Owner Manual

POWER INVERTERS
Model: M2524 / M3024

FOR YOUR SAFETY

The use of the appropriate Tundra CM Series installation kit is highly recommended

www.tundrainternational.com

PN. M2524_M3024-GD-0515-EN

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1 INTRODUCTION

Congratulations! You have purchased one of the most sophisticated and reliable power inverters of the industry. Incorporating the latest technologies, it will deliver years of trouble free operation for your truck, boat, RV or other “OFF Grid” system.

1.1 Important Safety Instructions

Your new power inverter is a power conversion device that MUST be installed and used with the utmost care. All safety precautions listed in this manual must be carefully understood and applied for your safety and that of others.

CAUTION: TO REDUCE THE RISK OF ELECTROCUTION, FIRE OR INJURIES, WE WOULD LIKE TO MAKE THE FOLLOWING RECOMMENDATIONS;

1) In order to get the most out of this inverter, please thoroughly read this manual before installing and using your new inverter. It is important to pay special attention to CAUTION! Statements in this manual as well as on the inverter.

2) The electrical current at the output of this inverter is similar to what’s delivered by public utility power services and may cause severe personal injuries. Do not play with electricity if you don’t have the required knowledge and skills.

3) The electrical current at the input of this inverter is extremely dangerous if not handled properly. Do not play with electricity if you don’t have the required knowledge and skills.

4) Be sure to install the inverter out of the reach of children.

5) Should the inverter be exposed to rain, moisture, or strong impact, have it inspected by a qualified technician before use.

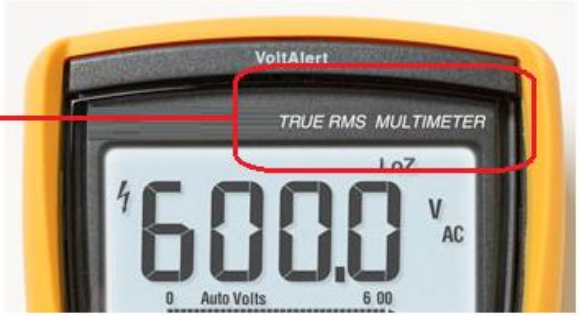
1.2 Disclaimer

The electrical code varies depending on location and the type of installation. Electrical installations must meet local and national wiring codes and should be performed by a qualified electrician. Tundra International Inc. is not liable for any incidental, consequential or other damages arising from the use, misuse or operation of this product; including, without limitation, damages resulting from loss of use, cost of removal, installation, or troubleshooting. All Tundra products specifications are subject to change without notice.

1.3 Output waveform

The AC output generated by your inverter is designed to provide a regulated RMS (Root Mean Square) output of 120 Volt/60Hz and its waveform is called a “Modified Sine Wave.” It is a stepped waveform suitable for most AC loads and designed to have characteristics similar to sine waves delivered by public utility power services.

To read the output voltage correctly, you must use a true RMS voltmeter. Most AC voltmeters are calibrated to read the average value of a waveform rather than the RMS value. Inappropriate meters may read a modified sine wave 2 to 20 volts lower than the actual value.



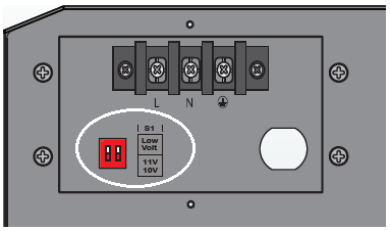
2 FRONT PANEL / REAR PANEL & REMOTE CONTROL

2.1 Front panel

ON/OFF switch: The M Series (M25024 & M3024) features one main ON/OFF switch located on the front panel. This ON/OFF switch turns the inverter's main control circuit ON and OFF. When the switch is ON but no power is being supplied to a load, the inverter draws approximately 250mA. If left ON for days, it will eventually drain your batteries down to the pre-set automatic shutdown **(20 or 22 Volts - see section 4.2)**. When the switch is OFF, the inverter draw is Ø (zero).

AC Outlets: The maximum output of your inverter is assumed to go through the two AC outlets. Do not exceed 1800w or 15A by outlet. It may result in extensive damages to your inverter and lead to injuries. The M2524 & M3024 are also equipped with one hard wire outlet which can be used as the "only" output socket to get full output capacity.

BOT switch: The M Series features our EXCLUSIVE Battery Optimization Technology. Using the dip switch located behind the "hard wire" cover on the front panel, you can select between two (2) low battery voltages shut down. Refer to section 4.2 for instructions.



Remote control port: This inverter is equipped with a Liquid Crystal Display remote control. To use it, you must connect the included cable to this port.

