CHEROKEE™

Titanium *SST*

Super Surge Technology

Model: TS-300

300 Watt

DC to AC Power Inverter User's Manual

Cherokee™ Power Inverters
A Division of
Wireless Marketing Company
1212 Remington Rd.
Schaumburg, IL USA 60173

HOW TO USE YOUR

CHEROKEE™

Titanium *SST*

Model: TS-300
300 Watt
DC to AC Power Inverter

Introduction

CONGRATULATIONS....You have just purchased one of the world's foremost DC to AC Power Inverters, the Cherokee™ Titanium Super Surge Technology *(SST)* Model: TS-300. This technological wonder combines superior product quality with innovative circuitry and advanced design that make it the premier power inverter available today. ***SST*** greatly enhances the higher starting current applications where the power inverter can be used. To maximize the life and use of your inverter, proper installation is critical. **Make sure that whoever does the installation reads the entire manual before starting the installation.**

Pay special attention to **CAUTION** and **WARNING** statements:

CAUTION statements help avoid situations that could result in damage to the power inverter or connected equipment.

WARNING statements alert you to avoid conditions that can cause injury or loss of life.

PLEASE READ THE MANUAL COMPLETELY BEFORE USING THE POWER INVERTER.

How Your Power Inverter Works

A Power Inverter is an electronic product that is designed to convert the 12 volts of direct current (DC) usually from a battery into 120 volts of alternating current (AC). This conversion enables the use of household products and power tools away from the normal AC power sources (wall outlets). Suddenly cars, trucks, boats and other vehicles can use TV's and other appliances like microwave ovens. Lighting and tools can be used in remote locations.

The conversion process first changes the 12 volts DC to a much higher DC voltage. The high DC voltage is then outputted in a forward and then in a reverse direction. The output waveform is called a modified sine wave because it mimics the normal AC voltage but does not exactly match.

Since power comes from the product of current and voltage, even a small AC appliance that requires only a few amperes of AC current will draw a large DC current from your battery. Remember to use the cables that come with the power inverter.

The vast majority of appliances and power tools have no problems with the modified sine wave current. However, some DC chargers, a few TV's and VCR's, and some compressor-driven products require a pure sine wave for proper operation. Sine wave power inverters are available. Please consult your appliances' operation manual and call us at 1-800-259-0959 if you need assistance.

Safety Information

The Power Inverter must be connected ONLY to batteries or power sources that have a normal output voltage of positive 12 volts DC. Do not use a 6-volt or 24 volt battery as a source of power.

WARNING: DO NOT INSTALL THE POWER INVERTER IN A POSITIVE GROUND DC SYSTEM.
To identify a positive ground system, look for the positive (+) terminal of the battery to be connected to the chassis of the vehicle or to a central grounding point.

WARNING: DO NOT PLACE THE INVERTER ANYWHERE NEAR FLAMMABLE SUBSTANCES.
Fumes and/or gases that could come into contact with the inverter could cause an explosion and/or fire that could result in injury or possible death.

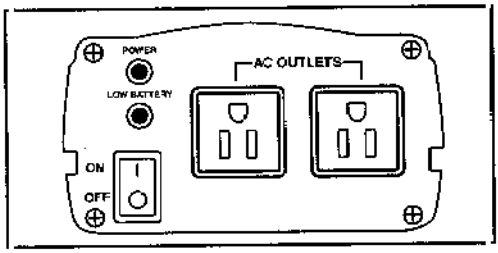
WARNING: ALWAYS TAKE CARE WHEN WORKING WITH ELECTRICITY.
The human body does not respond well to electricity. It is best to keep a healthy respect of electrical energy. Use insulated tools for installation.

WARNING: In RV and Marine systems, always disconnect the AC output of the power inverter before connecting another AC power source such as household current or a generator.
Failure to disconnect will destroy the power inverter and start a fire.

Caution: Observe the correct battery polarities.
Reversed connections will permanently damage the power inverter.

Caution: Check and recheck that the battery connection cables are tightened.
The connections can work loose. Loose connections generate heat and will melt the terminals.

