

48Vdc/12Vdc Step Down Converter

48 Vdc Input

13.8Vdc, 180 W Output

P/N: AX082400

Features:

- Wide input operating voltage 18 to 72 Vdc (48 Vdc nominal)
- Conditioned output of 13.8 Vdc
- High current output capability (15 A nominal, 18A peak)
- 180 Watts output power
- Switch mode operation delivers very high efficiency >93%
- Design manages heat dissipation avoiding forced cooling
- Reverse polarity, input under/over voltage protections
- Inrush current limit
- Overtemperature protection
- Short-circuit protection
- Rugged and highly reliable
- Compact size for ease of mounting in confined spaces
- Suitable for moist, high shock and vibration environments
- Operational from -40 to 85°C
- IP67 protection
- EMI/EMC compliant
- Current sharing, redundancy for parallel applications



Applications: Designed to interface between 48Vdc batteries and 13.8Vdc electrical systems such as solenoids, relays and other electrical systems found on mobile equipment, lift trucks and buses.

Ordering Part Numbers:

Converter with Wire Harness KIT:

AX082400K: KIT (AX082400 Converter, WH-DTP06-4S-S-2M Wire Harness)

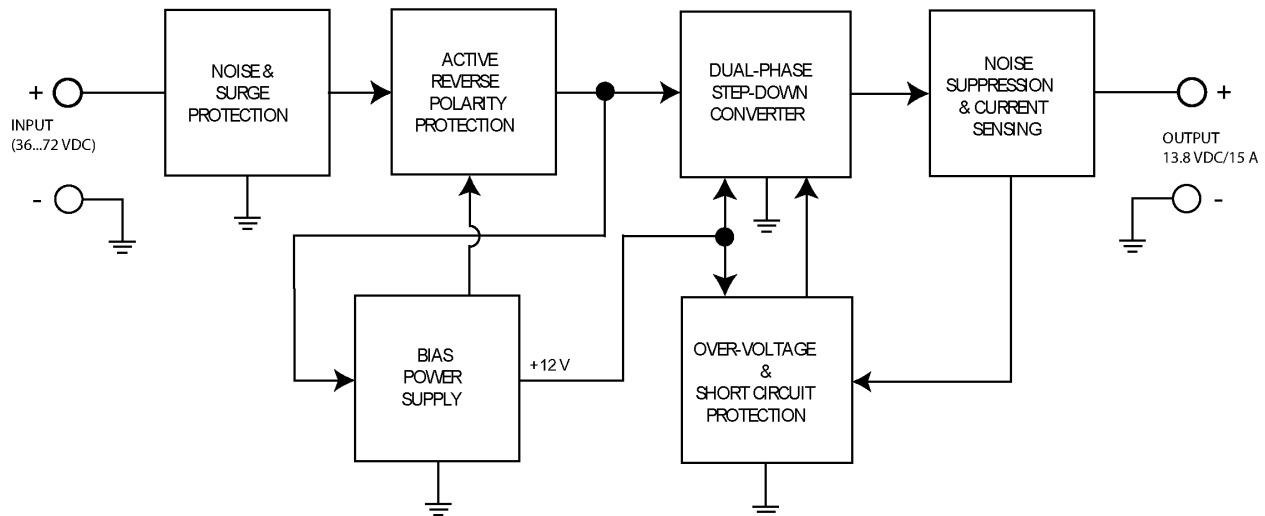
Items can also be ordered individually.

Converter: **AX0802400**

Mating Wire Harness, 2 m: **WH-DTP06-4S-S-2M**

Description: The DC-DC Converter provides regulated 13.8Vdc power suitable for solenoids, relays and other electrical systems. For operation under the harshest and demanding conditions, the IP67 rated unit protects against moisture, shock and vibration. Power from a battery or other source of 48 Vdc is converted to a 13.8Vdc output. The unit has a high current output capability of 15 Amps. The device manages heat dissipation and requires no forced cooling systems. Short-circuit and reverse polarity protections are provided. The compact unit is designed with extremely rugged surge and transient suppression in addition to sustained over/under voltage protection. With a nameplate rating of 180 Watts of output power, the DC-DC Converter provides proprietary dual-phase topology for a high efficiency of >93%.

