

TECHNICAL DATASHEET #TDAX083120  
**12Vdc to 12Vdc Converter**  
**Isolated, 48 W**  
**P/N: AX083120**

**Features:**

- 12Vdc to 12Vdc Converter, 48 Watts
- Input operating voltage range from 5 to 20Vdc
- Regulated output of 12Vdc  $\pm$  2%, 4A
- No minimum load requirement
- Switch mode operation delivers high efficiency
- Reverse polarity protection
- Withstands engine cranking
- Outputs voltage during load dump
- Inrush current control
- Input and output isolation
- Rugged and highly reliable
- Compact size for ease of mounting in confined spaces
- Connects via a 4-pin plug
- Suitable for high shock and vibration environments
- Operational from -40 to 85°C
- IP67 protection
- EMI/EMC compliant
- SAE J1455 and SAE J1113 compliant (including load dump and cranking transients)



**Applications:** Power Radio Equipment, Charging/Cranking Battery Based Power Supply Systems, Power Conditioning for Controls & Instrumentation, Off-Highway Equipment Control Systems

**Description:** The DC-DC Converter provides regulated 12Vdc power suitable for instrumentation and controls operating in a battery powered system. For operation under the most harsh and demanding conditions, the unit is fully sealed and enclosed to protect against moisture, shock and vibration. Power from a battery or other source in the range of 5-20Vdc is converted to a 12Vdc output regulated to 2% and 4 Amp continuous current. Input and output isolation are provided. The unit is designed with extremely rugged surge and transient suppression in addition to sustained over/under voltage protection as well as inrush current control. With a nameplate rating of 48 Watts of output power, the DC-DC Converter has an efficiency rated at 88%.

**Ordering Part Numbers:**

Converter with Wire Harness as a KIT: **AX083120K**  
(KIT AX083120 12Vdc-12Vdc Isolated Converter, AX070155 2m Wire Harness)

Items can also be ordered individually.

Converter: **AX083120**

Mating Wire Harness, 2 m: **AX070155**

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

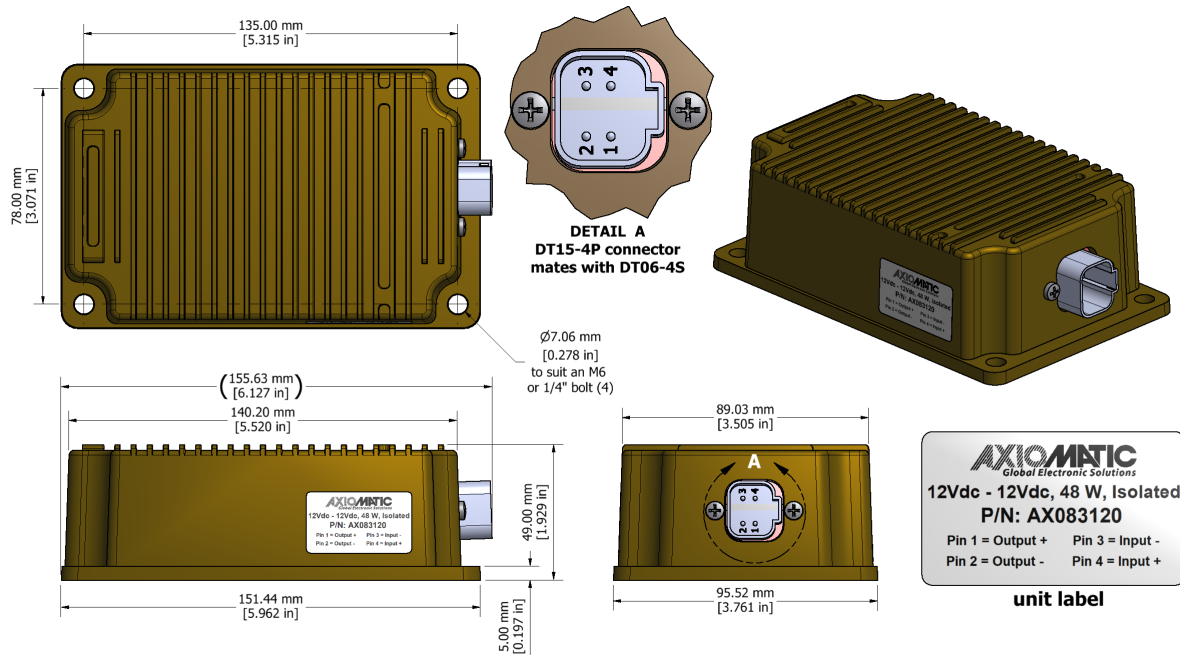


Figure 1.0 - Dimensional Drawing

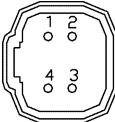
**Technical Specifications:** All specifications are typical at nominal input voltage and 25°C.

