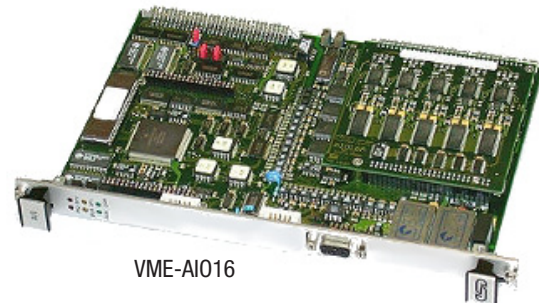




# VME-AIO16

## Intelligent A/D Converter

- Analog Inputs  
6 or 16 differential analog inputs  $\pm 10$  V  
High data throughput by means of local intelligence  
Synchronous scan of all 16 channels with a maximum sample rate of 33 kHz  
Max. sample rate 45 kHz (only one channel used)
- High Resolution  
Available A/D converter resolution: 12 or 16 bits



VME-AIO16

- Analog Outputs  
4 analog outputs  $\pm 10$  V/16 bits
- Software Interface  
Easy operation by shared RAM interface
- Industrial Standard  
Safety of operation by electrical isolation via opto-couplers

## Intelligent CPU Kernel

VME-AIO16 is an intelligent VMEbus board, containing 6 or 16 analog differential inputs and is ideally suited for fast and flexible data acquisition. It includes all necessary components on a VMEbus 6U board and needs one slot.

The AIO16 contains a local MC 68340 CPU at 25 MHz for the execution of complex data acquisition algorithms. The CPU section of the AIO16 contains 256 kbytes of SRAM, EPROM and two RS-232 interfaces. Configuration parameters may be stored in an EEPROM.

AIO16 contains 256 kbytes of shared SRAM, as well, to form the interface between local CPU and VMEbus.

## Powerful Analog Inputs

Designed for use of A/D converters with 16 bits resolution, the AIO16 can also be equipped with 12 bits resolution converters. The input voltage range with standard components is  $\pm 10$  V. By varying the resistance values, other voltage ranges as well as current measurement ( $\pm 20$  mA) are possible. The A/D converters synchronize via an external trigger signal or via software.

The included software allows you to obtain the following sampling rates: the maximum sampling rate from trigger signal to reception of the A/D-data in the SRAM is 33 kHz when sampling all 16 channels synchronously. If sampling only 8 channels synchronously, the maximum sampling rate is 40 kHz, for just one channel it is 45 kHz.

## Analog Outputs

In addition to the analog inputs, the AIO16 board contains 4 bipolar  $\pm 10$  V D/A converter outputs with a resolution of 16 bits. These D/A converters allow internal calibration and offset adjustment of the input amplifiers. Connect each D/A converter to one of four A/D inputs via a multiplexer for this result. Of course, the user can also use these D/A converter outputs directly as process outputs.

## Electrical Isolation

The VME-AIO16 has full electrical isolation of all analog inputs and outputs, proper wiring to the backplane via P2, an integrated power supply with DC to DC converters and LED displays on the front panel that make it ideally suitable for industrial use.

For further information please visit  
<http://www.esd-electronics-usa.com/VME.html>

growing with the  
challenge

# VME-AIO16

## Intelligent A/D Converter

### Software Support

esd electronics, Inc. supplies a complete operation package as firmware for the local CPU. It contains a shared RAM interface and complete parameter settings for sample rate, trigger condition etc.

The multi-channel shared RAM interface makes the implementation of different master operating systems, such as VxWorks, OS-9, PSOS, UNIX, or RTOS-UH easy to realize. C drivers for various operating systems are available.

### Technical Specifications:

<b>Process section:</b>		
CPU:	68340-25 MHz, 256 kbytes (1 Mbyte) SRAM, 512 kbytes EPROM, 2 x RS-232 (up to 38.4 kbaud), I <sup>2</sup> C EEPROM, BDM interface	
Shared RAM:	256 kbytes SRAM, access via local CPU and VMEbus	
<b>Analog inputs:</b>		
Inputs:	6 or 16 differential inputs (6 inputs on base board, 10 inputs inserted on A/D add-on), input voltage range $\pm 10$ V (standard), other measuring ranges or current measurement ( $\pm 20$ mA) are possible	
Resolution:	16 or 12 bits	
Trigger:	By software or common external trigger (+5 V)	
Maximum sample rate:	Without correction	With correction
	16 channels: 33 kHz	10 kHz
	8 channels: 40 kHz	15 kHz
	1 channel: 45 kHz	31 kHz
Electrical isolation:	By opto-couplers and DC/DC converters	
<b>Analog outputs:</b>		
Outputs:	4 bipolar outputs $\pm 10$ V	
Resolution:	16 bits	
Load:	RL \$ 600 $\Omega$	
Electrical isolation:	By opto-couplers and DC/DC converters	
<b>VMEbus section:</b>		
Base address:	Selectable by jumpers, the board covers 512 kbytes.	
Address modifier:	AM4 and AM5 are evaluated	
VMEbus Rev.:	IEEE 1014 rev. C.1	
Data transfer options:	SD16 - slave with A24/D16 access, additionally 'pseudo D32 accesses' possible	
Interrupts:	Programmable levels, interrupt handlers for mailbox interrupts from VMEbus	

<b>General:</b>		
Temperature:	0...50 EC	
Humidity:	Max. 90%, non-condensing	
Connector types:	P1:	DIN 41612-C96, VMEbus
	P2:	DIN 41612-C64, process I/Os
	X1:	10-pole post connector, BDM interface
	X2:	DSUB9 female, RS-232
	X3:	10-pole post connector, RS-232
Board size:	160 mm x 233 mm (6 U height, 1 slot width)	
Weight:	Approx. 750 g	
Power Consumption:	P1:	+5 V $\pm 5\%$ Approx. 2.5 A
		12 V $\pm 5\%$ Approx. 1.0 A
		-12 V $\pm 5\%$ Approx. 20 mA

### Order Information:

Designation		Order no.
VME-AIO16	CPU 68340, 25 MHz, 256 kbytes SRAM, 16 A/D channels (16 Bit), UIN = $\pm 10$ V, 4 D/A channels (16 Bit)	V.1705.02
VME-AIO16-12	As VME-AIO16, but 16 channels with 12-bit A/D converters	V.1705.04
VME-AIO16-6	As VME-AIO16, but 6 channels with 16-bit A/D converters	V.1705.06
VME-AIO16-12/6	As VME-AIO16, but 6 channels with 12-bit A/D converters	V.1705.05
VME-AIO16-RAM1M	1 Mbyte SRAM, instead of 256 Kbyte	V.1705.10
VME-AIO16-OS9	C driver for OS-9 as source	P.1705.50
VME-AIO16-VxW	C driver for VxWorks as source	P.1705.56

