

TRANSDUCTION



USER'S MANUAL

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TR-1000VA-48VDC Pure Sine Wave Inverter
48 V DC to 120 V AC 50/60 Hz

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Important Information

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All relevant issues have been considered in the preparation of this document.

Should you notice an omission or any questionable item in this document, please feel free to notify Transduction.

Regardless of the foregoing statement, Transduction assumes no responsibility for any errors that may appear in this document nor for results obtained by the user as a result of using this product.

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Return policy

Warranty is 3 years from the date of purchase. Products returned for repair must be accompanied by a Return Material Authorization (RMA) number, obtained from Transduction prior to return. Freight on all returned items must be prepaid by the customer. The customer is responsible for any loss or damage caused by the carrier in transit.

To obtain an RMA number, call us at 905-625-1907. We will need the following information:

- Return company address and contract
- Model name, model number and serial number
- Description of the failure

Mark the RMA number clearly on the outside of each box, include a failure report and return the product to:

Transduction
5155 – 23 Spectrum Way
Mississauga ON Canada L4W 5A1
Attn: RMA Department

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Safety Precautions

WARNING!

Before installing and using the inverter please read the safety precautions.

General Safety Precautions

Do not expose the inverter to rain, snow spray, bilge or dust. To reduce risk of hazard, do not cover or obstruct the ventilation openings.

To avoid risk of fire and electrical shock, make sure that existing wiring is in good electrical condition and that wire size is not underrated. Do not operate the inverter using damaged or substandard wiring.

Explosive Gas Precautions

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

Precautions When Working with Batteries

If battery acid contacts skin or clothing, immediately wash with soap and water

If acid enters the eye, immediately flush eye with cold, running water and keep flushing it for at least 20 minutes. Seek medical attention immediately

NEVER smoke, allow sparks or open flames near the battery or engine.

Do not drop metal tools on the battery. The resulting spark or short circuit may cause an explosion.

Remove personal jewelry items when working with lead acid batteries. The short circuit current produced is high enough to cause severe burns.

GENERAL FEATURES

- Pure sinewave output (<2% THD)
- Input and output isolation
- High efficiency 87% ~ 90%
- High surge capacity inductive loads
- Soft start technology
- Frequency 50/60Hz switchable
- Autorestart
- 2U rack mount
- 3 year warranty

INTRODUCTION

The TR-1000VA-48VDC power inverter is one of the most advanced power systems available. To get the most out of the power inverter it must be installed and used properly.

Please read the instructions in this manual before installing and using.

REAR VIEW RACK MOUNT VERSION



- Cooling Fans: Do not obstruct. Allow at least 1 inch clearance for air flow
- Battery Terminals: Check that the inverter voltage is compatible with your supply i.e. a 48V inverter on a 48V system. Using the spanner and cables provided, connect to 48V battery or other 48V power source.
NOTE: Reverse polarity connection will blow internal fuses and may permanently damage the inverter
- Ground: Chassis ground or to vehicle chassis using 8AWG wire.
NOTE: Operation without a proper ground connection may result in electrical hazard.

SHOCK HAZARD WARNING!!

Before proceeding any further, ensure that the inverter is NOT connected to any batteries and that all wiring is disconnected from any electrical sources. Do not connect the output terminals of the inverter to an incoming AC source.

QUICK HOOKUP AND TESTING

To check performance before proceeding with the installation, do the following:

1. Unpack and inspect the inverter. Make sure the power switch is in the OFF position.
2. Connect the cables to the power input terminals on the rear panel of the power inverter. The red terminal is positive (+) and black terminal is negative (-). Connect the cables into the terminals and tighten the wing nut to clamp the wires securely.
3. Connect the cable from the negative terminal of the inverter to the negative terminal of the power source. Make a secure connection.
NOTE: Loosely tightened connectors result in excessive drop and may cause overheated wires and melted insulation.
4. Before proceeding further, double check that the cable you have just connected to the negative terminal of the inverter is connected to the negative output terminal of the power source.
NOTE: Reverse polarity connection will blow a fuse on the inverter and may cause permanent damage. Damage caused by reverse polarity connection is not covered under warranty.
5. Connect the cable from the positive terminal of the inverter to the positive terminal of the power source. Make a secure connection.
NOTE: There may be a spark when this connection is made since current may flow to charge capacitors in the power inverter. Do not make the connection in the presence of flammable fumes, explosion or fire may result.
6. Turn ON the inverter and check the indicators on the front panel. The meters should show a reading. If it does not, check your power source and the connections. The other indicators should be off.
7. Turn OFF the inverter. The internal alarm may sound briefly. This is normal. Plug the test load in to the AC receptacle on the front panel of the inverter. Keep the switch in the OFF position.
8. Turn ON the inverter and the inverter should supply power to the load.

