

# 8-Channel High Resolution Analog Input Board For IBM PC/XT/AT and Compatibles

Model ADC-16

**\$599**



- ✓ 16-Bit Resolution
- ✓ 2 Digital Outputs/2 Digital Inputs
- ✓ 8 Differential Input Channels
- ✓ Low Noise, Integrating A/D Converter
- ✓ Expandable to 64 Channels
- ✓ On-Board Precision 1 mA Current Source for RTDs
- ✓ Utility Software Programs Included

The ADC-16 is an economical 16-bit (15 bit plus sign) analog input board for ISA and EISA bus computers (IBM PC/XT/AT or compatibles), and is ideally suited for chromatography, temperature and flow measurement, spectroscopy and high-accuracy data acquisition. The heart of the ADC-16 is an integrating A/D converter which provides up to 18 conversions/sec. Integrating A/D converters provide excellent precision and repeatability in noisy environments.

The ADC-16 has eight differential input channels. An instrumentation amplifier with software programmable gain on the input of the A/D provides gains of 1, 10 or 100. On all ranges the zero is automatically corrected (no adjustment). A single gain adjustment sets the full scale of every range. Connections are made through a standard 37-pin D connector.

The STA-EX8 eight-channel expansion multiplexer provides screw connections to all the ADC-16 interface signals and adds eight input channels. One STA-EX8 will provide a total of 15 channels (7 remaining ADC-16 channels plus 8 additional STA-EX8 channels), two boards will provide 23 channels, etc. A full complement of eight STA-EX8s will multiplex a total of 64 full differential channels. Applications not requiring more than eight channels should use the standard STA-U screw terminal board.

The ADC-16 also provides two TTL compatible general purpose digital outputs and two general purpose TTL/CMOS compatible digital inputs. The two digital outputs also drive two internal form C relays on the ADC-16 and the contacts are brought out on the rear connector. These relays can be used for a variety of switching and expansion applications. In addition, three digital outputs used to control the STA-EX8 are available if the expansion multiplexer is not used. The ADC-16 provides a 1 mA high precision current source, which can be used to directly excite resistance based transducers such as RTDs. The current source compliance is -10 to +4 V.

For background operation, The ADC-16 supports the generation of interrupts at the end of each A/D conversion on levels 2, 3, 4, 5, 7, 10, 11 and 15 on ISA



bus (AT bus) computers. The board will also operate in older style XT bus computers with interrupt levels 2, 3, 4, 5, and 7 only. Selection of interrupt levels is software programmable (no jumpers).

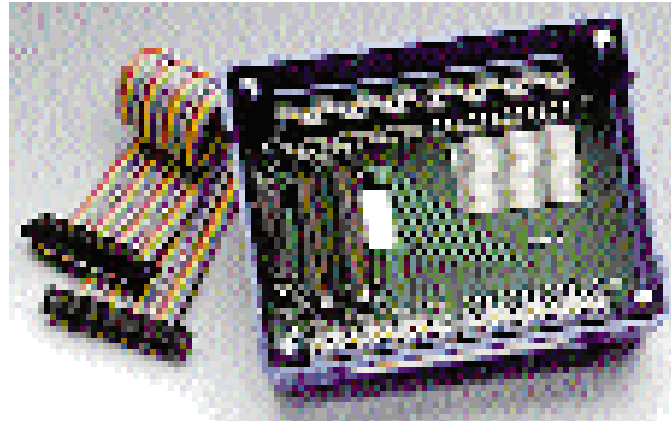
The ADC-16 is supported by a comprehensive set of drivers and programming tools. The ADC-16 software is provided in two levels. The Standard Software package which is included with each board, and the ASO-ADC-16 Advanced Software Option.