Features



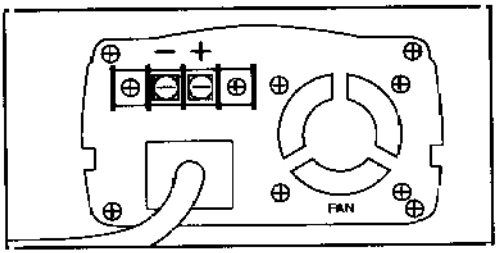
(Front Panel)

A) **ON/OFF** Power switch: This switch turns the output of the power inverter **ON** or **OFF**. Note: Even in OFF position the power inverter draws a small amount of current from the battery.

B) Power Indicator: When lit, indicates that the inverter has been turned on, and is ready for use.

C) Low Battery Indicator: When lit, indicates that the battery voltage is too low.

D) Dual AC Outlets: Designed to the North American Standard, they provide the ability to connect two separate devices. Please note that the combined required wattage must not exceed the capacity of the inverter.



(Back Panel)

E) Battery Cable Connection Posts(+ and -): Allows for the connection of the cables from the power inverter to battery of the vehicle that is supplying the power.

Caution: Be careful to observe the correct polarities. Red is for positive (+). Black is for negative (-).

F) High Speed Cooling Fan: Allows for the cooling of the internal circuitry of the power inverter.

G) Cigarette Lighter Plug Connector: Allows the inverter to draw its DC power directly from the cigarette light plug in your vehicle. We recommend that you use this connector only for light loads that draw under 150 watts. Anything higher than that should be used with the "Alligator Clip" cable harness supplied.

H) Over and Under Voltage Protection: Automatically shuts the power inverter off when the input battery voltage exceeds 14.7 volts or drops below 10.5 volts.

I) Thermal Protection: Automatically shuts the power inverter when internal temperature rises above 150°F.

J) Overload Protection: Automatically shuts off the power inverter when the load exceeds the continuous capacity: 300 Watts.

K) Short Circuit Protection: Automatically shuts off the power inverter when the output is shorted.

Installation

A) Selecting the Battery Power Source:

The input power source you are connecting to the power inverter must have a **minimum voltage of 10.5 volts to a maximum of 14.5 volts DC.** The power source most likely will be a combination a vehicle's battery and alternator (when the vehicle's motor is running).

> **WARNING:** DO NOT INSTALL THE POWER INVERTER IN A POSITIVE GROUND DC SYSTEM.

The 300 Watts that your power inverter is capable of supplying requires 30 amperes of input current. This means that in order to avoid draining the battery, the alternator must be able to provide at least 150 amps. All passenger car and small truck alternators are this large. Large over-the-road truck alternators are 200 amps or larger.

CAUTION: The power inverter must be connected ONLY to batteries or power sources that have a normal or average voltage of 12 volts. The power inverter will not operate from a 6 volt or a 24 volt power source.

B) Placement of the Power Inverter:

Placement of the inverter is important for maximizing the usefulness and life of the power inverter. For the best results, the inverter should be placed on a sturdy, flat surface.

> Note: The power inverter can be mounted in any position: vertical, horizontal, upright or inverted.

Consider the following criteria when choosing a permanent location:

1. Ventilation: Make sure there is at least one inch of clearance around the power inverter for maximum airflow. This is especially important when permanent mounting is being considers. Do not place objects on or over the power inverter during use. Air must be able to circulate. The built-in cooling fan provides cooling, but must have sufficient open space to operate properly. In the event that internal

temperature exceeds 150°F, the power inverter will automatically shut off.

2. Dry: Keep liquids, water or any other type of wet substance away from the power inverter. When choosing a permanent location, stay away from spill areas.
3. Cool: Best operating temperature range is between 45° and 85°F. Do not place the power inverter in a location that could be affected by a heating duct or any other heat source that would increase the normal operating temperature of the power inverter.
4. Safety: Do not place the inverter near flammable substances!!! Fumes and gases could cause and explosion or fire that would result in severe damage and possible death.

C). Cables Connecting the Inverter to the Battery:

Your choice of cable is the single most important factor in the proper operation of the power inverter. It does not pay to purchase low-cost inexpensive cables and expect good performance.

Your power inverter comes with #10 AWG stranded copper wire with good quality insulation. The insulation of the wire from the negative terminal of the battery should be black in color that is the most common color for the negative terminal in vehicles. The insulation of the wire from the positive terminal of the battery should be red or orange in color.

Remember to mount the power inverter as close as possible to the battery to give best performance.

