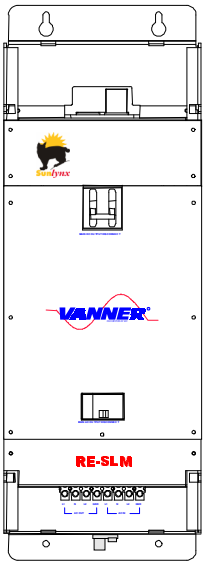
4282 Reynolds Drive
Hilliard Ohio, 43026
1(800) ACPOWER
www.vanner.com

SunLynx Module Owner's/Installation Manual



Model
RE48-SLM

Owner's Manual #D910770
Revision 0.1b

12/05/01 10:10 AM

TABLE OF CONTENTS

List of Tables

List of Figures

Phone: (614) 771-2718
FAX: 614-771-4904
www.vanner.com

1 INTRODUCTION

Thank you for purchasing a Vanner SunLynx Grid Tie Module. We are confident that you will be satisfied with its performance and its many features. With proper installation and care, you can look forward to years of service from this high performance product.

"***RE-SLM***" stands for **R**enewable **E**nergy **S**un**L**ynx **M**odule.

The *RE* SunLynx Module is a control system designed to incorporate the DC breaker, wiring, and switching needs for applying the RE48-4500 in a Battery less Grid Interactive Mode. This is to say that the SunLynx module enables the RE48-4500 in a Solar system to be tied directly to the grid without batteries. In addition, it contains an optional AC breaker for tying the system to the grid.

This document will describe the operation, technical specifications and installation procedures of the RE SunLynx and accessories offered in this product family. We suggest that you acquaint yourself with the RE48-4500 inverter and other optional accessories before proceeding with this manual. If you require additional information please contact your Dealer/Installer, or contact us directly at 1-800-227-6937 (800 AC POWER).

WARNING: Before you install and use your *RE-SLM,* be sure to read and save these safety instructions.

WARNING: The RE SunLynx Module is NOT designed to be used with batteries. Doing so may alter the systems performance and effect safety agency compliance.

WARNING: The RE-SLM is not designed to be a part of Life Supporting or Life Sustaining Equipment. If the Unit is to be used in such an application, please contact Vanner Inc. at 1-800-ACPOWER.

SAVE THESE INSTRUCTIONS!

Please note your model and serial number here for future reference.

Model No._____ Serial No._____ Date of Installation _____

This document describes the operation, technical specifications and installation procedures for the RE SunLynx Module System. If you require additional information please contact your Dealer/Installer or contact Vanner at 1-800-AC POWER (1-800-227-6937).

2 Specifications and Features

T 1 Table 2.0-1 RE-SunLynx Module Specifications

DC Power Ratings	
Rated Output Watts (0°Cto +25°C)	2160 Watts
DC Sources Eight (8) 8 amp sources – (48 VDC) PV Arrays	60 Amps @25C (60V Max)
DC Output	60.5 Vdc
AC Source One (1) 60 amp source	50 Amps AC
AC Input/Output Frequency	60 Hz
DC Input Wiring Method	Hardwire Terminal Strip
AC Input/Output Wiring Method	Hardwire Terminal Strip
System	
Ambient Operating Temperature	-40°C to +40°C (-104F to +104°F)
Enclosure	Painted Aluminum for Wall Mounting
Dimensions	29½ H x 10 ½ W x 9¼ D
Unit Weight	28 pounds

2.1 Standard Features

1. Includes most requirements for Solar Arrays, Solar Switcher, DC disconnect, and fusing in a convenient assembly.
2. Allows the use of the RE48-4500 in a battery-less Grid-Tied system configuration.
3. Supports AC loads straight from Arrays during daylight power outages.
4. Slotted mounting holes allow easy mechanical integration.
5. Entry/exit knockouts allow easy integration (no conduit required) to interface to RE48-4500.

2.2 Parts and Accessories

Part Number	Name	Description
RE48-SLM-A	**A**C Breaker	AC Breaker for overcurrent interruption and AC Disconnect of the Utility from the RE48-4500. Also provides Lightning and Surge suppression/protection for the AC portion of the system
RE48-SLM-C	Solar **C**ombiner Module	This is a standard feature that allows wires from Solar Array(s) to be combined at the SLM module, This feature contains termination locations that are fuse and diode protected for connecting up to 8 strings of 48 VDC Solar Arrays.
RE48-SLM-D	**D**C Surge Suppression	Provides Lightning and Surge suppression/protection for the DC portion of the system.
RE48-SLM-G	DC Breaker **G**FD	DC Breaker with Ground Fault Detection and Interruption for protection against ground faults, over current, and output disconnect of the SLM.

It should be noted that the RE48-SLM can be populated with a combination of any of the above options, from a single option RE48-SLM-A through RE48-SLM-G, to a fully populated option of RE48-SLM-ACDG

3 SAFETY INSTRUCTIONS

Warning Labels Please READ ME

SAVE THESE SAFETY INSTRUCTIONS!

This manual contains important instructions for the Vanner RE SunLynx Module that shall be followed during installation and maintenance of the system.

Installation should only be done by qualified personnel and in compliance with local regulations and codes.

Special care must be taken in working around the RE SunLynx System in order to avoid hazardous voltages and currents.

Note: In order to reduce the risk of damage to personnel or equipment, please read all instructions in this manual, particularly warnings noted by the following symbols.

Failure to follow these warnings could lead to loss of life or damage to equipment or property due to electrocution.

Electrocution Hazard Exists

Fire Hazard Exists

A Potential Dangerous Condition

Phone: (614) 771-2718
FAX: 614-771-4904
www.vanner.com

3.1 SAFETY INSTRUCTIONS

README

WARNING!

Before you install and use your *RE-SLM*,
Read and save these safety instructions!

WARNING!

This manual contains important safety and operating instructions for the Vanner Incorporated RE SunLynx as prescribed by Underwriters Laboratories (UL). The RE system is listed as compliant with UL 1741 for Inverters, Chargers, and Controllers for use in Independent Power Systems.

CAUTION

1. Read owners manual BEFORE wiring or powering up.

WARNING:

2. This equipment employs components that tend to produce arcs and sparks. To prevent fire or explosion, DO NOT install in confined areas or compartments that contain batteries or flammable gases and materials.

