Preliminary
TECHNICAL DATASHEET #TDAX081850

24Vdc/24Vdc Non-isolated Converter

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

Features

- 9-36Vdc/24Vdc, 720 W
- Operates from 9 Vdc to 36 Vdc with output current derating for input voltage less than 12 Vdc.
- 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 with derating for input less than 17 Vdc
- IP67 protection rating
- 1 TE Deutsch DT13-12P type connector and 1 TE Deutsch DT13-6P type 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, 2 m: **AX070154**

To purchase the Converter and mating wire harnesses 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 °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 Limitations & Return Materials Process as described on https://www.axiomatic.com/service/.

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

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 7.96 in x 11.12 in x 3.11 in (202 mm x 282 mm x 79 mm) L x W x H including integral connectors Refer to the dimensional drawing, Figure 2.0.
Protection	IP67
Weight	7.8 lbs. (3.54 kg)
Operating Temperature	-40 to 70 °C (-40 to 158 °F) There is derating for input less than 17V, see figures 3.1 and 3.2.
StorageTemperature	-50 to 90 °C (-58 to 194 °F)

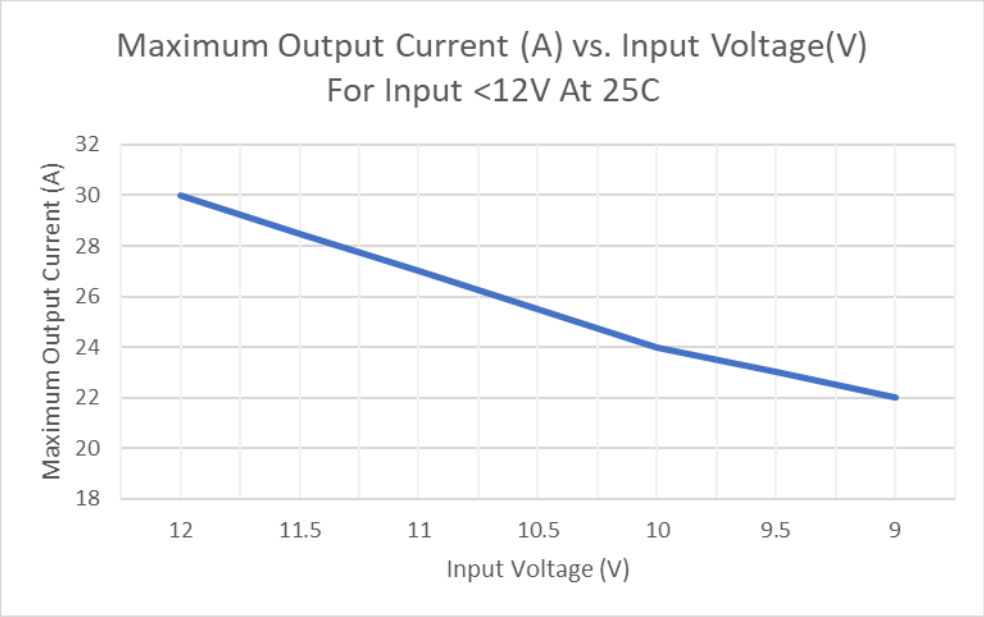


Figure 1. 0. – Output Current vs. Input Voltage

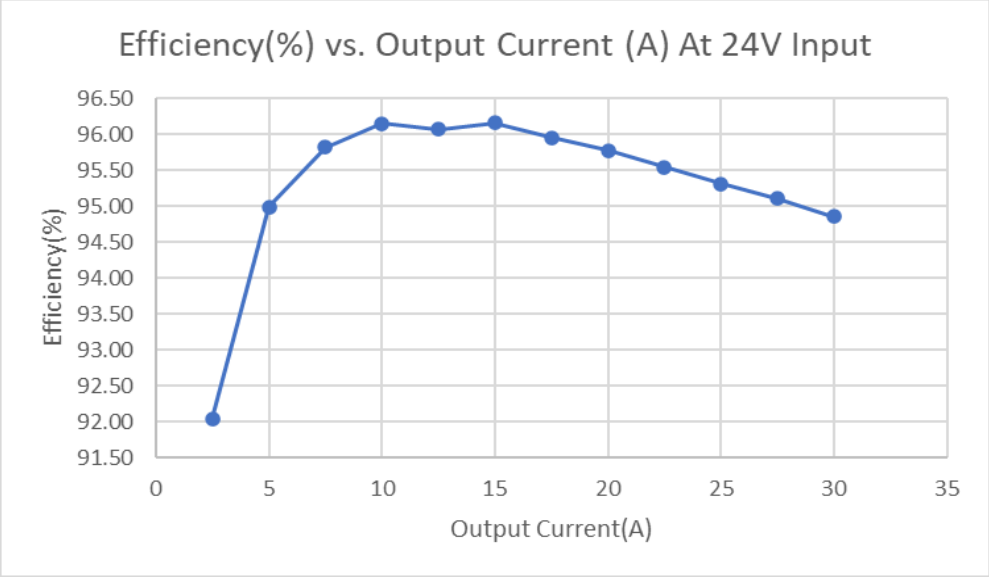


Figure 2. 0. – Power Efficiency vs. Output Current

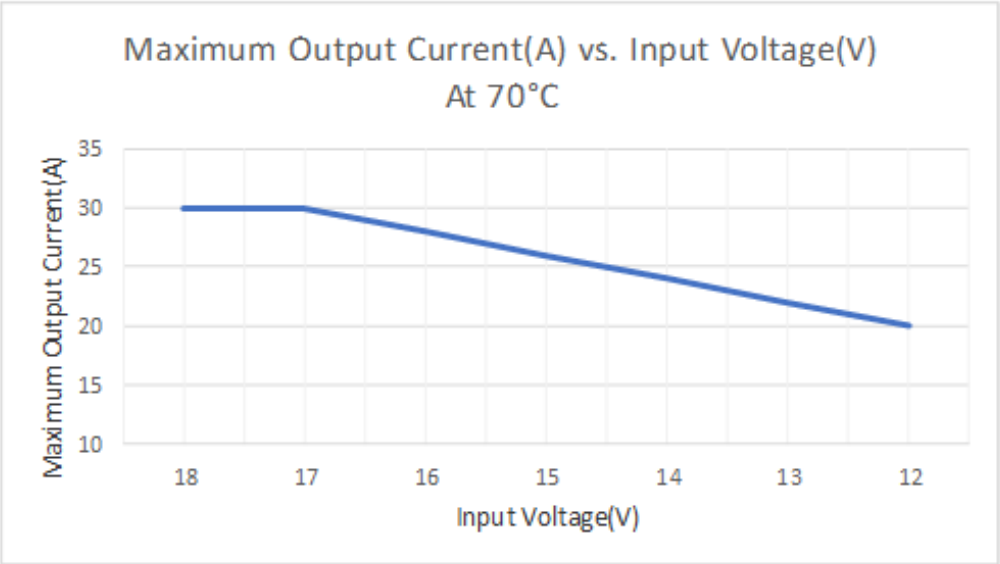


Figure 3. 1. – Maximum Output Current vs. Input Voltage At 70°C

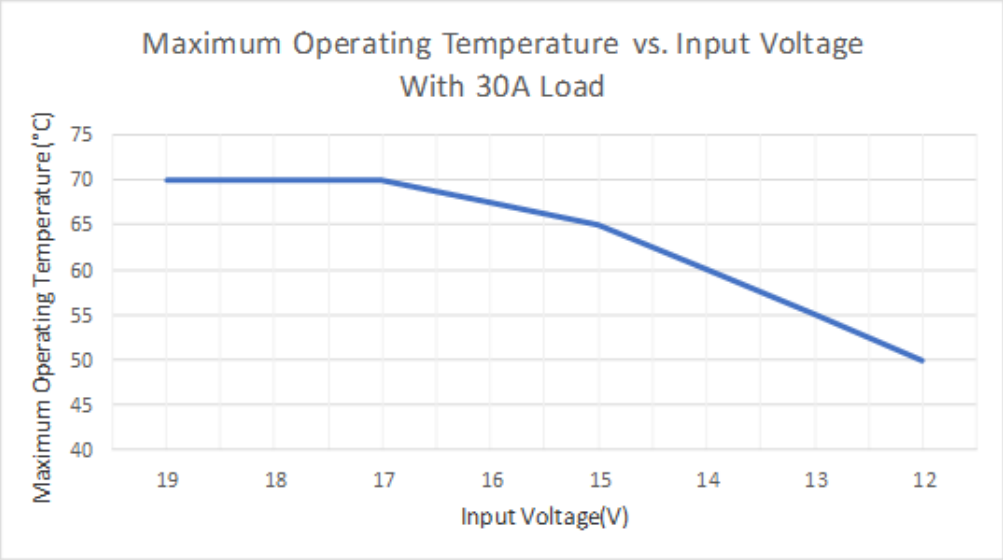
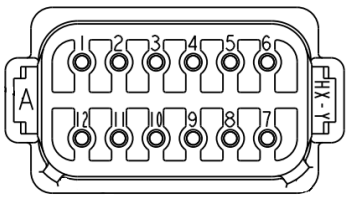