INSTALLATION

1. Where To Install

The power inverter should be installed in a location that meets the following requirements:

- a) Dry - Do not allow water to come in contact with the inverter.
- b) Cool - Ambient air temperature is between 0°C - 40°C
- c) Ventilated - Allow at least 1" of clearance around the inverter for airflow. Ensure the ventilation openings on the rear and bottom of the unit are not obstructed.
- d) Safe - Do not install the inverter in the same compartment as batteries or in any compartment capable of storing flammable liquids such as gasoline.

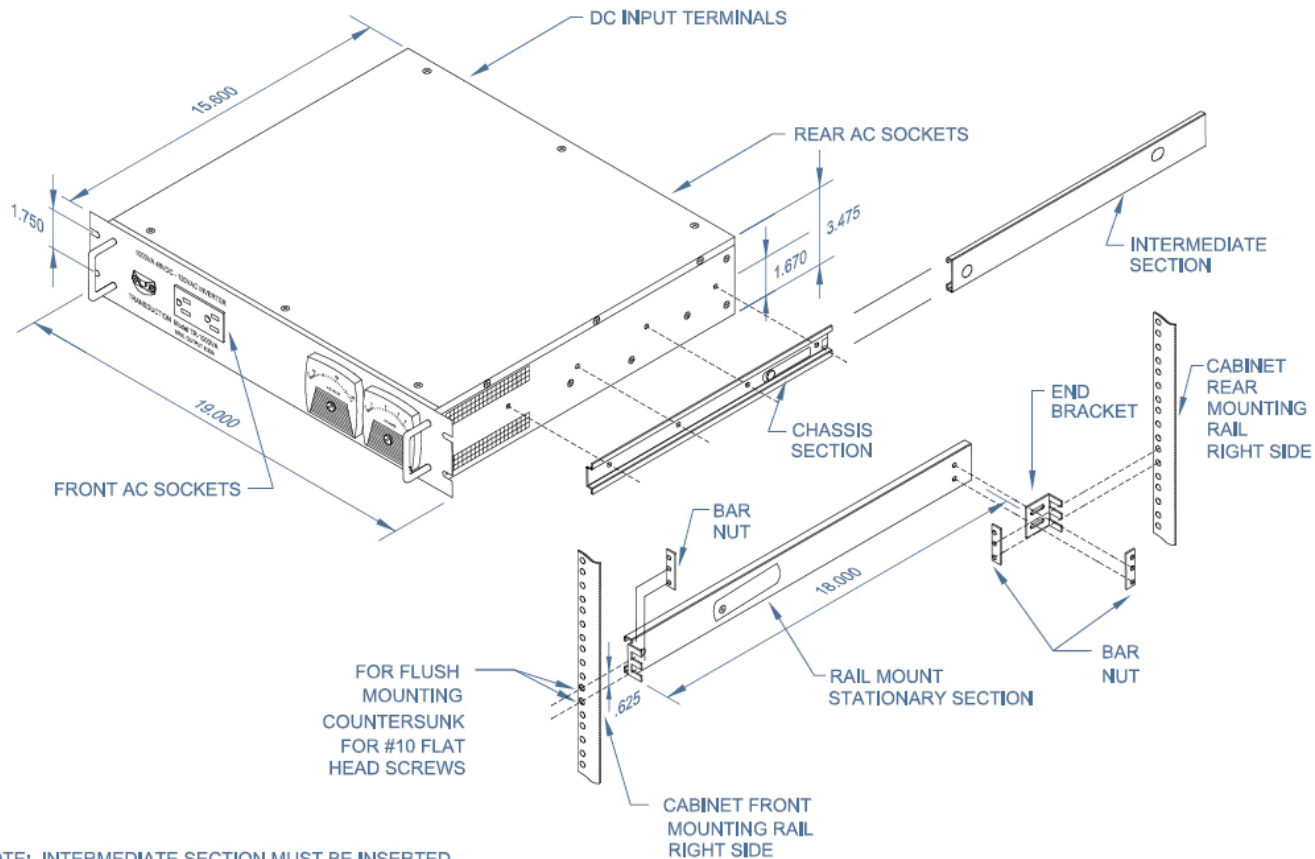
2. Cables

DC to AC inverters require high amperage/low voltage DC power to low amperage/high voltage AC power. To operate properly connect inverter DC input terminals directly to the battery with the heaviest wire available see chart below:

Max Output Watts	Approx. Amps	Req'd Wire Gauge
150W	15A	#16
300W	30A	#12
600W	60A	#6 or 2 x #10
1000W	100A	#4
1200W	120A	#4
1500W	150A	#4
1800W	180A	2 x #4
2500W	250A	2 x #4

Note: Battery connector screw size is #M10-1.25

TR1000VA-48VDC RACK MOUNT VERSION (showing installation of chassis slides)



NOTE: INTERMEDIATE SECTION MUST BE INSERTED INTO THE STATIONARY SECTION BEFORE THE END BRACKET IS ATTACHED. LENGTH OF THE STATIONARY SECTION CAN BE ADJUSTED FROM 18 TO 24 INCHES WITH TR-EXT EXTENDER. ALL DIMENSIONS IN INCHES

3. Grounding

AC Safety Grounding

During the AC wiring installation, AC output ground wires are connected to the Inverter. The AC output ground wire should go to the grounding point for your loads.

Neutral Grounding

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 Electric Code requirements.

Connecting Battery Cables to the DC Input Terminals

Cables should be less than 10 feet long (3 meters) and the correct gauge to handle the required current, in accordance with the codes/regulations applicable to your installation. Incorrect cabling will decrease Inverter performance and may cause poor surge handling, voltage warnings and shutdowns.

NOTE: Do not operate the power inverter without connecting it to ground. Electrical shock may occur.

OPERATION

To operate the power inverter, turn it on using the ON/OFF switch on the front panel. The power inverter is now ready to deliver AC power to various loads. If operating several loads from the power inverter Turn them on separately after the inverter has been turned on. This will ensure that the power inverter does not have to deliver the starting currents for all the loads at once.

NOTE: The ON/OFF switch turns the control circuit in the power inverter on and off. It does not disconnect power from the power inverter.

OPERATING LIMITS

Overload/Auto Re-Start

The inverter operates most AC loads within its' power rating. If the load is over the specification, TR-1000VA-48VDC will auto re-start 5 times. If it is not successful, the inverter will shut down automatically

Overtemp

There will be a sound tone if the temperature is too high, then the inverter will automatically shut down. Re-set the inverter after it cools down.

NOTE: The speed of the fan will be change to follow the inverter internal temperature.

Input Voltage

The power inverter will operate from output voltage range 42-64VDC.

Frequency Switchable

Adjust 50/60Hz with the internal button. Sound tone will begin to indicate frequency level. Sound tone (1) indicates 50Hz, (2) indicates 60Hz. Turn on the inverter again when frequency has been changed.

TROUBLESHOOTING GUIDE

Problem	Possible Cause	Solution
High Batt Shutdown	Battery voltage is too high	Check for fault with battery charging system. Manually reset inverter by turning switch "ON".
Low Batt Sound Tone, Shutdown	Battery voltage is too low	Charge battery. Manually reset inverter by turning switch "ON".
Overload Shutdown	Battery current too high, probable AC overload	Reduce load on the inverter.
Overtemp Sound Tone, Shutdown	System temperature is too high	Improve ventilation and cooling and/or reduce load on inverter.
System Shutdown	Overload or system hardware fault	Ensure all loads are disconnected. Reset the unit by switching to "ON". If unit still does not operat, contact distributor/merchant for service/warranty replacement.

MAINTENANCE

Very little maintenance is required to keep the inverter operating properly. Clean the exterior of the unit periodically with a damp cloth to prevent accumulation of dust and dirt. At the same time, tighten the screws of the DC input terminals.

Transduction

TR-1000VA-48VDC

2U Rack Mount Power Inverter

TR-1000VA-48VDC DC to AC Sinewave



Features

- ▶ Pure sinewave output (<2%THD).
- ▶ Input and output isolation.
- ▶ High efficiency 87% ~ 90%.
- ▶ High surge capacity inductive loads.
- ▶ Soft start technology.
- ▶ Frequency 50/60Hz switchable.
- ▶ Auto restart.
- ▶ 2U rack mount.
- ▶ 3 year warranty.

