



A Benny Lee Company

# PRODUCT USER GUIDE

## BCR-1000-24 Battery Charger Owners Guide

*(These instructions are intended for use by a technician familiar with electronic products)*

- Built-in Active Power Factor Correction
- Universal Auto Selectable Input Voltage 90 - 264 VAC
- Metering For Voltage / Amperage
- Microprocessor Controlled
- Charger For Lead-Acid Batteries
- Temperature Compensation Function
- Auto Fan Control (depends on charging current)
- Short Circuit/Overload/Over Voltage/Over Temperature Protection
- 3 year warranty



### DESCRIPTION

The BCR-1000-24 is an intelligent rack mount battery charger that comes with a built-in Active Power Factor Correction and is microprocessor controlled. The BCR Series also comes with three layers of protection short circuit, over load, over voltage, and over temperature protection.

### SPECIFICATIONS

Output Voltage .....	27.6 V (28.8 Boost Charge)
Output Voltage Tolerance .....	+/- 1 %
Output amperage .....	34.7 A
Maximum Power .....	1000 watts
Recommended Battery Capacity .....	120-350 Ah
Input voltage; Auto Selectable .....	90-264 VAC
Input frequency range .....	47-63 Hz
Maximum AC current .....	12A / 115 VAC; 5.2A / 230 VAC
Typical Efficiency .....	88 %
Max inrush current, single cycle .....	25A / 115 VAC; 50A / 230 VAC
Short Circuit protection .....	Protected By Internal Circuit
Reverse Protection .....	Protected By Internal Circuit
Line Regulation .....	.50 mV
Load Regulation .....	100 mV (20-100 % load)
Fan Control .....	<i>Dependent on Charging Current</i>
Over Temperature .....	>85 C Auto Output Shutdown/ Recovery
Working Temperature range .....	-20 - +60 C
Storage Temperature .....	-40 - +85 C
Withstand Voltage* .....	I/P-O/P: 3Kvac, I/P-FG: 1.5Kvac, O/P-FG: 0.5Kvac
Dimensions .....	3.5H x 19W x 7.5D inches, nominal
Weight .....	15 lbs., nominal

## INSTALLER NOTES

**NOTE:** The outputs are **NOT** referenced to the chassis. The Modular System can be used either positive or negative ground.

Suggested battery capacity for the BCR-1000-24: **120-350 Amp Hours**

Note:

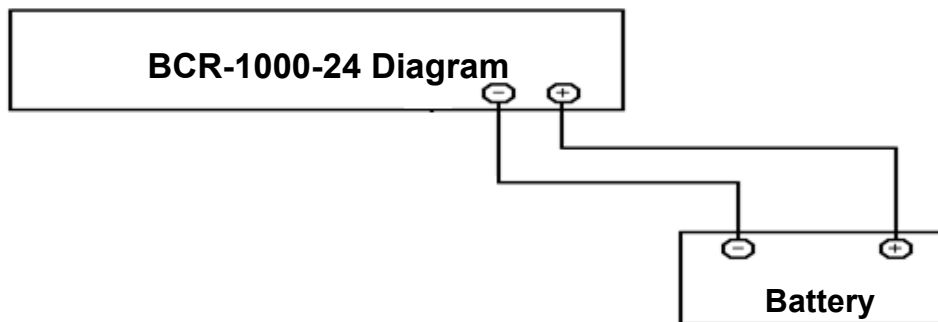
1. Using battery capacity larger than the suggested value will not lead to damage of the battery. The main drawback is it may take longer to fully charge the battery.

2. If you're unsure about max allowable charging current of your battery, please refer to the battery's technical specification or consult its manufacturer.

This unit is designed for charging lead acid batteries and must be installed in a dry and well-ventilated area.