D). Grounding the Inverter:

WARNINGS:

DO NOT INSTALL THE POWER INVERTER IN A POSITIVE GROUND DC SYSTEM.

To identify a positive ground system, look for the positive (+) terminal of the battery connected to the chassis of the vehicle or to a central grounding point.

E) Fusing:

The cigarette lighter has a 15 Amp fuse. The larger cables have a 35 Amp fuse.

Fuses can usually be purchased at auto supply stores.

F) Connecting to the Power Source:

At full power of 300 watts, the power inverter will be drawing 28 amps from the chosen power source. The usual power source is a battery (or group of batteries) which is recharged by an alternator driven by an engine. Other sources of recharging such as wind or solar power is possible but requires careful design.

1. Make sure the power switch on the inverter is turned off and no liquids are near.
2. You will need to determine which of the power cords is appropriate for the application you are trying to run. **We recommend that for loads up to 150 Watts, you can use the cigarette lighter plug that is connected directly to the inverter. For loads between 150 Watts and 300 Watts, we recommend that you use the direct wiring harness and attach it to the terminal connection posts on the back of the inverter.** This will help to insure sufficient and consistent power transfer to the attached equipment.
3. **If you use the cigarette lighter plug:** Simply place the plug into the cigarette lighter of your vehicle.
4. If you use the cable harness and attaching it to the terminal posts on the back of the inverter:
   A) Connect ends of the supplied cable, and insert them into their respective terminals on the back of the inverter. The black cable goes into the (-) negative post, then the red cable goes into the (+) positive post.

B) Tighten the screws securely to hold the cables in place. Make sure you do not over tighten to the point where you damage the wiring cable.

C) Connect the cable from the negative (-) terminal of the inverter to the negative terminal of the power source. A firm, secure connection here is very important, as a loosely tightened connections will result in excessive voltage drop and may cause overheated wires and melted insulation!

5. At this point, make sure that you have properly connected the negative terminal of the inverter to the negative terminal of the power source.

WARNING: REVERSING THE POLARITY CONNECTIONS WILL CAUSE PERMANENT DAMAGE TO THE POWER INVERTER.

6. Connect the cable from the positive terminal of the inverter to the positive output terminal of the power source. It is important to make a secure connection.

WARNING: You may observe a small spark when you make this connection since current may flow from the power source and charge the capacitors in the inverter. Make sure that no flammable liquids, or fumes, as an explosion may result.

7. Turn the POWER switch to the ON position. The POWER light should come on.

8. Turn the POWER switch to OFF. The POWER light will go off and an internal alarm may sound. The internal circuitry is resetting itself for the next operation.

Operation

1) Plug the AC power cord of the item to be powered by the power inverter into one of the AC outlets. Make sure the power of the connected product is turned OFF.

   Important: If two products are to be powered, make sure that the total wattage does not exceed the total capacity of the power inverter.

2) Turn ON the power inverter.

3) Now turn on your connected product. If you have two products connected, make sure that you turn them on separately. This will insure that the power inverter does not have to deliver the "peak" start-up power to two units at the same time.

Applications and Limitations

The TS-300 will operate most AC products that fall within its power rating of 300 Watts. In the event that you accidentally overload the power inverter, it will automatically shut down, protected by the built-in overload circuitry. Once the overload is removed, the inverter will resume normal operation.

Most electronic products have a power consumption rating label that rates the power needs in either watts or amps. If the rating is given in amps, multiply the amps rating by 100 to find the wattage. If more than one product is to be powered, add the wattage requirements of both units. The total must not exceed the capacity of the power inverter.

The TS-300 cannot operate any microwave oven or motor-driven equipment since these appliances draw significantly more than 300 Watts.

Modified Sine Wave

The AC output voltage simulates the AC power available in the wall outlets of your home. The output is called "modified" because it is not exactly like normal AC power. While the vast majority of products will accept this type of power, some TV's, small product charger's, computers, etc. require true Sine Wave power. Sine Wave power inverters are available. Please call us at 1-800-259-0959 for more information.

About Batteries and Alternators

Batteries that are installed in vehicles store energy developed by a running engine and alternator to be used in starting the vehicle. The battery instantly delivers the heavy current to start the engine. After starting, the alternator recharges the battery for the next starting cycle.