WARNING

3. Improper use of this product may result in risk of electrical shock.

3.2 General Precautions

1. Do not expose the SunLynx Module to direct water spray, rain, or snow.
2. Do not install the RE-SLM in a zero clearance compartment. This may result in overheating or diminished performance.
3. To avoid the risk of fire, electrical shock, or injury to persons, do not use attachments not recommended or sold by Vanner Incorporated.
4. Vanner recommends that all DC electrical wiring be performed by a licensed electrician or a qualified technician to ensure compliance with all applicable national and local wiring regulations.
5. To avoid a risk of fire and/or electrical shock, always verify wiring connections are in good electrical condition. All external conductors must use proper wire size to avoid dangerous overheating or diminished performance.

6.  If the SunLynx Module has been dropped or damaged in any way, do not operate until it has been verified to be safe by a qualified technician.

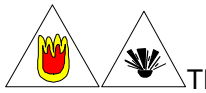
7.  To reduce the risk of electrical shock, always disconnect the DC connections using the code required DC disconnects.

8.  The SunLynx must be properly grounded in accordance with local and national codes and ordinances before operation. For most installations, the negative (ground) conductor should be bonded to the grounding system at one and only one point in the system.

9.  It should be noted that only qualified service personnel should attempt to wire the SLM to the Inverter, to the AC Utility and to the Solar Panel DC Sources.

10.  Always use service disconnects to break the circuit before attempting any kind of servicing of the RE-SLM. DO NOT attempt to service the unit while still actively connected to a power source of any kind.

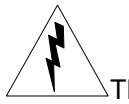
3.3 Explosive Gas Precautions

1.  This equipment contains components, which tend to produce arcs or sparks. To prevent fire or explosion, do not install in compartments containing batteries or flammable materials, or in locations that require ignition protected equipment. This includes any space containing batteries or gasoline-powered machinery, fuel tanks, or joints, fittings, or other connections between components of the fuel system.

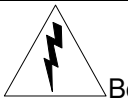
3.4 DC and AC Sources

1.  The RE SunLynx Module has a capacitor bank within it's circuit, which will become charged when DC voltage is applied to the RE-SLM. Caution should be taken when connecting or disconnection DC interconnect cables between the RE-SLM and RE48-4500.

2.  Before attempting any sort of wiring for the Solar Array to the SLM, insure that voltage does not exist on the wires going to the Solar array. Ideally, if this is a new installation, make the connections at the RE-SLM Combiner Module prior to connecting in the junction boxes associated with the solar array. If this is a previous installation, disconnect the solar array at the junction box associated with each solar array. Failure to do so could result in death.

3.  The solar panel will generate lethal currents even if not exposed to bright sunlight. It is important to make certain that the service disconnect is utilized to remove the lethal potential from the terminals.

Phone: (614) 771-2718
FAX: 614-771-4904
www.vanner.com

4.  Before attempting any sort of wiring for the AC supply to the RE-SLM, turnoff the AC service disconnect associated with the AC Mains. For Safety, ALWAYS check the operation of the disconnect with a voltmeter!!.

3.5 Code Compliance

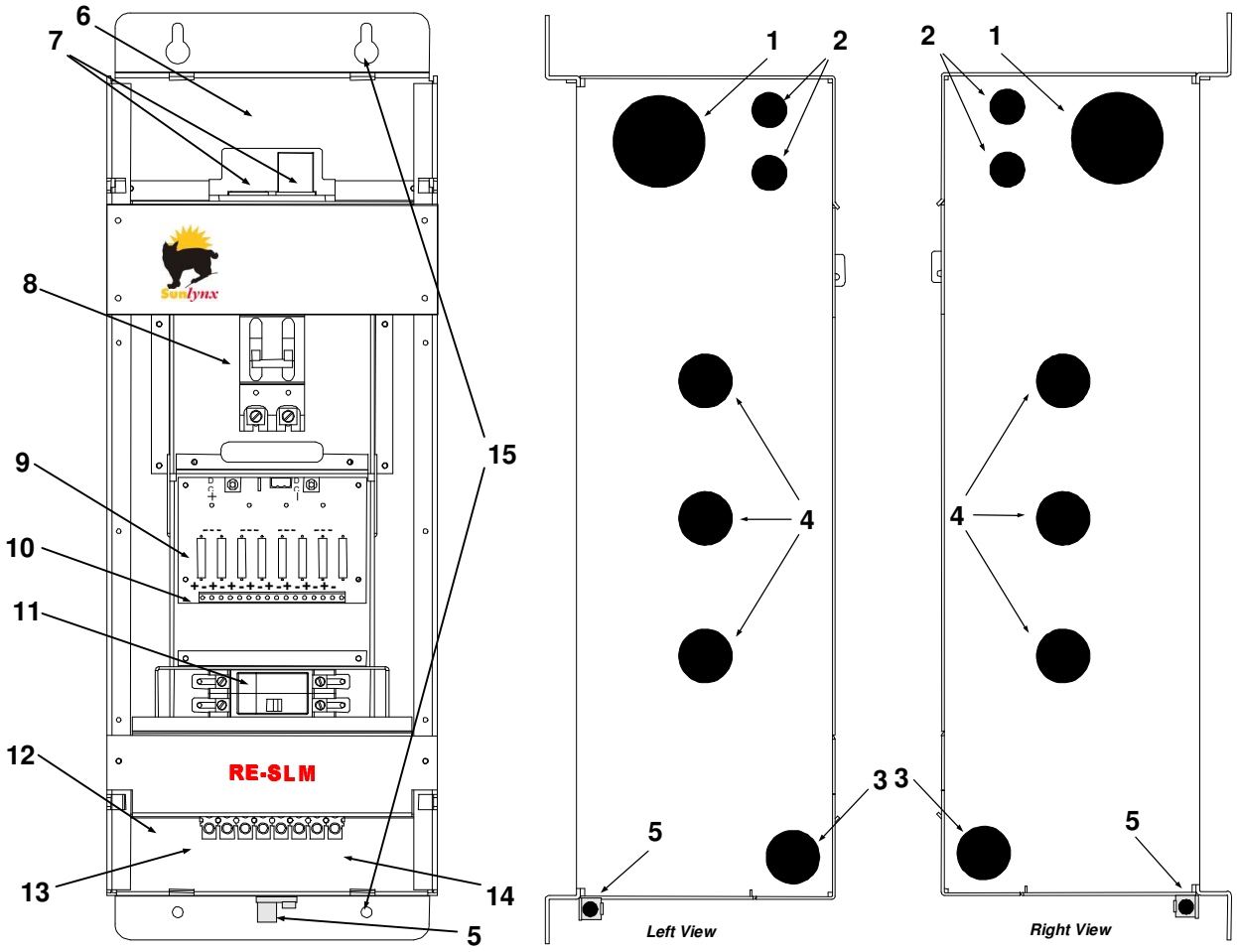
Vanner Model RE-SLM is listed by Underwriters Laboratories Inc. to UL 1741 for Inverters, Chargers, and Controllers for use in Independent Power Systems.

