



# **ANALYTIC SYSTEMS**

Power Conversion Solutions

## **INSTALLATION & OPERATION MANUAL**

### **BCD180 SERIES DC Battery Charger**



An ISO9001 and AS9100 Registered Company Battery Chargers • Inverters • Power Supplies • Voltage Converters

8128 River Way, Delta B.C. V4G 1K5 Canada T. 604.946.9981 F. 604.946.9983 TF. 800.668.3884 (US/CANADA)

[www.analyticsystems.com](http://www.analyticsystems.com)



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# IMPORTANT & SAFETY INSTRUCTIONS

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SAVE THESE INSTRUCTIONS — This manual contains important safety and operating instructions for the battery charger.

## ALL BATTERY CHARGERS

1. CAUTION — To reduce risk of injury, charge only lead acid or sealed gel cell type rechargeable batteries. Other types of batteries may burst causing personal injury and damage.
2. Do not expose battery charger to rain or snow.
3. Use of an attachment not recommended or sold by the battery charger manufacturer may result in a risk of fire, electric shock, or injury to persons.
4. Do not disassemble battery charger; take it to a qualified serviceman when service or repair is required. Incorrect reassembly may result in a risk of electric shock or fire.
5. To reduce risk of electric shock, disconnect battery charger from batteries or other DC supply before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.

## DC BATTERY CHARGERS

1. WARNING - RISK OF EXPLOSIVE GASSES
  - i. WORKING IN VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION. FOR THIS REASON, IT IS OF UTMOST IMPORTANCE THAT EACH TIME BEFORE SERVICING EQUIPMENT IN THE VICINITY OF THE BATTERY, YOU READ THIS MANUAL AND FOLLOW THE INSTRUCTIONS EXACTLY
  - ii. To reduce risk of battery explosion, follow these instructions and those published by battery manufacturer and manufacturer of any equipment you intend to use in vicinity of battery. Review cautionary marking on these products.
2. PERSONAL PRECAUTIONS
  - i. Someone should be within range of your voice or close enough to come to your aid when you work near a lead-acid battery.
  - ii. Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.
  - iii. Wear complete eye protection and clothing protection. Avoid touching eyes while working near battery.
  - iv. If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eye, immediately flood eye with running cold water for at least 10 minutes and get medical attention immediately.



- v. NEVER smoke or allow a spark or flame in vicinity of battery or engine.
- vi. Be extra cautious to reduce risk of dropping a metal tool onto battery. It might spark or short-circuit battery or other electrical part that may cause explosion.
- vii. Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a lead-acid battery. A lead-acid battery can produce a short-circuit current high enough to weld a ring or the like to metal, causing a severe burn.
- viii. NEVER charge a frozen battery.
- ix. If necessary to remove battery from service, always remove grounded terminal from battery first. Make sure all accessories are off, so as not to cause an arc.
- x. Be sure area around battery is well ventilated.
- xi. Clean battery terminals. Be careful to keep corrosion from coming in contact with eyes.
- xii. Study all battery manufacturer's specific precautions such as removing or not removing cell caps while charging and recommended rates of charge.
- xiii. Add distilled water in each cell until battery acid reaches level specified by battery manufacturer. This helps purge excessive gas from cells. Do not overfill. For a battery without cell caps, carefully follow manufacturer's recharging instructions.

### 3. BATTERY CHARGER LOCATION

- i. Never place battery charger directly above battery; gases from battery will corrode and damage converter.
- ii. Never allow battery acid to drip on battery charger when reading gravity or filling battery.

### 4. O/P CONNECTION PRECAUTIONS

Connect and disconnect all DC connections in a safe manner.

Analytic Systems does not recommend the use of the BCD180 Series Battery Chargers in life support applications where failure or malfunction of this product can be reasonably expected to cause failure of the life support device or to significantly affect its safety or effectiveness. Analytic Systems does not recommend the use of any of its products in direct patient care. Examples of devices considered to be life support devices are neonatal oxygen analyzers, nerve stimulators (whether used for anaesthesia, pain relief, or other purposes), auto-transfusion devices, blood pumps, defibrillators, arrhythmia detectors and alarms, pacemakers, haemodialysis systems, peritoneal dialysis systems, neonatal ventilator incubators, ventilators for both adults and infants, anaesthesia ventilators, and infusion pumps as well as any other devices designated as "critical" by the U.S. FDA.



