## *IP 16 bit A/D converter, 48 multiplexed input channels*
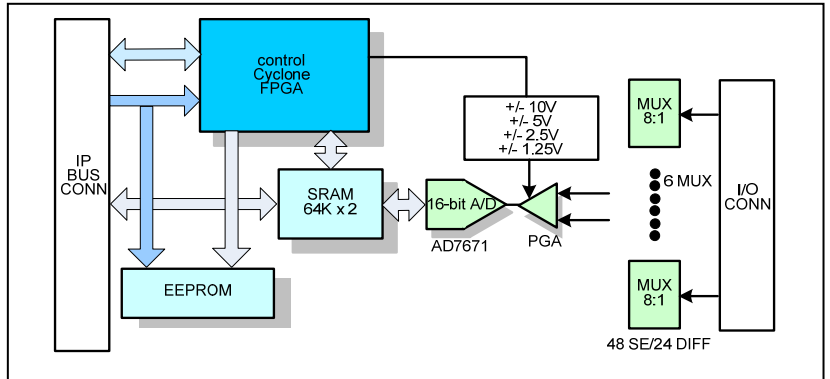
## Features

- 16-bit AD7671 A/D converter
- Acquisition time of ≤2μsec (500Ksps)
- Multiplexed 48 single-ended or 24 differential channels
- Fault and over-voltage protected analog input (-40 VDC to +55 VDC)
- Software programmable single-ended or differential input and gain for each channel
- Input ranges: ±10VDC, ±5VDC, ±2.5VDC, ±1.25Vdc via software programmable gain amplifier
- A/D jumper selectable gain (1-2-4-8)
- Internal sequencer with channel list for selected channel acquisition
- On-board input switches for offset or gain calibration
- 64Kx16 dual-ported SRAM
- Flash EEPROM for gain/offset correction data
- 8 or 32 MHz clock
- 2 interrupts and 2 slave DMA IP bus lines
- VITA 4 compliant
- The programmable internal sample clock offers sampling rates between 2μsec and 32sec intervals.





## Block Diagram and Operational Overview

The IP-48-ADM multiplexed A/D offers a mix of up to 48 single-ended or 24 differential analog input channels. Each channel features programmable gain and can be individually programmed to handle analog input with a single-ended or differential configuration or a calibration mode.

The acquisition can be started by the host or by an on-board sequencer that uses a channel list to specify which channel to acquire. A local 64Kx16 but dual ported SRAM stores the acquisition data. Memory pointers can be selected t limit the number of scans gathered, as well as the control of interrupt generation.

The AD7871 can provide a global acquisition and conversion time of ≤2μsec per sample per channel. The acquisition time increases to ‹8μsec with channel change and/or gain change.

Two different threshold levels can be selected for each channel. When enabled, the result of the acquisition is compared with one or both of the thresholds and a programmable interrupt will be generated to the host if the channel is outside or inside the defined band gap.

The board can also be set to monitor one channel and start acquisition on the channel list when ever the band gap has been violated. A programmable digital filter selects the minimum number of consecutive values before the interrupt is generated or acquisition starts.

## Application:

This is a perfect solution for:
- Process control,
- Industrial control, or
- Precision instrumentation

## AD7671 A/D Device Specifications:

- 16-bit, charge redistribution SAR, A/D converter
- Hardware factory-calibrated and tested to ensure SNR and THD are within specifications
- Gain, offset, and linearity are also factory-calibrated
- Throughput
    - 1 MSPS (warp mode)
    - 800 kSPS (normal mode)
- INL: ±2.5 LSB Max (±0.0038% of full scale) with no missing code
- Analog input voltage ranges
    - Bipolar: ±10 V, ±5 V, ±2.5 V
    - Unipolar: 0 V to 10 V, 0 V to 5 V, 0 V to 2.5 V
- No pipeline delay
- Single 5 V supply operation

## Industry Pack Specifications:

- Meets ANSI/VITA 4-1995
- 8/32 MHz synchronous operation
- Supports ID, 128 byte I/O, interrupt. & 8 Mbyte memory spaces
- 2 Interrupts per module
- Two passive DMA channels are possible.
- Hardware self timed per IP module
- Triggered via system reset and software control
- Jumper or software time-out function
- 5, +/-12 volt reset-able fuse per IP

## Mechanical: Environmental:

- Size – VITA 4 compliant
  1.8" x 3.9" or 46 mm x 99 mm
- Power – 1.0 watt
- Vibration – 0.5G, 20-2000 Hz rand
- Shock – 20G, 11 msec, ½ sine
- Weight – 2 ounces
- MTBF – >250,000 hours

## Operating Environment:

- Operating temperature
    Commercial: 0 to +70 ºC
    Optional: -25 ºC to +80 ºC
- Non-operating: -40 ºC to +85 ºC
- Airflow requirement – 5 CFM
- Humidity – 5 to 90% (non-cond)
- Altitude – 0 to 10,000 feet

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### Ordering Information:

| Part number: | IP-48-ADM | 48 channel 16 bit A/D Industry Pack Module |
| | IP-48-ADM -8 | 8 channel 16 bit A/D Industry Pack Module |
| | IP-48-ADM -8I | Same as above with -40 to +85 C |

### Optional Accessories:

| Part number: | TB-50-HDR | 50 pin terminal block and 1meter flat ribbon cable |
| | CBL-50-HDR | 50 pin, 1meter flat ribbon cable, IDC header connector |

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