4 COMPONENT IDENTIFICATION

This section will give the reader an idea as to location and description of various features of the RE-SLM.

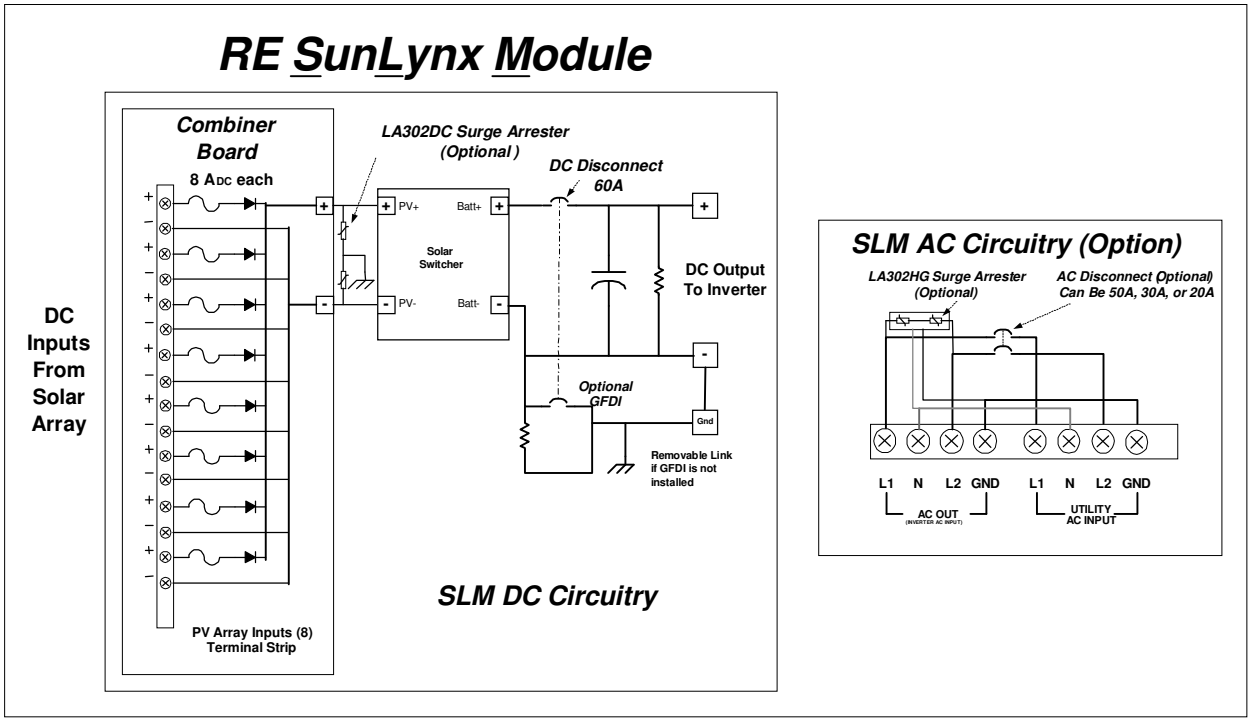
Note that at the top of the unit is a raceway with terminations for connecting DC, and at the bottom of the unit is a raceway for the routing and termination of AC power lines.

F 1 Figure 4.0-1 SunLynx Module Front and Side View



Phone: (614) 771-2718
FAX: 614-771-4904
www.vanner.com

F 2 Figure 4.0-3 SLM Schematic



(1) Knockout Entry/Exit for High Current DC Wiring

These knockouts provide for the routing and termination of high capacity DC cables from the RE-SLM to the RE48-4500 Inverter. These knockouts are a standard size to accommodate 2 ½" conduit or chase nipple.

(2) Knockout Entry/Exit for Low Current DC Wiring and Control Wiring

These knockouts provide for the routing and termination of low capacity DC wiring and Control Wiring.

These knockouts also provide access to the DC Wiring Raceway. These knockouts are a standard size to accommodate ¾" conduit or chase nipple.

(3) Knockout Entry/Exit for AC Wiring and Raceway

This knockout provides for the routing and termination of AC Wiring from the Grid and to the RE48-4500 Inverter.

This knockout also matches up with the AC knockout on Vanner systems such as the RE-4500. These knockouts are a standard size to accommodate 1 ¼ " conduit or chase nipple.

(4) Knockout Entry/Exit for DC Wiring from Solar Array

This knockout provides for the routing and termination of DC Wiring from the Solar Array to the RE-SLM.

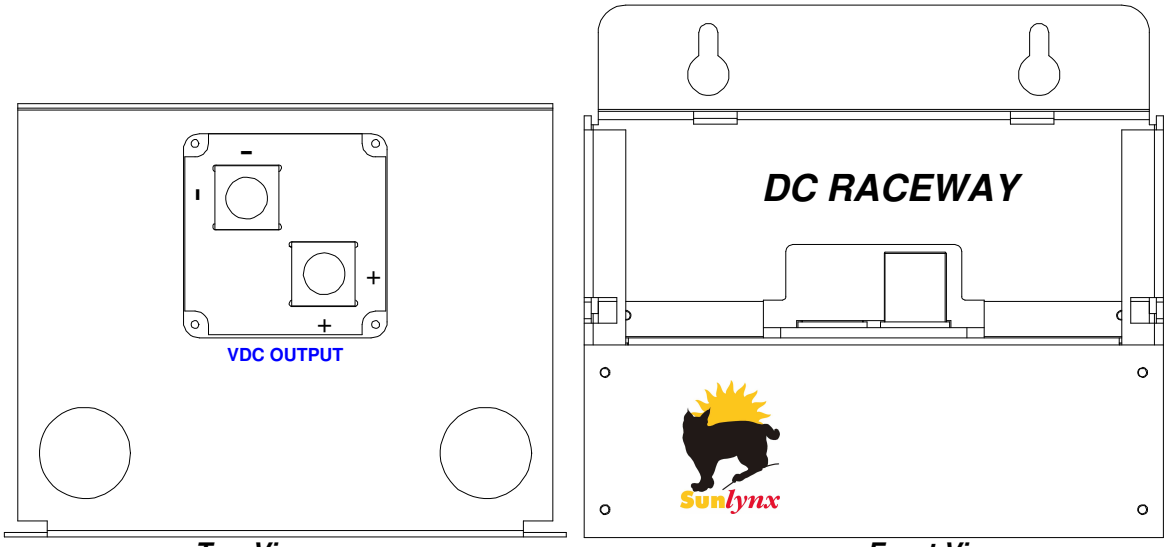
These knockouts are a standard size to accommodate 1 ¼ " conduit or chase nipple.