Normal batteries are not designed to provide smaller currents over long periods of time. This is the reason that we recommend that after 20 minutes of operating a power inverter, start the engine to recharge the battery and keep the engine and alternator running to power the power inverter.

The power inverter can be used either while the engine is running or turned off. However, the power inverter may not operate while the engine is starting, since the battery voltage can drop substantially during start-up.

Deep cycle marine and RV batteries as well as golf cart batteries are designed specially for providing power over longer periods of time. These types of batteries are recommended if the power inverter is to be used for long periods as an alternative to regular AC power.

Many alternative power systems use solar or wind generators to recharge batteries to power the power inverter. Please remember that these sources of power as usually very low current. It could take days of charging for only short periods of use.

About Power and Appliances

Electrical power is measured in watts. One thousand watts is a kilowatt. Power is the product (multiplication) of the voltage (120 volts AC) and the current required (amperes).

For example an appliance that needs 10 amps of current is asking for 1200 watts of power (10 times 120).

The 300-watt power inverter is capable of providing 300 divided by 120= 2.5 amperes of current.

Therefore, the total requirement for appliances to be powered simultaneously is 300 watts or 2.5 amperes.

Low Battery Alarm

Built into the power inverter is an alarm that will sound when the voltage drops to 10.5 volts. Use of the power inverter should stop, as the power inverter will automatically shut down when the voltage drops to around 10 volts, preventing potential damage to the battery and allowing enough current to restart the engine.

Do's and Don'ts

Do's

Do use either the cables that came with the power inverter or alternative thicker diameter cables.

Securely mount the power inverter to a secure surface when permanently mounting the power inverter.

Take care not to damage the insulation of the cables.

Don'ts

Don't overload the inverter.

Don't use 6 or 24-Volt batteries.

Don't use small diameter cables.

Don't operate near fumes.

Don't drop the inverter.

Don't parallel the output of two power inverters.

Don't allow the power inverter to get wet.

Don't use a wet power inverter or wet cables.

Troubleshooting

Common problems

BUZZ IN AUDIO SYSTEMS

Some inexpensive stereo systems and boom boxes will emit a buzzing sound from their loudspeakers when operated from an inverter. This is caused by the power supply in the stereo system not adequately filtering the modified sine wave power from the power inverter. The only possible solution is purchasing an inexpensive AC line filter.

TELEVISION INTERFERENCE

The power inverter is shielded and filtered to minimize interference with TV signals. In some cases, particularly with weak signals in remote areas, some interference may still be visible. Try the following measures:

1. Position the power inverter as far away from the television, antenna and antenna cable.
2. Adjust the orientation of the power inverter, television power cord and antenna cables to minimize interference.
3. Make sure that the antenna feeding the television provides an adequate (snow-free) signal and that the antenna cables are shielded.

Problem: Lack of AC Power Output

Possible Causes:	Suggested Solutions:
Poor contact with terminals	Clean battery terminals. Make sure of a good connection
Low battery voltage	Recharge or replace battery
Overload	Reduce the load
Inverter is hot and in thermal shutdown	Allow the inverter to cool. Increase the ventilation around the power inverter.
Blown Fuse	Replace 15 Amp fuse in cigarette lighter or 35 Amp fuse inside black connector on red wire.

Problem: Low Output Voltage

Possible Causes:	Suggested Solutions:
Using average reading Voltmeter	Use true RMS voltmeter
Overheating	Reduce load
Low Input Voltage	Increase battery size. Check cables and connections.

Problem: Low Battery Alarm

Poor battery	Replace battery
Poor connections	Check cables and connectors

NOTE: To accurately measure the output voltage, you must use a True RMS Voltmeter. A normal averaging type meter will read a lower voltage than 110-120 volts. This is the fault of the meter not the Power Inverter.

