Industry Pack Modules

Acromag® THE LEADER IN INDUSTRIAL I/O

IP320
12-Bit A/D,
Analog Input

The IP320 monitors 20 differential or 40 single-ended input channels. When used with a carrier that holds four IP modules, up to 160 inputs can be obtained from a single card cage slot.

A jumper offers a choice of three input voltage ranges. Using the software programmable gain, you can easily customize the input voltage on an individual channel basis. The control register provides further flexibility with the option of single-ended or differential inputs and controlled channel selection. Software or external triggers enable synchronization of data acquisition to external events.

Features

■ 20 differential or 40 single-ended inputs

■ 12-bit, successive approximation A/D converter (ADC) with an 8.5μS conversion time

■ 100K samples per second maximum system throughput rate

■ Three jumper-selectable input ranges: -5 to 5V, -10 to 10V, and 0 to 10V

■ Programmable gains of 1, 2, 4, and 8

■ Built-in calibration references

Benefits

■ Software or external hardware inputs can trigger A/D conversions for synchronization to external events.

■ On-board, precision voltage references enable accurate software calibration of the module without external instruments.

■ The module supports both "wait" states (generated by the IP module) and "hold" states (generated by the carrier board).
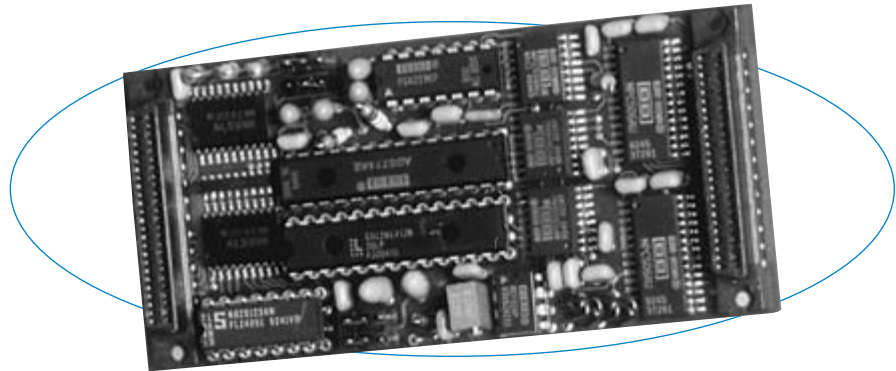
By installing multiple IP320s on one card, you can achieve extremely high channel density to reduce costs and preserve card slots

Specifications

Analog Inputs

Input configuration: 40 single-ended or 20 differential.

A/D resolution: 12 bits.

Input ranges (jumper-selectable):
Bipolar -5 to +5V, -10 to +10V (See Note 1), or
Unipolar 0 to +10V (See Note 1).

Note 1: Range requires ±15V external power supply. Clipping occurs with ±12V supplies, typically to ±9V.

Maximum throughput rate: 100KHz (10μS/conversion). Only one channel updates at a time.

Programmable gains: x1, x2, x4, x8.

A/D triggers: External and software.

Maximum overall calibrated error at 25°C: See below.

Input Range (volts)	PGA Gain	ADC Range (volts)	Max.Error ±LSB (%span)
0 to 10	1	0 to 10	3.2 (0.078)
-5 to +5	1	-5 to +5	1.8 (0.044)
-10 to +10	1	-10 to +10	2.8 (0.069)

Data format (left-justified): Bipolar Offset Binary (BOB) or Unipolar Straight Binary (USB).

Input overvoltage protection: ±32V powered, ±20V unpowered.

Common mode rejection ratio (60Hz): 71dB.

Channel-to-channel rejection ratio (60Hz): 71dB.

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*).

Access Times (8MHz clock):
All functions: 0 wait states (250nS cycle) except
Control register write: 1 wait state (375nS cycle),
Read ADC data: 3 wait states (625nS cycle).

Environmental

Operating temperature: 0 to 70°C (IP320) or -40 to 85°C (IP320E model).

Storage temperature: -40 to 100°C (IP320) or -55 to 105°C (IP320E model).

Relative humidity: 5 to 95% non-condensing

MTBF: 564,198 hrs at 25°C, MIL-HDBK-217F, Notice 2.

Power: +5V: 350mA maximum.
+12V from P1 or +15V from P2: 20mA maximum.
-12V from P1 or -15V from P2: 20mA maximum.

Ordering Information

Industry Pack Modules
IP320
40 single-ended or 20 differential inputs.

IP320E
Same as IP320 plus extended temperature range.

For Industry Pack Carrier Cards, see Page 5.

Software *(see Page 81)*
IPSW-API-VXW
VxWorks® software support package

IPSW-API-QNX
QNX® software support package

IPSW-ATX-PCI
ActiveX®/OLE Controls 2.0 software package

IPSW-LINUX
Linux™ support (website download only)

For accessories information, see Page 87.

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