(5) Chassis Ground Tie Point

(6) DC Raceway

This raceway provides a method of routing DC cables from the SLM to connect to the RE48-4500 Inverter.

F 3 Figure 4.0-4 DC Raceway



Top View *Front View*

(7) DC Voltage Out Terminals

These two terminals provide the DC output voltage from the RE-SLM Module to the RE48-4500 Inverter.

(8) PV Array Circuit Breaker (Ground Fault Detector is an Option)

This Circuit Breaker selects whether the RE-SLM is connected to the RE48-4500 Inverter. There is one (1) 60 amp circuit breaker for the entire array. There is an optional GFDI available for this breaker.

(9) Solar Panel Fuses (Part of Combiner Board)

These fuses are 8 Amp fuses designed to protect in case of a fault either with the Solar Array or with the RE system. There are eight of these fuses (1 for each Solar Array).

WARNING

For Continued Protection Against Risk Of Fire, Replace The Combiner Module Fuses With Only The Same Type And Ratings Of Fuse (Maximum 8 Amp).

(10) Solar Panel Termination Strip (Part of Combiner Board)

This terminal strip provides termination points for 8 strings of 48VDC Solar Arrays. Contains + and – DC input connections from the Solar Array.

Phone: (614) 771-2718
FAX: 614-771-4904
www.vanner.com

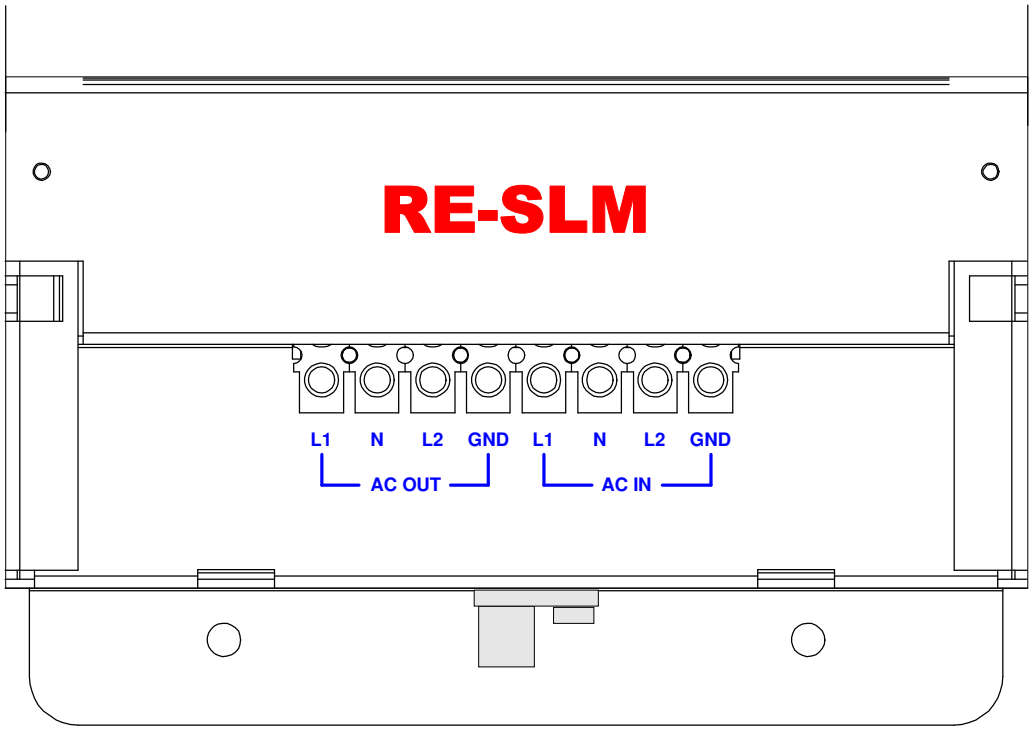
(11) AC Breaker (Optional)

This 50 Amp 240 VAC breaker provides a convenient disconnect and acts as a protection element for the RE48-4500.

(12) AC Raceway

This raceway provides a method of routing AC cables to connect to the RE-SLM to the RE48-4500 Inverter, and to the utility.

F 4 Figure 4.0-5 AC Raceway (AC Option Installed)



(13) AC Output to Inverter Terminals

These terminals are used to connect the AC output wires from the RE-SLM to the RE-4500 system if the AC breaker and Surge Arrester options are installed.

(14) AC Input from Utility Terminals

These terminals are used to connect the input wires from the Utility to the RE-SLM if the AC breaker and Surge Arrester options are installed. If the AC breaker and Surge Arrester option are not provided, the utility wires would be connected to the RE48-4500' s AC input terminal strip. Make sure all wiring is installed in accordance with all national and local code requirements.

(15) Mounting Bolt Slots

5 INSTALLATION and START-UP

This section will provide the user with information to install the RE-SLM into a power system.

5.1 Installation and Start-up

This installation procedure is to provide a method for installation of the RE-SLM. Please refer also to the RE48-4500 Owners Manual for information on installing the Inverter.

Unpacking the SLM

1. Inspect the shipping container and equipment for loose or damaged parts. If any damage is found, immediately notify the freight carrier.

Inverter and SLM Installation Considerations

1. Mounting: Locate a secure, flat vertical surface large enough to mount the SLM (and Inverter). The location should provide adequate ventilation while the SLM and inverter are operating. The location must be clean, dry and free of dripping water, or other moisture contamination.
2. The SLM weighs approximately 28 pounds and is designed for vertical mounting. Mounting bolt pattern is 6" horizontal x approximately 30" vertical.
3. Take into account Cooling Fan Clearance for the RE48-4500 (if the RE-SLM is to be installed with the RE48-4500): If the RE-SLM is to be installed with the RE48-4500, the mounting location must allow unobstructed airflow for cooling the RE48-4500. Remember to take this into account when mounting the SLM. Allow a minimum clearance of 12 inches (30.48 cm) on the bottom of the RE48-4500. The Cooling Fan is a thermostatically controlled exhaust fan. Air is drawn into the inverter from the intake vents and exhausted by the fan. Obstruction of the fan exhaust or the intake vents will diminish the inverter output capacity due to overheating.
4. The wiring of your inverter and SLM installation should conform to the National Electric Code (NEC) Article 690, ANSI/NFPA 70 and any other state or local codes in effect at the time of installation. These codes have been written for your protection and their requirements should be followed.
5. Remove the top cover to expose the DC wiring compartment and the DC Terminal Block.
6. Route the AC output wiring with as much physical separation as possible from low voltage wiring such as audio and video signal wires, and the Input DC wiring. This is accommodated in the system through the physical separation of the AC and DC wiring raceways.
7. To conform to local and national electrical codes, proper installation of strain reliefs and/or conduit is important. If strain reliefs are used, tighten the strain relief cable clamps to keep the wire from moving around in the entry/exit port.

