

WF-5100 Series

1000 Watt Pure Sine Wave Power Inverter, Users Manual



THE HEARTBEAT OF TODAY'S RVs

Distributed in the USA and Canada by CHENG USA, INC.
2021 Aeroplex Drive North, Elkhart, IN. 46514
Phone: 574-294-8997, Fax: 547-294-8698
www.wfcoelectronics.com

1. Important Safety Instructions



WARNING !

Before you install and use Your WF-5100 series Inverter, be sure to read these safety instructions.

1-1. General Safety Precautions

- 1-1-1. Do not expose the WF-5100 series inverter to rain, snow, spray, bilge or dust. To reduce risk of hazard, do not cover or obstruct the ventilation openings. Do not install the WF-5100 series Inverter in a zero-clearance compartment. Overheating may result.
- 1-1-2. To avoid a risk of fire and electric shock. Make sure that existing wiring is in good electrical condition; and that wire size is not under sized. Do not operate the WF-5100 series inverter with damaged or substandard wiring.
- 1-1-3. 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 which require ignition protected equipment. This includes any space containing generator, fuel tanks, or joints, fittings, or other connection between components of the fuel system.

1-2. Precautions When Working with Batteries

- 1-2-1. 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 least 20 minutes and get medical attention immediately.
- 1-2-2. Never smoke or allow a spark or flame in vicinity of battery.
- 1-2-3. 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.
- 1-2-4. 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.

2. Functional Characteristics

2-1. General Information

The WF-5100 Series is a stand alone power inverter with AC run through and is suitable for use in RV, Marine and other applications where clean 115Vac voltage is required.

As long as 115Vac utility power is applied to the inverter, 115Vac flow through the inverter to appliances. Should 115Vac utility power be cut off, the inverter automatically switches itself to the invert mode providing clean 115Vac. Once the 115Vac utility power is reapplied the inverter switches itself back to the run through mode. **Note:** Battery must be in place for run through function to work.

The WF-5100 Series Inverter is available with 12Vdc input (WF-5110H, WF-5110G) or 24Vdc input (WF-5120H, WF-5120G). Both have 115Vac 60Hz output.

The WF-5100 Series Inverter is also available in two different versions of output wiring:

Model: WF-5110H and WF-5120H are hard wired outputs.

Model: WF-5110G and WF-5120G have GFCI Receptacles for outputs. This provides a safe and easy way to plug appliances directly into the inverter. **Please read all instructions and cautionary marking on this manual before using WF-5100 series Inverter.**

2-2. Features

Product:

- 1000 Watt continuous output for electronic appliances
- Pure sine wave output (THD < 3%) to operate higher-end electronic Equipments.
- Built in 2 milliseconds transfer time. This allows the transfer from utility power to invert power to be interruption free, protecting sensitive equipment.
- Built in advance microprocessor to make friendly interface with user.
- Dual AC GFCI outlets or hard wire AC connection model options.
- LCD display with all operation status
- UL 458 approval and FCC class B.

Protection:

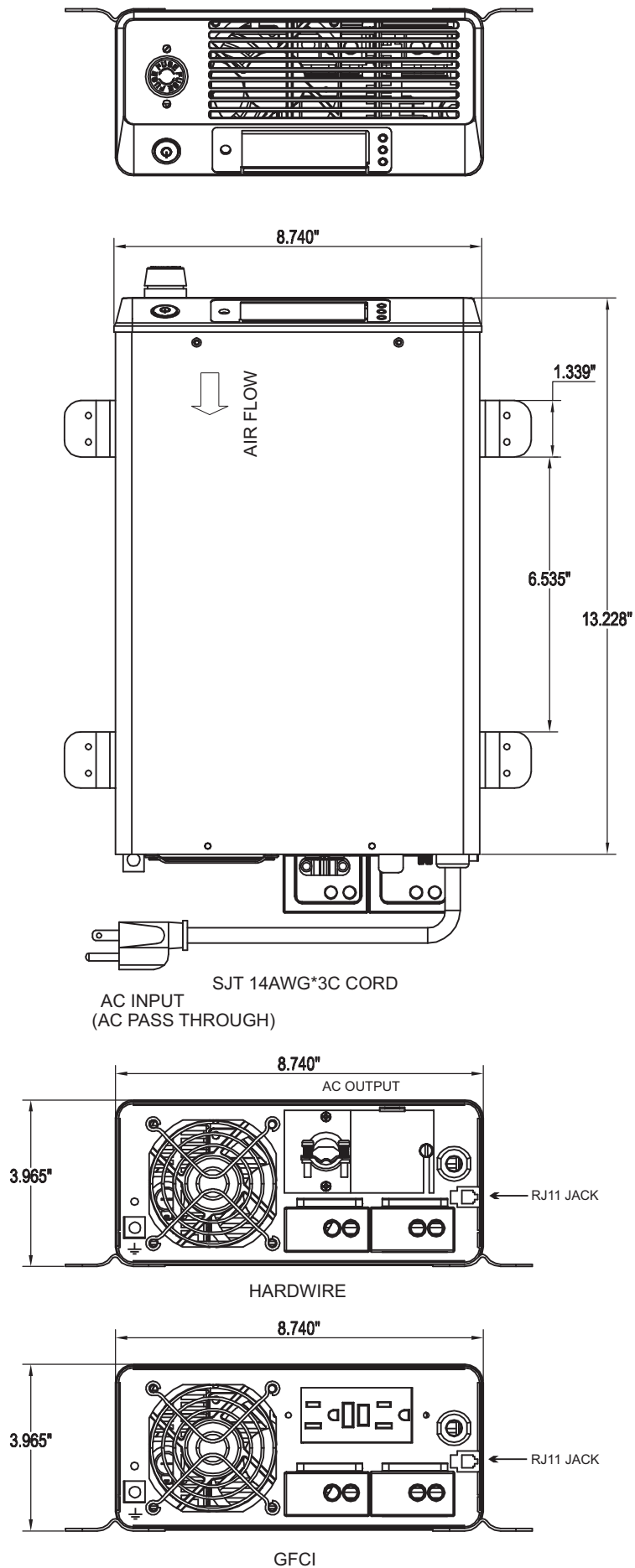
- Battery over voltage and under voltage protections.
- Over temperature protection.
- Over load protection
- Short Circuit protection
- Ground fault protection by GFCI receptacle.
- Reverse polarity protection .
- AC Output Fuse(15A/600VAC)For Over-Current Protection.

