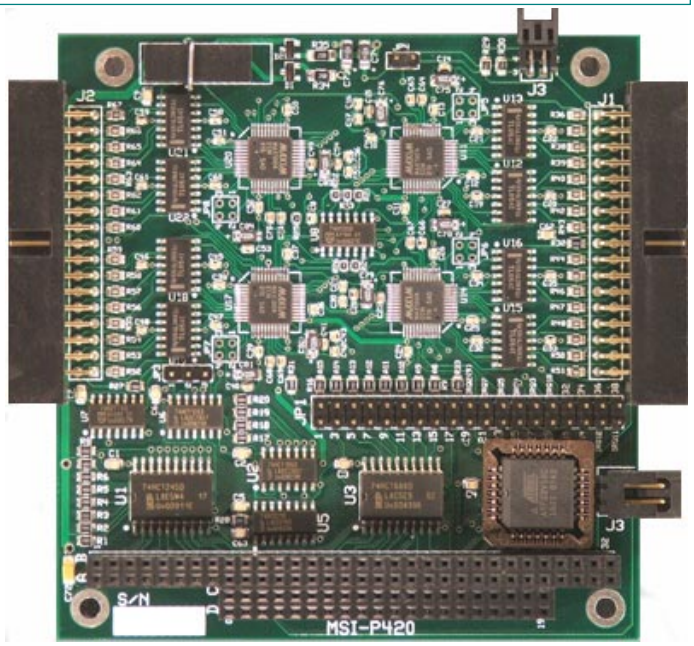
MSI PC/104
Embedded PC Series

MSI-P421 ANALOG INPUT CARD

FEATURES

- Up to 32 analog input channels.
- Simultanous conversions via software or an external convert pulse input via J1 or J3.
- ±5V input range with 12-bit resolution, ±1/2 LSB non-linearity (0-20 mA input range with MSI-P910).
- 2.2 us total conversion time for 32 channells.
- Enable/disable software command for each channel.
- Selectable interrupts IRQ2 thru IRQ15 for processing conversions.
- Single +5V operation.
- 16-bit stackthrough PC/104 with I/O mapped 16-bit addressing.
- Jumper selectable card addresses.
- Operating temperature range -40°C to 85°C.
- One-year warranty from date of shipment.