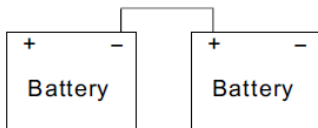
It should not be exposed to rain or snow. The cables between charger and battery should be kept as short as possible to prevent excessive voltage drop. Too much voltage drop will lead to longer charging periods. Refrain from connecting new and old batteries in series. Charger should be in the OFF mode before making battery connection or disconnection

### BCR-1000-24 WIRING LAYOUT



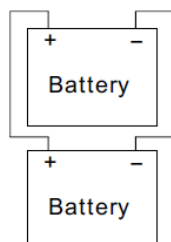
#### 1. Batteries in series

Voltage can be doubled when 2 batteries are connected in series. However, the capacity (Ah) will remain the same. For example, 2 x 12V 100Ah batteries connected in series = 24V 100Ah.



#### 2. Batteries in parallel

When 2 batteries are connected in parallel, voltage remains the same and the capacity (Ah) doubles. For example, 2 x 12V 100Ah batteries connected in parallel = 12V 200Ah.



## METER CIRCUITS

The panel meter is switched to provide DC output voltage measurement and individual output load current measurement for the individual module.

When set to the VOLT position, the full scale reading is 30 volts.

When set to the AMP position, the full scale reading is 60 amps.

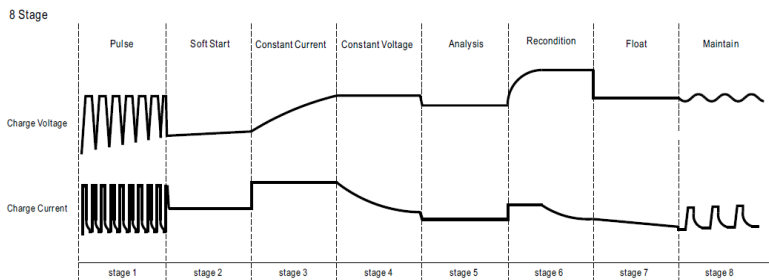
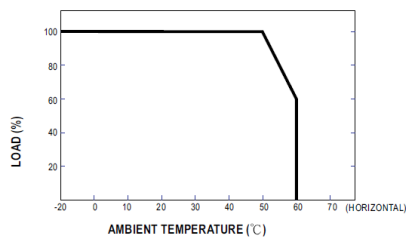
The meter and associated circuitry accuracy is 10 percent of full scale deflection. Since full scale is 60 amps, a 20 amp current can vary from 18 to 22 amps indicated. To prevent unnecessary output voltage drops, the meter circuits use the voltage drop of the black negative return to the module as a meter shunt. The meter sensitivity for voltage measurement is 1000 ohms per volt.

## CHARGER

The charging curve is for charging lead-acid batteries.

Contact DuraComm regarding other types of battery charging requirements

■ Derating Curve



## Explanation for 8 stage charging curve

- Initial stage (battery analysis): Check battery voltage level to see if it is within the normal range, whether or not a battery is connected, or if the battery is already full and further charging is not required.
- Stage 1 (pulse charging): Pulse charging is used to revive tired lead acid battery which is either improperly charged/discharged or allowed to self-discharge as occurs during non-use. Basically, help to restore its normal chemical properties.
- Stage 2 (soft start): Use low charge voltage and current to prepare the battery to accept upcoming bulk charging, so a better charge can be applied.
- Stage 3 (constant current): A high constant current is provided so the battery can be quickly charged to 2.4V per cell.
- Stage 4 (constant voltage): A constant voltage of 2.4V per cell is provided until the charging current naturally tapers down to a low level.
- Stage 5 (analysis): The charger will stop charging for 2 minutes to determine battery status. If the battery voltage is higher than 2.1V per cell, the battery is determined as OK and will move on to stage 6. If the battery voltage is lower than 2.1V per cell, the battery fail circuit will operate and the charger will stop charging.
- Stage 6 (recondition boost charge): Boost voltage is provided to recharge the battery storage capacity to its original state.
- Stage 7 (float charge): A float voltage of 2.3V per cell is provided for extended period of time so that the battery can maintain full charge.
- Stage 8 (maintain): Maintenance charge is provided to compensate for battery self-discharge and extend battery life.

