



Hard Wired
Reliability

Installation and Operation Manual

2019 DSP Standby Battery Charger



205B Konrad Cres., Markham, ON, L3R 8T9
www.chargers.ca

“Building Canada’s toughest battery chargers
for over a century.”



Congratulations on your purchase of a quality built, Canadian made Vulcan charger

With more than a century of experience, Vulcan Electric is renowned for its robust, heavy duty charger designs. Model DSP battery chargers are designed for permanent connection for charging and maintaining batteries used for starting standby generators. Its automatic sensing and charge rate adjustment helps to extend battery life compared to non-automatic battery chargers. As with all Vulcan chargers they are manufactured to provide years of trouble-free service.

STANDARD FEATURES

- **Automatic self-starting** - Requires only battery connection; initial cycle equalizes the battery.
- **Automatic bulk charge rate** - Senses the battery voltage and adjusts charge current accordingly thereby protecting the battery from overcharging.
- **Automatic float charge rate** - Maintains battery voltage by float charging.
- **Equalize Function** - Manual activation, 4 HOUR EQ CYCLE, return to float.
- **1% Digital Panel Meter** - Every DSP charger comes with a 1% accuracy Digital panel Meter that provides DC voltage, AC voltage, current wattage being consumed and a resettable accumulative wattage consumed readout to track overall energy usage of the battery.
- **Visual High and Low Voltage Alarms:** The Panel Meter screen will flash on and off indicating either a Low Voltage or High voltage condition exists.
- **Wall Mount cabinet-** Provides ability to mount charger in wall configurations.
- **Easy access Terminal Port** - The input and output terminals are placed at the rear with an access plate that allows clear access for termination.
- **Compact Rugged Design Cabinet** – Heavy duty 18-gauge steel cabinet sized to allow for installation in areas with restricted accessibility (See installation requirements).

OPTIONAL FEATURES

- LVA: Low Voltage Alarm, comes with a form “C” contact for remote enunciation.
or
- HVA: High Voltage Alarm, comes with a form “:C” contact for remote enunciation

SPECIFICATIONS

- Input: 120V, 60Hz
- Output: 12V or 24V DC, 10A. Refer to product label for model and voltage
- Recommended for group 24, 27 and 31 batteries.

- This model is available in 12V and 24V 10A output, so check your product label and ensure you have the correct charger voltage for your batteries. The product label identifies the model, CSA approval and corresponding serial number, included options, input voltage and current ratings, as well as the DC output voltage and current. Please review and ensure that you have the correct charger for your application. Recommended for group 24, 27 and 31 batteries.

The model number indicates charger features as follows:

Example: DSP 24/10 is a DSP-type, 24-Volt DC, 10-Amp charger.

Once you determine that you have the correct charger for your application, please inspect the unit for shipping damage prior to installation.

Charger Installation Procedures



WARNING: The following procedures must be followed exactly to avoid injury, fire, or risk of electric shock.

Inspect your charger thoroughly prior to installation to ensure that the unit is not damaged and that parts have not loosened during shipping. Inspect the product nameplate and cross reference the information with the packing slip and your order to ensure you have received the correct charger.



Your Charger is in a NEMA 1 Cabinet, mount the charger in a dry location that is free from vibration and offers sufficient ventilation. Slots and openings have been added to the cabinet for the purpose of ventilation. To ensure reliable operation of the charger, and to prevent it from overheating, these openings must not be blocked or covered. A minimum clearance of 40mm on each side and 80mm above and below the Charger when used in normal ambient temperatures is recommended.



Do not install electronic or electrical equipment including this battery charger in the battery compartment. Lead acid batteries emit hydrogen and oxygen gases during recharging, therefore, you must vent the battery compartment to prevent these gases from accumulating. Never smoke or use open flame when working around batteries. Always wear appropriate safety apparel, including eye protection, when handling or working around batteries.



When installing and connecting the charger to the batteries, remember that DC cables connected to the battery should be as short as possible. Vulcan Electric recommends using only copper wire. In Canada, all wiring must be completed in accordance with the Canadian Electrical Code and all local electrical codes to ensure a safe installation. Connections to the battery posts must be made with permanent connectors that provide a reliable low-resistance connection. Alligator clips are not a suitable connection. Clean your batteries' contacts regularly. **Only qualified personnel should attempt to install this product.**



Lead acid batteries emit hydrogen and oxygen gases during recharging, therefore you must vent the battery compartment to prevent these gases from accumulating. Don't smoke or use open flame when working around batteries. Wear appropriate safety apparel including eye protection when handling or working around batteries.

NORMAL OPERATION

- Upon initial connection and each time the batteries are reconnected to the charger it will cycle through the bulk charge mode then return to the float mode.
- The float mode will maintain the battery at full charge indefinitely by pulsing as a charge is required. Should the battery begin discharging e.g.: starting the generator, the float mode will automatically switch to bulk charge mode.