Figure 3.2. – Maximum Operating Temperature vs. Input Voltage With 30A Load

<table>
<tr>
<td>Electrical Pinout</td>
<td>
P/N: DT13-12PA


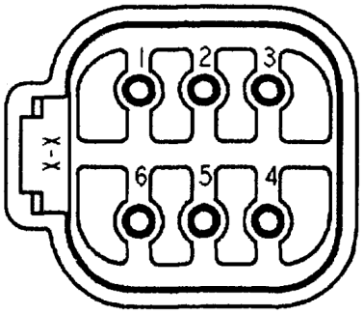
Input:
12 pin connector (TE Deutsch P/N: DT13-12PA)

<u>Connector Pin out:</u>
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- terminals connected with Voltage Output- terminals

P/N DT13-6P


Output:
6 pin connector (TE Deutsch P/N: DT13-6P)

<u>Connector Pin out:</u>
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
</td>
</tr>
<tr>
<td>Input Mating Wire Harness</td>
<td>P/N: AX070158 (includesTE Deutsch P/Ns: DT06-12SA, W12S and 12 contacts 0462-201-16141 with 2m (6.5 ft.) of 14 AWG unterminated lead wires.)

It has the following wire colours and pin out. Refer to Figure 6.0.
Pins 4,5,6,7,8,9 INPUT+, 14AWG WHITE/RED
Pins 1,2,3,10,11,12 INPUT-, 14AWG WHITE/BLACK

Also available is a mating plug KIT - P/N: AX070105 (includes DT06-12SA, W12S, 12 contacts 0462-201-16141, 3 sealing plugs)</td>
</tr>
<tr>
<td>Output Mating Wire Harness</td>
<td>P/N: AX070154 (includes TE Deutsch P/Ns: DTP06-6S, WP6S and 6 contacts 0462-201-16141 with 2m (6.5 ft.) of 14 AWG unterminated lead wires.)

It has the following wire colours and pin out. Refer to Figure 5.0.
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 –</td>
</tr>
<tr>
<td>Installation</td>
<td>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.</td>
</tr>
</table>