2-3. Electrical Performance

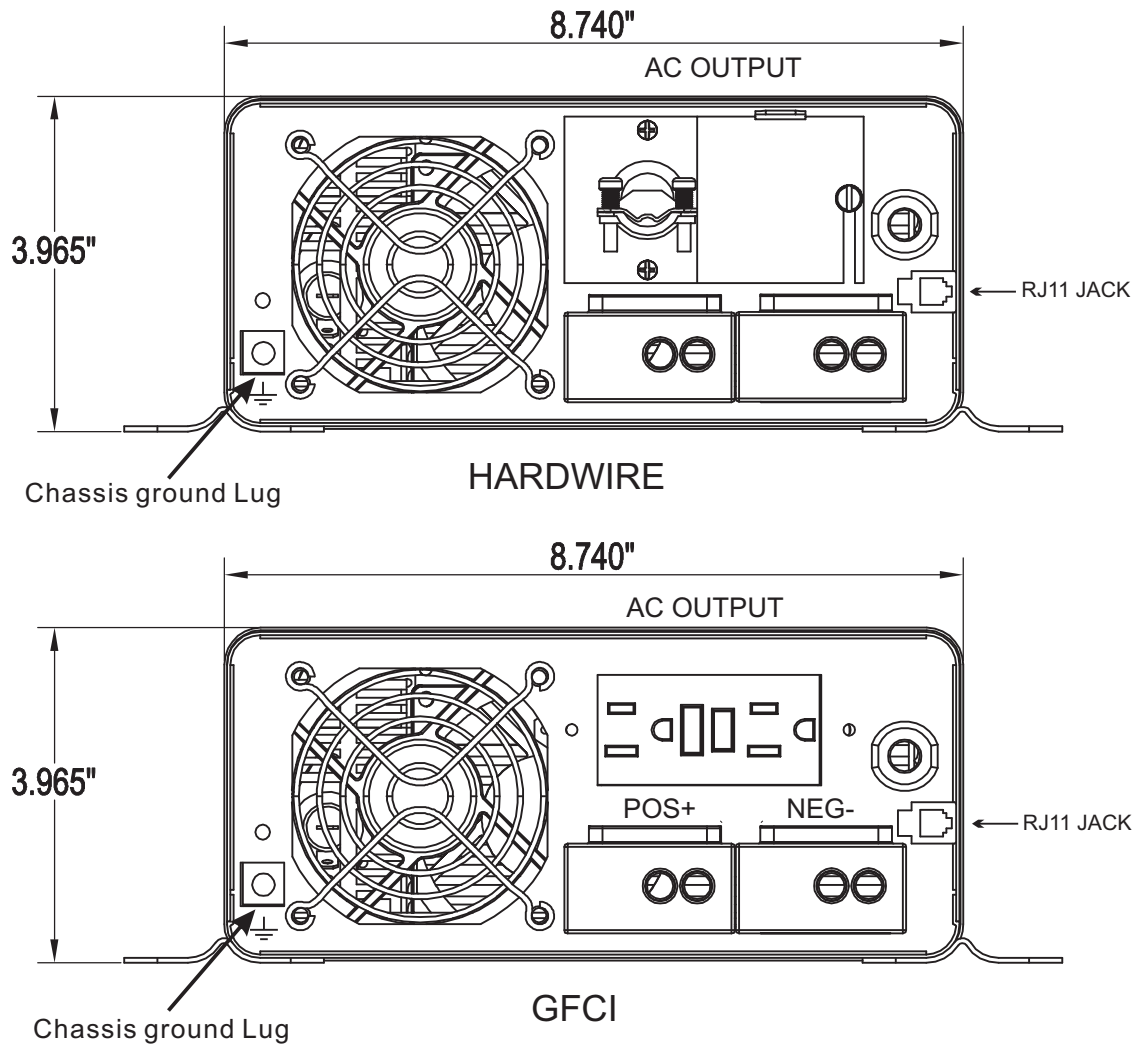
		Model No.
Item	WF-5110H.WF-5110G	WF-5120H.WF-5120G
Continuous Output Power	1000W	
Crest Factor	3:1	
DC Input Voltage	12V	24V
Output Voltage / Frequency	115Vac	
	60Hz +/- 0.05%	
Efficiency (full load)	>80%	>80%
Output Waveform	Pure Sine Wave (THD <3%)	
Input Voltage Regulation	10-15 VDC	20-30 VDC
Battery Back Up Status	Yellow LED	
AC Input Status	Green LED	
Inverter Failure	Red LED	
Protection	Overload, Short Circuit, Reverse Polarity (Fuse), Over/Under Input Voltage, Over Temperature. AC Output Fuse, GFCI.	
AC Output Fuse	15Amp	
Transfer switch	8.5Amp	
Transfer Time	<20 milliseconds	
Safety	UL458	
EMC	FCC Class B	
Operating Temperature Range	0 - 40 Degree C	
Storage Temperature Range	-30 to 70 Degree C	
Cooling	Loading controlled cooling fan	
Dimensions	13.228 (L) x 8.74 (W) x 3.965 (H) Inch	
Weight	11.5 LBS	

3. Basically Descriptions

3-1 Mechanical drawings



3-2 The Rear panel interface



3-2-1. AC Output Fuse:

Fuse Information:

Manufacturer: LITTELFUSE INC

Model Number: KLDR15

Fuse Size: 10.3*38.1mm, Rating: 15A/600VAC

CAUTION: Do Not Remove Covers. Refer Servicing To Qualified Personnel.
For Continued Fire Protection Replace Only With Specified Type And
Rate Fuse. Turns Off The Power Switch Before Replacing Fuse.

