

12 or 24VDC/24VDC Converter

24V/24V, 120W or 12V/24V, 95W

P/N: PSU1K

Isolated 24VDC power suitable for use with DeviceNet communications equipment or to protect sensitive electronics powered by a battery circuit...

- 24VDC to 24VDC Converter, 120 Watts
- 12VDC to 24VDC Converter, 95 Watts
- Input operating voltage range from 11 to 32VDC
- Conditioned output of 24VDC \pm 1%
- 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 70°C
- IP67 protection
- CE marked
- IT Class 2 - UL recognized to UL1950 and cUL recognized to CAN/CSA-C22.2 No. 950-95 (24VDC input model)



Applications:

SCADA Systems
Remote Terminal Units (RTU)
Switchgear
Motor Control Centers

Charging/Cranking Battery Based Power Supply Systems
Power Conditioning for Controls & Instrumentation utilizing DeviceNet or other industrial networks
Off-Highway Equipment Control Systems
Marine Auxiliary and Propulsion Systems

These applications are found in a variety of industries including process industries, general manufacturing, electric utilities, oil & gas, water/wastewater and mobile equipment.

Description: The DC-DC Converter provides clean 24VDC 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 11-32VDC is converted to a 24VDC output regulated to 1%. 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. With a 24V input, the nominal nameplate rating is 120 Watts of output power. With a 12V input, the nominal nameplate rating is 95 Watts of output power. The DC-DC Converter has an efficiency rated at >90%.

Ordering Part Numbers:

Converter with Wire Harness KIT:

PSU1K (KIT SMP-BAC-V06-24VDC-01 Converter, WH-DT06-4S-S-16AWG-2M Wire Harness)

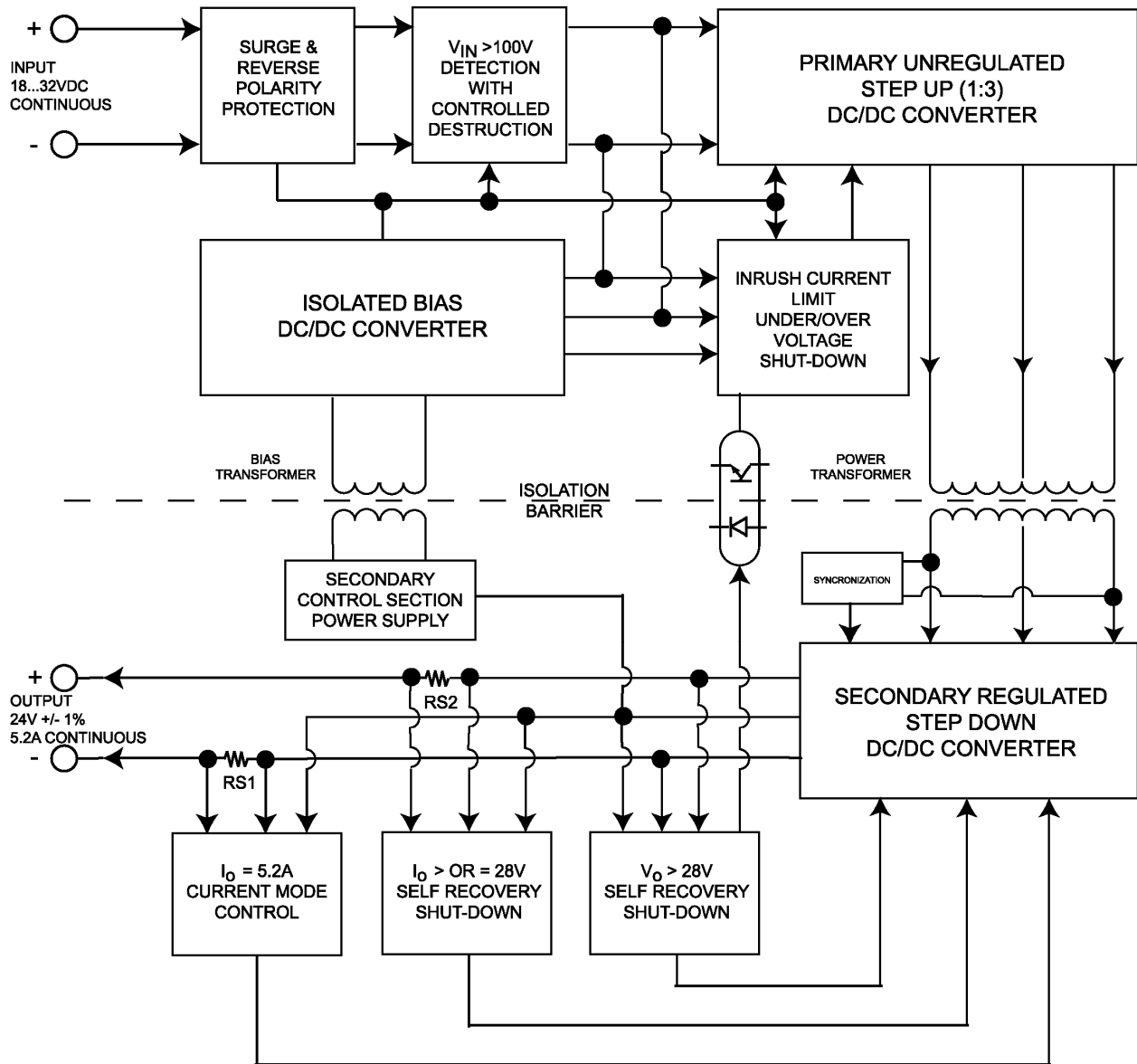
Items can also be ordered individually.