## Introduction

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The BCD180 Series Battery Charger is a constant voltage float charger with a precision linear regulator output. It can be configured to run from a 32, 48 or 72 VDC power system to provide output voltages as specified in the specifications.

The BCD180 Series Battery Charger features reverse input protection, current limiting, output over-voltage protection, ultra quiet low EMI operation and a wide operating temperature range.

This float charger will provide 15 amps maximum current at 12 volts or 7.5 amps at 24 volts nominal. The charger maintains a constant output voltage. When battery voltage reaches the charger voltage charge current is discontinued. This unit can be used to power a passive load.

## Specifications

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Input Voltages			
Nominal (i/p)	32	48	72
Actual (Vdc)	* 20 – 45	40 – 65	65 – 100
Input Amps (max)	** 11.3	6.8	4.3
Input Fuse	MDA-15	MDA-10	MDA-5

Output Voltages		
Nominal (op)	12	24
Actual (Vdc)	13.6 ± 0.05	27.2 ± 0.05
Output Crowbar	16.0 ± 0.5 V	32.0 ± 1.0 V
Output Amps (cont)	15	7.5
Output Amps (max)	18	9
Output Fuse	AGC-20	AGC-20



General	
Noise on Input	< 10 milli-Volts
Noise on Output	< 10 milli-Volts
Transient Response	< 1V for 50% Surge (Output Amps/2)
Efficiency	> 90 % @ maximum output
Temp. Range	-25 to +50 deg. C @ maximum output
Isolation	1500Vdc from Input to Case (500Vdc for 32V input) 500Vdc from Output to Case
Length	7.9 in / 20.1 cm
Width	6.0 in / 15.2 cm
Height	2.4 in / 6.1 cm
Clearance	1 Inch (2.5 cm) all around
Material	Marine Grade Aluminium
Finish	Black Anodize / Black Powder Epoxy
Fastenings	18-8 Stainless
Weight	2.6 lb / 1.1 kg

- \* 30 - 45 Vdc input range for 24Vdc output
- \*\* 7.6A for 24Vdc output
- \* Specifications subjects to change without notice.

Designed and manufactured by: **ANALYTIC SYSTEMS WARE (1993) LTD.**

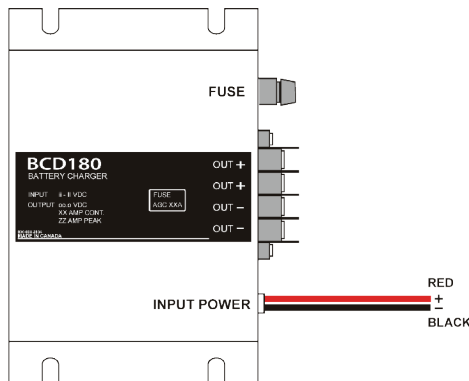
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# Installation

## MOUNTING

Mount the unit in a DRY location. Allow at least 1 inch of clearance around the unit for adequate cooling.





## **POWER CONNECTION**

A terminal strip is provided at one end of the unit for connecting the output leads. The input leads are as shown above.

Connect the leads as follows:

Output Positive to OUT +

Output Positive to OUT +

Output Negative to OUT -

Output Negative to OUT -

Ensure that the total average load connected does not exceed the continuous current rating of the unit. The full load can be connected to one set of output terminals.

## **Operation**

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As soon as power is supplied to the input leads the output terminals become energized.

## **Troubleshooting**

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In passive load mode, if the current demanded by the load connected to the unit exceeds the maximum output current rating, the output voltage will drop to maintain the current at the maximum level.

If the fuse blows whenever it is turned on, check that the power leads are connected to the battery with the correct polarity; if they are then the unit is damaged and must be returned for repair.