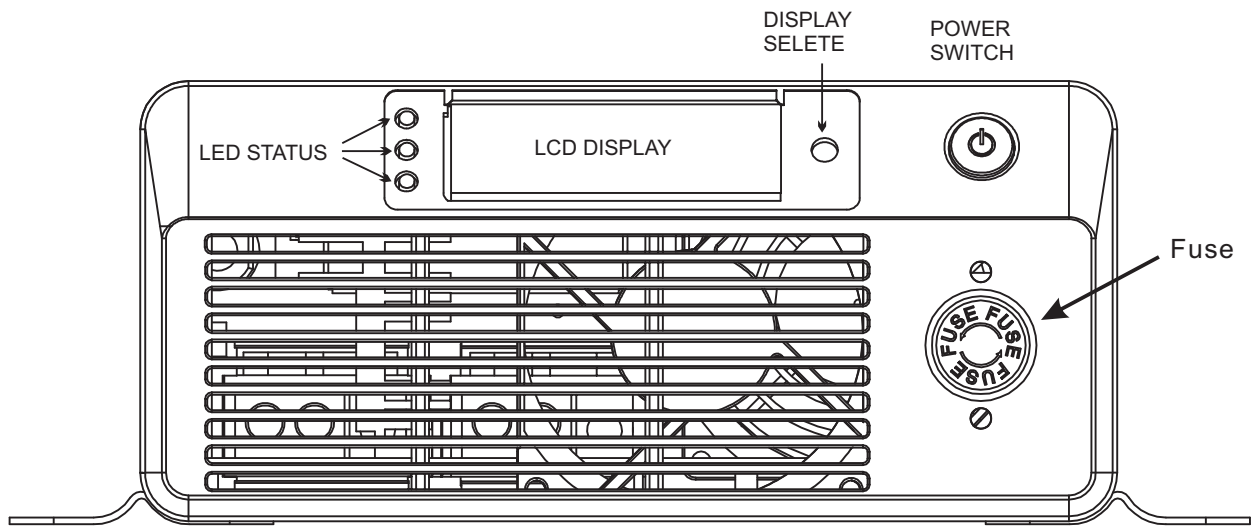
3-2-2 .Remote port: Connect RJ-11 wiring with remote control unit.

3-2-3. Battery terminals:

Connect 12V/24V batteries or other 12V/24V power sources.

3-2-4. Connect chassis ground terminal to earth.

3-3 The Front panel interface



3-3-1. Ventilation:

Do not obstruct, allows at least 2 to 3 inches of clearance for airflow.

3-3-2. AC input: Pass Through Voltage

Plug into AC source directly: 120Vac, 60Hz, 12 Amps Max.

4. Installation



WARNING!

Shock Hazard. Before proceeding further, carefully check to see if the Inverter is connected to the batteries, and every electrical sources wiring is disconnected. Do not connect output terminals of the Inverter to incoming AC source.

4-1 AC Safety Grounding:

During the AC wiring installation, AC input and output grounding are connected to the inverter. The AC input grounding must connect to the incoming grounding of your AC utility sources and the AC output grounding should go to the grounding point for your loads. (for example, a distribution panel ground bus).

Neutral Grounding (GFCI):

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 derived AC sources separately (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 AC breaker panel.

For models configured with a transfer relay, while AC utility powers presenting and the Inverter is in bypass mode, this connection (neutral of the Inverter's AC output to input safety ground) is not presented so that the utility neutral is only connected to ground at your breaker panel, as required.

4-2 Ground Fault Circuit Interrupters (GFCI):

Recreational Vehicles Installations (for North American approvals) will require GFCI protection. All branch circuits connected to the AC output hard wire should be GFCI protected. Additional electrical codes may require GFCI protection of certain receptacles in residential installations.

While the pure sine wave output of the Inverter is equivalent to the waveform provided by utilities, compliance with UL standards requires us to test and recommend specific GFCI. Use only GENERAL PROTECHT GROUP INC, Type DG15 ground-fault circuit-interrupter receptacles. Or AMERICAN ELECTRIC DEPOT INC, Type G1501 ground-fault circuit-interrupter receptacles. Other types may fail to operate properly when connected to this unit.