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Transduction

2U Rack Mount Power Inverter

TR-1000VA-48VDC

TR-1000VA-48VDC DC to AC Sinewave

Specification

Model

- ▶ TR-1000VA-48VDC

DC Input Voltage

- ▶ 48VDC

Voltage Range

- ▶ 42-64VDC

Output Wave Form

- ▶ Pure sinewave <2%THD

AC Output Voltage

- ▶ 120VAC

Continuous Output Power

- ▶ 1000W

Max Peak Power

- ▶ 2400W

Frequency

- ▶ 50/60Hz $\pm 3\%$

AC Regulation

- ▶ $\pm 5\%$

Receptacles

- ▶ 2 front, 2 rear

Indicators

- ▶ Analog 2.5" V & A meters

DC Current

- ▶ 20A, 80A in-rush

No Load Current Draw

- ▶ 0.3A

Efficiency

- ▶ >87%

DC Connector

- ▶ Terminal lugs and 40" cables

Battery Low Alarm

- ▶ 44 \pm 2V

Battery Low Shutdown

- ▶ 42 \pm 2V

Over Voltage

- ▶ 64 \pm 2V

Temperature Protection

- ▶ 55 $^{\circ}$ C \pm 5 $^{\circ}$ C

Output Short Circuit Protection

- ▶ Shutdown

Input Reverse Polarity Circuit Protection

- ▶ Internal fuse

Overload Protection

- ▶ Restarts 2 times. Shutdown if failed

Operating Temperature

- ▶ 0 $^{\circ}$ C ~ 50 $^{\circ}$ C

Humidity

- ▶ 20% ~ 90% RH, non-condensing

Storage Temperature Range

- ▶ -30 $^{\circ}$ C ~ 70 $^{\circ}$ C; 10% ~ 95% RH

Temperature Coefficient

- ▶ $\pm 0.05\%$ $^{\circ}$ C (0 $^{\circ}$ C ~ 50 $^{\circ}$ C)

Dimensions

- ▶ 17"(L) x 19"(W) x 3.5"(H)