## **Special Services & Options**

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<b>Conformal Coating</b>	INCLUDED ON ALL UNITS UNLESS REQUESTED NOT TO as of April 1, 2014
<b>Option "c"</b>	Ruggedization Package (EXTRA Conformal Coating and RTV Compound)
<b>Option "v"</b>	Marine / Industrial Pkg (EXTRA Conformal dipping and RTV Compound)
<b>Option "MS"</b>	Military Pkg (incl. Wide Temp Components, Conformal Dipping and RTV Compound)
<b>Option "w"</b>	Wide Temperature Operation (-40 to +55 C, incl)
<b>Option "SM"</b>	High Voltage Protection on the DC Input Side
<b>Option "d"</b>	Paralleling Diodes
<b>Option "FI"</b>	Forklift Modifications
<b>Option "F"</b>	Open Frame - No chassis just heat sink bars (not for all products)
<b>Special Input</b>	There is no charge for nominal output voltages (ie. 12.0, 24.0, 48.0), but this
<b>Special Output</b>	must be noted at the time of order (Contact Factory for details)
<b>Water tight options</b>	IP66, IPS67, IPS68





## Limited Warranty

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1. The equipment manufactured by Analytic Systems Ware (1993) Ltd. (the "Warrantor") is warranted to be free from defects in workmanship and materials under normal use and service.
2. This warranty is in effect for:
  - a. 3 Years from date of purchase by the end user for standard products offered in our catalog.
  - b. 2 Years from date of manufacture for non-standard or OEM products
  - c. 1 Year from date of manufacture for encapsulated products.
3. Analytic Systems will determine eligibility for warranty from the date of purchase shown on the warranty card when returned within 30 days, or
  - a. The date of shipment by Analytic Systems, or
  - b. The date of manufacture coded in the serial number, or
  - c. From a copy of the original purchase receipt showing the date of purchase by the user.
4. In case any part of the equipment proves to be defective, the Purchaser should do the following:
  - a. Prepare a written statement of the nature of the defect to the best of the Purchasers knowledge, and include the date of purchase, the place of purchase, and the Purchasers name, address and telephone number.
  - b. Call Analytic Systems at 800-668-3884 or 604-946-9981 and request a return material authorization number (RMA).
  - c. Return the defective part or unit along with the statement at the Purchasers expense to the Warrantor; Analytic Systems Ware (1993) Ltd., 8128 River Way, Delta, B.C., V4G 1K5, Canada.
5. If upon the Warrantor's examination the defect proves to be the result of defective material or workmanship, the equipment will be repaired or replaced at the Warrantor's option without charge, and returned to the Purchaser at the Warrantor's expense by the most economical means. Requests for a different method of return or special handling will incur additional charges and are the responsibility of the Purchaser.
6. Analytic Systems reserves the right to void the warranty if:
  - a. Labels, identification marks or serial numbers are removed or altered in any way.
  - b. Our invoice is unpaid.
  - c. The defect is the result of misuse, neglect, improper installation, environmental conditions, non-authorized repair, alteration or accident.
7. No refund of the purchase price will be granted to the Purchaser, unless the Warrantor is unable to remedy the defect after having a reasonable number of opportunities to do so.
8. Only the Warrantor shall perform warranty service. Any attempt to remedy the defect by anyone else shall render this warranty void.
9. There shall be no warranty for defects or damages caused by faulty installation or hook-up, abuse or misuse of the equipment including exposure to excessive heat, salt or fresh water spray, or water immersion except for equipment specifically stated to be waterproof.
10. No other express warranty is hereby given and there are no warranties that extend beyond those described herein. This warranty is expressly in lieu of any other expressed or implied warranties, including any implied warranty of merchantability, fitness for the ordinary purposes for which such goods are used, or fitness for a particular purpose, or any other obligations on the part of the Warrantor or its employees and representatives.
11. There shall be no responsibility or liability whatsoever on the part of the Warrantor or its employees and representatives for injury to any person or persons, or damage to property, or loss of income or profit, or any other consequential or resulting damage which may be claimed to have been incurred through the use or sale of the equipment, including any possible failure of malfunction of the equipment, or part thereof.
12. The Warrantor assumes no liability for incidental or consequential damages of any kind



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