



A16D2 - Multipurpose Analog I/O Module

The A16D2 is an inexpensive analog I/O solution for OMNIBUS host cards. The module implements 16 multiplexed analog input channels and two analog output channels, ideal for use in cost-sensitive acquisition and control applications.

The A/D section implements a single, 16-bit successive approximation converter with a 16:1 single-ended or 8:1 differential multiplexer on the front end. Sampling rates are supported from 0 to 200 kHz on a single channel or up to 12.5 kHz per channel for 16 single-ended channels or 25 kHz for 8 single-ended channels. An instrumentation amplifier and software programmable gain amplifier provide control over input voltage range. A sixth-order anti-aliasing filter is also provided with optional disable circuitry (filter must be disabled when muxing).

Automix function allows automatic switching of the import channels at the prescribed sampling rate without host CPU interaction. This allows the ability to chain DMA data movement from the module to the host processor, again preserving CPU bandwidth.

Outputs are generated by two 16 bit D/A converters with independent single-pole reconstruction filters. Sample rates to 2MHz are supported (depending on slew rate and accuracy requirements). Output voltage range is +/-10V, but may be jumpered to a variety of other bipolar or unipolar ranges. A first order roll-off filter is also included in the output buffering.

Auto-cal circuitry allows in-circuit calibration, completely under software control, at any time. Cables need not be disconnected during calibration.

Software examples demonstrating module operation and communication are included in the Zuma/Armada Toolsets. A full calibration report ships with every module.

Ordering Information

A16D2 single ended (16:1)	80026-1
A16D2 differential (8:1)	80026-2

Interface	Compatible with all OMNIBUS host products Consumes one interrupt to host
Power Requirements	Digital: 5V@150mA; Analog: 5V@20mA, +15V@60mA, -15V@50mA
Physicals	OMNIBUS mezzanine card; 2.000" X 4.600"
A/D Converter	1 Analog Devices AD976AA, a successive approximation architecture for low data latency
Resolution	16-bit
Update Rate	200 kHz max.
Analog Input Range	+/-10V, +/-5V, +/-2.5V, +/-1.25V software programmable
S/N Ratio	83 dB
THD	-70 dB (improved if filter defeated)
Gain Error	Auto-Cal
Offset Error	Auto-Cal
Conversion Time	5 μ s
Input Impedance	10 kOhm 3pF
Filter cutoff	Six-pole, 100 kHz disabled via jumpers
Conversion Trigger Sources	Software, host timers or external trigger
D/A Converter	2 LTC1597 converters
Resolution	16-bit
Update Rate	2 MHz max.
Analog Output Range	+/-10V, +/-5V, unipolar ranges also available, set via jumper
Settling Time	6 μ s max to 0.006% full-scale
Output Filter	Single pole @ 2 MHz
Conversion Trigger	Software, host timers or external trigger

