

Voltage or Current Signal Input, PWM Output Converter

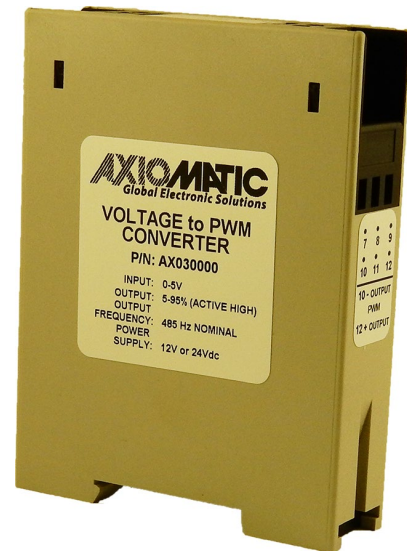
3-way Isolation

DIN rail mount

P/N: AX030000, AX030002, AX030003, AX030010

Features:

- 1 signal input:
 - Model AX030000: 0-5V
 - Model AX030003: 0-5V input
 - Model AX030002: 0-10 V
 - Model AX030010: 4-20 mA
- 1 PWM signal output (All Models)
 - Model AX030003 (Fixed at 100 Hz)
- Three-way isolation between power supply, input and output.
- 12V or 24Vdc (nominal) power input
- DIN rail mount
- IP20



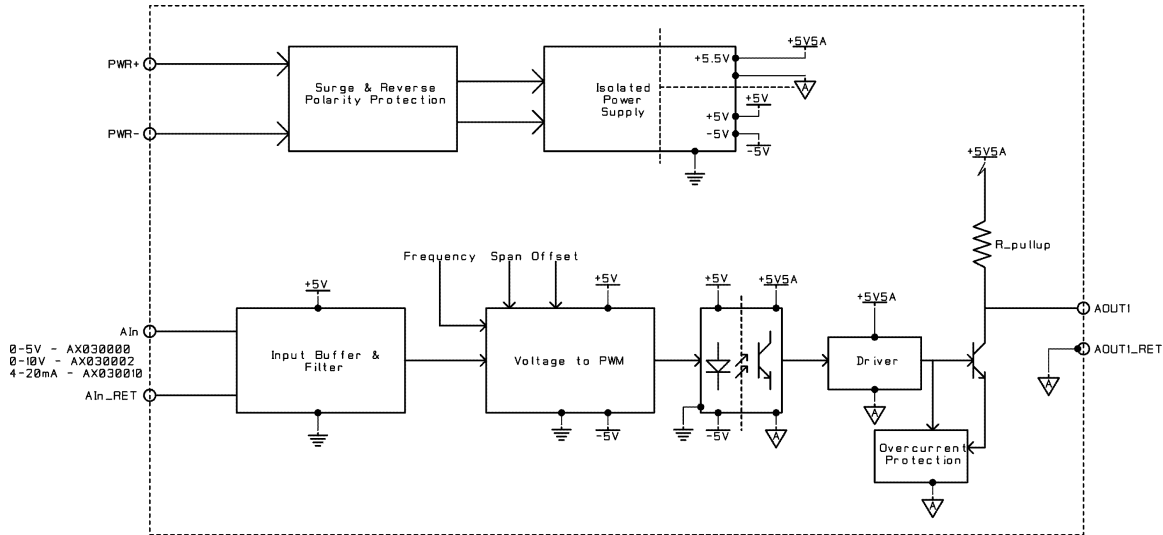
Description: The V/I to PWM Converter is a single channel signal converter in a DIN rail mount enclosure. It is designed for interfacing with legacy components in an engine control system on power generator sets. There are three models accepting either a 0-5V, 0-10V or 4-20mA signal input and generating PWM signal output.

Applications: The converter is designed for power generator set engine control system applications.

Ordering Part Numbers:

Model P/N	Description	Supersedes models:
AX030000	0-5V input, PWM output, DIN rail mount	VPWMDR5V
AX030003	0-5V input, 100 Hz PWM output, DIN rail mount	VPWMDR5V100Hz
AX030002	0-10V input, PWM output, DIN rail mount	VPWMDR10V
AX030010	4-20 mA input, PWM output, DIN rail mount	IPWMDR420MA

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/>.