The Standard Software provided with the ADC-16 includes the following:

- Function Call Driver compatible with BASICA, QBASIC and QuickBASIC
- Pop Up Control Panel which allows mouse or keyboard control and testing of all ADC-16 I/O functions
- ADC-16 Installation and configuration program
- A variety of example programs which show how to write ADC-16 programs in BASIC
- Complete Calibration routine

The ASO-ADC-16 provides a great deal of software capability beyond the standard software supplied with the board. Included in the ASO are the following capabilities:

- Function Call Drivers for Pascal, C, Turbo Pascal
- File I/O Command Driver for all languages
- Windows 3.X compatible Dynamic Link Library (DLL)
- Example programs in all supported languages



STA-U Screw Terminal Panel (\$120) and C-1800 Cable (\$30)

## Specifications

### ANALOG/DIGITAL

**Channels:** 8 differential, expandable to 64 with the use of eight STA-EX8 boards

**Input Resolution:** 16 bits (15 plus sign)

**Coding:** Sign + magnitude (binary)

**Input Ranges:**  $\pm 5$  V or  $\pm 3.2768$  V full scale (jumper selectable)

**Input Gains:** 1, 10 or 100 (software selectable)

### Input Range

#### 3.276V Input Range

Gain Range	Res.
1 $\pm 3.2768$ V	100 $\mu$ V
10 $\pm 327.68$ mV	10 $\mu$ V
100 $\pm 32.768$ mV	1 $\mu$ V

#### 5 V Input Range

Range	Res.
$\pm 5$ V	152.6 $\mu$ V
$\pm 500$ mV	15.26 $\mu$ V
$\pm 50$ mV	1.526 $\mu$ V

**Sample Rate:** 18 samples/sec

### Accuracy:

Gain = 1:  $\pm 0.01\%$  of full scale

Gain = 10:  $\pm 0.05\%$  typical

Gain = 100:  $\pm 0.05\%$  typical

### Noise (typical):

Gain = 1:  $< \pm 1$  bit RMS

Gain = 10:  $< \pm 1$  bit RMS

Gain = 100:  $\pm 3$  bits RMS

**Input Impedance:**  $> 100$  megohms

**Input Bias Current:** 50 nA max.

**Common Mode Range:**  $\pm 6$  V

**Max. Input Voltage Without Damage (power on):**  
 $\pm 35$  Vdc

**Max. Input Voltage Without Damage (power off):**  
 $\pm 20$  Vdc

### DIGITAL I/O

**Number of Inputs:** 2, TTL/CMOS compatible

**Input Logic Type:** Hi input returns a 1

**Input Logic Levels:**  $V_{low} = 0.8$  V,  $V_{high} = 2.0$  V,  
 $I_{low} = -0.2$  mA,  $I_{high} = 20$   $\mu$ A @ 2.7 V

**Number of Outputs:** 5 TTL compatible

**Output Logic Type:** Positive true

**Output Logic Levels:**  $V_{ol} = 0.5$  V max. at 8.5 mA;  
 $V_{oh} = 2.7$  V min. at -0.4 mA

**Power Requirements:** +5 V, 800 mA typical, 1 A max.; +12 V, 25 mA max.; -12 V, 15 mA max.

**Operating Temperature:** 32 to 158°F (0 to 70°C)

**Storage Temperature:** -10 to 183°F (-25 to 85°C)

**Relative Humidity:** 0 to 95%, non-condensing

**Dimensions:** 2/3 sized board

**Weight:** 10 oz (284 g)

To Order ( <i>Specify Model Number</i> )		
Model No.	Price	Description
ADC-16	\$599	8-Channel, 16-bit A/D board
STA-EX8	300	8-Channel expansion multiplexer (requires C-1800 cable, see below)
STA-U	120	Standard screw terminal board (requires C-1800 cable, see below)
C-1800	30	18" (0.4 m) cable
ASO-ADC-16	99	Advanced software option package

Comes with utility software and complete operator's manual.

**Ordering Example:** ADC-16 8-channel board, STA-U screw terminal board plus C-1800 cable, \$599 + 120 + 30 = \$749.