Converter: **SMP-BAC-V06-24VDC-01**

Mating Wire Harness, 2 m: **WH-DT06-4S-S-16AWG-2M**

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

Block Diagram – 24V Nominal Input

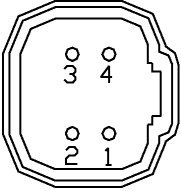


The block diagram for 12V nominal input is not shown.

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 or 12VDC	Nameplate Rating (Output Power)	With 24VDC input: 120 Watts nominal With 12VDC input: 95 Watts nominal
Operating Voltage Range	11 - 32VDC continuous	Output Current	With 24VDC input: 4.12/5.2A continuous With 12VDC input: 4A continuous
Maximum Input Current	14.4 ADC	Output Voltage	24VDC \pm 1%
Reverse Voltage Protection	Provided	Output Voltage Ripple	V(RIPPLE) \leq 250 mVpp
Over-voltage Shutdown	33VDC	Turn-on Time (with full load)	250 msec max/5% of final value
Under-voltage Shutdown	7.5VDC	Turn-on Overshoot	None
Inrush Current	Max. 20A for 50 mSec.	Stability	Stable at all loads (no minimum load requirement)
		Transient Response	200mV/1.5ms (No Load to Full Load) 100mV/1ms (50% - 100% Load)
		Short Circuit Current	Protection provided Self recovery 5.4A current limit
General Specifications			
Isolation	Isolated from input, output and chassis ground 500V between primary and secondary		
Efficiency	>90%		
Operating Temperature	-40 to 70°C (-40 to 158°F)		
Storage Temperature	-50 to 85°C (-58 to 185°F)		
Humidity	0-99% relative humidity (non-condensing)		
EMC/EMI Compliance	Emissions EN 50081-2 Immunity EN 50082-2		
Agency approvals (24VDC input model)	IT Class 2 (UL Recognized to UL1950, CUL Recognized to CAN/CSA-C22.2 No. 950-95) Other approvals – CE		
Protection rating	IP67		
Shock	IEC 68-2-27 (30G/11ms)		
Vibration	IEC 68-2-64		
Electrical Connection	Deutsch IPD P/N: DT13-4P Axiomatic Wire Harness: P/N: WH-DT06-4S-S-16AWG-2M (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) Pin out: Refer to page 4.		
Weight	Converter: 2.02 kg (4.45 lbs.) Converter + Wire Harness: 2.20 kg (4.85 lbs.)		
Dimensions	Aluminum enclosure Encapsulated 5.50 x 6.93 x 2.37 inches 139.7 x 176.0 x 60.3 mm (W x L x H excluding connector)		
		Mechanical Dimensions	
		<p>The image contains two mechanical drawings of the converter enclosure. The top drawing is the 'FRONT VIEW', showing a rectangular enclosure with a width of 5.500 inches [139.70 mm] and a height of 2.375 inches [60.32 mm]. A ground stud is located on the left side. The distance from the left edge to the center of the ground stud is 4.102 inches [104.19 mm]. The bottom drawing is the 'BOTTOM VIEW', showing the enclosure's footprint with a width of 4.624 inches [117.46 mm] and a height of 6.93 inches [176.00 mm]. The distance from the left edge to the center of the ground stud is 0.528 inches [13.42 mm]. The distance from the right edge to the center of the ground stud is 0.347 inches [8.82 mm]. The distance from the bottom edge to the center of the ground stud is 6.771 inches [172.00 mm]. The distance from the right edge to the center of the ground stud is 7.68 inches [195.00 mm]. The distance from the bottom edge to the top edge of the enclosure is 4.724 inches [120.00 mm]. The diameter of the ground stud is 0.250 inches [6.35 mm].</p>	
		Dimensions: inches [mm]	

Installation	
<p>Set up</p> <ol style="list-style-type: none"> 1. A maximum 30A 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 <i>mechanical drawing</i>.) 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. 	 <p>Connector Pin Out</p> <ul style="list-style-type: none"> 1 Output + (red/white) 2 Output - (black/white) 3 Power - (black) 4 Power + (red)
<p>Grounding</p>	<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>
<p>Mounting</p>	<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>
<p>Configuration</p>	<ul style="list-style-type: none"> • 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.

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 www.axiomatic.com/service.html. Form: TD3100AX-01/11/12

©2012 Axiomatic Technologies Corporation