TECHNICAL DATASHEET #TDAX081151

# 24Vdc/13.8Vdc Converter
# 14W, Isolated
# P/N: AX081151

## Features:

- 24Vdc to 13.8Vdc Converter, 14 Watts
- Input operating voltage range from 9 to 36Vdc
- Conditioned output of 13.8Vdc ± 0.5%, 1A
- No minimum load requirement
- Switch-mode operation delivers high efficiency
- Reverse polarity protection
- Input and output isolation
- Robust, rugged and highly reliable
- Compact size for ease of mounting in confined spaces
- Connects via a 4-pin plug with 2-meter lead wires
- Suitable for moist, high shock and vibration environments
- Operational from -40 to 85°C
- IP67 protection
- EMC Compliant for transients, surge and load dump

## Applications:

Lift Equipment

## Description:

The DC-DC Converter provides clean 13.8Vdc power suitable for instrumentation and control networks or process equipment. 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 9-36Vdc (24Vdc nominal) is converted to a 13.8Vdc output regulated to 0.5%. Input and output isolation is provided. The unit is designed with extremely rugged surge and transient suppression in addition to sustained over/under voltage protection. The nominal nameplate rating is 14 Watts of output power. The DC-DC Converter has an efficiency rated at >89%.

## Ordering Part Numbers:

Converter with Wire Harness KIT:
**AX081151K** (KIT AX081151 DC/DC Converter, WH-DT06-4S-S-16AWG-2M Wire Harness)

Items can also be ordered individually.
Converter: **AX081151**
Mating Wire Harness, 2 m: **WH-DT06-4S-S-16AWG-2M**
Mating Plug Kit: **PL-DT06-4S**


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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) | 14 Watts nominal |
| Operating Voltage Range | 9 - 36Vdc continuous | Output Current | 1A continuous |
| Maximum Input Current | 2 Adc @ 9Vdc | Output Voltage | 13.8Vdc ± 0.5% |
| Inrush Current | Less than 3A | Output Over-voltage Shutdown | 19Vdc typical |
| Reverse Voltage Protection | Provided | Line Regulation | 0.02% |
| Over-voltage Shutdown | 38 Vdc typical | Output Voltage Ripple | 0.5% |
| Under-voltage Shutdown | Output shuts off @ 8.5Vdc<br>Output turns on @ 10.0Vdc | Turn-on Time (with full load) | 800 ms for all inputs |
| | | Turn-on Overshoot | None |
| | | Stability | Stable at all loads (no minimum load requirement) |
| | | Transient Response | 240 mV/1 ms (25% - 75% Load) |
| | | Short Circuit Current | Protection provided<br>Self recovery<br>1.2A current limit |

| General Specifications | |
|---|---|
| Isolation | Isolated from input, output and chassis ground<br>700Vdc between primary and secondary |
| Efficiency | 82% @ 24Vdc and 1A load |
| Quiescent Current | 60 mA @ 24Vdc |
| Operating Temperature | -40 to 85°C (-40 to 185°F) |
| Storage Temperature | -50 to 85°C (-58 to 185°F) |
| Humidity | 0-99% relative humidity<br>(non-condensing) |
| Protection rating | IP67 |
| EMC Compliance | EMC Compliant for transients, surge and load dump<br>IEC61000-4-5<br>IEC61000-4-4<br>SAE J1113-11 |
| Vibration | MIL-STD-202G, Method 204D test condition C (Sine)<br>and Method 214A, test condition B (Random)<br>10 g peak (Sine)<br>7.68 Grms peak (Random) |
| Shock | MIL- STD-202G, Method 213B, test condition A<br>50g (half sine pulse, 9ms long, 8 per axis) |
| Electrical Connection | Deutsch IPD P/N: DT13-4P connector assembly mates to a wire harness comprised of a 4 pin plug (Deutsch IPD P/N: DT06-4S assembly) with 2 m (6.5 ft.) of 16 AWG unterminated lead wires<br>P/N: **WH-DT06-4S-S-16AWG-2M**<br>Pin out: Refer to page Installation section. |
| Weight | 2.02 lbs. (0.92 kg) excluding mating wire harness<br>2.43 lbs. (1.10 kg) with mating wire harness |
| Enclosure and Dimensions | Aluminum enclosure<br>Encapsulated<br>3.76 x 6.12 x 1.93 inches<br>95.5 x 155.6 x 49.0 mm<br>(W x L x H including connector)<br>Refer to Figure 2.0. |

