ANALYTIC SYSTEMS

Power Conversion Solutions

INSTALLATION & OPERATION MANUAL

VTC315 Series 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

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Revised - May 30, 2016

IMPORTANT & SAFETY INSTRUCTIONS

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

ALL VOLTAGE CONVERTERS

1. WARNING – Unless the label specifically states that the voltage converter may be used for battery charging, it must NOT be used for that purpose.
2. Do not expose voltage converter to rain or snow.
3. Use of an attachment not recommended or sold by the voltage converter manufacturer may result in a risk of fire, electric shock, or injury to persons.
4. Do not disassemble voltage 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.
5. To reduce risk of electric shock, disconnect voltage converter from DC 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 the I/P power switch to off position.

Analytic Systems does not recommend the use of the VTC315 Series Voltage Converters 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

This all new single board design incorporates state of the art switchmode technology for unmatched efficiency and ultra-quite operation. Multiple stages of filtering reduce radiated or conducted noise to very low levels. Extra features include adjustable output voltage, audible and visual indicators for low input voltage, low output voltage and over temperature. Safety features include reverse input protection, over-temperature shutdown, current limiting, short circuit protection with automatic recovery, input undervoltage shutdown, and output overvoltage crowbar. Optional features include a dry contact alarm relay output, and remote panel monitoring with On/Off control.

We are confident that you will get many years of reliable service from this Voltage converter.

Specifications

Input Voltages				
Nominal (ip)	12	24	48	72
Actual (Vdc)	10.5 - 16	20 – 35	40 - 60	65 - 90
Input Amps (max)	37A	22.1	11.1	6.8
Input Fuse	2x MDA-20	MDA-25	MDA-15	MDA-10

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. / 22.5 peak	10 cont. / 12.5 peak	5 cont. / 6 peak
Output Crowbar	16.0 ± 0.5 V	32.0 ± 1.0 V	63.9 ± 2.0 V

Noise on Input	< 25 milli-volts
Noise on Output	< 25 milli-volts
Efficiency	> 80 % @ maximum output
Temp. Range	-25°C to +40°C @ maximum output
Isolation	Input-Output & Input-Case 1500 Vdc (500 Vdc @ 24 V In), Output-Case 500 VDC (1500Vdc @ 48 V Out)
Length	9.6 in / 24.4 cm
Width	8.2 in / 20.8 cm
Height	3.5 in / 8.9 cm
Clearance	1 Inch (2.5 cm) all around
Material	Marine Grade Aluminum
Finish	Black Anodyze
Fastenings	18-8 Stainless
Weight	7.0 lb / 3.1 kg
Safety	ABS 11-HS794404B-PDA

* Specifications subjects to change without notice.

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

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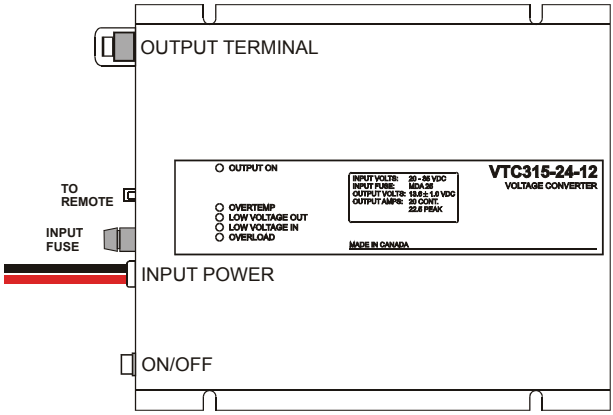
Installation



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 (500V for 24V Input) 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 3 foot power leads. This should normally be adequate to connect to a source of power. If you must extend the power leads, be sure to use at least a good quality (typeTEW) AWG12 wire. The wire colours are:

Red - Positive
Black - Negative

All connections should be made inside an appropriate junction box. Refer to the specifications table for the correct sizing of the circuit breaker in the distribution panel.