Power Input Specifications

Power Supply Input - Nominal	12 or 24Vdc nominal operating voltage 9...36 Vdc power supply range for voltage transients
Surge Protection	Provided
Reverse Polarity Protection	Provided up to 50V
Over-voltage Protection	Provided (Hardware shuts down at 41V.)
Under-voltage Protection	Provided (Hardware shuts down @ 7.5V with 1 V hysteresis.)
Quiescent Current	15 mA @ 12Vdc; 9 mA @ 24Vdc Typical

Signal Input Specifications

Signal Input	1 isolated signal input (factory set) <ul style="list-style-type: none"> Model AX030000, AX030003: 0-5V Model AX030002: 0-10 V Model AX030010: 4-20 mA <p>With voltage inputs, short circuit protection is provided.</p>																								
Minimum and Maximum Ratings	<table border="1"> <thead> <tr> <th colspan="4">Table 1.0. Absolute Maximum and Minimum Ratings</th> </tr> <tr> <th>Characteristic</th> <th>Min</th> <th>Max</th> <th>Units</th> </tr> </thead> <tbody> <tr> <td>Power Supply</td> <td>9</td> <td>36</td> <td>V dc</td> </tr> <tr> <td>Voltage Input</td> <td>0</td> <td>25</td> <td>V dc</td> </tr> <tr> <td>Current Input</td> <td>0</td> <td>100</td> <td>mA</td> </tr> <tr> <td>Current Input – Voltage Level</td> <td>0</td> <td>5</td> <td>Vdc</td> </tr> </tbody> </table>	Table 1.0. Absolute Maximum and Minimum Ratings				Characteristic	Min	Max	Units	Power Supply	9	36	V dc	Voltage Input	0	25	V dc	Current Input	0	100	mA	Current Input – Voltage Level	0	5	Vdc
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Characteristic	Min	Max	Units																						
Power Supply	9	36	V dc																						
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Current Input	0	100	mA																						
Current Input – Voltage Level	0	5	Vdc																						
Input Accuracy	+/- 1%																								
Input Impedance	0-5V: 250 kOhm 0-10V: 300 kOhm 4-20mA: 50 Ohm																								
Analog GND	1 Analog GND connection is provided.																								

Signal Output Specifications

PWM Output	<p>1 isolated PWM output</p> <p>PWM Frequency default settings:</p> <ul style="list-style-type: none"> ○ Model AX030000: 0-5V input has 485 Hz +/- 10% output ○ Model AX030003: 0-5V input has 100 Hz +/- 10% output ○ Model AX030002: 0-10 V input has 475 Hz +/-10% output ○ Model AX030010: 4-20 mA input has 550 Hz +/- 10% output <p>Option: Other PWM frequency settings are available from 100 to 10,000 Hz. (A trim pot on the PCB is adjusted.)</p> <p>Duty Cycle default settings: Model AX030000, AX030003 (0-5V input): 5-95% D.C. (Active High) Model AX030002 (0-10 V input): 0-100% Duty Cycle (Active High) Model AX030010 (4-20 mA input): 10-90% Duty Cycle (Active High)</p> <p>Option: Other duty cycles available on request.</p> <p>Current limited to 10 mA</p> <p>Output clamped via 10 kΩ resistor Low output voltage of 0.2 V High output voltage of 5.5 V</p>
Output Accuracy	+/- 1%
Signal GND	1 GND connection is provided.

General Specifications

Isolation	<p>3-way isolation between input, output and power. 850 V_{RMS} between power supply and input/output 3750 V_{RMS} between input and output</p>
Response Time	<40 msec.
LED Indicator	Green ON = Power is on.
Adjustments – PWM Duty Cycle	<p>Span and offset adjustment for PWM Duty Cycle is provided with trim potentiometers. Span (Turn CCW to increase.) Offset (Zero) (Turn CW to increase.) Trim pots are 10 turn.</p> <p>For Model AX030000, AX030003: When 0.1 V is applied adjust Zero to 5%. When 5V is applied, adjust Span to 95%.</p> <p>For Model AX030002: When 0.1 V is applied adjust Zero to 0%. When 10V is applied, adjust Span to 100%.</p> <p>For Model AX030010: When 4 mA is applied, adjust Zero to 10%. When 20 mA is applied, adjust Span to the 90%.</p> <p>PWM output can be measured using a multi-meter (with a PWM measurement feature).</p>
Adjustments – Frequency Output	<p>Frequency output adjustment can be made on request for from the factory settings. Coarse and Fine trim pots are located on the PCB board and are only accessible by removing the PCB assembly from the enclosure. <i>Contact Axiomatic to arrange for factory set outputs different from the default settings.</i></p> <p>If there is a need to adjust the frequency, remove the unit carefully from the enclosure, noting the orientation of the PCB assembly with the DIN rail foot and front label on the enclosure. These features can be used as orientation guides when re-inserting the PCB assembly.</p> <p>Adjust the coarse adjustment trim pot to obtain an output in the vicinity of the frequency required. Next, fine-tune it using the “fine” potentiometer. The sum of the minimum values of the potentiometers sets the high frequency (10</p>

	kHz), and the sum of the maximum values sets the low frequency (70 Hz).
Electrical Connections	#14-24 AWG screw terminals
Enclosure and Dimensions	JIT Components P/N: DR12, Polycarbonate DIN rail mount 75 x 98.5 x 22.5 mm (W x H x D) 2.95 x 3.88 x 0.89 inches Refer to Figures 1.0, 2.0 and 3.0.
Operating Temperature	-40°C to 85°C (-40°F to 185°F)
Storage Temperature	-50°C to 125°C (-58°F to 257°F)
Weight	0.25 lbs. (0.11 kg)
Protection	IP40 rated enclosure, IP20 connectors, Unit is conformal coated in its enclosure.
Mounting	The controller is designed to be installed in a control panel.