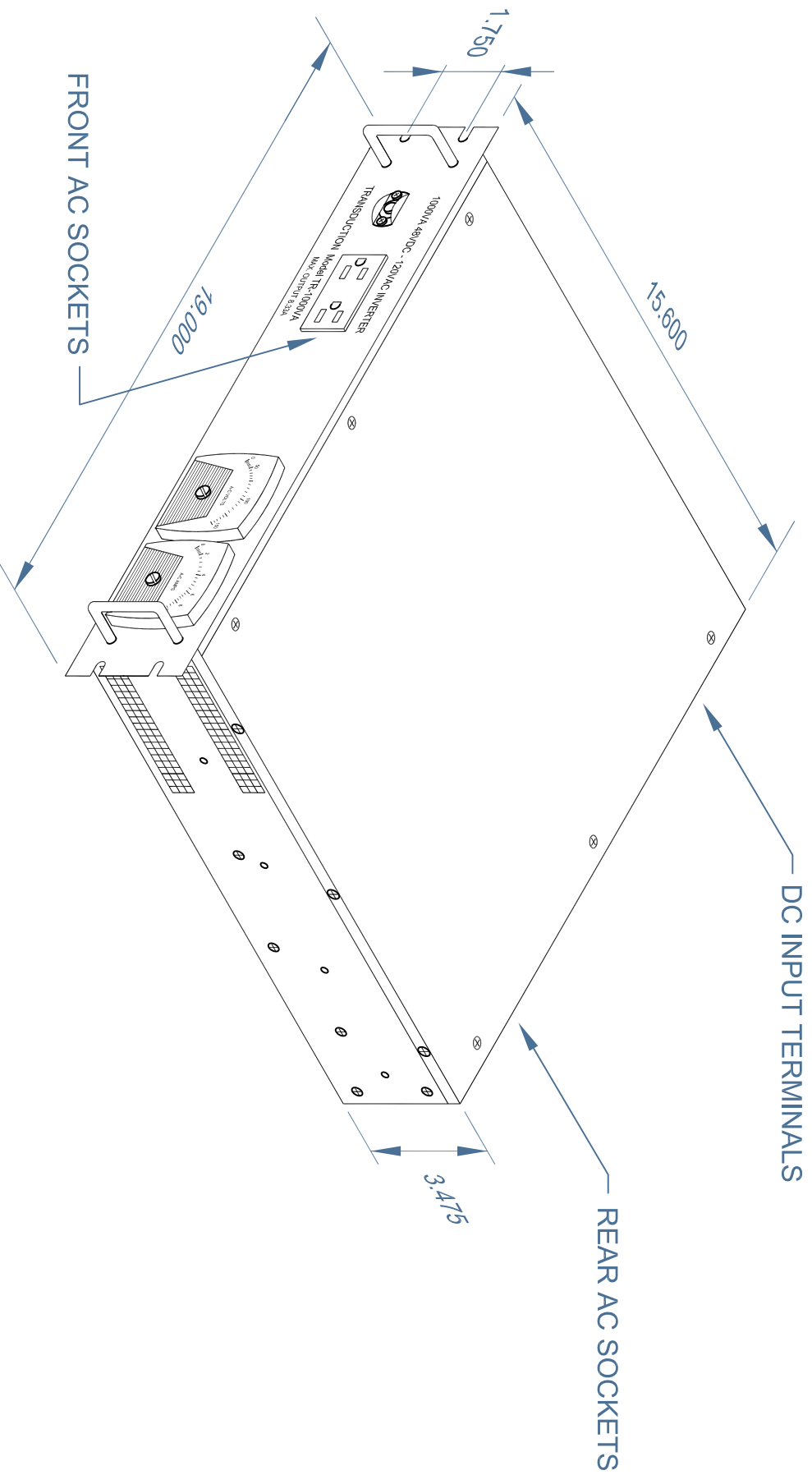
Net Weight

- ▶ 9.0KG

FOR SERVICE AND SUPPORT CONTACT

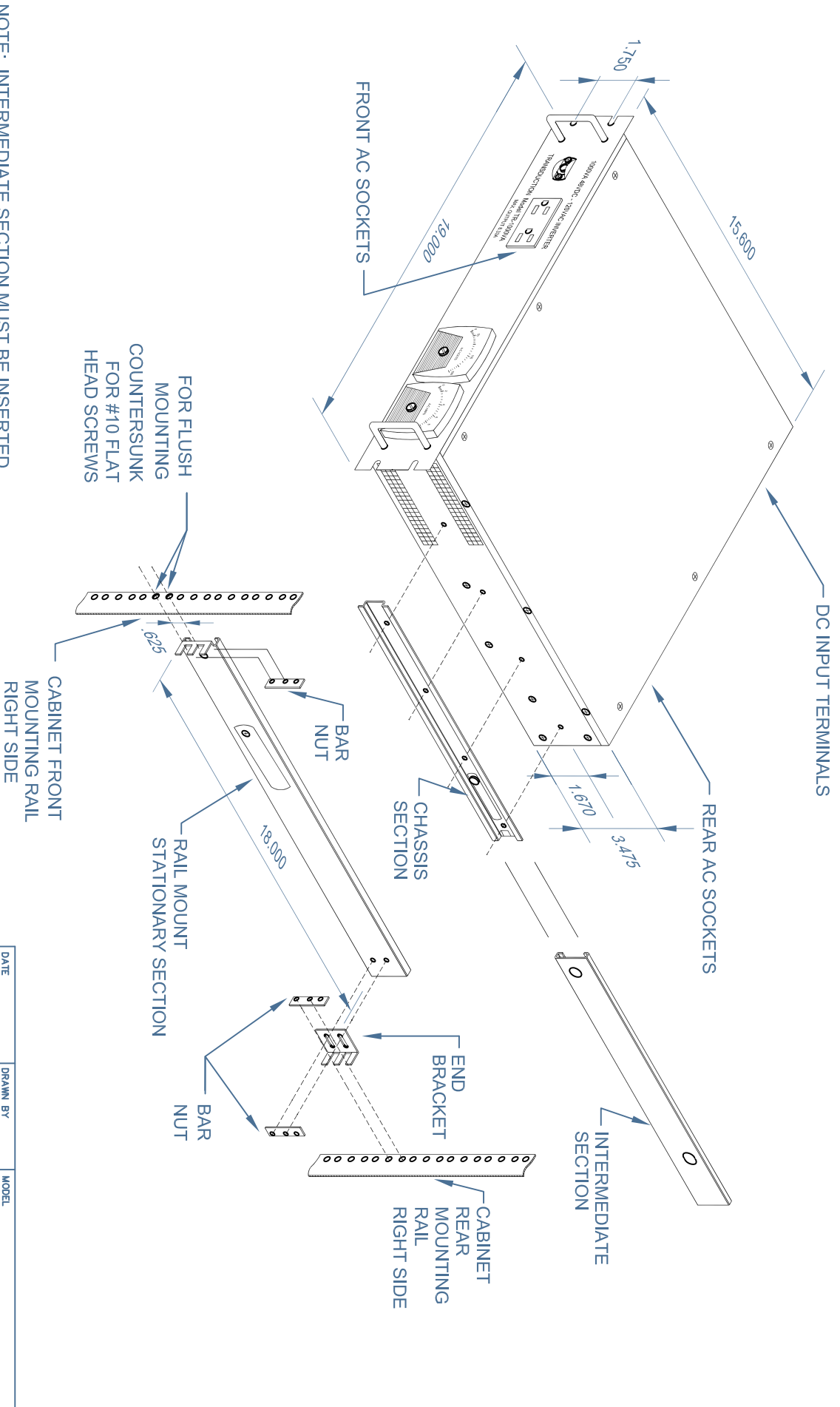
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NOTE: ALL DIMENSIONS IN INCHES