EQUALIZE FUNCTION

- The Equalize function is initiated by pushing the equalize switch, the charger will cycle through the equalize function until the required equalize voltage is reached, and then will float at the equalize voltage for 4 hours then return to float.
- Stationary batteries are almost exclusively lead acid and some maintenance is required, one of which is equalizing charge. Applying a periodic equalizing charge brings all cells to similar levels by increasing the voltage to 2.50V/cell, or 10 percent higher than the recommended charge voltage.

An equalizing charge is nothing more than a deliberate overcharge to remove sulfate crystals that build up on the plates over time. Left unchecked, [sulfation](#) can reduce the overall capacity of the battery and render the battery unserviceable in extreme cases. An equalizing charge also reverses [acid stratification](#), a condition where acid concentration is greater at the bottom of the battery than at the top.

Experts recommend equalizing services once a month to once or twice a year. A better method is to apply a fully saturated charge and then compare the [specific gravity](#) readings (SG) on the individual cells of a flooded lead acid battery with a hydrometer. Only apply equalization if the SG difference between the cells is 0.030.

During equalizing charge, check the changes in the SG reading every hour and disconnect the charge when the gravity no longer rises. This is the time when no further improvement is possible and a continued charge would have a negative effect on the battery.

The battery must be kept cool and under close observation for unusual heat rise and excessive venting. Some venting is normal and the hydrogen emitted is highly flammable. The battery room must have good ventilation as the hydrogen gas becomes explosive at a concentration of 4 percent.

MAINTENANCE

The charger requires little maintenance other than occasional vacuuming and ensuring the ventilation is kept free of obstruction. For non “maintenance free” batteries, the electrolyte fluid level should be checked at least once a month. Use only distilled water to replenish the battery. Excessive fluid loss is a sign of overcharging. Clean the batteries contacts regularly.

PERFORMANCE

There are several factors such as line voltage, battery temperature, low specific gravity and battery condition that have a substantial effect on the performance of Battery Chargers. Check each condition regularly to ensure optimum performance from your battery and charger.

1. Line Voltage: Should your line voltage be low or high, the output of the charger will drop or increase accordingly and will affect the performance of battery charger.

2. Old Batteries: Do not leave discharged batteries for more than a day or two without recharging. They undergo a chemical process referred to as sulphation. A common sign of sulphation is the sides of a battery bulging. These batteries may be permanently damaged and very difficult to recharge. Always periodically recharge batteries even when they are not in use.

3. Poor Connections: Connections to the battery posts must be made with permanent connectors that provide a reliable low-resistance connection. Alligator clips are not a suitable connection. Clean the battery contacts regularly.

4. Ambient Temperatures: Lead acid battery capacity is temperature sensitive; refer to the battery manufacturer’s specifications for further details.

5. Battery Maintenance: For non “maintenance free” batteries, the electrolyte fluid level and specific gravity should be checked at least once a month. Use only distilled water to replenish the electrolyte fluid. Excessive fluid loss is a sign of overcharging. Generally, a battery whose electrolyte specific gravity is down around 1100 or below will offer a high degree of resistance to the initial charging rate due to the fact that the conductivity of the electrolyte is very nearly that of water. As

the battery in this condition is charged, the specific gravity of the battery will rise which will increase the charging current. Refer to battery manufacturer's specifications for details.

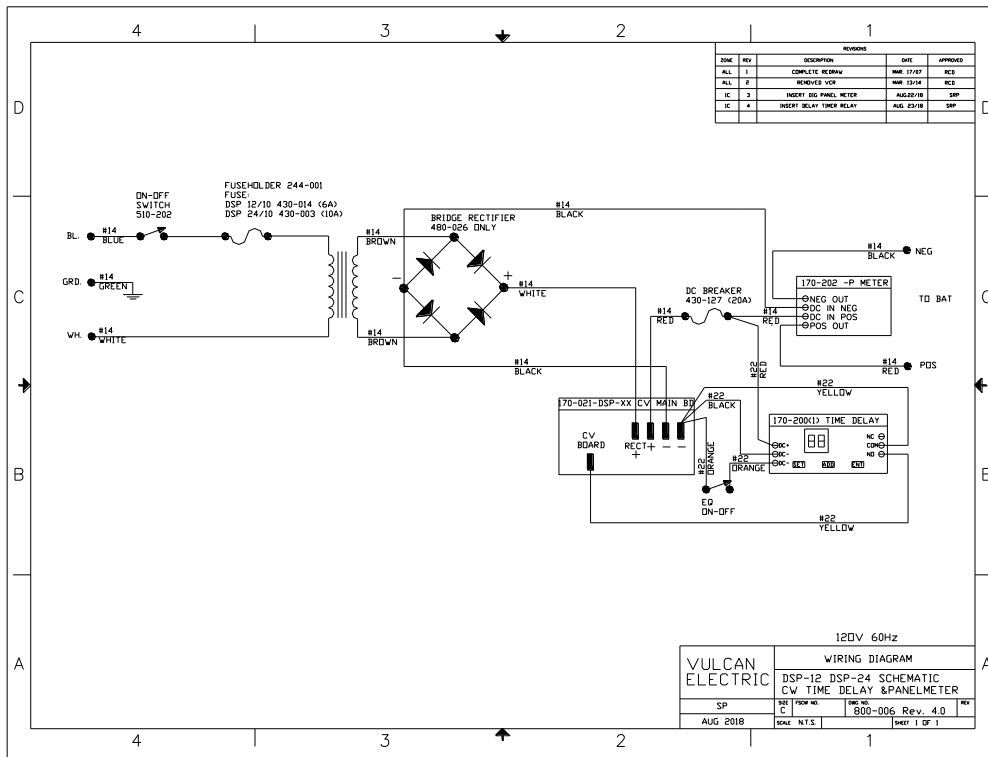
6. Output and Alarm settings:

