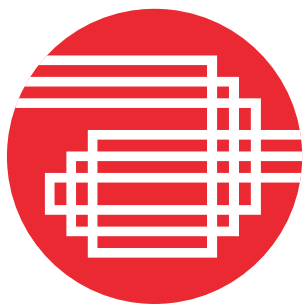




ANALYTIC SYSTEMS

Power Conversion Solutions

INSTALLATION & OPERATION MANUAL

VTC805 VOLTAGE CONVERTER



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

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www.analyticsystems.com



VOLTAGE CONVERTER

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 source, 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; gases from the battery will corrode and damage the voltage converter.
6. Never allow battery acid to drip onto the voltage converter.

MEDICAL EQUIPMENT NOTICE

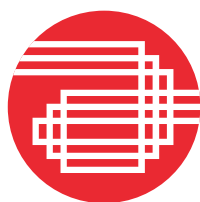
Analytic Systems does not recommend the use of their products in life support applications where failure or malfunction of this product can be reasonably expected to cause the failure of the life support device or to significantly affect its safety or effectiveness. Analytic Systems does not recommend 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

The VTC805 is a DC-DC voltage converter designed to convert 12 Volts DC to 24 Volts DC at up to 35 Amps of output current. It is a Common Negative design, meaning that there is no isolation between the input and output and they share a common ground.

The recently updated single board design incorporates proven switch-mode technology for high reliability and incorporates multiple stages of input and output filtering to reduce radiated or conducted noise to very low levels.

Safety features include over-temperature shutdown, current limiting, input under voltage shutdown, output over voltage protection, and reverse connection protection (requires external fuse or circuit breaker).

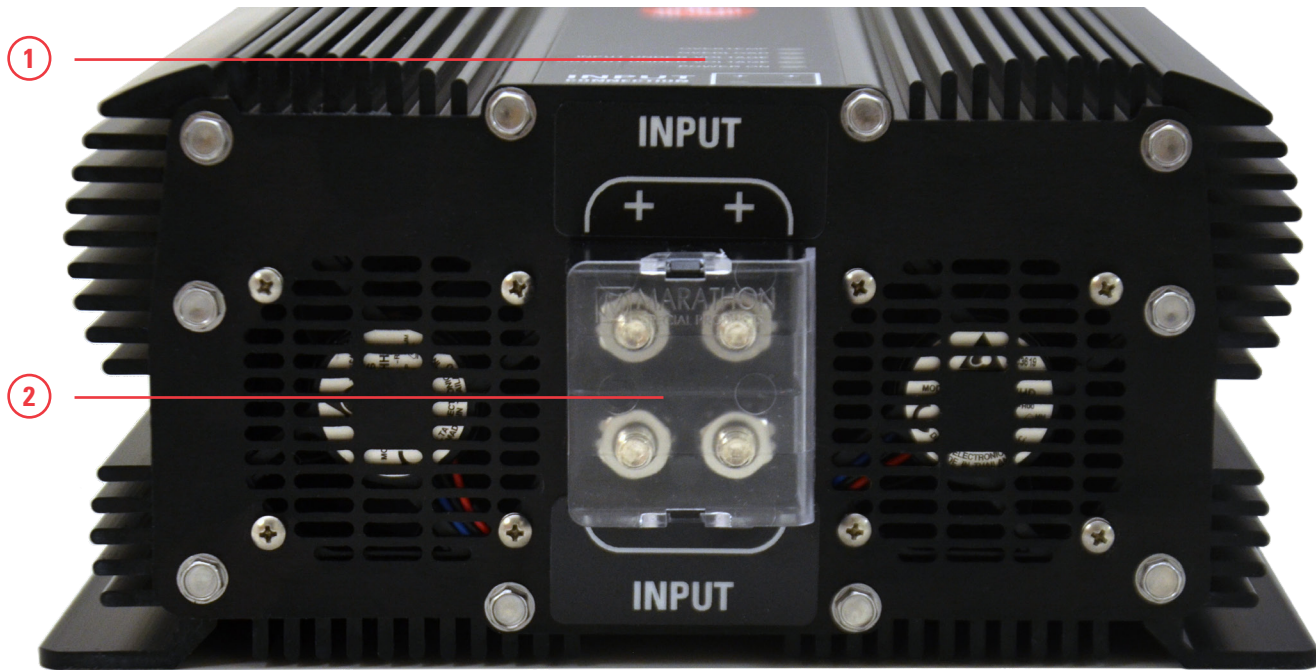
Box Contents

The box you have received should contain the following:

- One VTC805 DC Voltage Converter
- This manual
- One Warranty Card

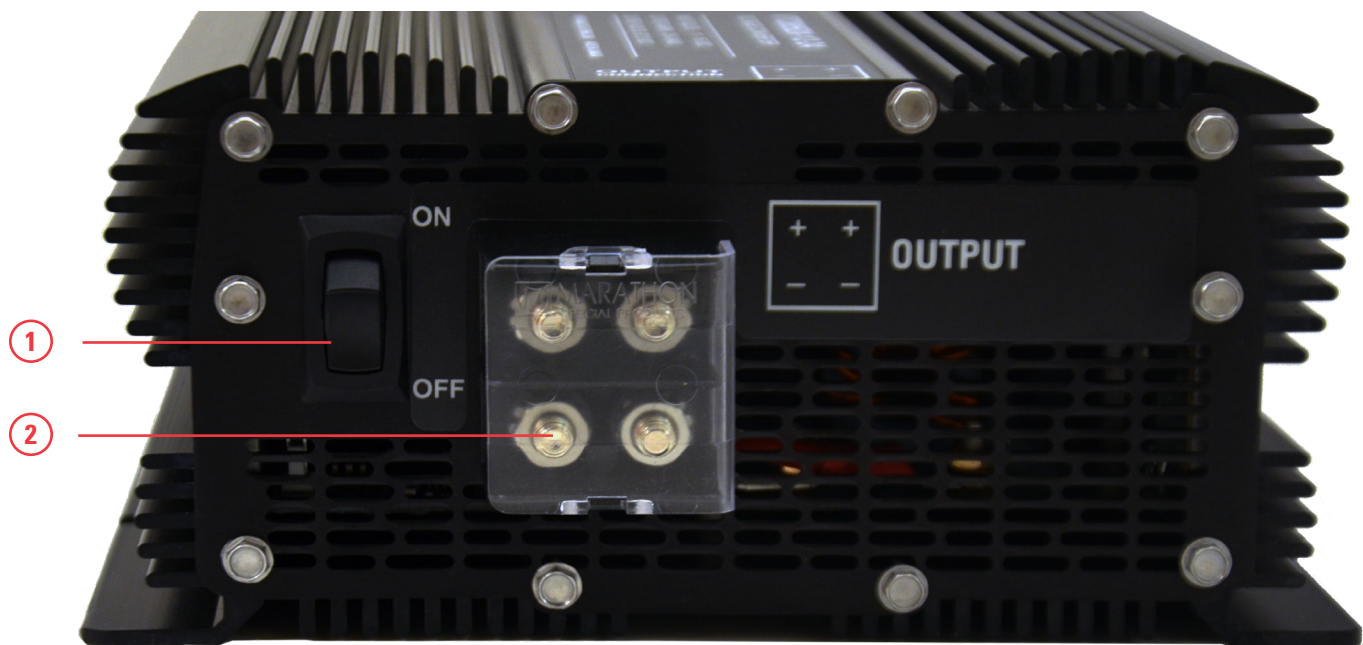
If anything is damaged or missing from your box, please contact your dealer or Analytic Systems for a replacement part.

Main Parts



Rear Panel

1. Indicator LEDs
 2. **Input Connection:** Marathon ST722B2502UH connector Power Stud Blocks with 1/4" - 20 Studs
-



Front Panel

1. Power Switch
 2. **Output Connection:** Marathon ST722B2502UH connector Power Stud Blocks with 1/4" - 20 Studs
-



Operation

The VTC805 is designed for simple operation. Before this unit can be put into operation, it must be properly installed and connected. For more information, see *Installation*.

TO OPERATE THE UNIT

1. Connect the voltage converter to the load.
2. Connect the voltage converter to the power source, or if already connected, turn on the external switch installed at the power source.
3. The Power LED will glow green indicating the presence of power on the Input and Output Connections.
4. The voltage converter will supply the load at 12 VDC for as long as it is connected.

TO OPERATE THE UNIT IN BOOST MODE

1. Flip the Power Switch on the front panel to the ON position.
2. Connect the voltage converter to the load.
3. Connect the voltage converter to the power source, or if already connected, turn on the external switch installed at the power source.
4. The Power LED will glow green indicating the presence of power on the Input and Output Connections.
5. The voltage converter will supply the load at 24 VDC for as long as it is connected.

TO STOP OPERATING THE UNIT

1. To end operation, turn off external switch installed at the power source or disconnect the power source from the voltage converter.

IMPORTANT: TURNING OFF THE POWER SWITCH WILL NOT TURN DISCONNECT THE INPUT FROM THE OUTPUT! TURNING THE SWITCH OFF ONLY REDUCES THE OUTPUT VOLTAGE TO THE INPUT VOLTAGE!



Installation

MOUNTING

Mount the unit in a DRY and WELL VENTILATED location, allowing at least 1 inch of clearance around all sides for adequate cooling.