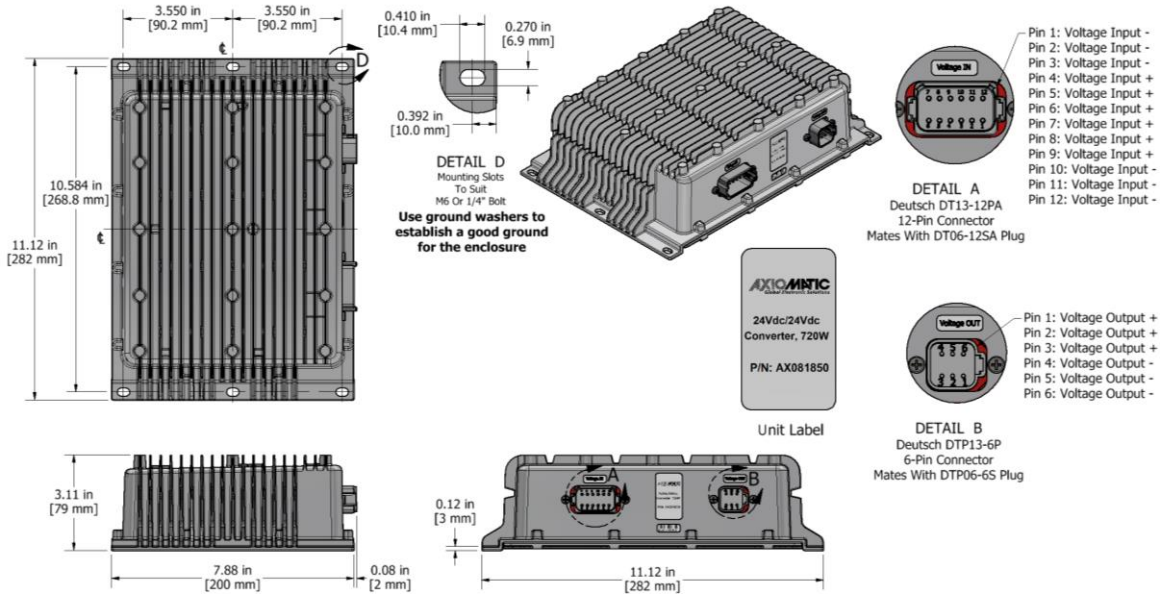


Figure 4. 0. – Dimensional Drawing

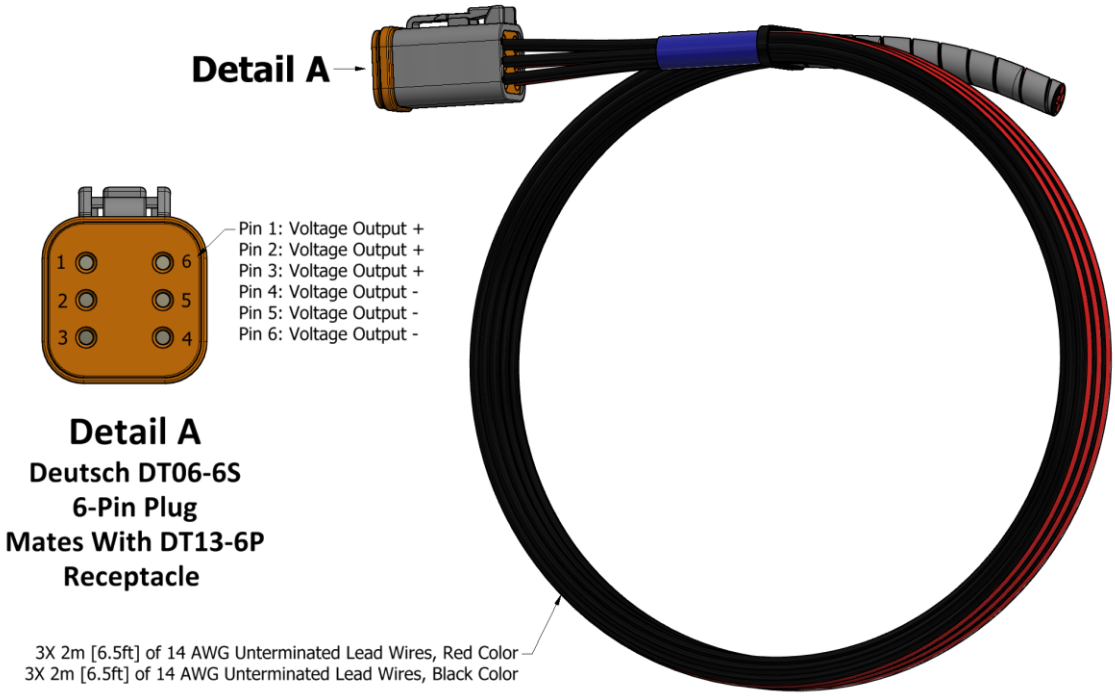


Figure 5.0 – Drawing of Wire Harness AX070154

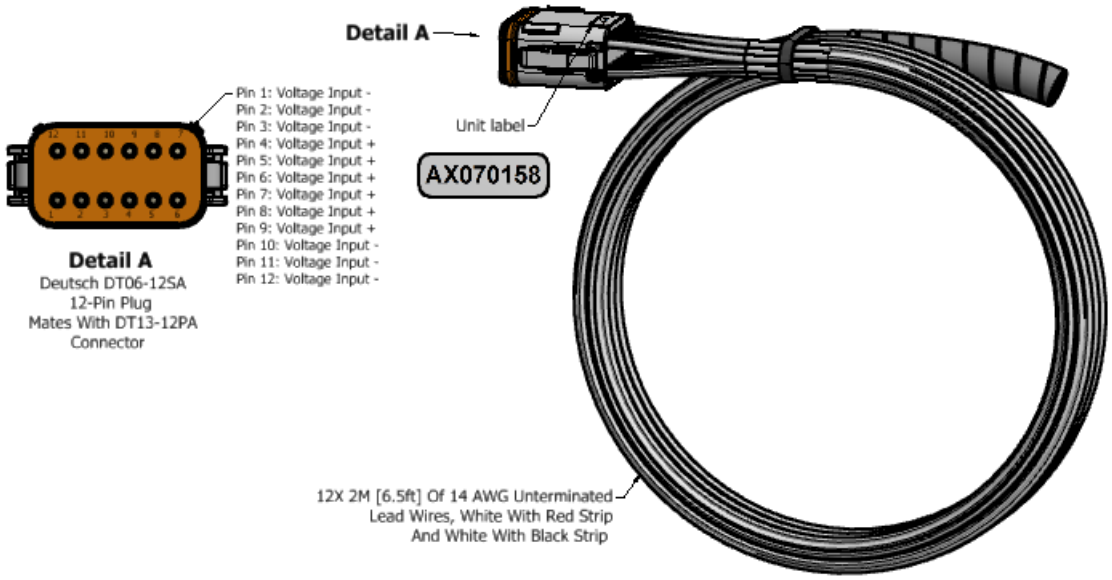


Figure 6.0 – Drawing of Wire Harness AX070158

Form: TDAX081850-11/12/2024