

Isolated 12Vdc/24Vdc to 48Vdc, 144W Converter

P/N: AX082200

Rugged, isolated 48 Vdc for machine electronics

Features:

- 12Vdc or 24Vdc input, 48Vdc output, 144 Watts
- Isolated
- Operates from 9Vdc-36Vdc, some derating for input voltage lower than 13V Dc
- Typical efficiency of 92% (for 13Vdc input) or 93% (for 24Vdc input)
- No minimum load requirement
- Switch mode operation delivers high efficiency
- Input inrush current limit
- Thermal protection for over temperature
- Reverse battery, over and under-voltage protection
- Short circuit and overcurrent protection
- -40 to 85 °C (-40 to 185 °F) operating temperature
- IP67
- 1 connector (equivalent TE Deutsch P/N: DT13-4P)
- Compact: 5.35 x 6.82 x 2.38 inches (136.00 x 173.41 x 60.58 mm)
- EMI/EMC compliant
- SAE J1455 and SAE J1113 compliant
- Suitable for engine cranking and load dump



Applications:

The DC/DC converter is suitable for application on charging/cranking battery based systems.

- Off-highway Equipment
- Power generator set control systems
- Oilfield equipment

Ordering Part Numbers:

24V/48V, 144W, Isolated DC/DC Converter P/N: **AX082200**

Accessories:

Mating Wire Harness, 2 m: **WH-DT06-4S-S-16AWG-2M**

Mating Plug Kit: **PL-DT06-4S**

To purchase the DC/DC Converter and mating wire harness as a KIT (AX082200 converter, WH-DT06-4S-S-16AWG-2M wire harness), the ordering P/N is **AX082200K**.

Technical Specifications:

All specifications are typical at nominal input voltage and 25 degrees C unless otherwise specified.

Specifications are indicative and subject to change. Actual performance will vary depending on the application and operating conditions. Users should satisfy themselves that the product is suitable for use in the intended application. All our products carry a limited warranty against defects in material and workmanship. Please refer to our Warranty, Application Approvals/Limitations and Return Materials Process as described on <https://www.axiomatic.com/service/>.

Input Specifications		Output Specifications	
Power Source	24 Vdc nominal	Nameplate Rating (Output Power)	144 VA nominal
Operating Voltage Range*	13 to 36 Vdc provides output regulated to 1% @ 3 A load Below 13 Vdc input down to 9 Vdc, output current derates due to the rating of connector and operating temperature 85C Refer to Figure 1.0.	Output Current (DC)	3A continuous (at input >13Vdc)
Maximum Input Current	13 ADC @ 12Vdc	Output Voltage	48 Vdc \pm 1%
Engine Cranking & Load Dump	Designed to meet engine cranking and load dump conditions	Output Voltage Ripple	$V_{O(RIPPLE)} \leq 250$ mVpp
Reverse Voltage Protection	Provided	Turn-on time (at full load)	250 ms typical
Under-voltage Shutdown	8.8 Vdc typical	Stability	Stable at all loads (no minimum load requirement)
Over-voltage Shutdown	38 Vdc typical	Transient Response	300 mV/1 ms (1A – 4A Load)
Inrush Current	Max. 13A for 50 mSec.	Short Circuit Current	Protection provided Self-recovery 3.5A current limit

