



# **Owner Manual**

**BATTERY CHARGER**

**Model: IBC4024**

## **FOR YOUR SAFETY**

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

**[www.tundrainternational.com](http://www.tundrainternational.com)**

**PN. IBC4024-GD-1015-EN**

Table of contents

<b>1</b>	<b>FEATURES</b>	<b>3</b>
1.1	Integrated charge controller	3
1.2	GFCI Protection	3
1.3	Reverse battery protection	3
1.4	Short circuit protection	3
1.5	Thermal protection	3
1.6	Ignition protection	3
1.7	Internal components cooling	3
1.8	Overvoltage protection	3
<b>2</b>	<b>GENERAL INFORMATION</b>	<b>4</b>
<b>3</b>	<b>GENERAL OPERATION</b>	<b>5</b>
<b>4</b>	<b>INSTALLATION</b>	<b>5</b>
<b>5</b>	<b>TROUBLESHOOTING GUIDE</b>	<b>6</b>
<b>6</b>	<b>INPUT &amp; OUTPUT SPECIFICATIONS</b>	<b>7</b>
<b>7</b>	<b>LIMITED ONE YEAR WARRANTY</b>	<b>8</b>

# 1 FEATURES

---

## 1.1 Integrated charge controller

The IBC4024 Chargers have been designed and tested to provide years of trouble-free and maintenance free operation. The IBC4024 is the intelligent way to recharge your truck batteries. The built-in microprocessor constantly monitors the batteries state of charge then automatically adjusts the output voltage to provide the proper charging combination of voltage & amperage for fast and safe recharges.

## 1.2 GFCI Protection

The IBC4024 has one of the lowest ground fault leakage available. With this unit, the user can confidently utilize almost any AC outlets without being concerned about a ground fault interruption of the facilities power source.

## 1.3 Reverse battery protection

If a battery is accidentally hooked up backwards, externally mounted ATO type fuses will blow and the charger will be protected. In the case of reversed polarity, replace fuses with brand new ones that are the exact same type and rating.

**CAUTION! IF THE PROTECTION FUSES HAVE BURNED DURING THE INSTALLATION, MAKE SURE THE INSTALLATION HAS BEEN REVIEWED BEFORE REPLACING THEM WITH NEW ONES. ONLY REPLACE THE FUSES WITH THE SAME TYPE AND RATING THAN THE ORIGINAL FUSES. USING DIFFERENT FUSES COULD RESULT IN CHARGER DAMAGES, VEHICLE DAMAGES, INJURY OR OTHER SERIOUS CONSEQUENCES.**

## 1.4 Short circuit protection

The IBC4024 is designed to protect itself. It could sense within millionths of a second if the output terminals have been shorted. If this condition occurs, the charger will limit its output current. Should this condition persists, the charger will shut down. Once the "short circuit" is corrected, the charger will automatically resume its normal operation.

## 1.5 Thermal protection

If an over temperature condition should occur due to air flow obstruction or improper installation, the IBC4024 will sense the condition and will either decrease its power output or shut down until the unit returns to normal operating temperature. The charger will return to full output capacity as soon as it cools down.

## 1.6 Ignition protection

All IBC4024 chargers are ignition proof. Although sparks free, they must be kept away from all flammable liquids.

## 1.7 Internal components cooling

The IBC4024 chargers are equipped with a variable speed cooling fan. The location of the fan allows the maximum cooling of both the housing and the components. The fan will only run at the speed needed to prevent the charger from overheating and shutting down. Running the fan at lower speeds when possible will reduce its consumption and reduce the audible noise generated by the fan while protecting the charger from excess heat.