4-3 Hard-wire Installation

To make AC wiring connections:

4-3-1. The AC wiring compartment is located on the front panel of the WF-5110H/WF-5120H. Remove the AC wiring compartment cover to gain access to the AC output hard-wire(pigtails leads).

4-3-2. Connect to the AC output wiring of the WF-5110H/WF-5120H AC output hard-wire(pigtails leads) by using wire connectors, refer to the following:

AC output Wiring		Wire length / gauge
Line (L)	Black	Within 16 feet / AWG# 16~18 16 ~ 32 feet / AWG# 14~16
Neutral (N)	White	
Ground	Green or Bare copper	

4-3-3. After wiring, double check and review all connections to make sure the wires are in correct position and all wires are secure.

4-4 Making DC Wiring Connections :

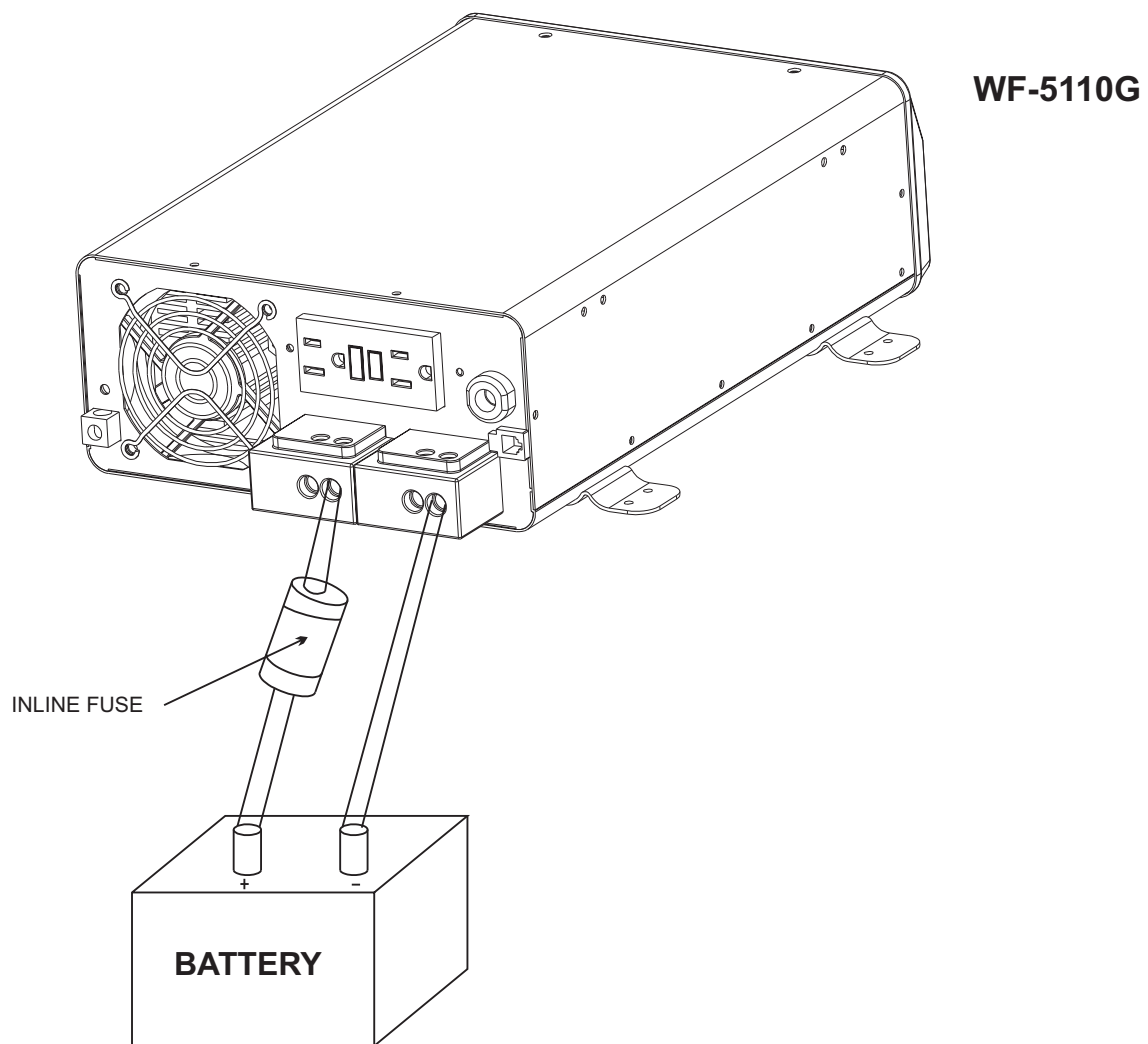
Following recommendations for connections between the battery cables and the DC input terminals on the Inverter. The cables should be made of high quality copper wiring, also keep the cable length as short as possible. Cables should be of adequate gauge for the length of cable being used. If cables are not of adequate gauge (too small or too long), the inverter performance will decrease.