BLOCK DIAGRAM



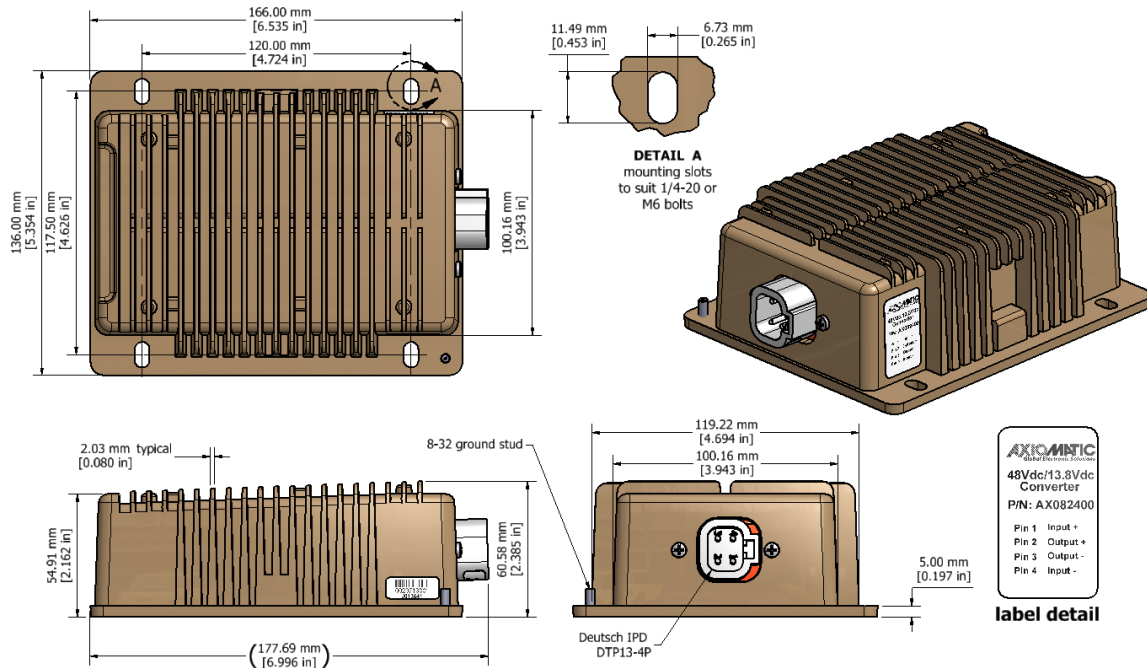
Technical Specifications:

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	48 Vdc nominal	Nameplate Rating (Output Power)	180 Watts nominal (240 Watts peak)
Operating Voltage Range	18 to 72 Vdc	Output Current (DC)	15 A continuous (18A peak)
Maximum Input Current	6 A _{DC} @ 36 Vdc, 15 A I-output	Output Voltage	11.9 To 13.8Vdc Factory set at 13.8 Vdc (nominal) ± 1%
Inrush Current Protection	Provided	Output Voltage Ripple	V _{O(RIPPLE)} ≤ 100 mVpp
Input Reverse & Under/Over-voltage Protection	Provided	Rise Time (with full load)	30-70 msec. at maximum load
Output Over-voltage Protection	Provided	Turn-on Overshoot	<1% of output voltage
Isolation	Not provided	Stability	Stable at all load conditions
		Transient Response	5% of Output Voltage (25% - 75% Load, V _{in} = 48V)
		Short-Circuit Protection	Provided, Auto-recover
		Overload Protection	Provided 16.5A ±1.5A

General Specifications	
Efficiency	>93%
Quiescent Current	50 mA @ 48Vdc Typical
Operating Temperature	-40 to 85°C (-40 to 185°F)
Storage Temperature	-40 to 85°C (-40 to 185°F)
Humidity	0-99% relative humidity (non-condensing)
Vibration	MIL-STD-202G, Test 204D and 214A (Sine and Random), Test 213BA – 6 ms (Shock) 15 g peak (Sine) 7.68 Grms peak (Random) 50g (Shock)
Protection rating	IP67
Electrical Connection	1 4-pin connector (equivalent TE Deutsch P/N: DTP13-4P) <u>Pin Out</u> 1. Power + 2. Output + 3. Output – 4. Power – A mating plug assembly with 12 AWG unterminated lead wires is available. Ordering P/N: WH-DTP06-4S-S-2M (The mating plug assembly is equivalent to the TE Deutsch P/Ns: DTP06-4S, WP4S and four contact sockets 0462-203-1214, with 2 meters (6.5 ft.) of 12 AWG lead wire, unterminated.) <u>Wire Harness Pin out:</u> Input + Red Output + Red/White Output – Black/White Input - Black
Weight	3.00 lbs. (1.37 kg)
Dimensions	5.35 x 7.00 x 2.39 inches (W x L x H including connector) 136.0 x 177.7 x 60.6 mm

Dimensional Drawing



Installation	
Set up	
<ol style="list-style-type: none"> 1. A 15A fuse is recommended in the primary circuit to provide protection for the primary wiring. 2. Use four ¼-20 1 inch screws to mount the converter. 3. Snap the mating plug connector with wiring harness into the receptacle mounted on the converter. 4. Once the load is ready to receive power, turn on the power source to the converter. 	
Grounding	<p>Protective Earth (PE) must be connected to the grounding stud to reduce the risk of electric shock. The conductor providing the connection should have a ring lug and wire larger than or equal to 4 mm² (12 AWG). The ring lug should be placed between the nut and a star washer. (To secure the ground strap, use an 8-32 “K-LOK” locknut, stainless steel, 3/8” O.D.)</p> <p>All chassis grounding should go to a single ground point designated for the machine and all related equipment.</p> <p>The ground strap that provides a low impedance path for EMI should be a ½ inch wide, flat, hollow braid, no more than 12 inches long with a suitable sized ring lug for the module’s grounding lug. It may be used in place of the PE grounding conductor and would then perform both PE and EMI grounding functions.</p>
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.</p> <p>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.</p> <p>All field wiring should be suitable for the operating temperature range of the module.</p> <p>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>
Paralleling	<p>The converters can be installed in a parallel configuration for current sharing or redundancy.</p>

Form: TDAX082400-06/21/23