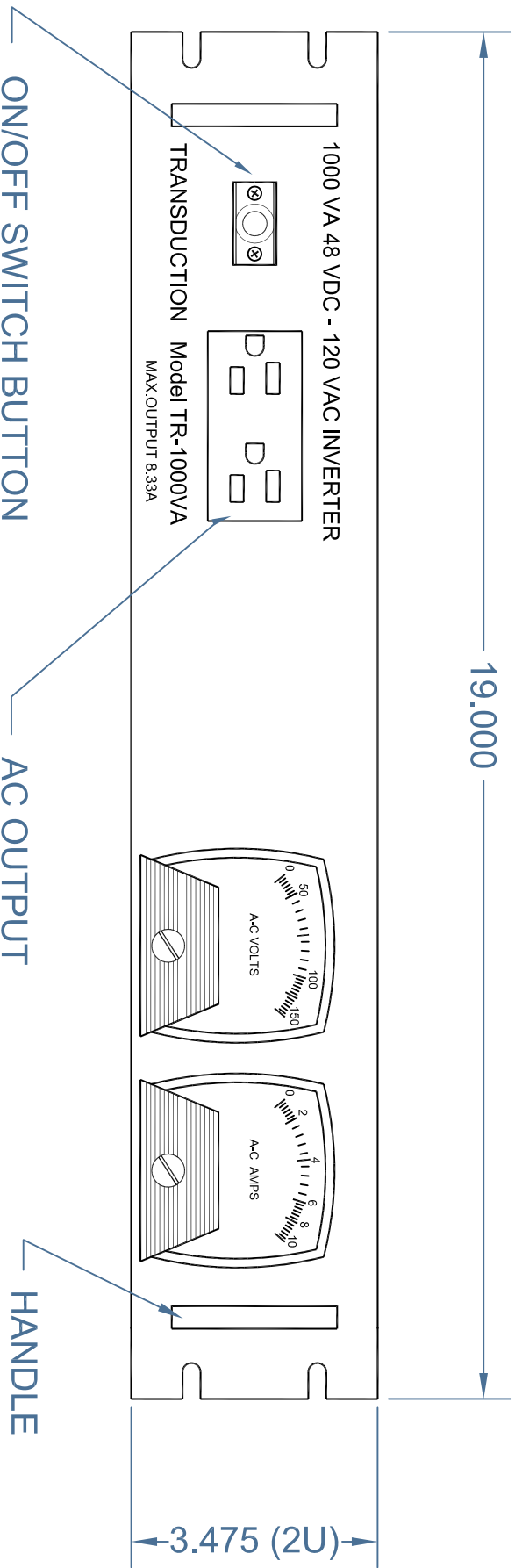
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PRODUCT	RACK MOUNT VERSION		REVISION		
FINISH	Transduction		CHECKED BY	NTS	
TITLE	LAYOUT			DRAWING No	B-537



NOTE: INTERMEDIATE SECTION MUST BE INSERTED INTO THE STATIONARY SECTION BEFORE THE END BRACKET IS ATTACHED. LENGTH OF THE STATIONARY SECTION CAN BE ADJUSTED FROM 18 TO 24 INCHES WITH TR-EXT EXTENDER.