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	12 Vdc nominal	Nameplate Rating (Output Power)	48 Watts nominal
Operating Voltage Range	5 - 20Vdc Starts up @ 9Vdc Withstands load dump up to 105Vdc	Output Current	4 Amps continuous
Maximum Input Current	<8 Adc @ 9Vdc	Output Voltage	12VDC ± 2%
Reverse Voltage and Inrush Current Protection	Provided	Line Regulation	0.3%
Under-voltage Shutdown	Shuts off: 4.0 – 4.8Vdc Turns on: 7.5 – 9Vdc	Output Voltage Ripple	250 mV
		Turn-on Time (with full load)	600 ms @ 9Vdc input
		Stability	Stable at all loads (no minimum load requirement)
		Transient Response	240 mV/1 ms (25% - 75% Load)
		Short Circuit Current	Protection provided Self recovery 5A current limit

<b>General Specifications</b>	
Isolation	Isolated from input, output and chassis ground 700Vdc between primary and secondary
Efficiency	88% @ input of 12Vdc and full load
Operating Temperature	-40 to 85°C (-40 to 185°F) -40 to 75°C (-40 to 167°F) at < 8Vdc input
Storage Temperature	-50 to 85°C (-58 to 185°F)
Humidity	0-99% relative humidity (non-condensing)
Protection rating	IP67
Shock	MIL- STD-202G, Method 213B, test condition A 50g (half sine pulse, 9ms long, 8 per axis)
Vibration	MIL-STD-202G, Method 204D test condition C (Sine) and Method 214A, test condition B (Random) 10 g peak (Sine) 7.68 Grms peak (Random)
EMI/EMC	Compliant SAE J1455 and SAE J1113 compliant (including load dump and cranking transients for 12Vdc systems)  ISO 7637-2 Conducted Transients for 12Vdc systems  ISO 10605 ESD Horizontal coupling EN61000-4-2 ESD Vertical coupling (±4 kV, ±6 kV and ±8 kV for direct contact and ±8kV and ±15 kV for air discharge)
Electrical Connection	Equivalent TE Deutsch P/N: DT15-4P See Table 1.0. Axiomatic Mating Wire Harness: P/N: AX070155 See Table 2.0.
Weight	2.02 lbs. (0.92 kg) excluding mating harness 2.43 lbs. (1.10 kg) with mating wire harness
Enclosure and Dimensions	Aluminum enclosure Encapsulated 3.76 x 6.12 x 1.93 inches 95.5 x 155.6 x 49.0 mm (W x L x H including connector) See Figure 1.0.
Paralleling	The converters can be configured in parallel for current sharing or redundancy.

**Table 1.0. Connector Pin Out**

	Equivalent TE Deutsch P/N: DT15-4P
	<ol style="list-style-type: none"> <li>1. Output +</li> <li>2. Output -</li> <li>3. Power -</li> <li>4. Power +</li> </ol>

**Mating Wire Harness**

P/N: AX070155  
Comprised of a 4-pin plug (equivalent TE Deutsch P/Ns: DT06-4S, W4S, four 0462-209-16141 contacts, and 2 m [6.5 ft.] of 14 AWG unterminated lead wires)

**Table 2.0 Wire Harness Pin Out**

Function	Colour
Output +	Red/White
Output -	Black/White
Power -	Black
Power +	Red

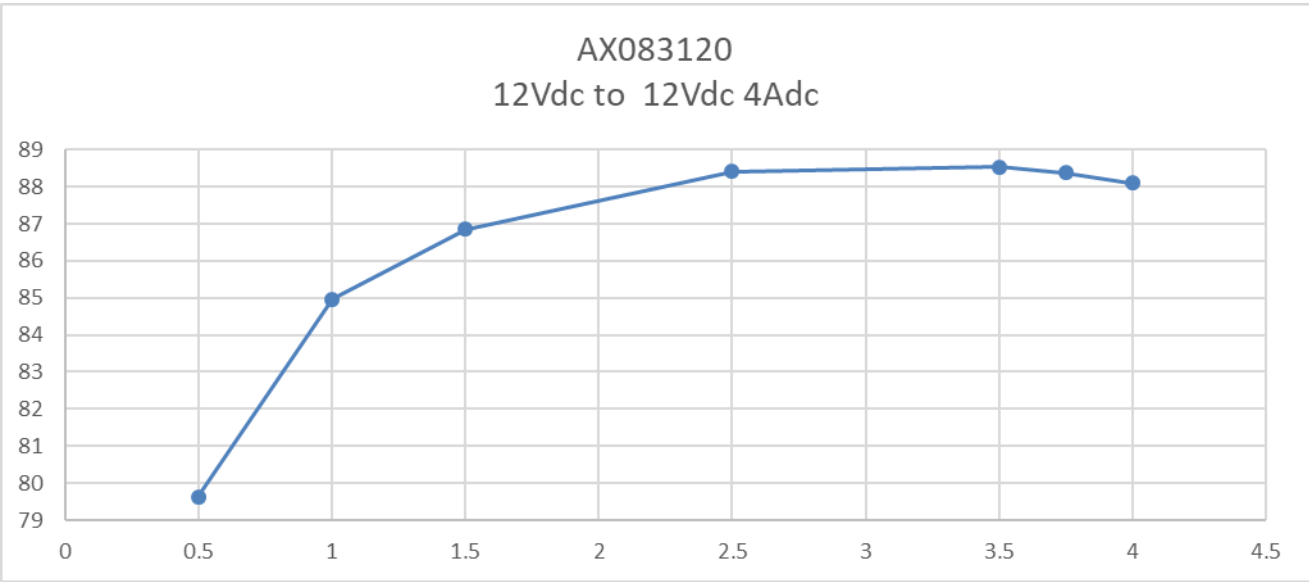


Figure 2.0 - Efficiency (%) vs. Output (A dc)

Form: TDAX083120-06/23/23