Preliminary
TECHNICAL DATASHEET #TDAX081850

24Vdc/24Vdc Non-isolated Converter

9-36 Vdc Input
24Vdc, 720W Output
P/N: AX081850

Features:

- 9-36Vdc/24Vdc, 720 Watts
- Operates from 9Vdc-36Vdc with output current derating for input voltage less than 12Vdc.
- Typical efficiency of 95%
- Input inrush current limit
- Thermal protection for over temperature
- Reverse battery, over and under-voltage protection
- Short circuit and overcurrent protection
- -40 to 70 °C (-40 to 158 °F) operating temperature
- IP67 protection rating
- 1 TE Deutsch DT13-12P connectors and 1 TE Deutsch DT13-6P connector
- 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
- Telecom

Ordering Part Numbers:

24Vdc/24Vdc, 720W, Non-Isolated DC/DC Converter P/N: **AX081850**

Accessories:
12 pin Mating Wire Harness, 2 m: **AX070158**
6 pin Mating Wire Harness, 2m: **AX070154**

To purchase the DC/DC Converter and mating wire harness as a KIT (AX081850 converter, AX070158 and AX070154 wire harnesses), the ordering P/N is **AX081850K.**

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Technical Specifications:

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

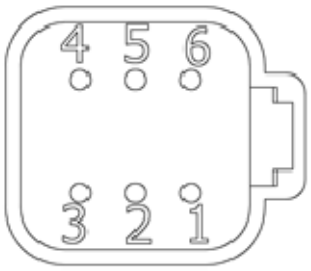
Input Specifications		Output Specifications	
Power Source	24 Vdc nominal	Nameplate Rating (Output Power)	720 VA nominal
Operating Voltage Range*	12 to 36 Vdc provides output regulated to 2% @ 30 A load For input< 12V, refer to Figure 1.0.	Output Current (DC)	30 A continuous For derating current for input < 12Vdc, refer to Figure 1.0.
Maximum Input Current	65ADC @ 12Vdc	Output Voltage	24 Vdc ± 2% Refer to Figure 1.0.
Load Dump	Designed to meet load dump conditions	Output Voltage Ripple	$V_{O(RIPPLE)} \leq$ 100 mVpp
Reverse Voltage Protection	Provided	Turn-on time (at full load)	500 ms typical
Under-voltage Shutdown	7Vdc typical	Stability	Stable at all loads (no minimum load requirement)
Over-voltage Shutdown	40 Vdc typical	Transient Response	700 mV/1 ms (25%-75% Load)
		Short Circuit Current	Protection provided Self-recovery 35A current limit

General Specifications

EMI and Environmental Compliance	Designed to meet the requirements of SAE J1455 and SAE J1113
Efficiency	95% (Refer to Figure 2.0.)
Enclosure	Cast Aluminum housing, integral gasket and connector 8.14 x 11.12 x 3.11 inches (206.00 x 282.00 x 79.00 mm) L x W x H including integral connectors Refer to the dimensional drawing, Figure 2.0.
Protection	IP67
Vibration	Pending MIL-STD-202G, Test 204D and 214A (Sine and Random) 10 g peak (Sine); 7.86 Grms peak (Random)
Shock	Pending MIL-STD-202G, Test 213B; 50 g
Weight	Contact Axiomatic.
Temperature Rating	Operating: -40 to 70°C (-40 to 158°F) Storage: -50 to 90°C (-58 to 194°F)

Figure 1. 0. – Output Current vs. Input Voltage

Figure 2. 0. – Power Efficiency vs. Output Current

Electrical Pinout	Drawing of 12 pin connector – pending:  **Input**, 12 pin TE Deutsch connector P/N: DT13-12PA Connector Pin out: Pin 4: Voltage Input + Pin 5: Voltage Input + Pin 6: Voltage Input + Pin 7: Voltage Input + Pin 8: Voltage Input + Pin 9: Voltage Input + Pin 1: Voltage Input - Pin 2: Voltage Input - Pin 3: Voltage Input - Pin 10: Voltage Input – Pin 11: Voltage Input - Pin 12: Voltage Input - Suitable for 14 AWG wire Voltage Input – connects to Voltage Output – **Output**, 6 pin TE Deutsch connector P/N: DT13-6P Connector Pin out: Pin 1: Voltage Output + Pin 2: Voltage Output + Pin 3: Voltage Output + Pin 4: Voltage Output - Pin 5: Voltage Output - Pin 6: Voltage Output – Suitable for 14 AWG wire
Input Mating Wire Harness	Input harness (new) to mate with DT13-12PA For the 12-pin input connector, a **mating plug assembly, P/N AX070158** is available and is comprised of TE Deutsch P/N: DT06-12SA, W12S and twelve contact sockets 0462-201-16141 with 2m (6.5 ft.) of 14 AWG unterminated lead wires. Refer to Figure 6.0. Also available is a plug kit. Mating Plug KIT (DT06-12SA, W12S, 12 0462-201-16141 contacts, 3 sealing plugs) P/N: **AX070105**
Output Mating Wire Harness	For the 6-pin Output connector, a **mating plug assembly, P/N AX070154** is available and is comprised of Deutsch P/N: DTP06-6S, WP6S and six contact sockets 0462-201-16141 with 2m (6.5 ft.) of 14 AWG unterminated lead wires. Refer to Figure 5.0. **P/N: AX070154** It has the following wire colours and pin out. Pin# 1 RED Voltage Output + Pin# 2 RED Voltage Output + Pin# 3 RED Voltage Output + Pin# 4 BLACK Voltage Output – Pin# 5 BLACK Voltage Output – Pin# 6 BLACK Voltage Output –
Installation	**Set up** 1. A 80A fuse is recommended in series with the input source. 2. Use four ¼-20 1 inch or M6 bolts screws to mount the converter. 3. Ground the unit to chassis ground by attaching to the casing a ground strap. 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.

