

# ANALYTIC SYSTEMS

Power Conversion Solutions

## INSTALLATION & OPERATION MANUAL

### VTC180 SERIES Voltage Converter



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

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Power Conversion Solutions

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# VOLTAGE CONVERTERS

## IMPORTANT SAFETY INSTRUCTIONS

**SAVE THESE INSTRUCTIONS** — This manual contains important safety and operating instructions for the voltage converter

### VOLTAGE CONVERTER PRECAUTIONS

1. Do not expose the voltage converter to rain or snow unless it is a sealed model.
2. Use of an attachment not recommended or sold by the manufacturer may result in a risk of fire, electric shock, or injury to persons.
3. Do not disassemble the voltage converter. If service or repair is required, return it to the manufacturer or an authorized service center. Incorrect reassembly may result in a risk of fire or electric shock. Voltages up to 350 volts are present inside the voltage converter any time it is connected to input power, even if it is switched OFF.
4. To reduce risk of electric shock, disconnect the voltage converter from the input power before attempting any maintenance or cleaning. Switching the voltage converter to OFF will not reduce this risk.
5. Never place the voltage converter directly above a battery; gasses from the battery will corrode and damage the voltage converter.
6. Never allow battery acid to drip onto the voltage converter.

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

### Medical Equipment Notice

Analytic Systems does not recommend the use of their products in life support applications where failure or malfunction of this product can be reasonably expected to cause the failure of the life support device or to significantly affect its safety or effectiveness. Analytic Systems does not recommend the use 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), auto-transfusion devices, blood pumps, defibrillators, arrhythmia detectors and alarms, pacemakers, hemodialysis systems, peritoneal 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.



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## Introduction

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The VTC180 Series Voltage Converter is a variable duty cycle switching power supply with a precision linear regulator output. It can be configured to run from a 32, 48 or 72 VDC power source to provide a 12VDC or 24VDC nominal output voltage.

Built for the safest and most reliable operation, this unit features reverse input protection, current limiting, output over-voltage protection. Meanwhile ultra-quiet low EMI operation prevents interference with any connected RF or sensitive communications devices and the unit's wide operating temperature range allows for use in extreme environments. .

We are sure this unit will provide you with many years of reliable service.

## Box Contents

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The box you've received should contain the following:

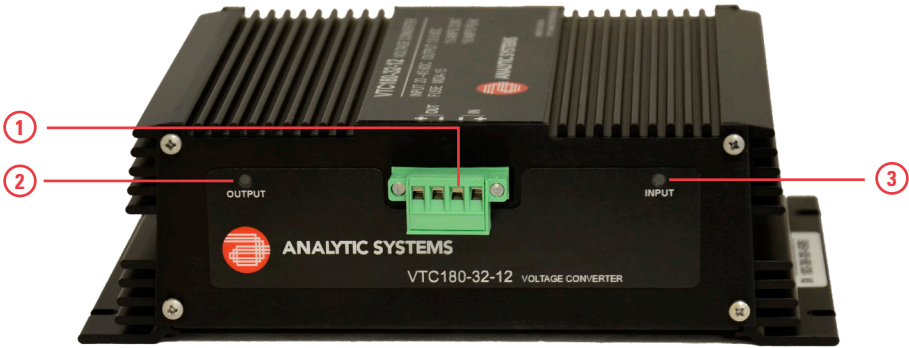
- One VTC180 Voltage Converter
- This manual
- One warranty card

*If anything is damaged or missing from your box, please contact your dealer or Analytic Systems for a replacement.*



# Main Parts

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## Front Panel

1. Input and Output Connection:  
4-pin Phoenix connector
2. Output Power LED
3. Input Power LED

## Operation

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This unit has been designed for simple and intuitive operation. Simply connect the unit to a source of DC power and to the load as shown under *Installation*.

1. Connect the load to the output connection.
2. Connect the unit to a suitable DC power source input connection pins indicated on the label. The Input LED and Output LEDs will begin glowing green.
3. To turn the unit off, disconnect the power source and wait 30 seconds for internal capacitors to discharge.
4. Finally, disconnect the load. The unit is ready for storage or service.



# Installation

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## MOUNTING

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

## POWER CONNECTION

A 4-pin Phoenix connector is provided to serve as both an input and output connections. The wiring for this connection can be found on the label on the unit's top panel as shown below.

**Important:** Ensure that the total average load connected does not exceed the continuous current rating of the unit. Ensure that the wire used is a suitable gauge for the current rating. See *Specifications* for more details.





# Troubleshooting

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Below is a list of common malfunctions and the suggested course of action for fixing the issues causing them.

**The unit is not supplying the listed voltage to the device(s)**

**Issue:** If the current demanded by the connected devices exceeds the maximum current rating of the unit. The unit will drop the output voltage to maintain the current at its maximum level.

**Fix:** Disconnect some devices from the converter to reduce the load.

**The input fuse blows with the unit is turned ON**

**Issue:** The power source is likely connected in the reverse polarity.

**Fix:** Check the input connection and correct the polarity if connected in reverse. If the connection is correct, the cause is likely an internal component failure and the unit must be returned for service.

**The input LED does not turn glow when the input power source is connected.**

**Issue:** The unit is not receiving the minimum voltage required for normal operation.

**Fix:** Check the input power source using a multimeter to ensure it is supplying the rated voltage. Check your input power connections to make sure they are not damaged or discontinuous. If there are no problems with the power source or input connection, the cause is likely an internal component failure and the unit must be returned for service.

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# Specifications

Input Voltages			
Nominal	32 VDC	48 VDC	72 VDC
Actual	* 20 – 45 VDC	40 – 65 VDC	65 – 100 VDC
Input Current	13.6 A	6.8 A	4.3 A
Input Fuse	MDA-15	MDA-10	MDA-5
Noise on Input	<10 mV		

Output Voltages		
Nominal	12 VDC	24 VDC
Actual	13.6 ± 0.05 VDC	27.2 ± 0.05 VDC
Output Crowbar	16.0 ± 0.5 V	32.0 ± 1.0 V
Output Current (cont)	15 A	7.5 A
Output Current (max)	18 A	9 A
Noise on Output	<10 mV	

General	
Transient Response	< 1V for 50% Surge (Output Amps/2)
Efficiency	> 90 % @ maximum output
Temp. Range	-25°C to +50°C @ maximum output
Isolation	1500 VDC from Input to Case (500 VDC for 32V input) 500 VDC 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
Fastenings	18-8 Stainless
Weight	2.6 lb / 1.1 kg

\* Specifications subjects to change without notice.

\* 30 – 45 VDC input range for a 24VDC output

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

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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 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




DESIGNED AND MANUFACTURED BY



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