



# ANALYTIC SYSTEMS

Power Conversion Solutions

## Installation & Operation Manual

### *PWS310 MS* *Power Supply*





# IMPORTANT & SAFETY INSTRUCTIONS

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**SAVE THESE INSTRUCTIONS** — This manual contains important safety and operating instructions for the power supply.

## ALL POWER SUPPLIES

- 1) **WARNING** – Unless the label specifically states that the power supply may be used for battery charging, it must NOT be used for that purpose.
- 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, disconnect power supply from AC supply before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.

## 6) O/P CONNECTION PRECAUTIONS

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

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

# Introduction

This all new single board design incorporates state of the art switchmode technology for unmatched efficiency and ultra-quiet operation. Multiple stages of filtering reduce radiated or conducted noise to very low levels. Safety features include reverse input protection, over-temperature shutdown, current limiting, short circuit protection with automatic recovery, input undervoltage shutdown, and output overvoltage crowbar. We are confident that you will get many years of reliable service from this Power Supply.

## Specifications

Input Voltages			
Nominal (ip)	110	220	
Actual (Vac)	90 - 130	180 - 260	
Input Amps (max)	6.3	3.1	
Input Fuse (slow blow)	MDA -7	MDA-4	
Input Frequency	45 – 65 Hz		
Output Voltages			
Nominal (op)	12	24	48
Output Volts (DC)	13.6 ± 0.05	27.2 ± 0.05	54.4 ± 0.05
Output Adjust	±1.0 V		
Output Amps	20 cont. / 25 peak	10 cont. / 13 peak	5 cont. / 6.5 peak
Output Crowbar	16.0 ± 0.5 V	32.0 ± 1.0 V	64.0 ± 2.0 V
Transient Response	< 1V for 50% surge		
General			
Noise on Input	< 25 milli-volts		
Noise on Output	< 25 milli-volts		
Efficiency	> 80 % @ maximum output		
Temp. Range	-55 to +50 deg C @ maximum output		
Isolation	Input-Output & Input-Case 1500 Vdc Output-Case 500 VDC (1500Vdc @ 48 V Out)		
Length	12 in / 30.5 cm		
Width	8.25 in / 21.0 cm		
Height	4 in / 10.2 cm		
Clearance	1 Inch (2.5 cm) all around		
Material	Marine Grade Aluminum		
Finish	Black Anodized		
Fastenings	18-8 Stainless		
Weight	10.8 lb / 4.9 kg		

\* Specifications subjects to change without notice.

Designed and manufactured by: ANALYTIC SYSTEMS WARE (1993) LTD.  
8128 River Way, Delta, B.C., V4G 1K5, Canada  
phone (604) 946-9981 fax (604) 946-9983 toll free 800-668-3884 US/Canada  
email: [analyticinfo@analyticssystem.com](mailto:analyticinfo@analyticssystem.com) web site: [www.analyticssystem.com](http://www.analyticssystem.com)

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# Installation

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Allow at least 1 inch of clearance all around the case for cooling. The best mounting configuration is to mount the unit on a vertical surface oriented as shown. Use #10 screws of the appropriate type for the mounting surface to securely mount the unit.

There is 1500 volts of isolation between the input and output, and the input and case. There is 500 volts (1500V for 48V Output) of isolation between the output and case. Therefore, the unit may be mounted on any surface without fear of electrolysis or ground fault.

## POWER CONNECTION

The unit is supplied with a power cable 3 feet long. 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 supply is 4.3 amps (110Vac) or 2.1 amps (220Vac), so a 5 amp circuit breaker should be used in the circuit panel to feed power to the PWS310.

To reduce radio noise to the absolute minimum, it may be necessary to bond the case to local ground. For this purpose, a ground stud has been provided.

# Operation

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To turn the unit on, simply move the power switch to the ON position. The alarm buzzer will sound and the green OUTPUT ON LED will illuminate. The unit's output voltage is preset at the factory. You may check this voltage at the output terminals of the unit with a good digital voltmeter. Please ensure that 110 AC is plugged only into an 110AC source, or that the 220 AC is plugged into a 220 source.

## Troubleshooting:

If the unit does not have an output, please that check the unit's input breaker is turned on. Also ensure that the 110/220AC power cord is plugged into an appropriate power source.

If the unit emits a slightly continuous buzzing noise, the unit is defective and should be returned to the manufacturer or an authorized service centre for repair. Please contact the manufacturer for more information.

# 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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