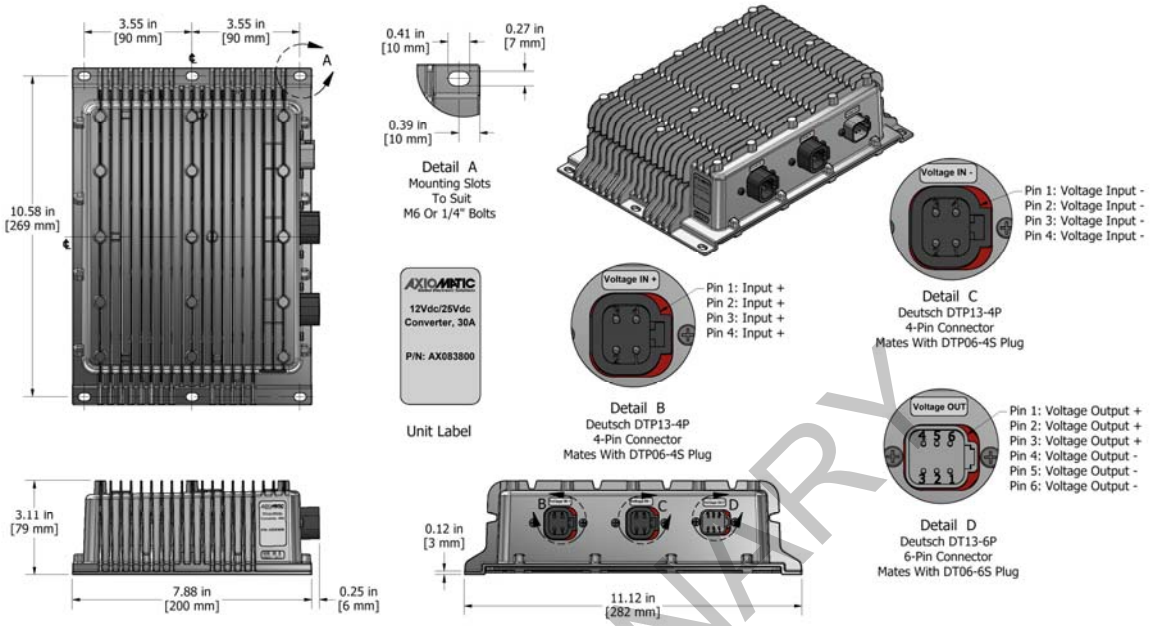


Figure 4. 0. – Dimensional Drawing – pending – same housing but different input connector

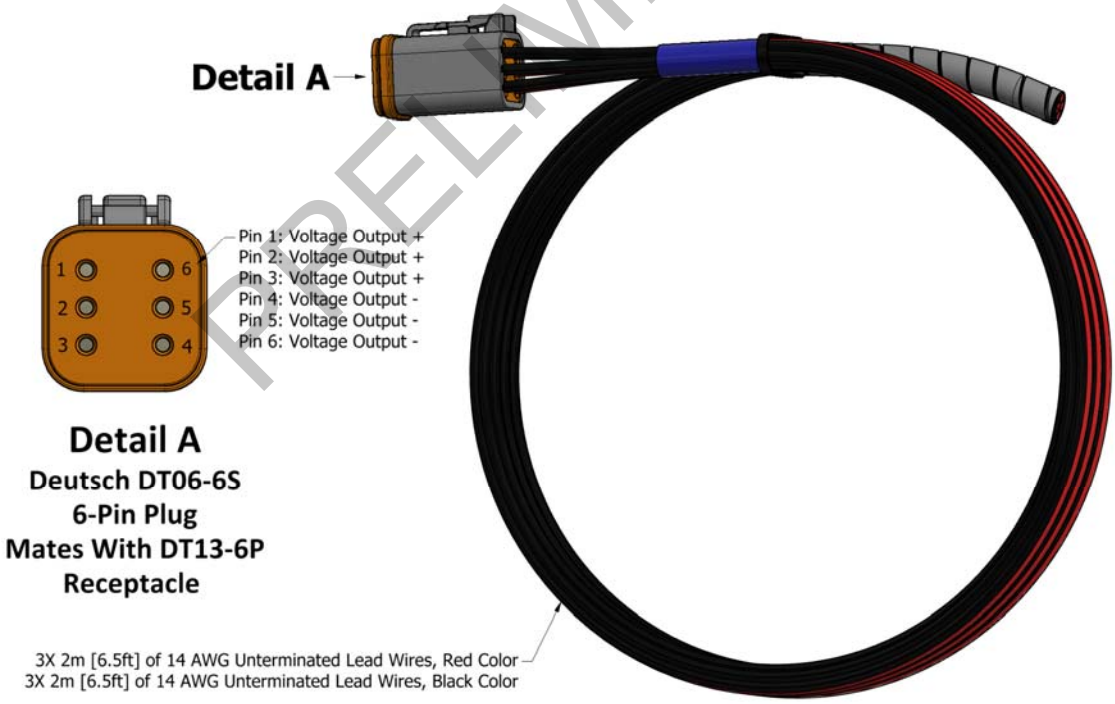


Figure 5.0 – Drawing of Wire Harness AX070154

Figure 6.0 – Drawing of Wire Harness AX070158

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/.

Form: TDAX081850-03/17/22