CAUTION! **FOR YOUR OWN SAFETY, LEAVE THE FRONT PANEL SWITCH IN THE OFF POSITION DURING THE INSTALLATION.**

2.2 Rear panel

DC inputs: This inverter is equipped with DC input blocks suitable for terminal lugs with 3/8" mounting holes.

Chassis ground: This inverter has a studded grounding point. When the inverter is NOT installed on a metallic surface grounded to the DC electrical system of the vehicle, a grounding procedure is necessary to derive potential AC leaks to ground in case of malfunctioning. **Refer to section 3.6 for more details**.

Fan: This inverter is equipped with a thermostatic cooling fan that operates upon the interior temperature of the inverter. In order for the inverter to properly operate, the fan opening must never be obstructed. Allow at least 6 inches (15.2 cm) of clearance around the inverter for proper airflow.

CAUTION! **FAN COULD CONTINUE TO RUN EVEN IF THE INVERTER HAS SHUTDOWN.**

2.3 LCD remote control

This inverter is equipped with a Liquid Crystal Display remote control. During normal operation of the inverter, the remote will display a number of information to allow its user to better understand the operational limits of the inverter. The information displayed can be used to obtain maximum performances as well as troubleshooting.

2.3.1 Display

Input DC volt: Displays the voltage at the inverter's input terminal. Usually this voltage is very close to the actual battery voltage and the difference, if any, is caused by the resistance in the DC cables and connections between the inverter and the batteries. A regular maintenance will contribute to minimize any possible resistance.

Battery capacity: Displays an estimation of the "state of charge of the batteries" within the operation limits of your inverter **(refer to section 4)**.

Load: Displays the "real time" consumption in Watt (when greater than 50W). Loads under 50W may not be recognized by the inverter.

Fault light: Indicates a faulty condition such as: low or high battery voltage, over temperature and overload. An audible alarm will sound announcing the faulty condition.

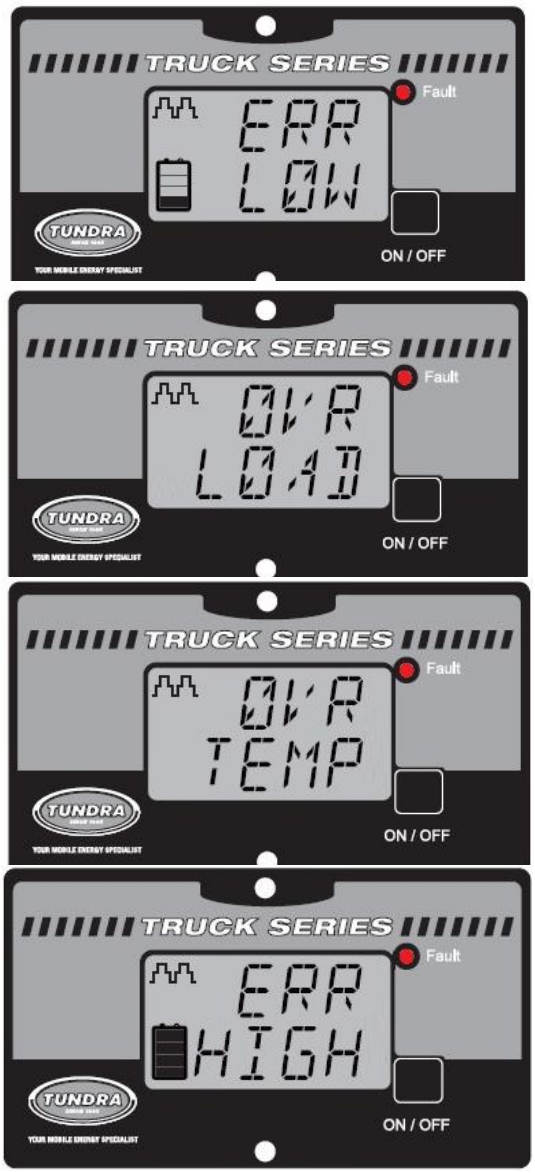
2.3.2 Fault codes: (Refer to section 6 for troubleshooting)

ERR LOW
Indicates the battery capacity has reached its lower limit (22.0 Volts or 20.0 Volts; refer to section 4.2) and must shutdown. This is likely to happen when batteries are discharged or when the installation is either inappropriate or requires maintenance. Once the battery voltage will rise above 26.4 Volts for at least 2 seconds, the inverter will resume automatically.

OVR LOAD
Indicates the inverter has reached its maximum output capacity (Wattage) and must shutdown. This is likely to happen when the total consumption (Wattage) is too high for the model you chose. Once the consumption will back down within the operation limits of your model, the inverter will resume automatically.