Contact us with any questions or problems:
Cherokee™ Customer Service
Phone: 1-800-250-0959
Fax: 1-847-839-0016
E-mail: wrlmkt@sprynet.com
Web: www.wirelessmarketing.com

Glossary:

AC	Alternating Current. Normal household power
Alternator	Device connected to the engine usually by a belt that recharges the battery
Amperes	Unit of measure of electrical current (amps)
Battery	Chemical Storage device to provide starting DC power
Capacity	Amount of electricity current or power stored in a battery
Current	Flow of electrons measured in amperes
DC	Direct Current power stored in a battery
Modified Sine Wave	Shape of AC power from Power Inverter
Power	Electrical power measured in watts
Power Converter	Device that converts AC to DC
Power Inverter	Devices which converts DC to AC
Sine Wave	Shape of Normal Household AC
Voltage	Force which pushes electrons out of a battery through a wire
Volts	Unit of measure of voltage
Watts	Unit of measure of power

Specifications

300 Watt Power Inverter

Maximum Continuous Output Power	**300 Watts**
Surge Capacity (Peak Power)	**800 watts**
Optimum Efficiency	**>90%**
Output Waveform	**Modified Sine Wave**
DC Input Voltage Range	**10-14 Volts**
No Load DC Current Draw	**.2 Amp**
Low Battery Alarm	**@10.5 Volts**
Low Battery Shutdown	**@10.0 Volts**
Output AC Frequency	**60 Hz**
Output AC Voltage	**110-115 Volts rms**
Thermal Protection Shutdown	**>150°F**
AC Receptacles (North American Standard)	**Dual**
Warranty	**3 years**
Weight	**3.0 lb (1.36kg)**
Length	**9.1" (.23m)**
Width	**4.1" (.10m)**
Height	**2.3" (.06m)**
Country of Origin	**Taiwan**

Warranty and Service

Three Year Limited Warranty - "Plug in Protection"

WIRELESS MARKETING CORPORATION warrants that its CHEROKEE™ power inverters and the component parts thereof, will be free of defects in workmanship and materials for a period of three (3) years from the date of first consumer purchase. This warranty may be enforced by the first consumer purchaser, provided that the product was sold and utilized within the USA or Canada.

WIRELESS MARKETING CORPORATION will, without charge, repair or replace, at its option, defective power inverters and damaged electrical equipment upon delivery to our Factory Service Department, accompanied by proof of date of first consumer purchase, such as a duplicated copy of the sales receipt.

The customer is responsible for the shipping charges to our Factory Service Department. The return shipping expenses will be at Cherokee's expense, if the product is repaired/replaced under the warranty or plug-in-protection.

For further details concerning procedures, see the "If You need Service" section of the owner's manual.

Exclusions: This limited warranty does not apply to; 1) any product damaged by accident; 2) in the event of misuse or abuse of the product is result of unauthorized alterations alterations or repairs; 3) If the serial number has been altered, defaced, or removed; 4) if the owner of the product resides outside of the USA or Canada.

All implied warranties, including warranties of merchantability and fitness for a particular purpose are limited in duration to the length of the warranty.

Wireless Marketing Corporation shall not be liable for any incidental, consequential or other damages. This includes, without limitation, damages resulting from the loss of use or cost of installation.

This warranty is limited to a maximum claim for the cost of repair or replacement of the power inverter. This warranty does not cover the loss of software or data of any kind nor provides any provision for loss of use, business interruption or downtime.

Some states do not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion of limitation of incidental or consequential damages, so the above limitations may not apply to you.

If You Need Service

IF YOU THINK YOU NEED SERVICE OR HAVE OPERATIONAL QUESTIONS, CALL US AT:

1-800-259-0959

Monday through Friday, 8 AM to 5 PM Central Time

You may be asked to send your unit back to the Cherokee™ Factory Service Department. It will be necessary to furnish the following information, in order to have the product serviced and returned.

1) For Warranty Repair, include some form of proof-of-purchase, such as a mechanical reproduction or carbon of the sales receipt. If you send the original receipt, please be aware that it can not be returned.
2) Send the entire product. You must include all the accessories that came standard with the product. If you have permanently installed the cables, keep them.
3) Enclose a description of what is happening with the unit. Include a typed or clearly printed name and address (no P.O. boxes) of where the unit is to be returned.
4) Pack the unit securely to prevent damage during shipping. If possible, use the original packing material.
5) Ship the unit **prepaid and insured by way of a traceable carrier, such as United parcel Service (UPS) or Roadway Parcel Service (RPS)** to avoid loss in transit to:

   Cherokee™ Factory Service
   Wireless Marketing Corporation
   1212 Remington Road
   Schaumburg, IL 60173

6) If you have received the Cherokee™ product as a gift and you do not have the proof-of-purchase paperwork, include the following information with the product:

   a) your typed named and address
   b) Date., month and year you received the product

If you have questions, call 1-800-259-0959