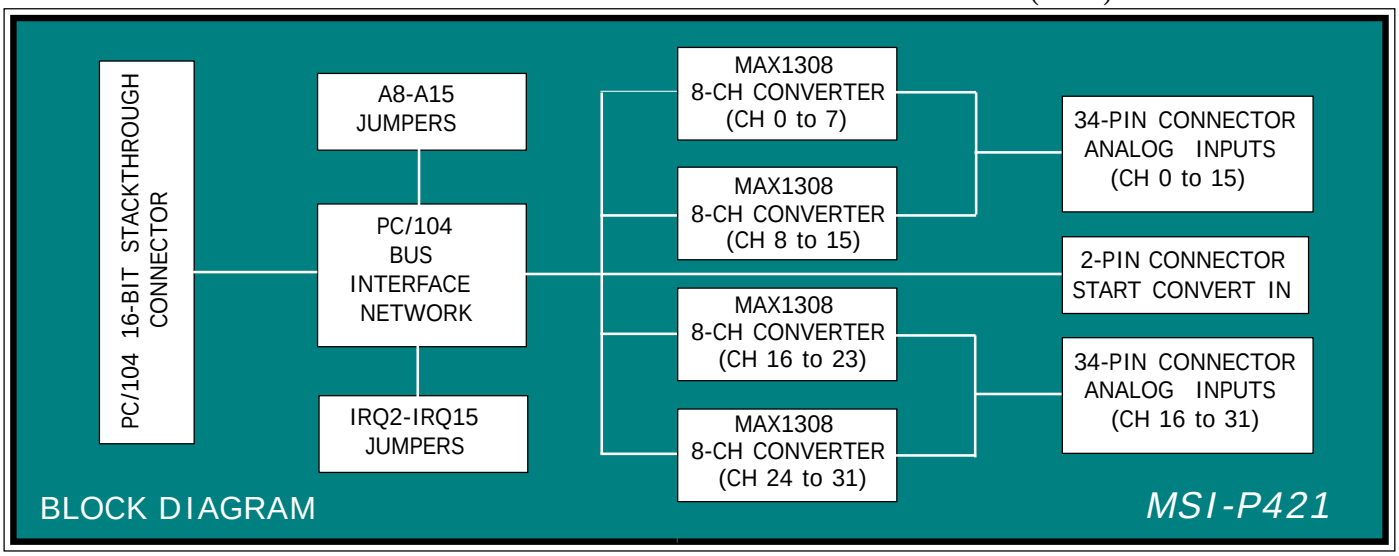


DESCRIPTION

The MSI-P421 series is a low cost, high performance 12-bit analog input card designed for use with all PC/104 embedded systems. A special feature for the series is the simultaneous conversion sequence of all channels activated from software or from an external pulse. Four models provide ±5V input ranges with capacities of 8, 16, 24 or 32 channels which operate from a single +5V supply with a non-linearity of ±1/2 LSB. The inputs are overvoltage tolerant to ±15V. A block diagram of the card is shown in Fig. 1.

The card employs up to four MAX1308, eight-channel A/D converters that incorporate a precision 2.5V reference source with buffer amp, internal 15 MHz clock, and independent track-and-hold (T/H) circuitry provides for the simultaneous sampling of each channel.

(over)



Channels for each of four devices can be enabled or disabled via the configuration register of the devices. Conversion times of approximately 800ns to 2200ns for 1 to 8 channels, respectively, for each device. Since conversions are simultaneous, all four devices are converting at the same time for a maximum time of approximately 2200ns for all 32 channels.

The card is I/O mapped using 16-bit addressing to select the input channels and device status. Option jumpers are provided for specifying the card base addresses A8 thru A15 and interrupts IRQ2 thru IRQ15.

The card is supplied with a User Manual containing detailed hardware descriptions with schematic diagrams and a sample 'C' program example.

The MSI-P910 terminal card can be used to provide up to 16 analog inputs via terminal strips. This card includes surge protection for protecting against spurious voltages prevalent in harse or industrial environments.

Standard Models:

MSI-P421-8Ch - 8 Analog Input Channels

MSI-P421-16Ch - 16 Analog Input Channels

MSI-P421-24Ch - 24 Analog Input Channels

MSI-P421-32Ch - 32 Analog Input Channels

SPECIFICATIONS

PC/104	16-bit, stackthrough
Analog Inputs	
Channels	8 to 32 in groups of 8
Converter	MAX1308
Single-ended Input	
Range	±5V
Resolution	12 bits
Internal Clock Freq.	15 MHz
Conversion Rate	456 ksps per channel, 32 Ch's enabled
Non-linearity	±1/2 LSB typical
Offset Error	±3 LSB typical
Gain Error	±2 LSB typical
Signal-to-Noise	71 dB typical
Input Resistance	1 MΩ standard (10 MΩ optional)
Internal Reference	
Ref Out Voltage	2.5 V ±1%
Temp. Coeff.	30 ppm/°C
Connectors	
MSI-P421-8Ch	One (1) 3M 30320-5002 or eq. (20-pin)
MSI-P421-16Ch	One (1) 3M 30334-5002 or eq. (34-pin)
MSI-P421-24Ch	One (1) 3M 30316-5002 or eq. (16-pin) One (1) 3M 30334-5002 or eq. (34-pin)
MSI-P421-32Ch	Two (2) 3M 30334-5002 or eq. (34-pin)
Interrupts	
Channels	One, sharing with tri-state buffer for IRQ2-15
Option Jumpers	.025" square posts, 0.1" grid
Electrical & Environmental	
+5V @ 300 mA typical, 32 Ch's enabled	
-40° to 85°C	

MICROCOMPUTER SYSTEMS, INC.
1814 Ryder Drive ♦ Baton Rouge, LA 70808 ♦ Phone (225) 769-2154 ♦ Fax (225) 769-2155
Email: staff@microcomputersystems.com http://www.microcomputersystems.com