OVR TEMP
Indicates the inverter internal circuitry has reached a critical temperature limit and must shutdown. This is likely to happen in very hot temperature periods only. Once the temperature will drop enough to allow a safe operation, the inverter will resume automatically.

ERR HIGH
Indicates the battery voltage has reached its higher limit (30 Volts) and must shutdown. This is likely to happen when the alternator is faulty and requires maintenance. Once the battery voltage will drop to 13.2 Volts for at least 2 seconds, the inverter will resume automatically.



3 PERMANENT INSTALLATION

This installation procedure has been developed based on the use of Tundra installation kit. Therefore, the use of one of our CM SERIES installation kits is strongly recommended. These complete installation kits are designed to maximize the performances of our inverters and to promote the safest possible installation. It also helps eliminate the difficult task of sourcing the right material and to cut down on installation costs and time.

CM SERIES installation kit content

- High quality “color coded” DC cables - 6 to 12ft./per pole (1.83 to 3.7m./pole) depending on the chosen kit
- Zinc plated terminal lugs “All crimped” and covered with high quality shrink tubing.
- 2 x PVC strain reliefs, factory inserted on the cables to safely run the cables through sheet metal floors
- 1 x High Quality DC Fuse kit of the proper size.
- Plastic “loom” tubing - to protect the cables from road hazards and other possible wear
- High endurance plastic cable ties - to secure the cables from one end to the other
- Hardware kit - includes all the required metal clamps and screws

YOU MAY REFER TO OUR WEBSITE TO SELECT THE RIGHT KIT FOR YOUR INVERTER AND YOUR APPLICATION: **http://www.tundrainternational.com/en/pages/cmseries**

3.1 List of recommended tools

- Power drill
- Hole saw for metal
- Screw driver set
- Side cutters
- Measuring Tape
- Drill bit set for metal
- Open end wrench set

CAUTION! FOR YOUR OWN SAFETY, LEAVE THE FRONT PANEL SWITCH IN THE OFF POSITION DURING THE INSTALLATION.

3.2 Where to install

CAUTION! POWER INVERTERS MUST BE INSTALLED IN AN ISOLATED COMPARTMENT, AWAY FROM DIRECT CONTACT WITH ANY PERSON. A MALFUNCTION OR ACCIDENTAL LIQUID SPILL MAY RESULT IN SEVERE INJURIES OR DEATH.

Your inverter MUST be installed in a location that meets the following requirements:

- Close to batteries: Install the inverter as close as possible to the batteries (but not in the same compartment) in order to minimize the DC cable length between the inverter and the batteries. The distance between your inverter and the batteries should never exceed 12 feet (3.7m) to avoid damaging its circuitry.

- Dry Keep the inverter away from any sort of liquid, rain, snow or other sources of moisture. Excessive humidity may spark which may result in severe injuries or death or/and results in premature failure of the inverter.

- Tempered For the inverter to operate properly, the ambient air temperature should remain between 32° and 131° F (0° and 55° C). A sudden and heavy load while the inverter's temperature is below the freezing point may result in permanent damages on the inverter. Operating it above 131 degrees Fahrenheit (55°C) may cause the inverter to overheat, shut down and result in permanent damages on the inverter

- Ventilated Ensure that the unit is located in a well-ventilated compartment. At least 6 inches (15.2cm) of clearance are required around the inverter for proper air flow. Verify that all ventilation openings on the unit (front and rear panels) are not obstructed.

- Safe Find a location away from any kind of flammable liquid or flammable material. Power inverters may produce sparks that can result in fire if exposed to flammable vapors. Never install the inverter in the same compartment as the batteries.

CAUTION! TO AVOID FIRE HAZARDS AND/OR OVERHEATING; DO NOT INSTALL THE INVERTER IN A ZERO CLEARANCE COMPARTMENT AND DO NOT COVER OR OBSTRUCT ANY VENTILATION OPENINGS. THIS EQUIPMENT CONTAINS COMPONENTS THAT MAY PRODUCE ARCS OR SPARKS. TO REDUCE THE RISK OF FIRE OR EXPLOSION, DO NOT INSTALL IN A COMPARTMENT CONTAINING BATTERIES OR FLAMMABLE MATERIALS, OR IN A LOCATION THAT REQUIRES IGNITION PROTECTED EQUIPMENT.

3.3 Mounting the inverter

The inverter must be mounted on a flat and even surface using its mounting flanges. Mounting hardware should be strong enough to support the weight of the inverter. The inverter may be mounted on a vertical surface if the cooling fan is pointing left, right or up (it must never point down). The inverter can also be mounted on a horizontal surface, but never upside down.