Phone: (614) 771-2718
FAX: 614-771-4904
www.vanner.com

WARNING

All diagrams in this document are for informational purposes ONLY!!! Please refer to National, State, and Local Electrical Wiring codes to insure compliance and safety!

WARNING

It is important to disconnect ALL AC and DC sources to avoid electric shock!

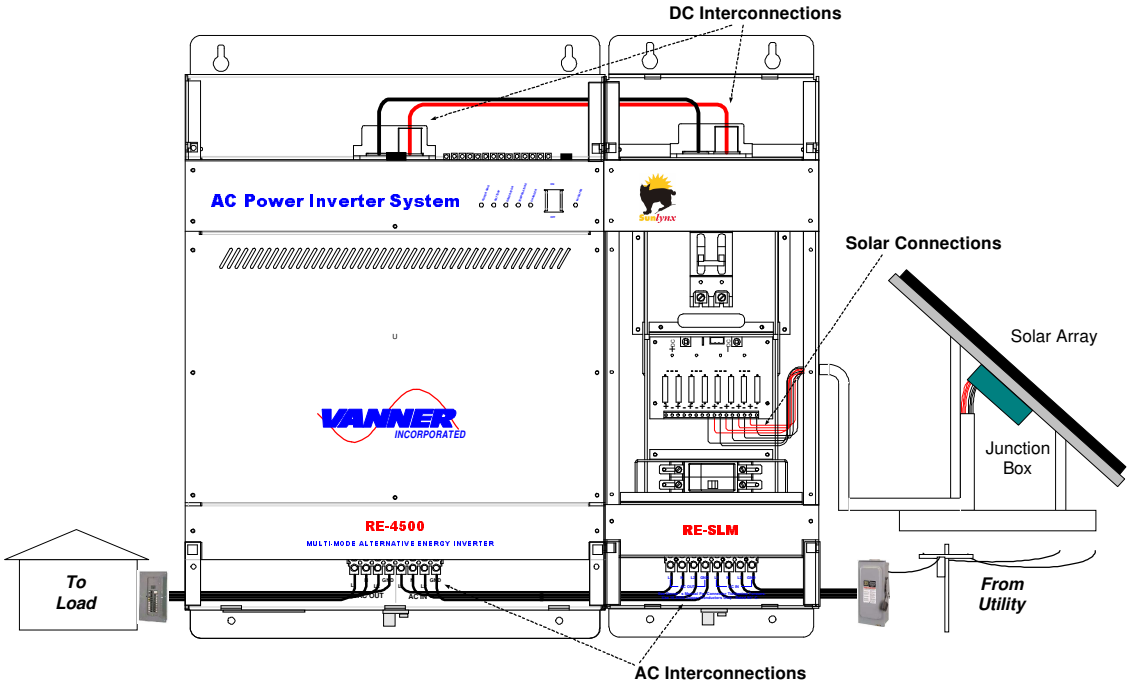
If possible, disconnect the Solar Array at the junction box prior to wiring between the Solar Junction Boxes and the RE-SLM.

DC Voltage is extremely dangerous and contact with DC Currents can lead to injury, damage to property, and death!

Use the DC disconnect to insure that ALL potentials are disabled.

WARNING

F 5 Figure 5.1-1 RE-SLM System Interconnection Diagram



5.1.1 DC Wiring Considerations

1. The wiring of your RE-SLM installation should conform to the National Electric Code (NEC) and any other state or local codes in effect at the time of installation. These codes have been written for your protection and their requirements should be followed. Article 690 of the NEC requires any DC cable from a solar panel, be protected by a fuse. This consideration is taken care of in the SunLynx Module through the combiner module fuses.

It is important to disconnect ALL AC and DC sources to avoid electric shock!

If possible, disconnect the Solar Array at the junction box prior to wiring between the Solar Junction Boxes and the RE-SLM.

DC Voltage is extremely dangerous and contact with DC Currents can lead to injury, damage to property, and death!

Use the DC disconnect to insure that ALL potentials are disabled.

2. Route the DC power wiring and AC output wiring with as much physical separation as possible from low voltage wiring such as audio and video signal wires.
3. Route the DC positive and negative cables as close together as possible and use cable ties to keep them together. This reduces electromagnetic radiation that could interfere with sensitive electronics.
4. If passing through steel or other ferrous metal walls, the DC input cables need to pass through the same hole to prevent causing a transformer effect. If two holes are required, cut a slot to connect the two holes to prevent heating of the ferrous metal.
5. If passing through any sort of holes, make certain that strain reliefs are used to avoid cutting or abrasion of insulation over time.

5.1.2 DC Wiring Installation Procedure

1. The DC wiring raceway is located on the top of the RE-SLM and RE48-4500. The DC cables may exit the RE-SLM through left or right side openings in the raceway. Bolts are provided for connecting the DC Input cables to the DC contacts in each unit. Care must be taken when connecting the DC cables for polarity, refer to figure 5.1.2-1.
2. Install the DC interconnect cables before connecting array wiring to the RE-SLM combiner board. If DC voltage is applied to the RE-SLM prior to attaching DC interconnect cables, an arc will be produced by a capacitor bank within the RE-SLM that becomes charged by the array voltage. Refer to section 5.2 for connecting arrays to combiner board.

