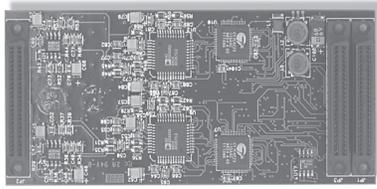


## Instrumentation Grade Analog I/O Module



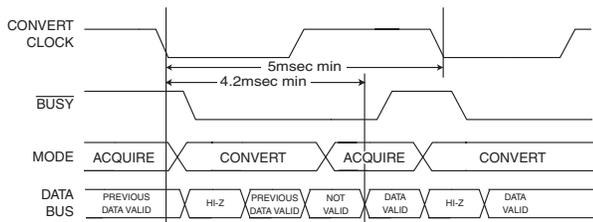
The A4D4 module is ideal for high-accuracy analog measurement and control systems with data acquisition speeds up to 200 kHz. The A4D4 provides analog I/O that is tightly coupled with the DSP for control systems, process monitoring and data acquisition. Applications include vibration measurement and control, SONAR and semiconductor process equipment to name a few.

The four analog inputs on the A4D4 module are successive approximation type A/D converters, which allows for low data latency critical in control applications and multiplexed channel configurations. Each A/D channel has a six-pole analog anti-alias filter and differential inputs for noise rejection. Each channel is calibrated for offset and gain errors allowing accurate measurements for a variety of applications. The TERM card may be used to expand each A/D input with a multiplexor, for a total of 32 channels of input to each A4D4 module.

The four D/A channels on the A4D4 are commonly used as the control outputs from the A4D4. Each is calibrated for gain and offset errors. These may be used as control signals for many types of actuators, transducers and other electronic devices.

Software for the A4D4 includes example programs for data acquisition, control systems and waveform generation.

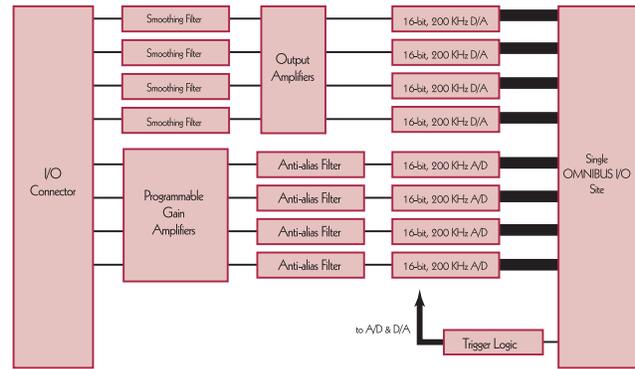
A full calibration report ships with every module.



Conversion Timing with Outputs Enabled After Conversion ( $\overline{CS}$  Tied Low)

### Ordering Information

A4D4 OMNIBUS Module	
80020-1	Four channels 16-bit, 200 kHz A/D in, four channels 16-bit up to 200 kHz D/A out, programmable gain and filtering



<b>Bus Type</b>	Compatible with all OMNIBUS Innovative products; 32-bit. Consumes one interrupt to host DSP. Wait-states depend on host platform.
<b>Power Requirements</b>	5 V@ 130mA analog; 5V @160 mA, +15V @30 mA, -15V @30 mA
<b>Physicals</b>	OMNIBUS mezzanine card; 2.000" X 4.600"
<b>A/D Converters Four A/D chips</b>	Analog Devices AD976AA Successive approximation architecture for low data latency. Each converter channel has independent filtering and programmable gain.
<b>Resolution</b>	16-bit
<b>Update Rate</b>	200 kHz
<b>Settling Time</b>	5 us (no filtering) @ 10 V step to 0.0008%
<b>Analog Input Range</b>	+/- 10 V, +/- 5 V, +/- 2.5 V, +/- 1.25 V, software programmable
<b>S/N Ratio</b>	85 - 90 dB
<b>THD</b>	-70 dB (improved if filter defeated)
<b>Dynamic Range</b>	90 dB
<b>Gain Error</b>	Trimable on each channel – factory calibrated
<b>Differential Linearity Error</b>	+3/-2 LSB
<b>Offset Error</b>	Trimable on each channel – factory calibrated
<b>Aperature Delay</b>	40 ns
<b>Aperature Jitter</b>	Meets AC specs
<b>Programmable Gain</b>	1,2,4,8 standard; 1,2,5,10 available special order
<b>Input Type</b>	Differential
<b>Input Impedance</b>	1M    5 pF; Each input leg is tied to ground with 1 M resistor
<b>Filter characteristics</b>	6-pole elliptic filter -3 dB set at 100 kHz no overshoot
<b>Conversion Trigger Sources</b>	DSP, timers or externally triggered
<b>Interface to DSP</b>	Memory-mapped 32-bit result returned for each A/D pair
<b>D/A Converters</b>	Four analog devices AD7846 Each D/A channel has independent filtering, gain and trims
<b>Resolution</b>	16-bit
<b>Output Range</b>	+/- 10 V custom ranges may be special ordered
<b>Settling Time</b>	7 us (unfiltered) to 0.003%
<b>Dynamic Range</b>	96 dB
<b>Offset Error</b>	Trimable on each channel – factory calibrated to +/- 4 LSB
<b>Gain Error</b>	Trimable on each channel – factory calibrated to +/- 4 LSB
<b>Differential Nonlinearity Error</b>	+/- 1 LSB – Monotonic
<b>D/A Glitch Energy</b>	400 nV-sec typical at MSB transition
<b>Interface to DSP</b>	Memory-mapped; 16-bit interface to DSP