During this step, it is the right time to think about where you intend to mount the remote control panel and where to run its cable. The remote control cable allows for an installation up to 20ft (6m) away from the inverter.

3.4 Strain reliefs installation

Close to the inverter, prepare to drill two holes (about 3 inches apart (7.6cm) in the truck's floor to install the two strain reliefs. If using our CM Install Kit, the strain reliefs are factory inserted onto the cables.

Drill 1/8" pilot holes first to confirm you are in a convenient location to drill the larger holes. Strain reliefs vary in size upon the inverter capacity. Make sure to use the right size hole saw.

Remove the PVC nut from the cables. Insert the cables through the holes you just drilled in order to permanently install the strain reliefs. Tighten the PVC nuts under the cab firmly using pliers or a wrench. Do not over tighten!

CAUTION! ON A "SLEEPER" TRUCK, BE CAREFUL NOT TO DRILL ON CAB CROSS-MEMBERS AS IT MAY WEAKEN THE CABIN STRUCTURE. ALSO, BE CAREFUL NOT TO DRILL INTO HOSES OR LINES (COOLANT, AC AND HEATER FUEL LINE).

3.5 DC Cables (From Inverter to Batteries)

Our CM series installation kits are made with premium quality welding cables and terminals for maximum safety, efficiency and durability. Using one of our kits will make you avoid the hazards of doing your own cables

CAUTION! PROPER WIRING IS VERY IMPORTANT FOR SAFE AND PROPER OPERATION OF A POWER INVERTER. LOW RESISTANCE CONNECTIONS ARE ESSENTIAL TO DELIVER THE REQUIRED AMOUNT OF ENERGY TO YOUR INVERTER.

If you choose to do your own DC cables, the following rules must be strictly observed;

1. You MUST use the proper cable gauge: 2500w & 3000w = AWG #2
2. Terminal lugs must be crimped using a Premium crimping tool.
3. Never "ever" weld a terminal lug on a cable. This process damages the conductors, the insulation, the terminal lug in addition to offering very poor connectivity.
4. Never crimp terminal lugs with a hammer, a vise or a percussion tool.
5. Avoid using "bare" copper terminal lugs. You should only use "plated" terminal lugs.
6. You should apply good quality shrink tubing to prevent water infiltration inside the cable jacket.
7. Keep the cable length as short as possible

3.6 Ground (NOT the - negative side)

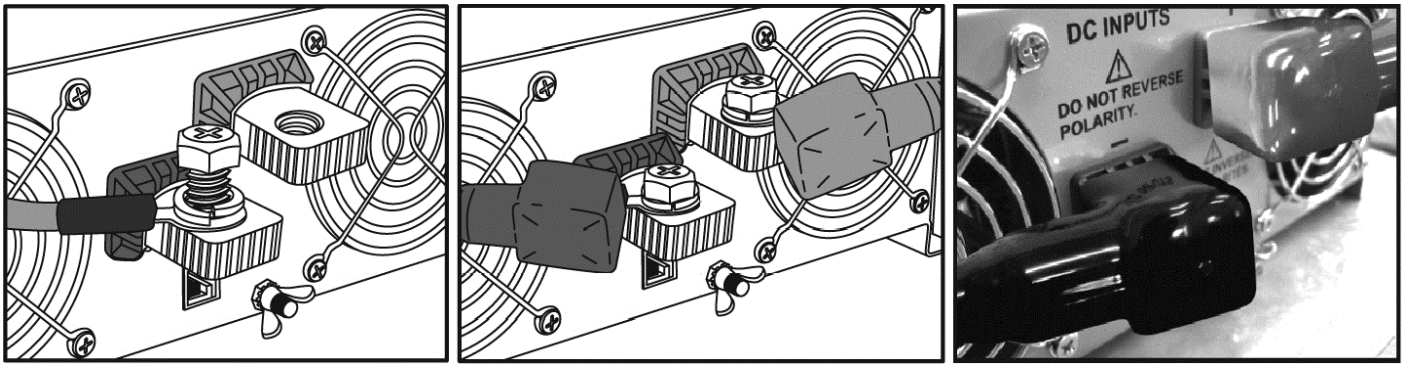
The inverter housing must be connected to the chassis of the vehicle or to a metallic panel connected to the chassis of the vehicle. This grounding procedure conforms to most electrical codes that require to derive AC sources to ground in case of malfunctioning. Most cab structures allowing for strong install points are generally linked to the chassis of the vehicle. For this reason, NO GROUNDING material is included in our CM Series installation kits.

Test procedure: To make sure that your inverter is properly grounded, run a 24 volts test light from the positive terminal of your battery to your inverter mounting point; if the light comes on, your inverter is grounded.