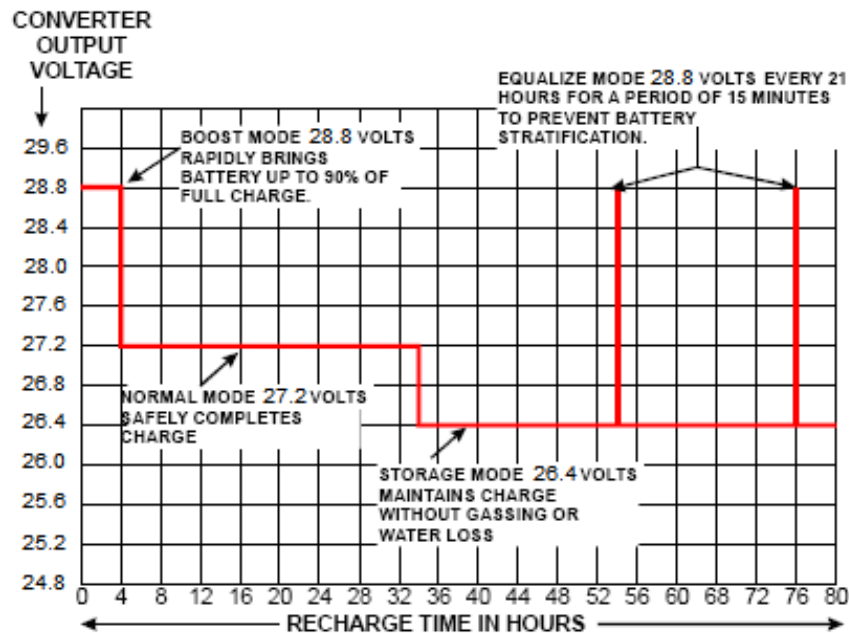
## 1.8 Overvoltage protection

If the input voltage exceeds the pre-set limit, the charger will shut down automatically to prevent damages. The unit will return to normal operation when the voltage returns under the pre-set limit.

## 2 GENERAL INFORMATION

The IBC4024's are state-of-the-art electronic 120 VAC to 24 VDC Converter / Battery chargers that are UL and CUL (Canadian) listed. Their compact size and quiet operation give greater flexibility in selecting the mounting location for either OEM installation or aftermarket.

The IBC4024 battery chargers have a built-in charge controller module which constantly monitors the batteries, in order to adjust its output voltage based on their state of charge. The charge controller has four (4) operating modes (BOOST, NORMAL, STORAGE and EQUALIZE). Each mode is automatically selected by the charge controller to ensure a fast and safe recharge for the batteries. See the chart below for details.



- 28.8 Volts (Boost Mode)** Rapidly brings the batteries up to 90% of full charge / LED is steady ON
- 27.2 Volts (Normal Mode)** Safely completes the charge / LED blinks rapidly (2 sec).
- 26.4 Volts (Storage Mode)** Maintains charge with minimal gassing or water loss / LED blinks slowly (5 sec).
- 28.8 Volts (Equalizing Mode)** Every 21 hours of constant use, the output voltage will raise to 28.8V for a 15-minute period to prevent sulphating

THE ABILITY OF THE INTEGRATED CHARGE CONTROLLER TO CHANGE THE OUTPUT VOLTAGE OF THE CHARGER WILL SIGNIFICANTLY REDUCE THE AMOUNT OF TIME IT TAKES TO RECHARGE YOUR BATTERY. THE LOWER VOLTAGE OF THE STORAGE MODE PREVENTS GASSING AND REDUCES WATER LOSS DURING LONG-TERM STORAGE.

### 3 GENERAL OPERATION

---

The IBC4024 charger will supply an output voltage between 26.4 to 28.8 VDC from an input voltage ranging from 90 to 130 VAC.

The IBC4024 charger is primarily designed for use with batteries; however, the output of the IBC4024 is a regulated, filtered DC voltage that can power sensitive electronics without the need for batteries or other filtering. **The full rated capacity is available for loads, battery charging or both.** When functioning as a converter, the IBC4024 has a nominal output voltage of 27.2 VDC. When connected to batteries, the system was designed to sense battery resistance and automatically selects one of 4 operating modes (Boost, Normal, Storage or Equalization) in order to provide the best charge possible.

**NOTE! IF THE INPUT VOLTAGE IS LESS THAN 105 VAC, THE CHARGER MAY NOT FUNCTION PROPERLY.**

**CAUTION! FLUID LEVEL OF ANY CONNECTED BATTERIES MUST BE CHECKED ON A REGULAR BASIS (when possible). BATTERIES MAY “GAS” AND LOOSE SOME FLUIDS WHEN CONTINUOUSLY CONNECTED TO A CHARGING SOURCE.**

### 4 INSTALLATION

---

Horizontal installation of the ICB4024 is recommended. However, it can be mounted in any position as long as the fan and air vents are never obstructed. Firmly mount the charger to the mounting surface using standard bolts and nuts.

If the charger is installed in a place where ventilation is not adequate, it will stop and restart abruptly until the environmental conditions are adequate.

The charger can be safely installed up to 12 ft. from the batteries using AWG 4 cables and a 100A CNL type fuse. Using undersized cables may overheat the charger and cause a premature shutdown. Make sure to use PVC strain reliefs when routing the cables through sheet metal to prevent short circuit.

