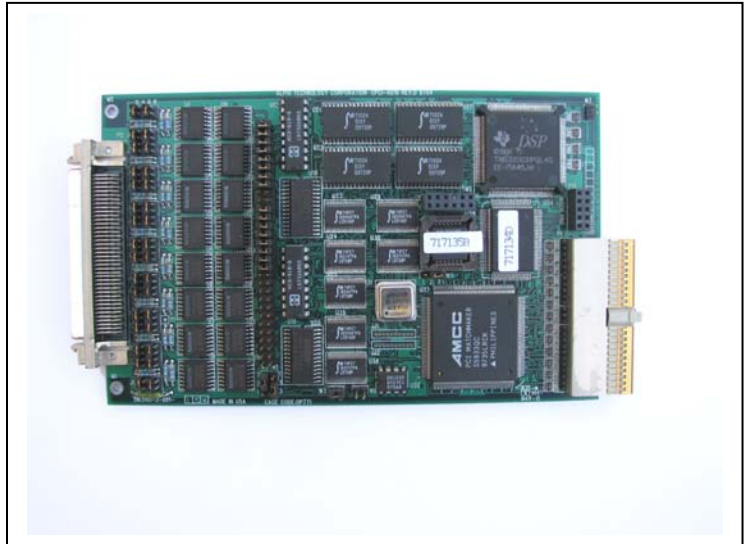


## 16 channels- 16 bit A/D CPCI With 320C31 DSP

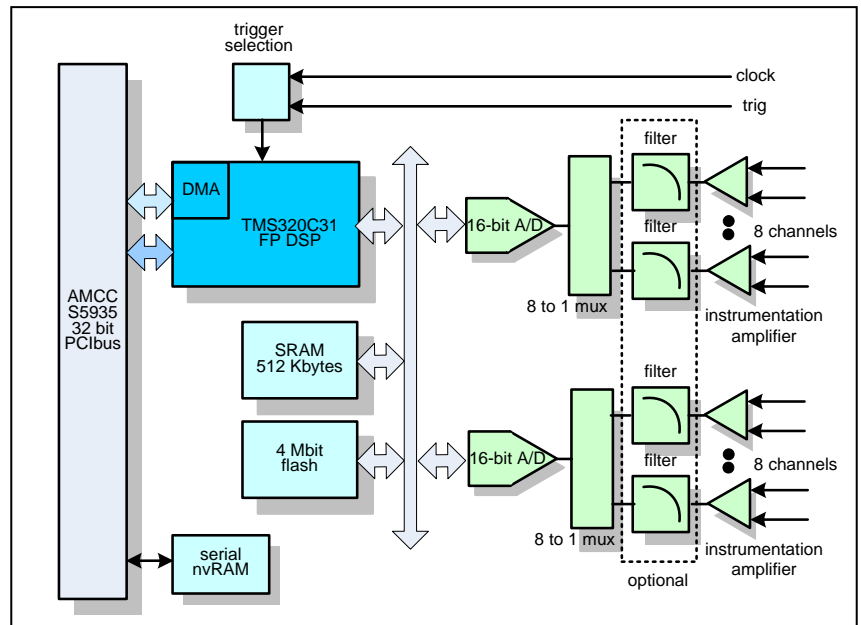
### Features

- Based around the TI floating-point Digital Signal Processor TMS320C31 at 32 MHz
- Dual 16-bit A/D converters and two 8 to 1 multiplexers support 16 analog input channels
- 3U high Compact PCI module
- Front panel I/O connections
- Differential or single ended analog inputs
- instrumentation amplifier input support with software programmable gain
- Optional input filter for high-frequency band elimination
- Built in DMA support for PCI and system high speed data transfers
- External or internal sampling clock
- External or internal power supply



### Block Diagram Overview

The 32 MHz floating point 32-bit DSP TMS320C31 provides input signal conditioning support. The DSP is supported by 512 Kbytes of zero wait state SRAM that provides temporary storage and workspace for DSP operations. 16 input channels are optionally filtered after software gain amplification instrumentation amplifiers provide differential or single-ended input buffering. A/D operations can be triggered internally or externally through the front panel. A PCIbus connector provides the interface to the host computer. This module can use external power source for reduced noise operation.



### Available Software Drivers and Software Tools:

- C library dll's
- Linux drivers
- Window XP drivers
- VxWorks drivers
- LabView

### Applications:

The CPCI-AD16 module provides a 3U high performance data acquisition subsystem. The Local DSP can be used to simply move data samples to the CPCI bus or can provide processing functions such as limit checking, FFT's, digital filtering, etc. Application software

can be downloaded to the DSP via the CPCI interface. Instrumentation amplifiers provide over-voltage protection, gain and filtering on a per channel basis. Internal scan and trigger

clocks are derived from either the CPCI bus clock or the local DSP clock. Dual 32 bit timers can be programmed to pace the acquisition process. The CPCI-AD16 can also accept external scan and trigger signals from a front panel connector.

**TMS320C31 DSP Features:**

- 32-bit floating point TMS320C31 DSP at 32 MHz
- Single-cycle instruction execution
- 2 Kbytes of internal RAM
- DMA internal co-processor for concurrent I/O and CPU operation
- Boot loader program built-in
- 64 x 32 internal cache for data
- 2 built-in timers
- Two Integer and floating point multipliers
- Parallel multiply and arithmetic/logical operations on integer or floating-point numbers in a single cycle
- Internal or external trigger support for A/D conversion synchronization tied to DSP operations
- Two 32-bit timers which can also be configured for bit I/O

**AD976A specifications:**

- Fast 16-bit ADC
- Successive approximation, switched capacitor architecture
- 200 Ksamples/sec throughput – AD976A
- Single 5 V supply operation
- Input range: ±10 VDC
- 100 mW max power dissipation
- Choice of external or internal 2.5 VDC reference
- High speed parallel interface
- On-chip clock

**Filter specifications:**

- 4<sup>th</sup> order analog low pass filters

**Mechanical Environment:**

- Size – 3U CPCI module  
100mm x 160mm
- Power – 1.5 watt
- Vibration – 0.5G, 20-2000 Hz rand
- Shock – 20G, 11 msec, ½ sine
- Weight – tbd
- MTBF – >250,000 hours



**PGA204 Instrumentation amplifier specifications:**

- Differential or single ended input support; single ended output referenced to  $V_{ref}$
- ± 10VDC input range
- Software programmable gain of 1, 10, 100, or 1000
- Over-voltage protection to ± 40 VDC
- Low offset voltage: 50 µV max
- Low offset voltage drift: 0.25µV/°C
- Low input bias current: 2nA max
- Low quiescent current: 52 mA typical
- Offset voltage, voltage drift, and quiescent current are laser trimmed

**PCI Bus Controller Features:**

- Uses the AMCC S5935 PCI controller
- PCI 2.1 compliant master/slave
- 132 Mbytes/sec transfer rate
- Supports Windows NT service pack 2 & 3
- PCI bus operation DC to 33 MHz
- Four definable pass-through data channels
- Two 32 byte internal FIFOs with DMA
- Four mail box registers with byte level status and data strobe/interrupts
- Direct PCI and add-on interrupt pins
- Serial nvRAM interface or byte-wide non-volatile memory interface

**Operating Environment:**

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

**Ordering Information:**

CPCI-AD16                      3U A/D converter with 320C6713B DSP

**Optional Accessories**

CBL-SCSI-80                      80 pin SCSI to SCSI cable only  
 TB-80                                80 pin terminal block with cable