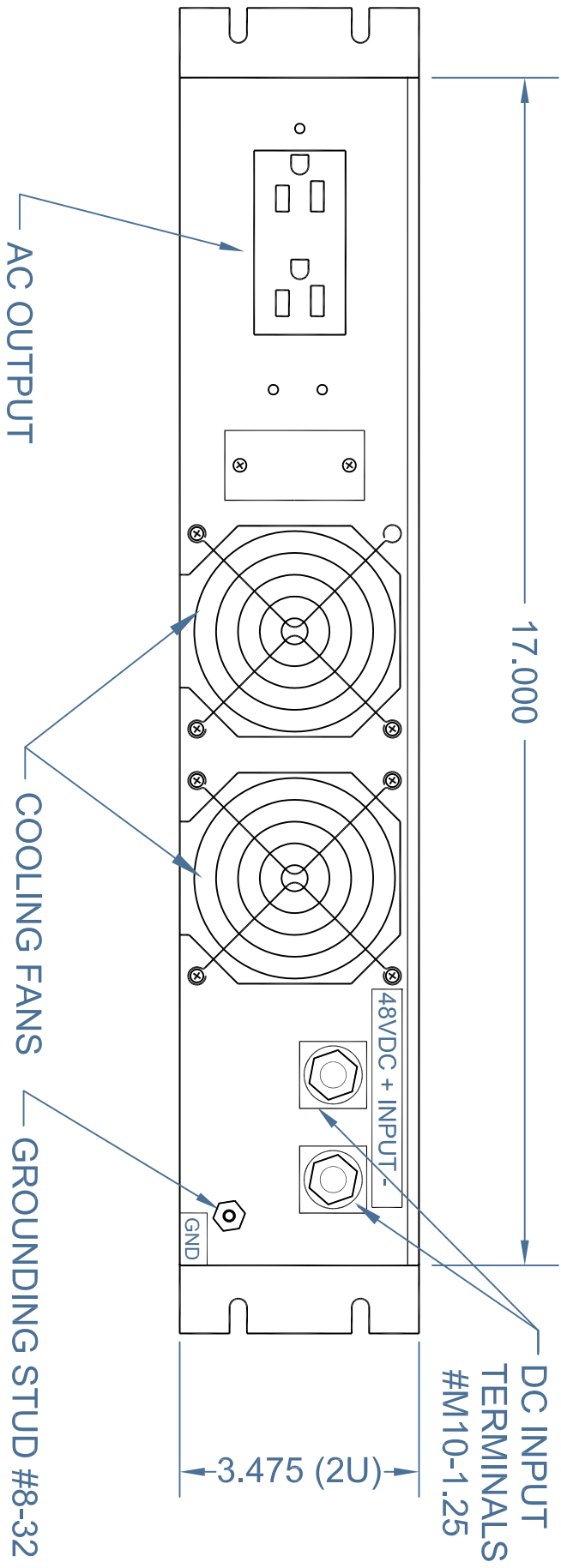
ALL DIMENSIONS IN INCHES

DATE	11-18-2012	DRAWN BY	B.G.	MODEL	TR-1000VA 48VDC
PRODUCT	RACK MOUNT VERSION		REVISION	SCALE	
FINISH	Transduction		CHECKED BY	NTS	
TITLE	LAYOUT		DRAWING No	B-537A	



FRONT VIEW

DATE	11-12-2012	DRAWN BY	B.G.	MODEL	TR-1000VA 48VDC
PRODUCT	RACK MOUNT VERSION		REVISION	CHECKED BY	NTS
FINISH	CARDINAL E-141-BK19		SCALE		
TITLE	LAYOUT		DRAWING No	B-538	



BACK VIEW

DATE	11-12-2012	DRAWN BY	B.G.	MODEL	TR-1000VA 48VDC
PRODUCT	RACK MOUNT VERSION		REVISION	SCALE	
FINISH	YELLOW ZINC	Transduction		CHECKED BY	NTS
TITLE	LAYOUT			DRAWING No	B-539