**CAUTION! THE IBC4024 CHARGERS ARE NOT DESIGNED FOR ZERO CLEARANCE COMPARTMENTS.**

**CAUTION! DO NOT EXCEED 50 IN / LB TORQUE ON THE OUTPUT TERMINALS.**

**CAUTION! THE OUTPUT TERMINALS ARE RATED FOR AWG 2 COPPER WIRE MAX.**

**CAUTION! THE IBC4024 CHARGERS ARE NOT WATERTIGHT. THEY MUST BE INSTALLED AWAY FROM WATER AND HIGH HUMIDITY.**

## 5 TROUBLESHOOTING GUIDE

IF THE CHARGER/CONVERTER DOES NOT SEEM TO WORK PROPERLY;

1. MAKE SURE THE CHARGER/CONVERTER IS CONNECTED TO AN AC POWER SOURCE OF **20A @ 105-130 VOLTS AC**. YOU MAY USE AN AC VOLTMETER TO CHECK FOR PROPER VOLTAGE AT THE OUTLET WHERE THE CHARGER IS PLUGGED IN.
2. DISCONNECT THE BATTERY CABLES AND USE A DC VOLTMETER IN ORDER TO VERIFY THE OUTPUT VOLTAGE OF THE CHARGER/CONVERTER. IF YOUR READING IS AT LEAST 26 VOLTS, THE CHARGER/CONVERTER IS WORKING PROPERLY.
3. CHECK THE FUSES LOCATED ON THE FRONT PANEL OF THE CHARGER/CONVERTER. THESE FUSES CAN BLOW FOR MANY REASONS. DISCONNECT THE CHARGER/CONVERTER FROM ITS POWER SOURCE AND REPLACE THE BURNED FUSES WITH IDENTICAL FUSES, THEN REPEAT STEP 1 AND 2.
4. IF THE PROBLEM PERSISTS, USE THE CHART BELOW.

<b>PROBLEMS</b>	<b>POSSIBLE CAUSES</b>	<b>ACTIONS</b>
<b>1. No Output</b>	Not connected to a 120 VAC source	Connect the charger to an AC source Check AC distribution panel source for a tripped breaker
	External Fuses Blown	Check cables for reversed polarity Replace fuses with same type and rating
	Short Circuit	Trace AC Circuits for possible fault
	Unit has shut down due to overheating	Check air flow Allow unit to cool down
	Unit has shut down due to over voltage	Check AC input voltage Charger will shut down if the AC input voltage exceeds 132 Volts
<b>2. External Fuses Blown</b>	Reversed polarity at the battery	Properly connect DC cables
	Damaged DC cables	Replace damaged DC cables Replace fuses with same type and rating
<b>3. Charger does On – Off cycles</b>	Compartment gets too hot	Check air flow around the charger/converter Improve ventilation in the compartment
<b>4. Low output</b>	Excessive load for the charger	Reduce load or install a more powerful charger
	Improper input voltage	Supply the correct voltage (105-130 VAC)
	Bad batteries	Replace batteries

## 6 INPUT & OUTPUT SPECIFICATIONS

<b>Input</b>	105-130 VAC	60 Hz	14.9A
<b>Output</b>	26.4 to 28.8 VDC	40 Amps	
<b>Dimensions</b>	11.5 x 9.0 x 3.6 (in.) / 29.2 x 22.9 x 9.1 (cm)		
<b>Weight</b>	7.5lbs / 3.4kg		

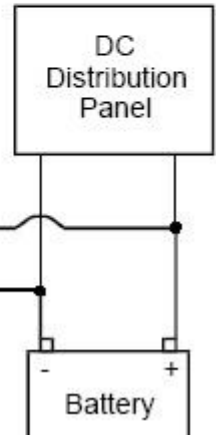
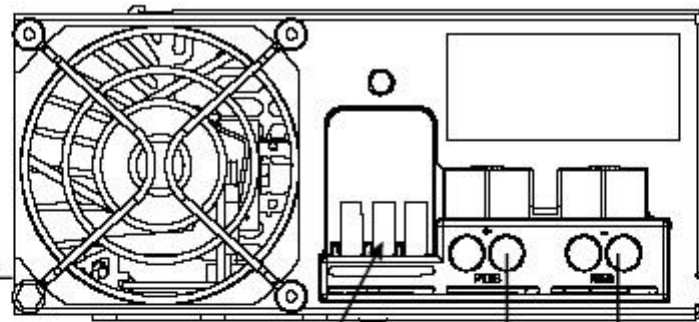
\* SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.



Grounding Lug  
(located on AC  
end of Unit)

Chassis  
Ground

Reverse Battery  
Protection Fuse(s) 2 x 30A



**CAUTION RISK OF FIRE:**

Chassis bonding wire must be a separate wire ran directly from the Grounding Lug provided on the converter. **DO NOT** connect Output Negative to chassis using the same wire.

## **7 LIMITED ONE YEAR 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 TROUBLESHOOTING section of this manual.
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.**