A ground stud is provided to bond the chassis to local ground to reduce or eliminate EMI.

Operation

To turn the unit on, simply move the power switch to the ON position. The alarm buzzer will sound and the Low Output LED will come on briefly, and then 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. If you wish to adjust the output voltage, use a very small flat blade screwdriver to rotate the potentiometer. Clockwise increases the output voltage, and counter clockwise decreases it.

Troubleshooting

If the red **OVERTEMP LED** and the audible alarm come on, the unit has overheated, and it will shut down until it cools off sufficiently. You may not have allowed sufficient space around the unit for cooling, or there may be too many devices connected to the output of the unit. Either reduce the number of devices connected to the unit, or reposition the unit for better cooling. If necessary, direct a stream of moving air over the unit.

If the red **LOW INPUT LED** and the audible alarm comes on, the input voltage has dropped to below a usable level.

If the red **LOW OUTPUT LED** and the audible alarm comes on, the unit is overloaded. The green **OUTPUT ON LED** will still be on, but it will be dimmer than normal. Remove loads as necessary to prevent the **LOW OUTPUT LED** from coming on. Refer to the manufacturers specifications and add up the current ratings for each device to be connected to the unit. Make sure that the total does not exceed the continuous rating of the unit.

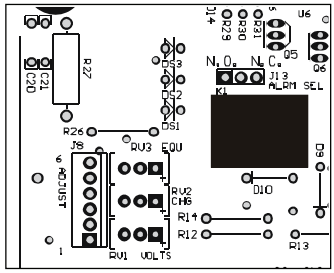
If the **LOW OUTPUT LED** and the audible alarm come on, and the green **OUTPUT ON LED** is completely off, the output of the unit has been shorted out, or there has been an internal failure. Turn the unit off, disconnect all the loads connected to it, and turn it back on again. If it comes on normally, turn it off again, reconnect one load, and turn it back on. Continue reconnecting loads until the short circuit condition returns. Turn the unit off, disconnect the faulty load, and reconnect it only after the fault is found and rectified. If the condition still exists even after all the loads have been disconnected, the unit is defective, and must be returned to the factory or an authorized service centre for repair.

If the unit will not turn on at all, check the input fuse. To do this, first turn off the unit and disconnect the power cord. Next, disconnect all loads connected to the unit. Remove the fuse and check it with an ohmmeter. If it is blown, replace it with a new one. If that fuse blows as well or the unit still will not turn on, it is defective, and must be returned to the factory or an authorized service centre for repair.

Dry Contact Relay

To use the dry contact output fail relay you must connect a 9-pin D connector to the unit. You must use pins one and six as indicated in the remote control diagram on page 7.

The relay is factory preset to fail in the closed position when the converter is OFF or the low output LED and buzzer come on. If you wish to have the relay fail in the open position when the low output LED and buzzer come on, you must take the cover off the unit and move the jumper to the other position on J13. J13 is located next to the relay.



To change the position of the jumper, first turn the unit off and disconnect the unit from both the I/P power and O/P load. Next, turn the unit on for 30 seconds to discharge the capacitors, and then turn it off again. Turn the unit upside down and remove the four screws. Remove the base plate and locate J13. It will be next to the relay as is shown in the above diagram. Simply move the jumper to the desired position as is shown in the above diagram. Replace the base plate and re-install the four screws.

Remote Control Option

A remote control panel may be connected to the voltage converter using a 9-pin D-connector, which attaches to the front panel of the battery charger. The remote control panel and D connector are part of the remote control option. The remote control panel allows the unit to be operated remotely as well as duplicating all the diagnostic indicators and audible alarm.

IMPORTANT: This remote is to be used only on Voltage Converters manufactured by Analytic Systems.

This connector is located on the side of the unit. Important: To prevent the possibility of High Voltage Electrical Shock, do not power up the Converter unless all wiring from the unit to the remote is securely connected. Do not remove the dust cover from the DB-9 connector if the remote is not being used.

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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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