104-AIO16-16 is a high-speed, 16-bit resolution board which provides speeds up to 500 KHz for the board’s 16 single-ended or eight true differential analog input channels. This multifunction board features an excellent price/performance value for precision PC/104-based data acquisition, control, or signal analysis of standalone environmental test stations, compact production test equipment, portable testers, avionics and other applications.

The 104-AIO16-16 features 11 standard analog input ranges and a filtered, extremely quiet front end. In addition to direct data transfers, the board’s ability to trigger the A/D in real time assures synchronized sampling that is unaffected by other computer operations—an essential requirement for signal, vibration and transient analysis where high data rates must be sustained for short periods of time. The 500 KHz sampling rate is supported by a 1024-sample FIFO (optional, up to 64K samples) for reducing processor overhead. Sixteen parallel bits of digital I/O and two 12-bit D/A outputs allow for a complete, high-performance data acquisition solution.

The 104-AIO16-16 is supported for use in all operating systems and includes a free DOS, Linux and Windows 95/98/Me/NT/2000/XP compatible software package. This includes sample programs and source code in “C” and Pascal for DOS, and Visual Basic, Delphi, C++ Builder, and Visual C++ for Windows. Also included is a graphical setup program in Windows. Linux support includes installation files and basic samples for programming from any user level via an open source kernel driver.
**Specifications**

### A/D

- **Inputs**: 16 single-ended or 8 differential
- **Resolution**: 16-bit resolution
- **Bipolar ranges**: ±0.5V, ±1V, ±2V, ±5V, ±10V
- **Unipolar ranges**: 0-1V, 0-2V, 0-4V, 0-5V, 0-10V
- **Sampling rate**: Sampling rate: 500KHz
- **Type**: Successive approximation
- **Overvoltage protection**: 33V
- **Nonlinearity**: ±1 LSB max, monotonic
- **A/D FIFO**: 1024 16-bit wide samples
- **Trigger Source**: Automatic with values stored in EEPROM

### D/A

- **Outputs**: 2
- **Resolution**: 12-bit resolution
- **Ranges**: 0-5V, 0-10V
- **Relative accuracy**: ±2 LSB
- **Nonlinearity**: ±0.2 LSB
- **Settling time**: 8µs
- **Output current**: 5mA
- **Calibration**: Automatic with values stored in EEPROM

### Digital I/O

- **Number of I/O**: 16
- **Input voltage**: Logic low: 0.0V min, 0.8V max; Logic high: 2.0V min, 5.0V max
- **Input current**: ±1µA max
- **Outputs**: Logic low: 0.0V min, 0.55V max; Logic high: 2.4V min, 5.0V max
- **Output current**: Logic low: 64mA max sink; Logic high: 32mA max source

### Counter/Timers

- **Type**: 82C54
- **A/D Pacer clock**: 16 or 32-bit
- **Clock Frequency**: 10MHz

### General

- **Power required (using optional DC/DC converter)**: +5V at 190mA typ
- **Power required (using ±12V)**: +12VDC - 25mA typical; -12VDC - 25mA typical; +5VDC - 65mA typical
- **Operating Temperature**: 0 to +70°C, optional -40 to +85°C
- **Storage Temperature**: -50 to +120°C
- **Humidity**: 5% to 90% RH, non-condensing

### Ordering Guide

- **104-AI016-16**: 16-bit, 16-channel A/D with 12-bit D/A
- **104-AI016-16W**: Wider bus version for higher throughput

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