If not, use the threaded stud on the rear panel and a #8 AWG copper cable to connect the inverter to a good grounding point.

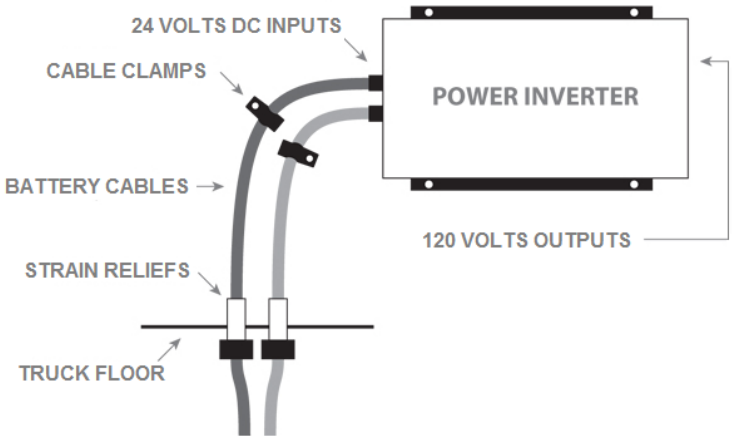
CAUTION! DO NOT CONNECT THE GROUND LUG TO THE NEGATIVE INPUT OF THE INVERTER. WE HAVE ALREADY THOUGHT ABOUT IT AND IT'S NOT ENOUGH.

3.7 Battery cables installation / Inside the cabin



1. Insert the rubber insulators on the cables (Included with the Inverter - see image above)
2. Install both cables on the DC inputs of the inverter respecting the polarities. RED = POSITIVE (+) / BLACK = NEGATIVE (-).
3. Install the rubber insulators.

4. Adjust the cable length between the strain reliefs and the inverter DC input in order to allow minimal movement of the cables and consequently reduce the stress on the inverter's inputs. Install cable clamps to avoid unnecessary vibration.



3.8 Battery cables installation / Outside the cabin

Starting from underneath the cab at the strain reliefs, insert all the remaining portion of battery cables inside the plastic loom included in your CM Install kit. Then run both cables together toward the batteries using the metal clamps and cabin cross members as support. Firmly tie them together using the included plastic cable ties.

CAUTION! THIS STEP REQUIRES SKILL AND CAREFULNESS. CABLES MUST BE STRONGLY ATTACHED SO THEY DON'T RUB ON ANYTHING SHARP WHILE STAYING AWAY FROM EXHAUST PIPES, AIR CONDITIONING AND COOLANT LINES.

CAUTION! IF YOUR TRUCK IS EQUIPPED WITH AN AIR RIDE SYSTEM, CABLES MUST BE ABLE TO MOVE ALONG WITH THE CABIN. MAKE SURE TO LEAVE "HALF A LOOP" OF CABLE AT THE INTERSECTION WHERE THE CABLES ARE LINKED BETWEEN THE CAB AND THE BATTERY BOX.

3.9 DC fuse installation

1. Remove the DC fuse holder cover by pressing and pulling firmly. Do not use tools as it may damage the cover.

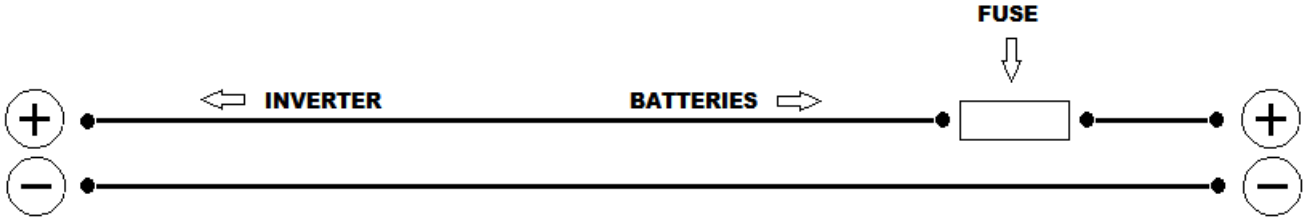
2. Start by assembling the DC fuse onto the DC fuse holder

CAUTION! MAKE SURE TO INSERT THE FUSE LEGS CORRECTLY. INSTALLATION IN THE WRONG DIRECTION COULD LEAD TO DAMAGE OF THE FUSE LEGS AND LEAD TO IMPROPER CONNECTIVITY.

3. Connect the positive cable (Red) coming from the cab to one side of the fuse holder/fuse combo. The terminals must be solidly fixed using the included nut. Do not over tighten the nut.