T 2 Table 5.1.2-1 Ring Terminals for 4/0 DC Cables

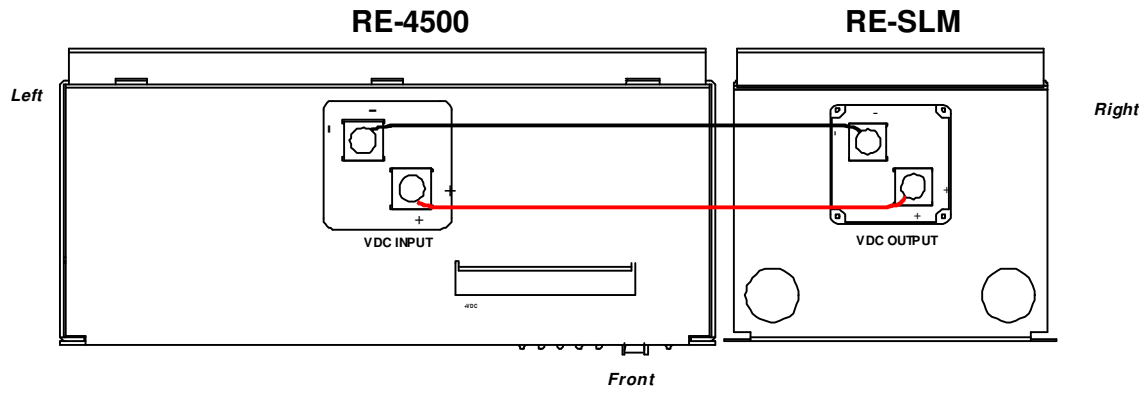
It is required by Vanner, that the installers use 4/0 AWG wire. This wire needs to be temperature rated at 90°C.

UL Listed Ring Terminals for 4/0 DC Cables

Molex Part Number	Size	Model	Crimping Tool Part Numbers
L-395-56	5/16" DIA.	Versacrimp	DLHH, PPDLH,SKT-840*
L-995-56		Nylacrimp	

*This tool is for crimping Versacrimp style terminals only.

F 6 Figure 5.1.2-1 DC Raceway Terminations



3. Select a location for the RE-SLM. An ideal location is close to the solar array; protected from weather and moisture; and well ventilated.

WARNING

It is important to disconnect ALL DC sources to avoid electric shock!

DC Voltage is extremely dangerous and contact with DC Currents can lead to injury, damage to property, and death!

Use the DC disconnect to insure that ALL potentials are disabled.

4. Remove the cover plate on the DC cable raceway to expose the positive and negative DC connections.
5. Conduit knockouts are provided for removal for routing DC interconnect cables. Bolts and spring washers are provided for connecting 5/16" diameter ring terminals to the DC Input Contacts.
6. Verify that the DC cables are still disconnected from the Solar Array (or other DC Source). Insert DC cables through the entry/exit port and into the DC wiring raceway. Torque DC cable mounting bolts to 180 inch pounds.
7. Route the negative DC cable to the Inverter. Verify cable polarity before proceeding.

If the cables are reversed, the RE48-4500 fuse will be blown and inverter can be damaged.

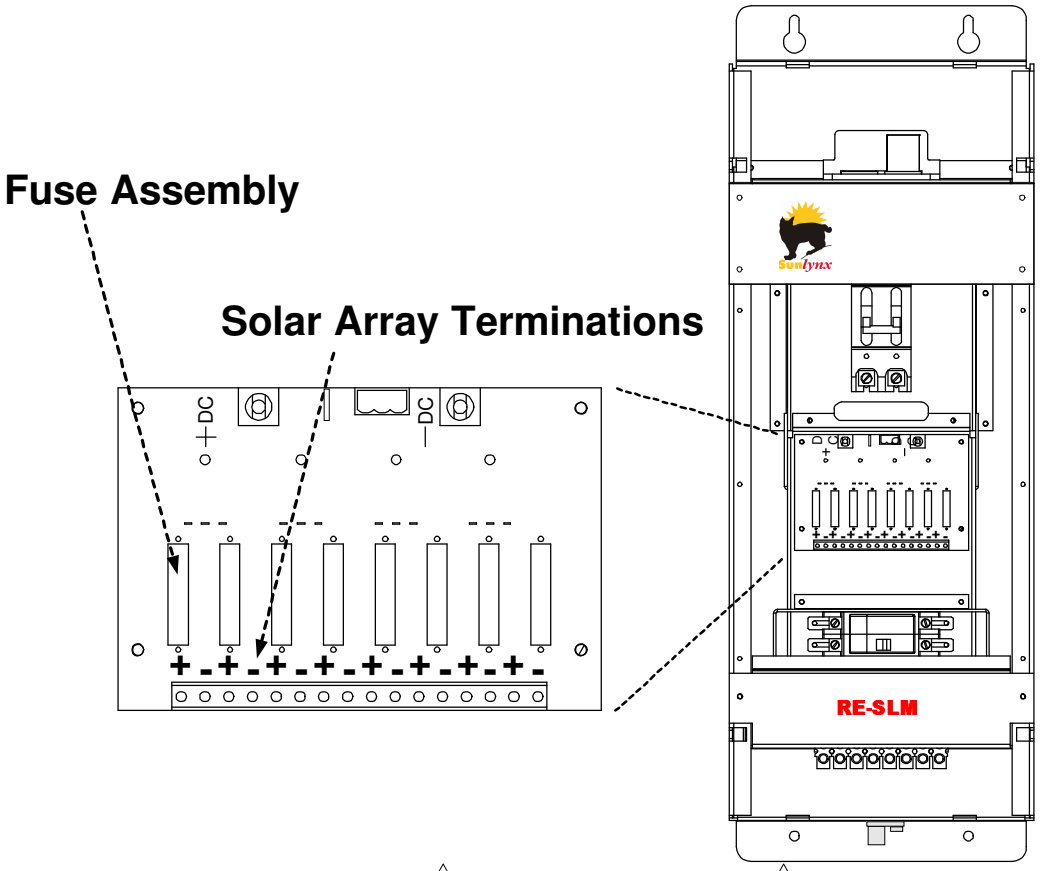
8. Route the positive DC output cable to the RE48-4500.
9. Verify DC wiring installation. Verify that all connections are tight and secure all wiring.

5.2 Solar Array Connection Procedure

In Grounded PV installations, the negative conductor shall be the ground.

F 7 Figure 5.2-1 Solar Terminations

Phone: (614) 771-2718
FAX: 614-771-4904
www.vanner.com



WARNING

Before proceeding with the DC wiring, verify that the inverter is OFF. Serious or fatal electrical shock may occur.

Note: It is recommended that all DC wiring to the Solar Array be done with 10 AWG 90ºC wire (12 AWG minimum). Keep wires as short as possible to minimize losses over the wire and to minimize hazard of fire. Make certain that the wiring conforms to National and Local Electric Codes.

