VAC, single phase output, a connection should be made to any two of the hot leads, as L1 and L2, or L1 and L3, or L2 and L3.

To obtain 120 VAC, single phase output, a connection should be made to any one hot lead and to AC neutral "N"; as L1 and N, or L2 and N, or L3 and N.

Remote AC outlets should be mounted at a convenient location in a listed outlet box with approved strain relief, if used.

⚠CAUTION

Do not connect another source of AC power directly to the output of the inverter. This will result in damage to the inverter that is not covered under warranty.

4.0 Operation

To operate the inverter, switch the output circuit breaker switch to "ON". Also switch "ON" the inverter on/off switch and the remote on/off switch (if used).

5.0 Troubleshooting

DMX Power offers free phone consultation concerning installation or troubleshooting. Call customer service at 800-553-6418 or 651-653-7000. Technical questions can also be sent by email to support@dmx-power.com.

NOTICE

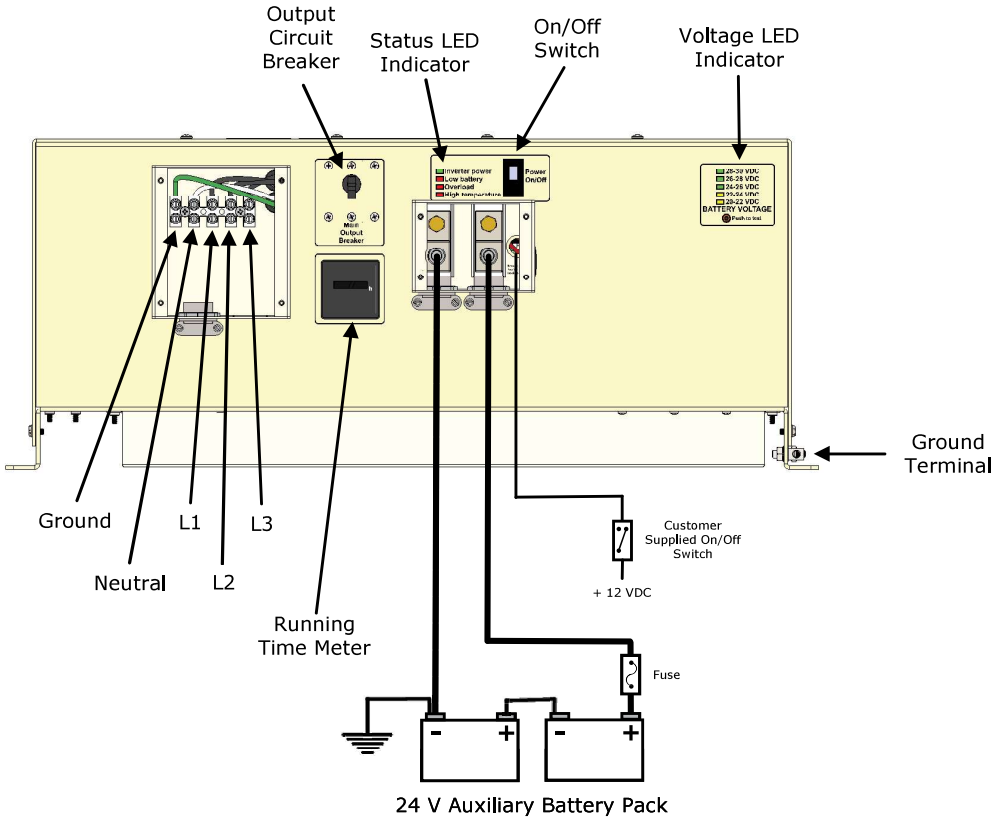
Since the inverter has a quasi-sine waveform, a TRUE RMS volt meter is required for an accurate reading. Other volt meters that use averaging circuitry will give incorrect readings.

If the inverter fails to operate, use the following troubleshooting procedure.

1) Connect a 100 watt light bulb to each 120 VAC phase and disconnect all other output wiring.
2) Make sure the inverter is "ON" and the output circuit breaker is also "ON".
3) Observe the fault indicating lights on the front of the inverter.
    a) If the low input voltage light is lit, turn inverter "OFF" for 5 seconds, then turn "ON" again. If the light again turns on, check wiring, DC source voltage, battery condition, and line fuse.
    b) If the overload light is lit, check output wiring for short circuit. Otherwise, the load is too large for the power rating of the inverter.
    c) If the high temperature light is lit, the inverter must be left to cool to 40° C (104° F). Check to see that the inverter is not in a closed compartment and that the fans are not blocked.

If the above steps are completed and the inverter still will not operate satisfactorily, call DMX Power for a return authorization number.

Appendix A – Inverter External Diagram



Appendix B – Specifications

	24/6000H-3PH
Inverter Specifications	
Output Watts	6000 Watts
Peak Watts	15000 Watts
Output Voltage	220Y/120 VAC
Peak Output Current	Up to 41.7 Amps AC
Output Current	Up to 16.7 Amps AC
Output Waveform	Modified-Sine
Output Frequency	60 Hz
Input Voltage	21.5-30.0 VDC
Efficiency	>85%
Phase	Three
Topology	Low Frequency
General Features and Capabilities	
Internal cooling	Three 117 cfm single 120mm AC fans
Overcurrent protection	Output Supplemental Circuit Breaker
Over-temperature protection	On Transformer and MOSFETS
Corrosion protection	PCBs conformal coated, powder coated chassis/top, and coated steel fasteners
Environmental Specifications	
Temperature (Operating/Non-operating)	-20°C to 65°C (0°F to 149°F)
Physical Specifications	
Unit dimensions (length x width x height)	26.5” x 17.7” x 11” (673mm x 450mm x 280mm)
Shipping dimensions (L x W x H)	32” x 24” x 18.75” (813mm x 610mm x 476mm)
Mounting	Surface
Unit weight	145 Lbs.

Specifications @ 25°C and 25.2 VDC – Subject to change without notice.

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