## **CONDUCTOR PRETREATMENT**

All kinds of copper conductors can be clamped without treatment. DO NOT solder tin stranded conductors. The solder yields and fractures under high pressure. The result is increased contact resistance and excessive temperature rise. Additionally, corrosion has been observed due to the fluxes. Notch fractures at the transition from the rigid tinned part to the flexible conductors are also possible. Ferrules can be used as a protection when wiring stranded conductors. Copper ferrules prevent the current transfer from being influenced by dissimilar metals and remove the risk of corrosion. Always use the correct tool to crimp the ferrule.

## **RECOMMENDED COPPER WIRE SIZE FOR CURRENT CAPACITY**

(Insulated Wire, Single Conductor in free air)

<b><u>Current Level in Amperes</u></b>	<b><u>Wire Size</u></b>
<7 AMPERES	20 AWG Up to 5 feet 18 AWG Up to 10 feet
14 AMPERES	18 AWG Up to 5 feet 16 AWG Up to 10 feet
20 AMPERES	16 AWG Up to 5 feet 14 AWG Up to 10 feet
30 AMPERES	14 AWG Up to 5 feet 12 AWG Up to 10 feet
40 AMPERES	12 AWG Up to 5 feet 10 AWG Up to 10 feet
50 AMPERES	10 AWG Up to 5 feet 8 AWG Up to 10 feet
70 AMPERES	8 AWG Up to 5 feet 6 AWG Up to 10 feet
100 AMPERES	6 AWG Up to 5 feet 4 AWG Up to 10 feet

## **LIMITED WARRANTY**

*DuraComm warrants to the initial end user, each power supply manufactured by DuraComm to be free from defects in material and workmanship, when in normal use and service for a period of three year from the date of purchase, from an authorized DuraComm dealer.*

*Should a product manufactured by DuraComm fail or malfunction due to manufacturing defect, or faulty component, DuraComm, at its option, will repair or replace the faulty product or parts thereof, which, after examination by DuraComm, prove to be defective or not operational according to specifications in effect at the time of sale to the initial end user. The product that is replaced or repaired under the provisions of this warranty, will be warranted for the remainder of the original warranty period, only, and will not extend into a new three year warranty period.*

*The limited warranty does not extend to any DuraComm product which has been subject to misuse, accidental damage, neglect, incorrect wiring not associated with manufacture, improper charging voltages, or any product which has had the serial number removed, altered, defaced, or changed in any way.*

*DuraComm reserves the right to change, alter, or improve the specifications of its products at any time, and by so doing, incurs no obligation to install or retrofit any such changes or improvements in or on products manufactured prior to inclusion of such changes.*

*DuraComm requires any product needing in or out of warranty service to be returned to DuraComm. All requests for warranty service must be accompanied by proof of purchase, such as bill of sale with purchase date identified. DuraComm is not responsible for any expenses or payments incurred for the removal of the product from its place of use, transportation or shipping expenses to the place of repair, or return expenses of a repaired or replacement product to its place of use.*

*The implied warranties which the law imposes on the sale of this product are expressly LIMITED, in duration, to the three (3) year time period specified herein. DuraComm will not be liable for damages, consequential or otherwise, resulting from the use and operation of this product, or from the breach of this LIMITED WARRANTY.*

*Some states do not allow limitations on the duration of the implied warranty or exclusions or limitations of incidental or consequential damages, so said limitations or exclusions may not apply to you. This warranty gives you specific legal rights which vary from state to state.*

*This warranty is given in lieu of all other warranties, whether expressed, implied, or by law. All other warranties, including WITHOUT LIMITATION, warranties of merchantability and fitness or suitability for a particular purpose, are specifically excluded. DuraComm reserves the right to change or modify its warranty and service programs without prior notice.*

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