Note

The Output Neutral is Not Bonded to Ground internally.

Note

It should be noted that the RE-SLM enclosure is not grounded and should be when required by Section 690-41, 690-42, and 690-43 of NEC/NFPA 70-1999.

Note

It should be noted that if the Optional DC Ground Fault Detector is installed, that the Solar Array Chassis Ground must be tied to the RE-SLM Chassis Ground Point, and then tied to the Residential Earth Ground Rod in accordance with Code.

All of the SLM's electrical connections are labeled.

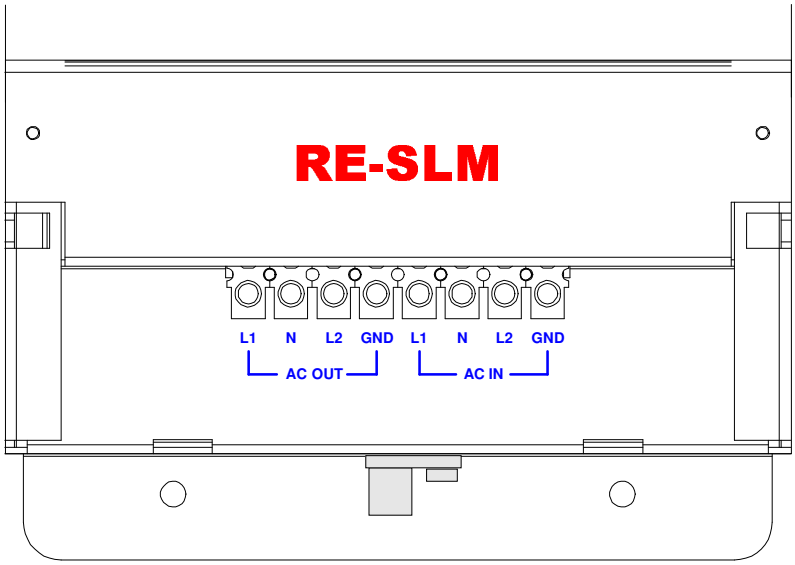
1. Place ALL Disconnects on the SLM and Service Disconnects in the OFF position to avoid electrical shock.
2. Remove the Front Panel from the SLM to expose the Solar Array Terminations on the Combiner board.
3. Remove all fuse assemblies prior to connecting solar DC to combiner board. This isolates the DC voltage from charging the integral capacitor bank within the SLM.
4. Solar Connection: Connect to the DC Solar terminals of the Combiner board, while observing polarity using 10 AWG 90º C wire recommended for best performance (12 AWG 90º C minimum).
5. Verify that the Solar Panel cables are disconnected from the DC Source. Insert DC source cables through the entry/exit ports and into the Combiner board terminal strip. Connect the positive and ground to the appropriate terminals on the terminals and torque each of the DC terminal screws to 15 inch pounds. Re-torque after 30 days.
6. Inspect the compartment to be sure no copper wire fragments are present after tightening cables.
7. Route the positive DC input wires to the Solar Panel junction boxes. Protect cables with loom and use grommets or other appropriate means where cables may contact hard, sharp edges.
8. Verify DC wiring installation. Verify that all connections are tight. Secure all wiring and replace the fuse assemblies.
9. Connect any disconnection' s made at the Solar Array Junction Boxes.

5.3 AC Raceway Wiring Installation Procedure

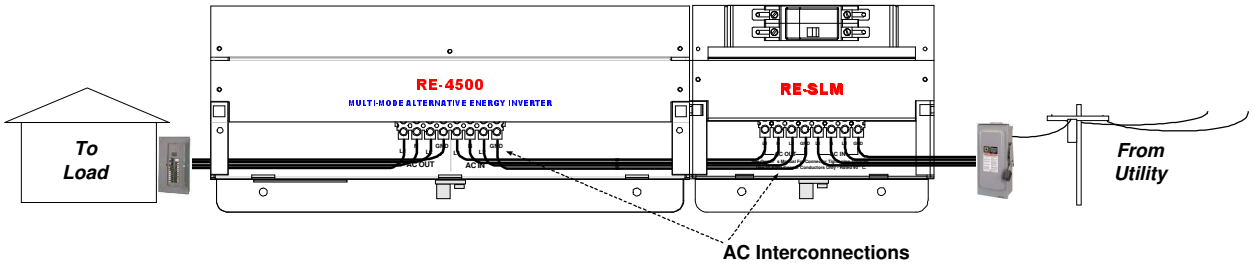
This section covers the interconnection and wiring of the RE-SLM AC Raceway (shown below in Figure 5.3-1.

F 8 Figure 5.3-1 SLM AC Raceway Connections

Phone: (614) 771-2718
FAX: 614-771-4904
www.vanner.com



F 9 Figure 5.3-2 RE-SLM to RE-4500 AC Connections



1. All of the SLM electrical connections are labeled.
2. Place ALL Disconnects on the SLM and Service Disconnects in the OFF position to avoid electrical shock.
3. Remove the access covers to the AC raceways.
4. Verify that there are no voltages present on the output of the AC Service Disconnect and that the disconnect is operating properly
5. Utility Connection: Connect 240 Volt Vrms Three wire Utility L1, L2, N, and GND to the AC Utility terminals using 8 gauge wire minimum.
6. Verify that the AC utility cables are still disconnected from the AC Utility. Insert AC utility cables through the entry/exit port and into the AC wiring raceway. If AC breaker option is installed, connect L1, N, L2 and ground to the appropriate terminals in the RE-SLM terminal strip and torque each of the AC terminal screws to 15 inch pounds. If AC breaker option is not present, make this connection at the RE48-4500 AC input terminal strip. Re-torque after 30 days.
7. The RE-SLM AC Output Connection (Inverter In): Connect 240 Volt Vrms Three wire AC Output L1, L2, N, and GND to the Inverter AC Input on the RE48-4500 using 8 gauge wire minimum.
8. Verify that the RE48-4500 is off and that the AC utility cables are still disconnected from the AC Utility. Insert AC Output (to Inverter) cables through the entry/exit port and into the AC wiring

raceway. Connect L1, N, L2 and ground to the appropriate terminals in the terminal strip and torque each of the AC terminal screws to 15 inch pounds. Re-torque after 30 days.

9. Use the Chassis Ground compression fitting (28) to ground the chassis using 8 AWG 90º C wire. Connect the chassis ground wire to the compression fitting and torque the bolt to 75 inch pounds. Re-torque after 30 days.