Nominal Voltage	No. of Cells	Float Voltage	Equalize Voltage	Low Voltage Alarm	High Voltage Alarm
12V	6	13.5V	14.5V	11.0V	15.0V
24V	12	26.5V	28.5V	22.0V	30.0V

TROUBLE SHOOTING GUIDE

SYMPTOMS	INVESTIGATE	REASONS
1) AMMETER SHOWS ZERO READING	1) 120V AC LINE VOLTAGE.	1) AC SUPPLY FAILURE. CHECK BREAKER PANEL. CHECK CHARGER ON OFF SWITCH.
	2) BATTERY CONNECTION.	2) BATTERY MIGHT HAVE BEEN DISCONNECTED FROM CHARGER.
	3) FUSE.	3) IF BLOWN, REPLACE, IF FUSE FAILS AGAIN INVESTIGATE BATTERY AND WIRING.
2) EXCESSIVE DRAW ON CHARGER	1) BATTERY VOLTAGE.	1) CHECK BATTERIES FOR APPROPRIATE VOLTAGE FOR CHARGER RATINGS.
	2) BATTERY CONDITION.	2) BATTERY SEVERELY DISCHARGED, INVESTIGATE BATTERY CONDITION
3) FUSE KEEPS ON BLOWING	1) BATTERY POLARITIES.	1) INCORRECT BATTERY POLARITY.
	2) BATTERY VOLTAGE.	2) BATTERY OVER-DISCHARGED.
4) BATTERY IS CHARGING TOO SLOWLY	1) BATTERY CONDITION.	1) BATTERY MAY NEED TO BE RE-CONDITIONED OR REPLACED.

In all conditions, problems should be referred to a competent professional.





Three Year Charger Limited Warranty

Vulcan Electric manufactures its hardware products from parts and components that are new in accordance with industry-standard practices. **Vulcan Electric warrants the charger to be free from defects in workmanship or materials for one year from the date of purchase. The rectifier and the transformer are warranted for three years from the date of purchase.** During this period, Vulcan Electric will, at its options, repair or replace the defective product free of charge. This warranty will be considered VOID if the unit has suffered any physical damage or alteration, either internally or externally, and does not cover damage arising from improper use, or from use in an unsuitable environment. This warranty will not apply where the product has been misused, neglected, improperly installed, or repaired by anyone than Vulcan Electric or an Authorized Service Depot. In order to qualify for the warranty, the product must not be disassembled or modified without prior authorization by Vulcan Electric.

Repair or Replacement are your sole remedies and Vulcan Electric shall not be liable for damages, whether direct, incidental, special, or consequential, even though caused by negligence or fault.

Vulcan Electric owns all parts removed from repaired products. Vulcan Electric uses new parts made by various manufacturers in performing warranty repairs and building replacement products. If Vulcan Electric repairs or replaces a product, its warranty term is not extended.

User is responsible for determining whether this Vulcan Electric product is fit for a particular purpose and suitable for user's method of application.

Vulcan Electric shall not otherwise be liable for loss or damages, whether direct, indirect, special, incidental, or consequential, regardless of the legal theory asserted, including, but not limited to, contract, negligence, warranty, or strict liability.

THIS IS VULCAN ELECTRIC'S ONLY WARRANTY, AND THE COMPANY MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

To Obtain Warranty Service:

If your Vulcan Electric Charger requires service, please return it to the place of purchase. If you are unable to contact your merchant, or the merchant is unable to provide service, contact:

Vulcan Electric Inc.
205B Konrad Cres., Markham, Ontario, L3R 8T9
Telephone: (905) 513-1550, Fax: (905) 513-1557
Website: www.chargers.ca

You must obtain a Return Authorized Number from Vulcan Electric before returning a Vulcan Electric Charger directly to Vulcan. Do not return a Vulcan Electric Charger without first obtaining a Return Authorization Number. When you contact Vulcan Electric to obtain service, be prepared to supply the Serial number of your Vulcan Electric Charger. The serial number is located on the front of the unit. The following information needs to be supplied:

- A description of the problem
- Serial number of the unit (serial number is located on the front of the unit) name and address of the dealer, where you purchased the unit, and date of purchase.
- Package the unit safely, preferably using the original box and packing materials, Include the Return Authorization Number, a return address where the repaired unit can be shipped, a contact name and telephone number, and brief description of the problem.

SHIP ALL UNITS PREPAID.