

## IP330 16-Bit A/D Analog Input

IP330 Industry Pack (IP) modules provide fast, high resolution A/D conversion.

The IP330 has many features to improve your overall system throughput rate. You can scan all channels or define a subset for more frequent sampling. Burst mode scans selected channels at the maximum conversion rate. Uniform mode performs conversions at user-defined intervals. Both modes can scan continuously, or execute a single cycle upon receiving a trigger.

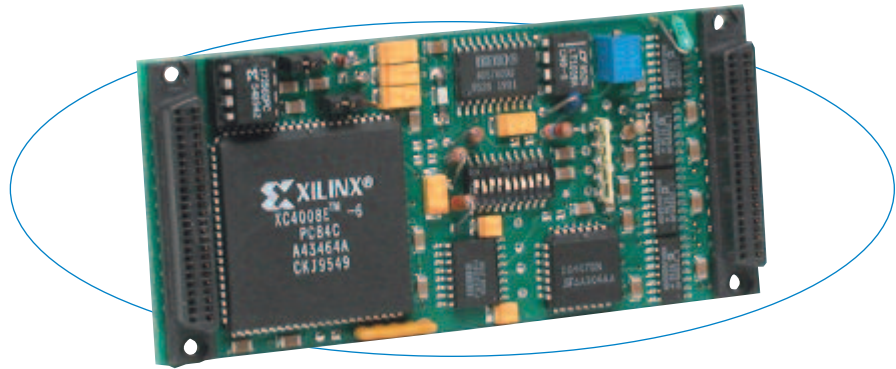
"Mail box" memory allows the CPU to read the latest data in 32 storage buffer registers without interrupting the A/D converter.

### Features

- 16-bit A/D converter (ADC)
- 8 $\mu$ S conversion time (125KHz)
- 16 differential or 32 single-ended inputs ( $\pm 5V, \pm 10V, 0-5V,$  and  $0-10V$  input ranges)
- Individual channel mailbox with one or two storage buffer registers per channel
- Programmable scan control
- Four scanning modes
- User-programmable interval timer
- External trigger input and output
- Programmable gain for individual channels
- Post-conversion interrupts

### Benefits

- "Mailbox" memory eliminates scanning interruptions for optimum throughput.
- Data register indicates new and missed (overwritten) data values in the mail box.
- Programmable interrupts simplify data acquisition by providing greater control.



*Advanced memory management techniques allow the IP330 to operate with minimal interruption of the A/D converter.*

### Specifications

#### Analog Inputs

Input configuration: 16 differential or 32 single-ended.

A/D resolution: 16 bits.

Input ranges:  $\pm 5V, \pm 10V^*$ ,  $0-5V,$  and  $0-10V^*$ .

\* Requires  $\pm 15V$  external supplies.

Data sample memory: Individual channel mailbox with one or two storage buffer registers per channel.

Maximum throughput rate:

Only one channel can be updated at a time.

One channel: 125KHz maximum (8 $\mu$ S/conversion)

[66KHz (15 $\mu$ S/conversion) recommended]

16 channels (differential): 4.2KHz (240 $\mu$ S/16 ch)

32 channels (single-ended): 2.1KHz (480 $\mu$ S/32 ch).

Programmable gains: 1x, 2x, 4x, 8x.

A/D triggers: External and software.

System accuracy: 2 LSB (0.0030%) typical  
(SW calib., gain=1, 25°C).

Data format: Straight binary or two's complement.

Input overvoltage protection:  $V_{SS} -20V$  to  $V_{DD} 40V$  with power on,  $-35V$  to  $55V$  power off.

Common mode rejection ratio (60Hz): 96dB typical.

Channel-to-channel rejection ratio (60Hz): 96dB typical.

#### IP Compliance (ANSI/VITA 4)

Meets IP specifications per ANSI/VITA 4-1995.

IP data transfer cycle types supported: Input/output (IOSel\*),  
ID read (IDSel\*), Interrupt select (INTSel\*).

Access times (8MHz clock):

ID PROM read: 1 wait state (375ns cycle).

Channel port/register read/write: 0 wait states.

Interrupt select cycle read: 1 wait state.

Mail box I/O read: 1 wait state. 6 wait states  
if ongoing internal mail box write.

#### Environmental

Operating temperature: 0 to 70°C (IP330)  
or -40 to 85°C (IP330E model).

Storage temperature: -55 to 100°C.

Relative humidity: 5 to 95% non-condensing.

MTBF: 798,625 hrs at 25°C, MIL-HDBK-217F, Notice 2.

Power:

+5V: 40mA.

+12V from P1: 20mA.

-12V from P1 or  $\pm 15V$  through P2: 15mA.

### Ordering Information

#### Industry Pack Modules

##### IP330

32 single-ended or 16 differential inputs.

##### IP330E

Same as IP330 plus extended temperature range

Acromag offers a wide selection of [Industry Pack Carrier Cards](#).

**Software** (see [software documentation](#) for details)

##### IPSW-API-VXW

VxWorks® software support package

##### IPSW-API-QNX

QNX® software support package

##### IPSW-API-WIN

Windows® DLL driver software support package

##### IPSW-LINUX

Linux™ support (website download only)

See [accessories documentation](#) for additional information.

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