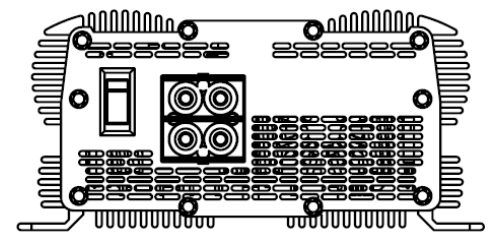
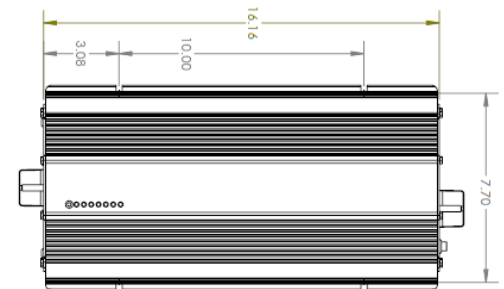
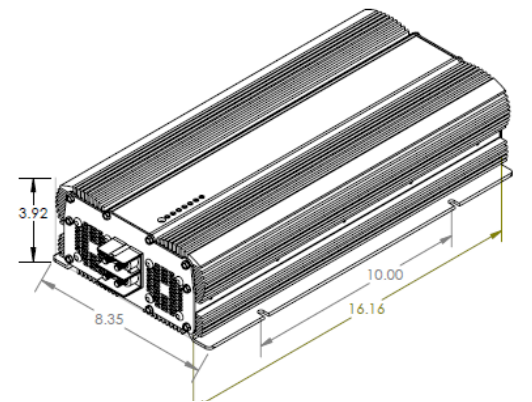
INPUT CONNECTION

Prior to connection, an external switch and fuse both rated for maximum input amps (100 A) should be installed at the power source.

This unit's rear panel is equipped with an Marathon ST722B2502UH Power Stud Block connector with 1/4" - 20 Studs as a DC input connection.

This voltage converter can draw up to 100 amps from a 12 volt power source. Adequate wire size is crucial for proper operation. Connect the DC power source to the Input Connection using at least AWG6 (preferably AWG4) wires terminated in soldered or crimped 2 hole lugs.

These connectors are intended for 'Dual Hole Lugs' to be able to handle their maximum rated current of 175 amps. The holes in the lugs are on 5/8th inch centers. Suitable lugs are available from many sources including Panduit, Thomas and Betts and others.



OUTPUT CONNECTION

This unit's front panel is equipped with a Marathon ST722B2502UH Power Stud Block connector with 1/4" - 20 Studs as a DC output connection.

Connect the DC load to the Output Connection using at least AWG10 (preferably AWG8) wires with soldered or crimped 2 hole lugs.

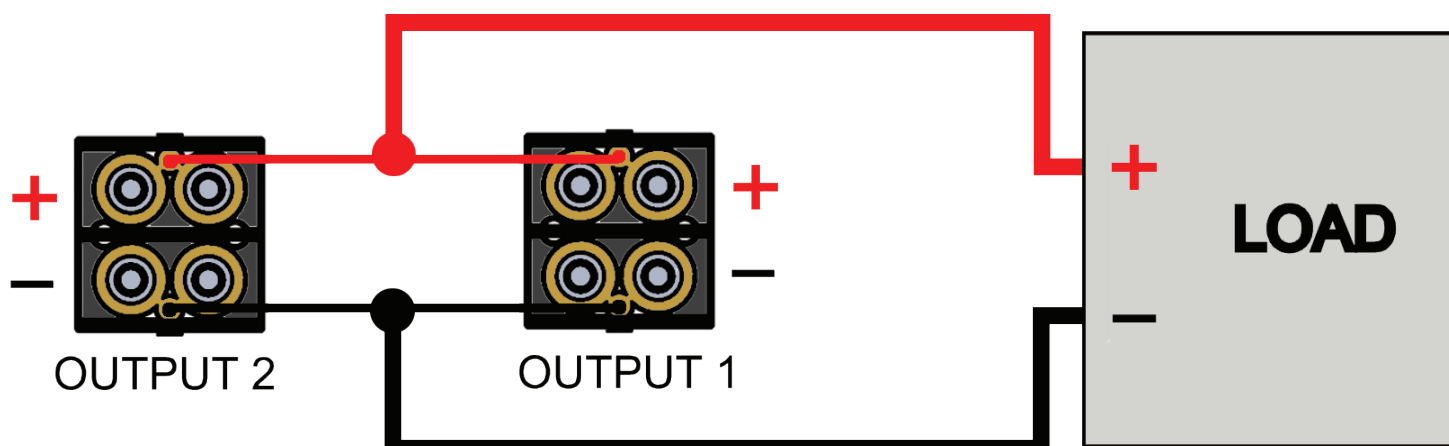
These connectors are intended for 'Dual Hole Lugs' to be able to handle their maximum rated current of 175 amps. The holes in the lugs are on 5/8th inch centers. Suitable lugs are available from many sources including Panduit, Thomas and Betts and others.