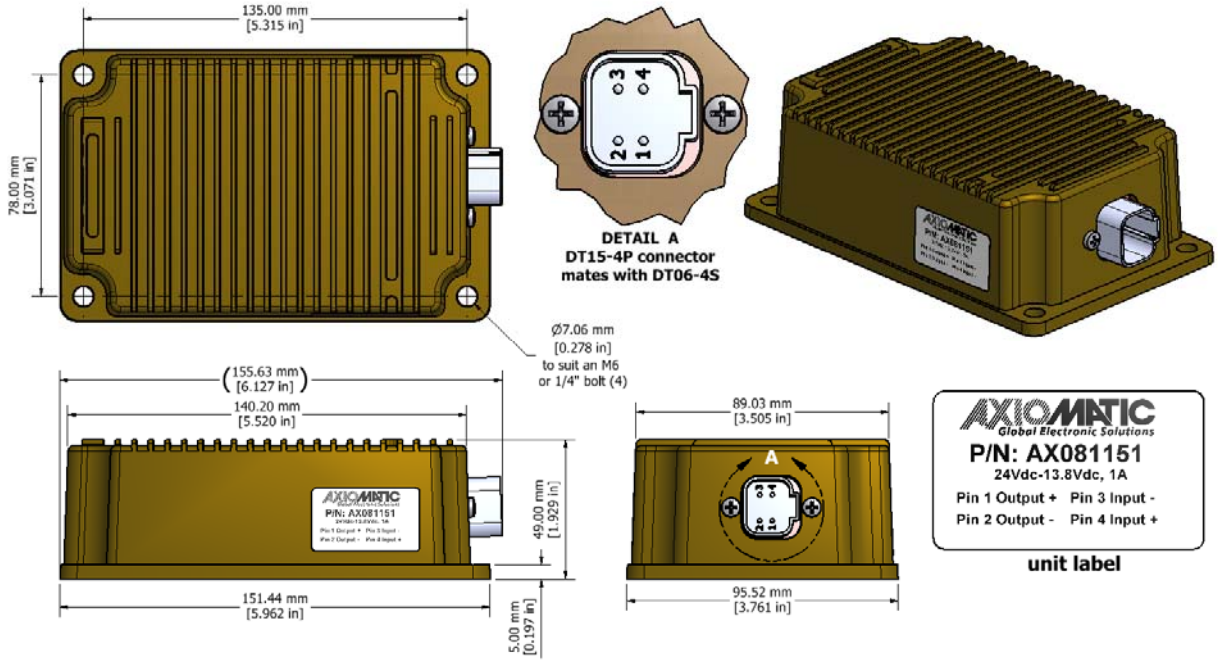
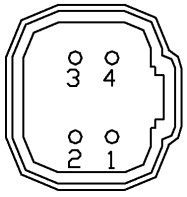



*Figure 2.0 – Dimensional Drawing*

## Installation

### Set up

1. A maximum 10A 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. Ground the unit to chassis ground by attaching a ground strap and locking washer to the ground stud found on the housing. (*See mechanical drawing.)*
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.




Connector Pin Out
1 Output + (red/white)
2 Output - (black/white)
3 Power - (black)
4 Power + (red)

### Mounting

Mounting ledges include holes sized for ¼ inch or M4 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).

### Configuration

- For standard operation follow the set up instructions above.
- For an inversion of the output, connect the +ve output pin to the load's –ve point and the –ve output pin to the load +ve point.