4. Connect the included 1 foot (Red) cable to the other side of the fuse block. The terminals must be solidly fixed using the included nut. Do not over tighten the nut.

5. Install the plastic cover.



CAUTION! NOT INSTALLING THE FUSE PROPERLY CAN RESULT IN FIRE THAT MAY CAUSE SEVERE INJURIES AND/OR DAMAGES.

3.10 Battery connections

CAUTION! MAKE SURE THE INVERTER IS OFF BEFORE PROCEEDING.

CAUTION! YOU MAY OBSERVE A SPARK WHEN MAKING THE CABLE CONNECTIONS SINCE CURRENT WILL FLOW FOR THE FIRST TIME TO CHARGE CAPACITORS INSIDE THE INVERTER. THIS IS NORMAL. ALWAYS WEAR SAFETY GLASSES AND DO NOT MAKE CABLE CONNECTIONS IN THE PRESENCE OF FLAMMABLE FUMES OR MATERIAL; IT MAY RESULT IN EXPLOSION AND/OR FIRE.

CAUTION! REVERSING THE POLARITY WHEN CONNECTING THE DC CABLES WILL PERMANENTLY DAMAGE YOUR INVERTER. THIS IS NOT COVERED BY THE WARRANTY.

IF YOUR VEHICLE IS EQUIPPED WITH DYNACRAFT BATTERY LINKS, WE RECOMMEND THE HEREWITH PROCEDURE TO FAVOR RESISTANCE FREE CONTACT BETWEEN THE DIFFERENT TERMINALS AND THE BATTERY POSTS.

Although well made, Dynacraft battery cables have certain deficiencies when it comes time to installing high power devices such as power inverters. Their partially sealed and massive design prevents the addition of a third terminal on a battery post. The following procedure is intended to favor resistance free connectivity and promote less corrosion and therefore less maintenance when this type of cable is strictly required.

Step 1.

Remove the steel washer. This washer rusts easily and can cause premature resistance. If the cable has more than 6 months, corrosion can make its removal difficult.

Step 2.

Using a utility knife, remove the insulation that covers all relevant terminals.

Step 3.

Install the cables in the following order: 1 - Dynacraft cables 2- Power inverter cable. Never install more than 3 high power cables per post. Properly tighten the nuts (80 to 100 in.lbs.) Do not overtighten!

Positive side
The Positive cable is red and fitted with a red heat shrink. Connect this cable to battery #1 by making sure the terminal is in full contact with the battery's link terminals. If there is an accessory located on this pole, you must place it on top of the inverter terminal, NOT underneath.

Negative side
The Negative cable is black and fitted with a black heat shrink. Connect this cable to the most distant possible battery (i.e.: battery #4) by making sure the terminal is in full contact with the battery's link terminals. If there is an accessory located on this pole, you must place it on top of the inverter terminal, NOT underneath.

Attach all the cables to the battery links using the cable ties. Do not cut any excess cable. Just make sure it is properly attached and not in contact with sharp edges.

4 OPERATIONS

To operate the power inverter, turn it ON by using the ON/OFF switch located on the front panel and/or the ON/OFF switch located on the LCD remote control. The inverter is now ready to deliver 120 Volts power to your loads. If you intend to operate several loads from the inverter, turn them ON one by one up to the maximum capacity of the inverter. This will prevent the inverter from having to provide the starting load for all devices simultaneously.

4.1 Operating limits

Power output: Your inverter is designed to deliver its full output capacity on a continuous basis, and has a 200% (double) power surge capacity for ±0.3 seconds. The power surge capacity CANNOT be considered as usable Wattage. It is strictly meant to quickly start heavy loads such as electric motors.

Input voltage: The inverter will operate with an input voltage ranging between 22 and 30 Volts or 20 to 30 Volts depending on the selected configuration. (See section 4.2) Optimum performance will be obtained with an input voltage ranging from 24.0 to 28.0 Volts. If the voltage drops lower than the pre-set shut down, the low battery protection alarm will sound and battery sign on the remote will blink.

If the voltage drops below the pre-set shutdown point, ERR LOW code will display on the remote and the inverter will shut down automatically. This protects your batteries from being over-discharged. The inverter will automatically restart when the input voltage will rise above 26.4 Volts for at least 2 seconds.

The inverter also has a high voltage shut down. If the voltage exceeds 30 Volts, the high battery warning alarm will sound, the ERR HIGH code will display on the remote and the inverter will shut down until the input voltage drops below 30 Volts. This protects the inverter from excessive input voltage. While the inverter incorporates protection against over voltage, it may still be damaged if the input voltage exceeds 30 Volts.