Paralleling Diodes Option

The Paralleling Diodes Option allows multiple voltage converters to be connected in parallel to share in powering a load. To perform this function, each unit is equipped with special output isolation diodes to prevent current from one unit back feeding into another. In addition, the units' peak output current is lowered to the continuous rating for safety purposes.

Units with the Paralleling Diodes option will have the D-designation following model name, in this case VTC805D, is a VTC805 voltage converter with the paralleling diodes option.



WARNING: TO PREVENT THE RISK OF HIGH VOLTAGE ELECTRIC SHOCK, NEVER CONNECT OR DISCONNECT ANYTHING TO THE INPUT OR OUTPUT WHILE POWER SWITCH IS ON.

TO SET UP LOAD SHARING:

1. Connect a 1 foot (0.3m) length of appropriate gauge red wire to the positive terminal of each unit. See *Installation* for more information about suitable wire gauge.
2. Join these wires to a distribution bus or join them together to a common point.
3. Connect the common point or distribution bus to the load.
4. Repeat the above steps for the negative terminals using black wire and a different common point/distribution bus.
5. The units should now load share. Use a clamp-on ammeter to measure the current to read the current being drawn from each unit to confirm this. A slight different in current between units is normal.



Troubleshooting

This unit provides 5 LED indicators to help diagnose any problems. The following table lists the meanings of the LEDs and tips for troubleshooting the issues they indicate



LED	Indication
OVERTEMP	Indicates that the voltage converter is running too hot. The unit will shut down until it cools. There may be too many devices drawing from the converter or is it located in a poorly ventilated area. Try disconnecting some devices or remounting the unit if this persists.
INPUT UNDER VOLTAGE	Indicates that the input voltage is not high enough for the unit to operate normally. Ensure the power source is supplying the correct voltage. Check that the input connection and wires have not been damaged or corroded. If these factors are in working order, the cause is likely an internal component failure and the unit will have to be returned for service.
OUTPUT UNDER VOLTAGE	Indicates that the output voltage is higher has dropped to <50% the regulated output voltage. There is likely too much load is being drawn from the converter and the voltage is dropping to try and maintain the output current. Reduce the load on the system by disconnecting or turning off some of the connected devices. Check that the output connection and wires have not been damaged or corroded.
OVERLOAD	Indicates that load is drawing too much current from the converter. The unit has been operating at it's peak output current for too long. Reduce the load on the system by disconnecting or turning off some of the connected devices.
POWER ON	Indicates that the converter is being supplied with power and operating.

Specifications

Input	
Nominal Voltage	12 VDC
Actual Voltage	11-16 VDC
Input Amps	100.0 A Max
Noise in Input	< 50mV Peak to Peak
Input Fuse	None, external fuse required
Output	
Nominal Voltage	24 VDC
Actual Voltage	27.2 ± 0.05 VDC
Output Amps	35.0 Continuous / 40 A (Peak)
Output Voltage Crowbar	32.0 ± 1.0 VDC
Switching Frequency	60 ± 2.0 KHz
Duty Cycle	Continuous: 100% for 24 hours per day Peak: 20% for 10 min max
Efficiency	> 85% @ Maximum Output
Idle Power	<10 Watts
Transient Response	<2V for 50% Surge
Regulation (Line & Load)	< +/- 0.5%
Mechanical	
Length	16.3 in / 41.4 cm
Width	8.4 in / 21.3 cm
Height	3.9 in / 9.9 cm
Clearance	1.0 in / 2.5 cm all around
Weight	16.0 lbs / 7.3kg
Material and Finish	Marine Grade Black Anodized Aluminum
Fasteners	18-8 Stainless Steel
Connections	DC Input/Output: Marathon ST722B2502UH connector Power Stud Blocks with 1/4" - 20 Studs, 175 Amp, 300V Rating c/w Protective Snap On Cover
Environmental and Safety	
Operating Temperature Range	25°C to +40°C: Continuous Operation (Standard Models) -40°C to +55°C: Continuous Operation (Option X wide temperature Models) Operation at reduced power to +85C (All models)
Storage Temperature	-55°C to +105°C
Isolation	Input-Case and Output-Case: 500 VDC, Input-Output: None, Common Negative
Humidity	0 - 95% Relative Humidity (non-condensing) with standard conformal coating
Audible Noise	< 42 dB @ 3 ft/ 1m with fans running
Typical Service Life	> 10 years (87,600 hrs)
Warranty	Three years parts and labor
Safety	Complies with FCC Class B, Part 15

Note: Specifications are subject to change without notice.



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



DESIGNED AND MANUFACTURED BY



ANALYTIC SYSTEMS
Power Conversion Solutions

Battery Chargers • Inverters • Power Supplies • Voltage Converters

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