



ANALYTIC SYSTEMS

Power Conversion Solutions

INSTALLATION & OPERATION MANUAL

BCA1510MS-24 AC 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



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IMPORTANT & SAFETY INSTRUCTIONS

1. **SAVE THESE INSTRUCTIONS** — This manual contains important safety and operating instructions for power supply.
2. Do not expose power supply to rain or snow.
3. Use of an attachment not recommended or sold by the power supply manufacturer may result in a risk of fire, electric shock, or injury to persons.
4. Do not disassemble power supply; 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, unplug power supply from outlet before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.
6. Never place marine power supply directly above battery; gases from battery will corrode and damage power supply.
7. Never allow battery acid to drip on power supply when reading gravity or filling battery.
8. **8) O/P CONNECTION PRECAUTIONS**

Connect and disconnect DC output connections only after setting the power supply switch to the off position.

9. **9) I/P CONNECTION PRECAUTIONS**

Do not use the I/P Connector as a handle

ALL BATTERY CHARGERS

1. **WARNING — RISK OF EXPLOSIVE GASES.**
 - 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 and on engine.
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 in the vessels 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 manufacturers' 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.

GROUNDING AND AC POWER CORD CONNECTION INSTRUCTIONS — The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances.

DANGER — Never alter A/C cord or plug provided — if it will not fit outlet, have proper cord installed by a qualified electrician. Improper connection can result in a risk of an electric shock.

Analytic Systems does not recommend the use of the PWS1510MS-26.0-SRC Series Power Supplies 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 anesthesia, pain relief, or other purposes), autotransfusion devices, blood pumps, defibrillators, arrhythmia detectors and alarms, pacemakers, hemodialysis systems, peritoneal dialysis systems, neonatal ventilator incubators, ventilators for both adults and infants, anesthesia ventilators, and infusion pumps as well as any other devices designated as "critical" by the U.S. FDA.



Introduction

All new Current Mode switching design offers increased power and reliability in a compact package. Extra input and output filtering reduce EMI to extremely low levels. Reliability features include an input fuse, thermal shutdown, current limiting and output short circuit shutdown with automatic recovery. The model PWS1510MS-26.0-SRC Power Supply supplies either 26, or 28 VDC from a 110 or 220 VAC power source.

Features

In a DC UPS (Un-interruptible Power Supply) , the charger simultaneously powers the DC load as well as the battery. As long as the AC power to the charger is available and the charger is working normally, the charger will supply the DC load as well as charge / float the battery. In case the AC power fails or if the charger stops working, the battery will automatically power the DC load. As soon as the AC power to the charger is restored, the DC load will once again be fed by the charger and at the same time the battery will be recharged. **CAUTION!** Please ensure that the sum of the current drawn by the DC load and the current desired for charging the battery is less than the maximum current capacity of the charger. To use as a DC UPS, first switch off the DC load and connect it to the battery. Now connect the battery. Switch on the charger and then switch on the DC load.

Specifications

Input	
Nominal (ip)	Auto Select 110/220
Actual	90-130Vac / 180-260Vac
Input Amps (max)	15A max.
Input Fuse (slow blow)	25 A Breaker
Input Frequency	45 - 400 Hz
Output	
Nominal (op)	24.0Vdc
Actual	27.2 ± 0.05Vdc
Output Crowbar	32.0 ± 1.0 Vdc
Output Amps (cont)	25 A
Output Amps (max)	46 A (1/min)

**General**

Noise on Input	< 50 milli-Volts
Noise on Output	< 50 milli-Volts
Transient Response	< 1 V for 50% surge
Efficiency	> 80 % @ maximum output
Temp. Range	-25 to +40 deg. C @ maximum output
Isolation	Input-Output, Input-Case & Output-Case 1500VDC
Isolation	Output-Case 500VDC
Length	17.0 in / 43.2 cm
Width	8.2 in / 20.8 cm
Height	3.5 in / 8.9 cm (without carrying handle)
Clearance	1 Inch (2.5 cm) all around
Material	Marine Grade Aluminum
Finish	Clear chromate
Fastenings	18-8 Stainless
Weight	14.4 lb / 6.5 kg

* 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 4 inches of clearance around the extrusion for adequate cooling.

POWER CONNECTION

The unit is supplied with a 5 foot power cable. This should normally be adequate to connect to a source of power. If you must extend the power cable be sure to use a 3 conductor grounded type extension cable. For hard wiring to a source of power, cut off the plug, and strip the wires as necessary. The wire colours are

110 VAC	220 VAC
Brown - AC Hot	Brown - AC Hot / Phase 1
Blue - AC Neutral	Blue - AC Neutral / Phase 2
Green - Ground	Green/Yellow - Ground



All connections should be made inside an appropriate junction box. The maximum current draw from the 110 VAC supply is 16.2 amps, so a 20 amp circuit breaker should be used in the circuit panel and for a 220 VAC supply, 8.1 amps is the maximum current draw, so a 10 amp circuit breaker should be used in the circuit panel to feed power to the power supply.

OUTPUT POWER CONNECTION

The unit's output is equipped with a 4 pin socket. The pin configuration on the output connector is as follows:

Pin A, C	Positive
Pin B, D	Negative

Operation

Turn the switch on the side of the unit on to energize the outputs. The green indicator light will glow to indicate the proper operation of the unit.

Troubleshooting

If the load exceeds the continuous rating for too long a period, the temperature sensor inside the unit will turn off the output. After the unit cools sufficiently, it will automatically come back on. If this happens frequently, remount the unit for increased airflow so it cools better.

WARNING:

This unit has no reverse output hook up protection or output fusing. If the output is hooked up in reverse, the unit may be damaged or destroyed.



Special Services & Options

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



Limited Warranty

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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