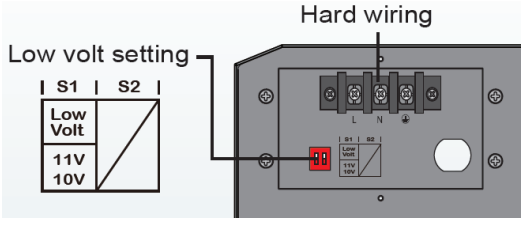
4.2 Battery Optimization Technology

The M Series features our EXCLUSIVE Battery Optimization Technology. This technology allows users to manually select between two anti-battery discharge modes through a dip switch located on the front panel.

NOTE: FACTORY SETTING IS SET FOR COMMERCIAL VEHICLES.

↑ UPPER POSITION = Factory setting: Truck /Starting batteries
Low Voltage Alarm: 23.0 VDC / Low Voltage Shut Down: 22.0 VDC

↓ LOWER POSITION = Automotive / Auxiliary batteries
Low Voltage Alarm: 21.0 VDC / Low Voltage Shut Down: 20.0 VDC



NOTE: Should it be required to LOCK the preferred selection, it can be done using silicone caulk. Fill the cavity where the dip switch is located. This is not a sealed cavity – DO NOT OVERFILL. let dry for 5 minutes.

4.3 Trouble loads - Television & CB radio interference

CB and television are designed to catch “air” frequencies and signals. Inductive loads such as electric motors (ex: fridge compressor) can emit a magnetic field strong enough to be interpreted as a signal by television and CB radios.

If this occurs, the following steps may help eliminate the problem:

- Disconnect all inductive loads while using the TV or the CB Radio
- Move the television as far as possible from your inverter
- Use an extension cord to help dissipate the strength of the magnetic field.
- Make sure both DC battery cables are tied up together as much as possible (from the inverter to the batteries)

4.4 Trouble loads - Medical equipment

The waveform of your inverter is called a “Modified Sine Wave.” It is a stepped waveform suitable for most AC loads and designed to have characteristics similar to sine wave delivered by public utility power services. Some appliances however may not adequately interpret the waveform produced by the inverter and could, although unlikely, function erratically or be damaged. If you intend to feed medical equipment or if you are unsure about powering a device with a modified sine wave power inverter, contact the manufacturer of the said device. The use of our S Series pure sine wave inverters may be required.

4.5 Trouble loads - Microwave

The power rating advertised on microwave ovens represents the cooking power which refers to the power being delivered to the food being cooked. The actual operating power requirement is approximately 50% higher than the advertised cooking power (i.e.: 600w microwave could consume up to 1200w). The actual power consumption is usually stated on the back of the microwave. If the operating power requirement cannot be found on the back of the microwave, check the owner's manual or contact the manufacturer.

* NOTE: Amperage x Voltage = Wattage (i.e.: 10A x 120Vac = 1200W)

4.6 Trouble loads - Tools

The power rating of certain tools like circular saws or pumps refers to the power required during normal operation. The actual operating power requirement at start up may be up to 300% higher. In a tool application, it is recommended to buy an inverter more powerful than the tools seem to require, in order to be able to support the start-up surge required by certain tools.

5 MAINTENANCE

Very little maintenance is required to keep the inverter operating properly:

- You should clean the immediate environment around the inverter to prevent dust accumulation on the circuitry inside the inverter
- DC input bolts should be tightened periodically
- Cables should be inspected regularly for damage and cracks.
- Terminals on batteries and the fuse must be cleaned twice a year
- You must also keep your batteries as clean as possible to prevent current loss that may affect inverter operation

CAUTION! IF YOU WORK ON THE DC INPUT TERMINALS OF YOUR POWER INVERTER, DISCONNECT BOTH CABLES AT THE BATTERY SIDE TO AVOID ANY SHORT CIRCUIT.

6 TROUBLESHOOTING

Fault codes **Ref. Section 2.3.2**	**Possible cause**	**Solution**
ERR LOW = Low input voltage (Front panel LED flashing & steady alarm)	1. Discharged batteries 2. Insufficient battery capacity 3. Improper installation	1. Recharge batteries 2. Add more batteries 3. Follow the inverter's installation steps / Section 3 above
ERR HIGH = High input voltage (Front panel LED flashing & steady alarm)	1. Input voltage is higher than 30V	1. Check vehicle alternator
OVR LOAD = Overload (Front panel LED flashing & steady alarm)	1. Total consumption exceeds the inverter's nominal capacity 2. A short circuit / damages AC cord (120V) 3. Defective appliances	1. Remove or reduce loads, switch the inverter OFF at least 5 seconds and restart the inverter 2. Check the AC wiring (120 Volts) 3. Test your appliance on another power source to validate its good functioning
OVER TEMP (Front panel LED flashing & steady alarm)	1. Thermal shutdown 2. Improper installation	1. Allow inverter to cool off 2. Improve ventilation 3. Install according to recommendations on Section 3.
Low output voltage reading (85 to 105 VAC)	1. You are using a voltmeter which cannot properly read the RMS voltage of a modified sine wave	1. Use a TRUE RMS reading voltmeter
No output voltage	1. Inverter OFF 2. No DC power going into the inverter 3. Reverse DC polarity	1. Turn the inverter ON 2. Check the battery cables 3. Check DC fuse on battery side of battery cables 4. Check battery cables for corrosion or damages. 5. Refer to our troubleshooting guide. 6. Damages caused by reversed polarity are not covered by the warranty.