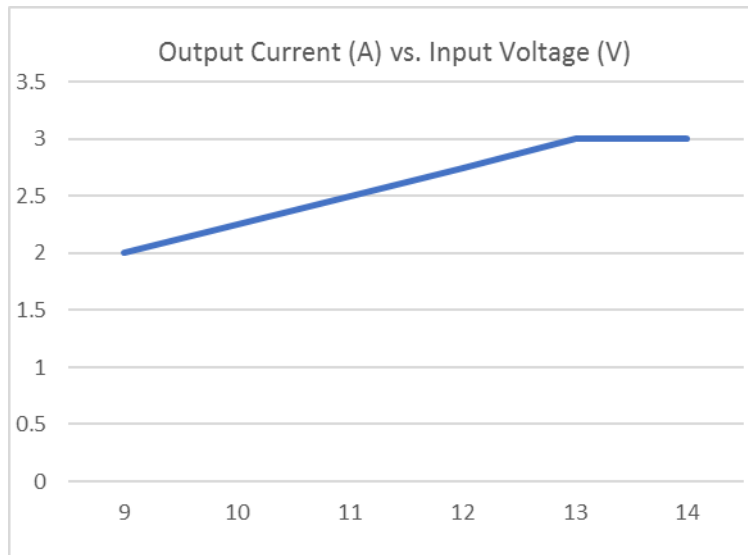


Figure 1.0 - Output Current (A) vs. Input Voltage (V),
Operating Temperature 85°C and Connector limited at 13A

General Specifications

EMI and Environmental Compliance	Designed to meet the requirements of the following standards. DIN EN 13309
Efficiency	92% (for 12Vdc input) or 93% (for 24Vdc input) (Refer to Figure 2.0.)
Isolation	500 Vdc minimum
Quiescent Current	65mA @ 24Vdc input

Enclosure	Aluminum enclosure Encapsulated 5.35 x 6.82 x 2.38 inches 136.0 x 173.41 x 60.58 mm (W x L x H including connector) See Figure 4.0.
Protection	IP67
Vibration	MIL-STD-202G, Test 204D and 214A (Sine and Random) 10 g peak (Sine); 7.86 Grms peak (Random)
Shock	MIL-STD-202G, Test 213B, 50 g
Weight	3.35 lb. (1.52 kg) Converter plus wire harness: Contact Axiomatic.
Temperature Rating	Operating: -40 to 85°C (-40 to 185°F) Storage: -50 to 90°C (-58 to 194°F)
Humidity	0-99% relative humidity (non-condensing)

