



## **PAS 2515/AO**

### **Single IP Module Provides 16 Channel 12-Bit Analog Output**

#### **GENERAL DESCRIPTION**

The **PAS 2515/AO** provides sixteen 12-bit analog voltage output channels on a single IP module.

Four quad-voltage output DACs generate the sixteen analog output channels. Settling times of 10  $\mu$ Sec enable the DACs to produce relatively high-speed output waveforms. The fifty-pin field I/O connector provides the voltage output signals. This connector also terminates two general-purpose digital output signals and the external synchronization signals.

Users can tailor the card's output voltage for their application, using the card's four analog output ranges. Bipolar ranges of  $\pm 10$  volts or  $\pm 5.0$  volts and unipolar ranges of 0 to 10 volts or 0 to 5.0 volts are supported. All output ranges provide a minimum of 5 milliamps of output current.

An on board DC to DC converter generates the  $\pm 15$ -volt power used by the D to A converters. External power supplies are not required to achieve the full-scale output voltage of  $\pm 10$  volts.

Additional features include board identifier registers, control and status register, external sync signals and DAC loop-back registers.

This board is compatible with the PAS 9890/CAR, a VME carrier for four IP modules, and the PAS 3090/CAR, a PCI Express carrier for three IP modules. It is ideal for a variety of applications including industrial automation, closed-loop servo control, process control, and automotive test and measurement.



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## Card Features

- 16 channels of analog voltage outputs, with a 12 bit D/A Converter per channel
- Software selectable +/- 10 V, +/- 5V, 0-10V, and 0 to 5V ranges @ 5 mAmp output per channel
- DACs are powered by +/- 15 Volts from an on board DC-to-DC converter. This allows the DACs to output +/- 10 volts without the need for external power supplies
- All DACs are calibrated with a precision on board voltage reference
- Offset binary or two's complement data format software selectable
- DACs reset to bipolar zero during power up reset
- Output slew rate of 2.2 Volts per uSec, Settling time of 10 uSec to 0.01%
- DACs have digital readback registers
- Double buffered DACs can be updated simultaneously with software sync or external sync signal
- TTL level sync in and sync out signals are provided in the I/O connector
- Two general purpose digital output signals provided in the I/O connectors
- Board identifier registers
- Positive and Negative DAC reference voltages are available in the I/O connector

## Electrical Specifications

Number of DAC Channels	16 Analog Outputs
Resolution	12 bits
Output Voltage Ranges	+/- 10 Volts, +/- 5 Volts, 0 to 10 Volts, 0 to 5 Volts
Output Current	+/- 5 mAmps
Settling Time	10 uSec (typ) to 0.01%
Integral Nonlinearity	+/- 1 LSB (max.)
Differential Nonlinearity	+/- 1 LSB (max.)
Zero Scale Error	+/- 2 LSB
Full Scale Error	+/- 2 LSB
Digital Outputs	1 Sync Out, 2 General Purpose Outputs
Digital Input	1 Sync In
Card Power Requirements	5 Volts @ 1 Amp, (typ)

## Environmental Specifications

Operating Temperature Range	0° to 70° C (standard version) -40° to +85° C (industrial version)
Relative Humidity Range	20% to 80%, non-condensing

## Physical Specifications

Configuration	Single Industry Pack Module
Dimensions	3.90" X 1.80"
Max Component Height	0.29"
Weight	3 oz. (typ)