Please refer to the above chart for proper cable length and gauges.

Battery cable fusing --- A fuse is required by the National Electrical Code (NEC) to protect the battery and cables, A UL listed DC rated slow blow fuse must be installed in positive battery cable, within 18 inches of the battery.

WFCO recommends the following cables for an optimum inverter performance.

Model No	Wire AWG	Inline Fuse
WF-5110H,5110G	# 4	100A
WF-5120H,5120G	# 6	50A



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.

5. Operation :

To operate the WF-5100 series Inverter, turn it on by using the ON/OFF switch. The inverter is now ready to deliver AC power to your loads. If you are loading several appliances, turn them on separately after the inverter switch is on, this process is to avoid the power inverter from delivering the starting current all at once to the loads.

5-1. Controls and indicators :

The ON/OFF switch turns on/off the control circuit of the power inverter. The WF-5100 Inverter operates on input voltage ranges as follows:

10 to 15.0 VDC for 12V models

20 to 30.0 VDC for 24V models

Yellow LED - indicates battery back up status.

Green LED - indicates AC input status.

Red LED - indicates inverter failure.

LCD Display - indicates operation status.

Note: Inverter will not operate on AC input only. A battery must be connected to the inverter for inverter to operate.

6. Warranty Information

6-1. WFCO Power Inverter :

WFCO extends, to the original owner, a Limited Power Inverter Warranty commencing from the original date of purchase for a period of two (2) years. This limited warranty is extended specifically for and is limited to Recreational Vehicle application and is only valid in the continental United States, Alaska, Hawaii and the Provinces of Canada. WFCO warrants, to the owner, that its Power Inverter is free from defects in material and workmanship under normal use and service based on its intended use and function and is limited to the repair or replacement, at its discretion, of any defective part or defective assembly. Any implied warranties of merchantability and fitness for intended use are limited in duration unless applicable State Law provides otherwise. You may have other right as specified by each individual state.

6-2. Exclusions and limitations :

The OEM warranty specifically does not apply to the following :

Any Power Inverter that has been repaired or altered by an unauthorized person.

Any damage caused by misuse, faulty installation, testing, negligence or accident or any Power Inverter installed in a commercial vehicle.

Any Power Inverter whose serial number has been defaced altered or removed.

Any consequential damages arising from the loss of use of the product including but not limited to : inconvenience, loss of service, loss of revenue, loss or damage to personal property, cost of all services performed in removing or replacing the WFCO Power Inverter.

6-3. Warranty:

Upon determination and validation by the OEM dealer that a WFCO Power Inverter has a defect, the dealer shall contact the WFCO warranty service number (877) 294-8997 and obtain a return goods authorization (RGA) number. This number shall appear on all correspondence with warranty service. Upon validation warranty service shall replace the Power Inverter with a like product. The RGA number shall also be placed on the outside of the carton used to return the product for ease of identification. Do not mark on the Power Inverter.