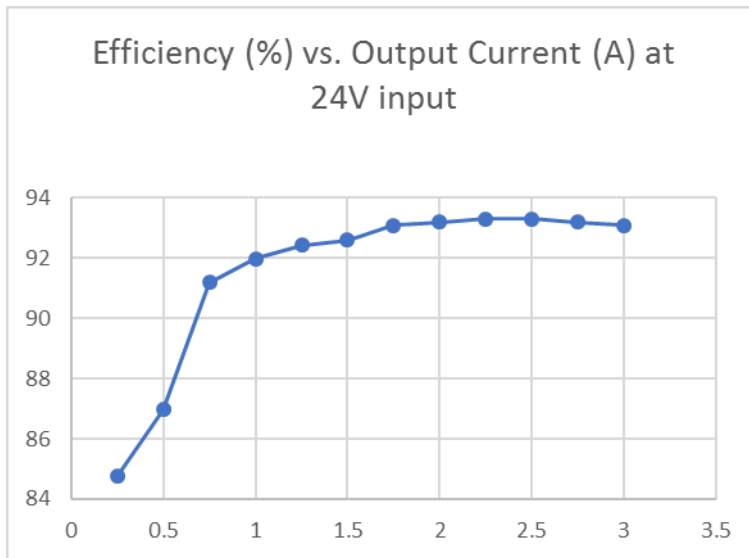


Figure 2.0 – Power Efficiency vs. Load Current at 24Vdc Input

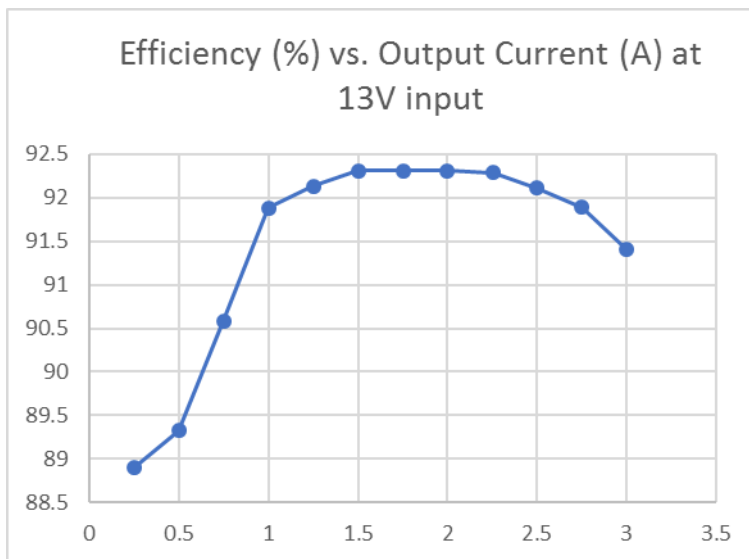
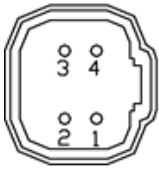


Figure 3.0 – Power Efficiency vs. Load Current at 13Vdc Input

Electrical Pinout	<p>1 Connector (equivalent TE Deutsch P/N: DT13-4P) Axiomatic Wire Harness: P/N: WH-DT06-4S-S-16AWG-2M (comprised of a 4 pin-plug assembly, which is equivalent to the TE Deutsch P/N:DT06-4S with 2 m (6.5 ft.) of 16 AWG unterminated lead wires)</p>  <p>Connector Pin Out 1 Output + (red/white) 2 Output - (black/white) 3 Power - (black) 4 Power + (red)</p> <p>A mating wire harness is available as P/N: WH-DT06-4S-S-16AWG-2M. It has the following wire colours and pin out. Pin# 1 Red/White for Output + Pin# 2 Black/White for Output - Pin# 3 Black for Power - Pin# 4 Red for Power +</p>
Installation	<p>Set up</p> <ol style="list-style-type: none"> 1. A maximum 20A fuse is recommended in the primary circuit to provide protection for the primary wiring. 2. Mount the converter with four M6 or ¼" bolts. Suggested length: 1" [25 mm] 3. Ground the unit to chassis ground. 4. Snap the plug connector into the mating receptacle mounted on the converter. 5. Connect the wiring to power and output terminal blocks (provided by customer). 6. Once the load is ready to receive power, turn on the power source to the converter.
Mounting	<p>Mounting ledges include holes sized for ¼ inch or M6 bolts. The bolt length will be determined by the end-user's mounting plate thickness. Typically ¾ inch (20 mm) is adequate. If the module is mounted without an enclosure, it should be mounted vertically with connectors facing left and right to reduce likelihood of moisture entry. All field wiring should be suitable for the operating temperature range of the module. Install the unit with appropriate space available for servicing and for adequate wire harness access (6 inches or 15 cm) and strain relief (12 inches or 30 cm).</p>
Grounding	<p>Protective Earth (PE) must be connected to the chassis to reduce the risk of electric shock. All chassis grounding should go to a single ground point designated for the machine and all related equipment.</p>

