



# ANALYTIC SYSTEMS

Power Conversion Solutions

## INSTALLATION & OPERATION MANUAL

### VTC90 Voltage Converter



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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1. **SAVE THESE INSTRUCTIONS** — This manual contains important safety and operating instructions for the converter.
2. **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.
3. Do not expose converter to rain or snow.
4. Use of an attachment not recommended or sold by the converter manufacturer may result in a risk of fire, electric shock, or injury to persons.
5. Do not disassemble converter; take it to a qualified serviceman when service or repair is required. Incorrect reassembly may result in a risk of electric shock or fire.
6. To reduce risk of electric shock, disconnect converter from batteries or other DC supply before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.

## Introduction

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The VTC90 Step Down Series of Voltage Converter supplies standard 12V, 24, 32V, 48V or 72VDC output from 20VDC to 100VDC power systems for use in heavy equipment, marine, industrial, or alternative energy environments. Many customizable input/output options. Power output from 10A down to 1 A is dependent on the I/O choice.

New high frequency design offers higher reliability, higher efficiency (up to 93%), more power (up to 10A at 12VDC out) and minimum size.

SMT production

The unit has reverse input protection, output current limiting and output overvoltage protection.



# Specifications

		Input Volts					
		Nominal	24	36	48	72	
		Min / Max	20 / 32	30 / 48	40 / 64	60 / 96	
Output Volts	Nominal	Actual	Output Amps				Output Crowbar
	12	13.6	10.0	8.1	7.0	5.7	16
	24	27.2		5.7	5.0	4.1	32
	36	40.8			4.1	3.3	45
	48	54.4				2.9	60
Volts		Continuous				Volts	

### Electrical

Output Ripple & Noise	< 10 mV
Transient Response	< 1V for 50% Surge
Regulation (Line & Load)	< +/- 0.5%
Overload Capability	120% rated current for 1 minute max at 10% duty cycle
Efficiency	> 93% @ Maximum Output

### Environment Specification

Operating Temp. Range	-25° to +40°C @ maximum output Derate Linearly 2.5% per °C from 40°C (Optional -40°C TO +55°C extra wide temp. operation available)
Humidity	0 – 95% Relative Humidity (non-condensing) with optional conformal coating)
Audible Noise	NONE Ødb @ 3 ft
Typical Service Life	> 10 yrs. (87,600 hrs)
Isolation	Any Input or Output to Case 500 VDC, 1500 VDC for 48 and 72 input

### Mechanical Specification

Length	4.12 in / 10.5 cm
Width	4.30 in / 10.9 cm
Height	1.57 in / 3.96 cm
Material	Marine Grade Aluminum
Finish	Black and Red Anodized / Powder Epoxy Coating
Fastenings	All 18-8 Stainless Steel
Weight	0.62 lb / 0.28 kg
Warranty	3 years

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

8128 River Way, Delta, BC V4G 1K5 Canada p. 604.946.9981 f. 604.946.9983 tf. 800.668.3884 US/Canada  
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# Installation

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## MOUNTING

Mount the unit in a DRY location.

## CONNECTIONS

The unit is equipped with a terminal strip for easy connection. Markings on the unit indicate the proper wire connections.

- + IN Power (+) Positive
- GND Common (-) Negative
- GND Common (-) Negative
- + OUT Load (+) Positive

## Operation

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The unit will operate whenever power is connected except on units with the optional Start input. Connecting Start to Ground will turn the unit on.

## Troubleshooting

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If the current demanded by the devices connected to the unit exceed the maximum output current rating, the output voltage will drop to maintain the current at the maximum level.

If the fuse blows whenever power is applied to the unit and there is no load connected, check that the power leads are connected with the correct polarity; if they are then the unit may be 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 must be noted at the time of order (Contact Factory for details)
<b>Special Output</b>	
<b>Water tight options</b>	IP66, IPS67, IPS68

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## 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 Purchaser's knowledge, and include the date of purchase, the place of purchase, and the Purchaser's 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 Purchaser's 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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