5.4 Final Inspection

1. Inspect AC and DC raceways to verify that no scrap or loose wire is present.
2. Verify AC and DC wiring installations. Verify that all connections are tight and secure all wires.

5.5 Startup With Utility Voltage Present

This section covers the start up of the RE-SunLynx system when utility is present. It is assumed that the RE48-4500 Inverter has been fully installed at this time. If it has not, please complete the installation of the RE48-4500 by following the instructions in your RE48-4500 Installation Manual.

1. Make certain that the RE48-4500 power switch is in the "Off" position.
2. If the solar array is providing power, verify that a DC voltage is present on the Solar Terminations of the Combiner board.
3. Verify that 240 VAC is present on the input to the Optional AC Breaker (right hand terminals). If optional AC breaker is not present, check for 240 VAC on external disconnect.
4. Turn the Optional AC Breaker or external disconnect to the "On" position and verify that 240 VAC is present on the AC Input terminals to the RE48-4500 Inverter.
5. Turn the DC Disconnect to the "On" position and verify that the output DC voltage is present on the Input terminals to the RE48-4500 Inverter.
6. Re-install the Front Panel of the RE-SLM, along with the AC Raceway and DC Raceway covers.
7. Proceed to the check out of the RE48-4500 following the checkout in the RE48-4500 Owners Manual.

5.6 Startup With Utility Voltage NOT Present (Running off array voltage only)

This section covers the start up of the RE-SLM when Utility power has been loss or disconnected. This system has the ability to support AC loads straight from your arrays when Utility power is unavailable. It is assumed that your system has been fully installed at this time. If it has not, please complete the installation before proceeding.

WARNING: This feature has been designed as an AC convenience source during daylight power outages. It is NOT intended to support critical loads such as life sustaining equipment.

1. Make certain that the RE48-4500 power switch is in the "**Off**" position.
2. There must be adequate DC voltage from the arrays (this feature will not work at night or if weather conditions prevent your arrays from delivering adequate voltage to the SLM).
3. Make sure DC Disconnect breaker is in the "On" position.
4. If DC voltage has just been attached to your RE-SLM, allow 5 to 10 Minutes for the internal capacitor bank to be charged before switching on the RE48-4500.

5. Switch "On" the RE48-4500 and check for AC voltage at the RE48-4500' s AC output terminal strip.

Note: The performance of this feature and its ability to support AC loads is strictly limited by your array capacity. If your AC loads demands more current than the arrays can deliver to the SLM, the RE48-4500 will indicate low DC supply and shut down until the DC voltage is back within tolerances. Dynamic loads such as Air Conditioners, Refrigerators, and Motors require large amounts of start current which may exceed your arrays ability to maintain adequate voltage to the SLM for starting these loads. Your systems ability to support loads with this feature will very with weather and daylight conditions.

6 Preventive Maintenance and Trouble Shooting Procedures

Preventive Maintenance

For continued reliability and safety, a monthly maintenance program should be implemented to include the following:

1. Check to insure that all wiring connections are tight, secure and corrosion free.
2. Examine connectors, indicators and switches for cracks and breaks.
3. Examine any surfaces that are discolored or deformed due to excessive heat.

Trouble Shooting Procedures

The following are the most common questions heard by Vanner service professionals. If your situation does not apply to the following categories, please contact your Dealer/Installer or the Vanner Inc. Customer Service Department: 1-800-AC-POWER (1-800-227-6937). Please have your model and serial number available when consulting customer service.

7 APPENDIX

7.1 Warranty

NORTH AMERICAN LIMITED WARRANTY

Vanner Inc., doing business as The Vanner Inc., referred to herein as Vanner, warrants that this product is free from defects in materials and workmanship for a period of two (2) years from date of installation or two and one half (2 1/2) years from date of manufacture, whichever is less if and only if the following requirements are complied with:

1. The product is installed and checked out properly according to all guidelines, instructions, and checkout procedures set forth in the product Installation and Operating Manual.
2. The installer records all checkout data required and completes, signs, and returns the warranty registration card to Vanner within ten (10) days after installation.
3. The product was purchased after January 1, 2000.

Vanner does not warrant its products against any and all defects when: defect is a result of material or workmanship not provided by Vanner; normal wear and tear, or defects caused by misuse or use in contrary to instructions supplied, neglect, accident, reversed polarity, unauthorized repairs and/or replacements.

Vanner does not manufacture this product for use in a life supporting or life sustaining role. Please contact Vanner if you have any questions along this line.

All warranties of merchantability and fitness for a particular purpose: written or oral, expressed or implied, shall extend only for a period of two (2) years from date of installation or two and one half (2 1/2) years from date of manufacture, whichever is first. There are no other warranties that extend beyond those described on the face of this warranty. Some states do not allow limitation on how long an implied warranty lasts, so the above limitations may not apply to you.

Vanner does not undertake responsibility to any purchaser of its product for any undertaking, representation, or warranty made by any dealers or distributors selling its products beyond those herein expressed unless expressed in writing by an officer of Vanner.

Vanner does not assume responsibility for incidental or consequential damages, including, but not limited to, responsibility for loss of use of this product, removal or replacement labor, loss of time, inconvenience, expense for telephone calls, shipping expense, loss or damage to property, or loss of revenue. Some states do not allow the exclusion or limitation of incidental or consequential damages, so these limitations may not apply to you.

Vanner reserves the right to repair, replace, or allow credit for any material returned under this warranty. Any damage caused by the customer will be charged or deducted from the allowance.

All warranty work will be performed at Vanner's factory, by authorized Vanner distributors, by Vanner installers/technicians, or a Vanner authorized repair facility utilizing a valid Warranty Authorization Number (WAN) prior to repair. Products shall be delivered to Vanner's facility, freight prepaid and fully insured. Products repaired under warranty, or replacement parts or products will be returned to North American location prepaid via same transportation means and level of service as received, unless directed otherwise. Prepaid freight policy does not apply to locations outside North America.

Phone: (614) 771-2718
FAX: 614-771-4904
www.vanner.com

7.2 Application Notes

Please refer to the Vanner Incorporated Web site for Application notes at:
http://www.vanner.com

7.3 Applicable Documents

National Electric Code 1999
NEC Article 690
UL-1741
IEEE-929

Vanner Inc.
4282 Reynolds Drive
Hilliard, Ohio 43026

1-800-AC POWER
(1-800-227-6937)
Tel: 614-771-2718
Fax: 614-771-4904

www.vanner.com
e-mail: pwrsales@vanner.com

Manual Part Number D910770
Printed in USA