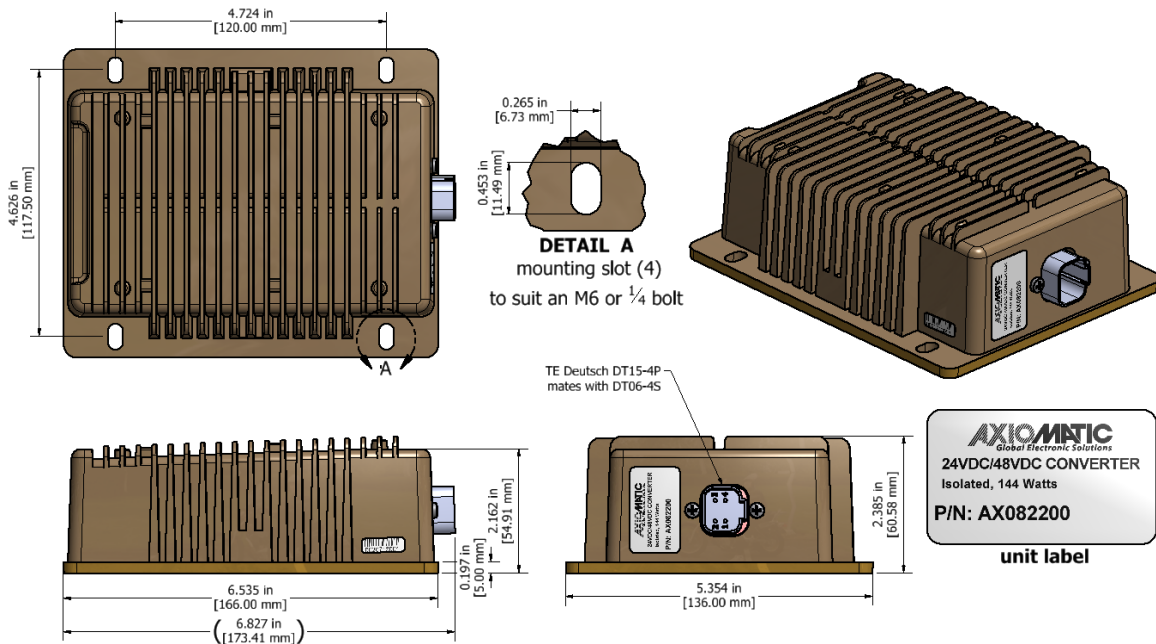


Figure 4.0 – Dimensional Drawing of AX082200

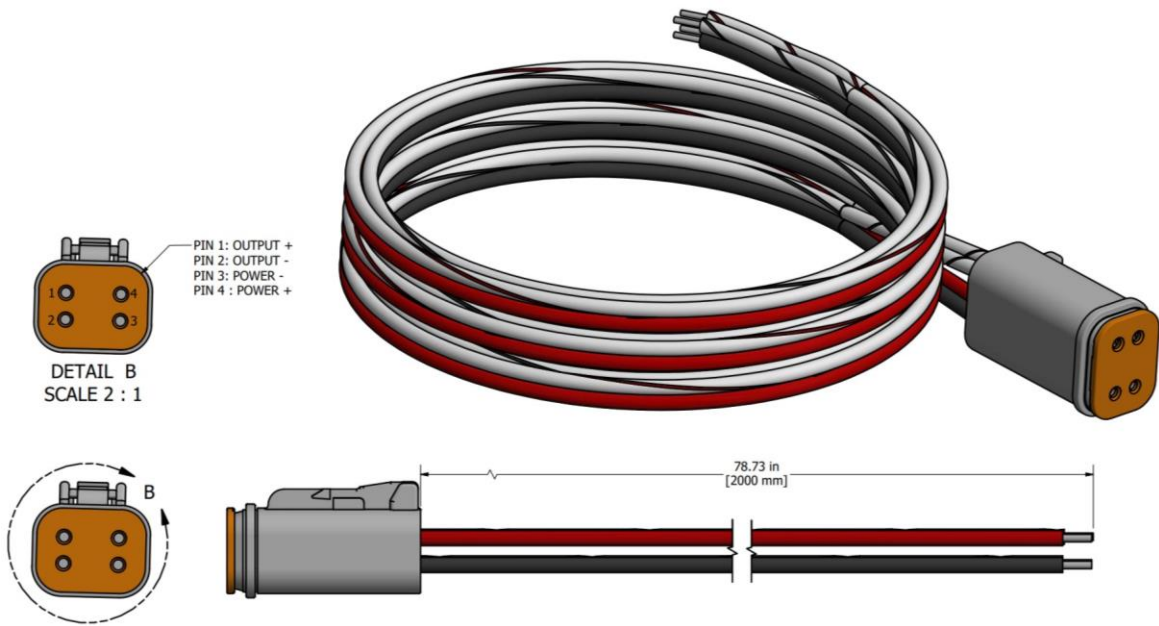


Figure 5.0 – Dimensional Drawing of Mating Wire Harness (2m) WH-DT06-4S-S-16AWG-2M

Form: TDAX082200-04/04/2024