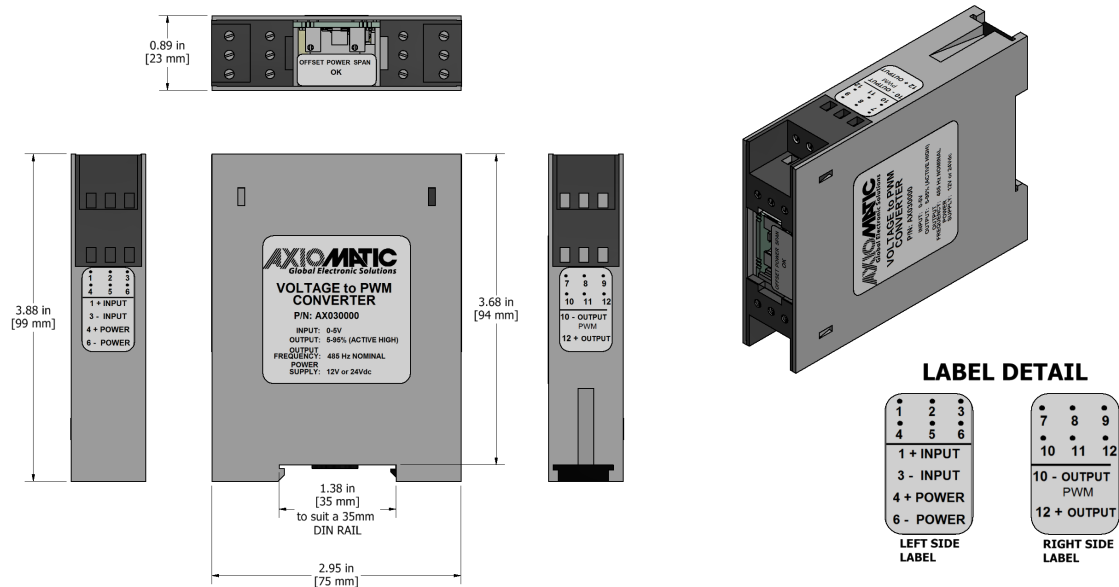


Figure 1.0 – Dimensions for AX030000

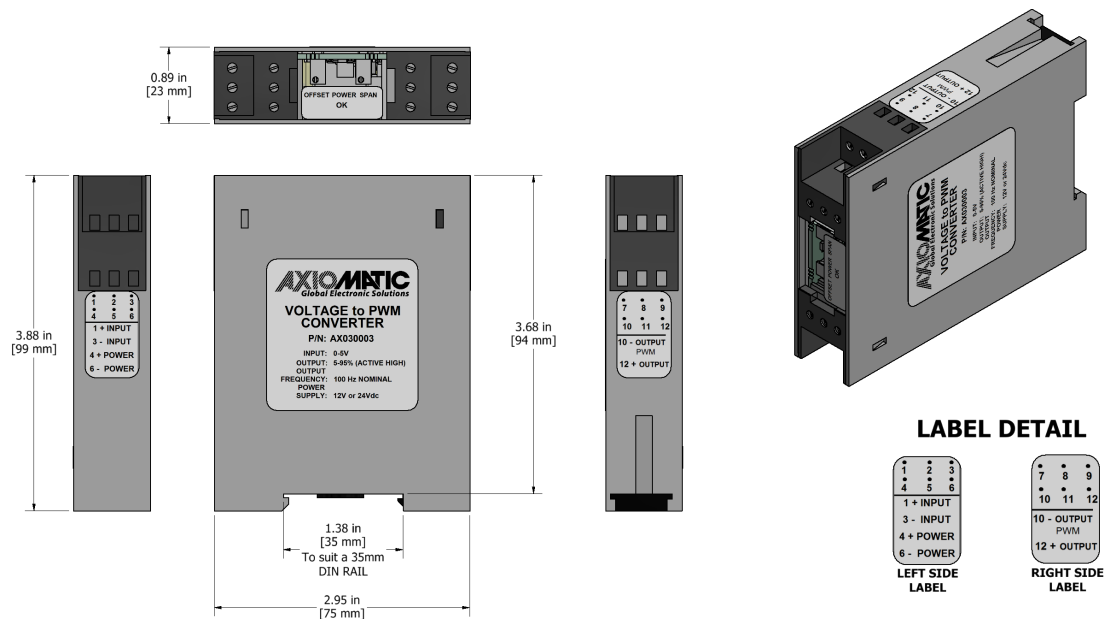


Figure 2.0 – Dimensions for AX030003