You may also refer to our online troubleshooting guide:
http://www.tundrainternational.com/en/pages/support

7 SPECIFICATIONS

Model	**M2524**	**M3024**
Type	**Power Inverter**	**Power Inverter**
Grade	**Industrial**	**Industrial**
Part number	**TUN124009**	**TUN124010**
Electrical specifications		
Continuous output power	2500W	3000W
Peak output power	5000W	6000W
Input voltage (nominal)	24 VDC	24 VDC
Operating input voltage	20-30 VDC / Adjustable - BOT (2)	20-30 VDC / Adjustable - BOT (2)
Output voltage	120 VAC +/- 3%	120 VAC +/- 3%
Output frequency	60 Hz	60 Hz
Output wave form	Modified	Modified
DC efficiency (Peak)	90%	90%
AC efficiency (Peak)	92%	92%
General Specifications		
AC outputs	2 x NEMA 5-15R + Hardwire	2 x NEMA 5-15R + Hardwire
Operating temperatures	-30° to 131°F	-30° to 131°F
Cooling fan(s)	Thermostatic	Thermostatic
Display	Liquid Crystal Display	Liquid Crystal Display
Construction	Steel	Steel
DC inputs	Blocks for 3/8" terminals	Blocks for 3/8" terminals
Unit dimensions (W x L x H) - English (in.)	22,1 x 8,5 x 5,2	20,2 x 8,5 x 5,2
Unit dimensions (W x L x H) - Metric (cm.)	51,7 x 26,4 x 13,3	51,7 x 26,4 x 13,3
Unit weight (Lbs / kg)	19,4 / 8,9	20,7 / 9,2
Warranty	1 Year (1)	1 Year (1)

(1) Tundra International Inc. warrants its power inverters against defects in workmanship and materials for a period of one (1) year from the date of first consumer purchase. This warranty is given only to the first end-user of the product.

(2) Battery Optimization Technology. (BOT) Allows to manually select between two distinctive modes of battery anti-discharge protections. 1. Autonomy mode: 20vdc 2. Engine start mode: 22vdc.

*** SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.**

8 LIMITED WARRANTY

TUNDRA INTERNATIONAL INC. warrants its products against defects in material or workmanship for a period of one (1) year from the date of first end-user purchase. This warranty applies to the original purchaser (end-user) of the product only. This limited warranty is voided if the unit is abused, modified, installed improperly, if the housing has been removed, if the serial number is missing, or if the original identification markings have been defaced, altered, or removed or if there is a lack of maintenance. Tundra International Inc. is not liable for any incidental, consequential or other damages arising from the use, misuse, or operation of this product; including, without limitation, damages resulting from loss of use, cost of removal, installation, or troubleshooting of the customer's electrical systems.

IMPORTANT NOTES

1. Before returning a defective product, the end-user must certify that he has read and understood the related TROUBLESHOOTING GUIDE available in the Support & Warranty section of our website.
2. The product should have never been abused or modified.
3. The product should have never been exposed to liquids, heavy dust or corrosive material.

FOR TECHNICAL SUPPORT, CONTACT US AT 450-649-2470 or 1-877-964-2582

STEPS TO GET WARRANTY & SUPPORT:

1. A Warranty Form must be filled by the merchant and/or the end customer
2. The merchant and/or the end customer MUST contact us to get an RMA number.
3. A proof of purchase MUST BE INCLUDED with ALL returned products.
4. The returned product MUST BE PROPERLY PACKAGED to prevent shipping related damages. Shipping related damages are not covered by the warranty.
5. All defective products MUST be sent with all shipping charges PREPAID.
6. Returned products will be evaluated by our technical department where a decision will be made as to whether the product is covered by the warranty will be repaired, replaced or credited.

ALL DEFECTIVE PRODUCTS COVERED BY THE WARRANTY WILL BE RETURNED FREE OF CHARGE.