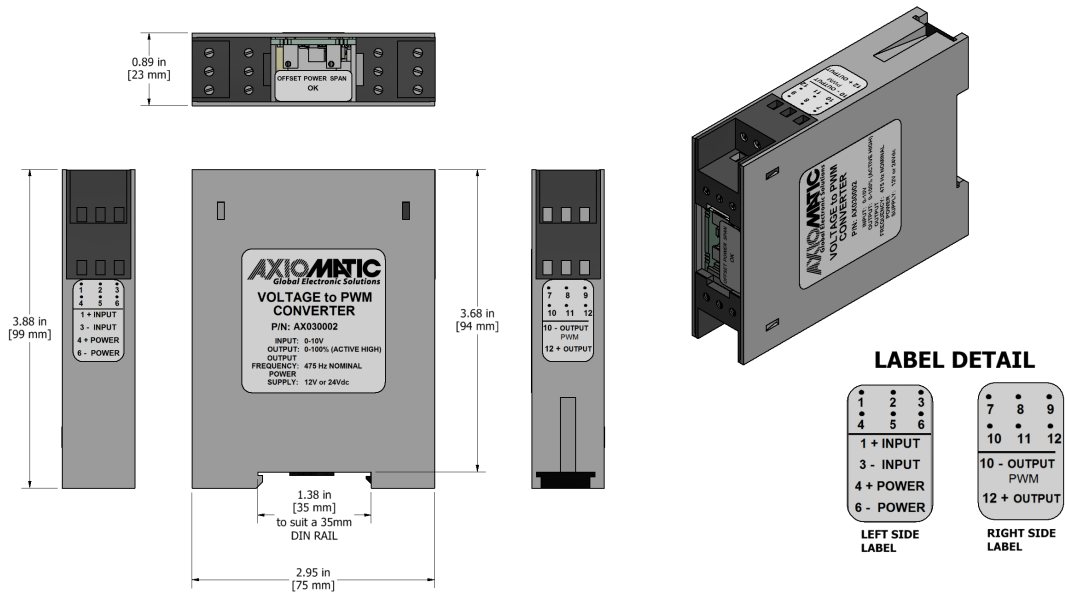


Figure 3.0 – Dimensions for AX030002

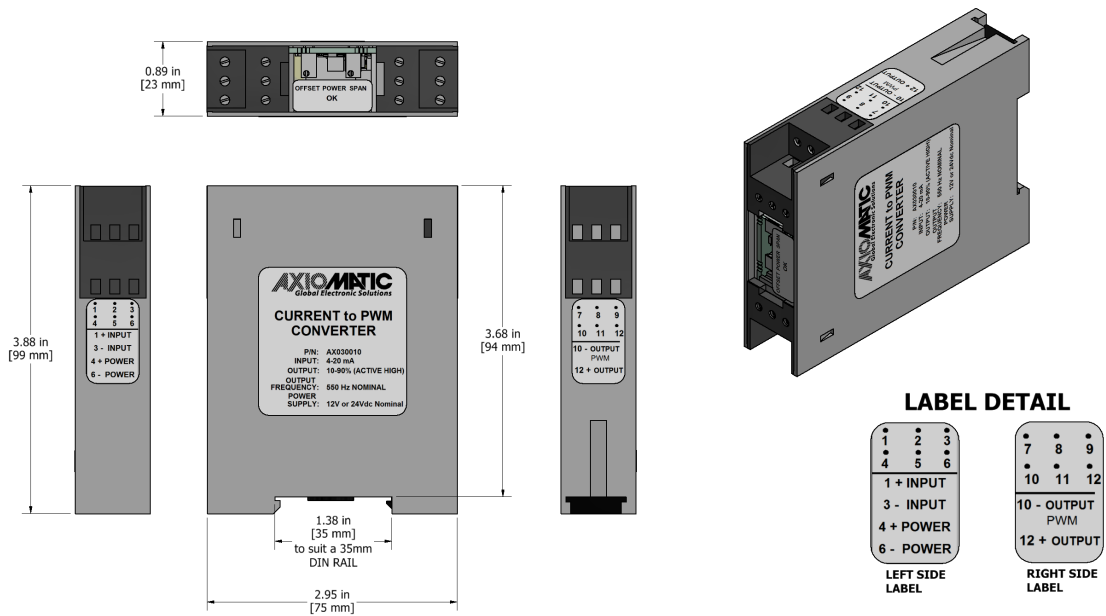


Figure 4.0 – Dimensions for AX030010

Form: TDAX0300XX-05/31/23