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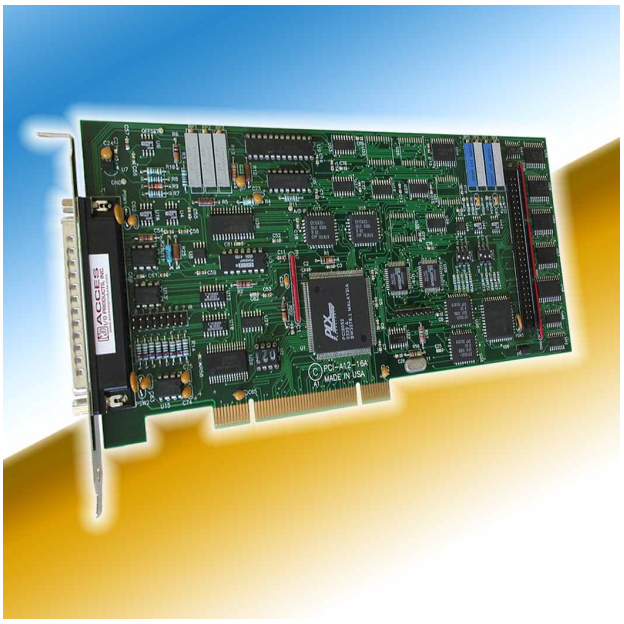
Find the *Acces PCI-A12-16A* at our website: ***Click HERE***

PCI-A12-16A

16-Channel, 12-Bit
Analog I/O Board

FEATURES

- **16 Single Ended / 8 Differential Analog Inputs**
- **12-Bit Resolution, 100kHz A/D Converter**
- **Two 12-Bit Analog Outputs**
- **Eight Programmable Voltage Ranges (Unipolar & Bipolar) and 4-20mA Current Range**
- **FIFO Data and Point List Buffers. Both FIFOs 2K**
- **On-Board Pacer Clock and Counter Timers**
- **24 Buffered Digital I/O Lines**
- **Universal PCI, 3.3V & 5V Compatible**



FUNCTIONAL DESCRIPTION

Model PCI-A12-16A is a multifunction, analog-to-digital, digital-to-analog, and digital I/O board. It accepts up to 16 single-ended inputs or eight differential inputs. Inputs are protected against over-voltage conditions up to ±35 volts and typically survive static discharges beyond 4000 volts. Conversions can be initiated in any one of three ways: (a) software command, (b) external start commands, or (c) on a timed basis using on-board programmable counters. Converted data may be transferred to the computer by one of two software selected methods: (a) polling for the end-of-conversion signal, or (b) by generating an Interrupt when the end-of-conversion signal occurs.

The board includes a 2K Samples FIFO data buffer and a 2K words Point List FIFO buffer. These FIFOs permit background-task-based data acquisition, essential for moderate throughput in Windows. The Point List FIFO contains channel, sub-MUX channel for use with external signal conditioner model AIM-16, and voltage range for each analog-input channel (point). The data buffer contains A/D conversion results. When the data buffer becomes half full, an interrupt can be generated to cause the data to be read into the computer.

INPUT VOLTAGE RANGES

Input analog voltages are amplified by a programmable-gain amplifier. Eight voltage ranges are available: 0-10V, 0-5V, offset voltage ranges of +1.25V to +3.75V and 1.25V to 6.25V, and ±10V, ±5V, ±2.5V, and ±1.25V bipolar. Further, by placing jumpers on the

board you can manually select a 4-20 mA current range. In that latter case, the current input is converted to a special analog voltage range that will yield full 12-bit resolution and there can be up to eight inputs. In applications that require mixed voltage and current inputs, jumpers are placed only on the channels that are to have current inputs.

INPUT SYSTEM EXPANSION

Up to 256 differential or single-ended analog inputs can be handled through use of external signal conditioner/sub-multiplexers (model AIM-16). The output of each 16-input sub-multiplexer will connect to one of the A/D single-ended inputs.

ANALOG OUTPUTS

Output ranges of 0-2.5V, 0-5V, 0-10V, ±2.5V, ±5V and ±10V, are field selectable with jumpers. Note that two conversions may take place at once and that, since the D/As are double buffered, data for the next conversion may be loaded simultaneously.

DISCRETE DIGITAL INPUT/OUTPUT

The circuit uses an 82C55A PPI with mode 0 supported. All bits are buffered and pulled up to 5V. These lines are connected via an external 50 pin ribbon cable through an adjacent mounting bracket.

COUNTER/TIMERS

The board contains a 1 MHz crystal-controlled oscillator and a type 82C54 counter/timer chip that has three 16-bit programmable down counters. Counters 1 and 2 are concatenated to provide 32 bits count capability and the "zero-crossing" output of Counter 2 can be used as a pacer clock for timed start commands to the A/D converter. Frequency generation is easy because Counters 1 and 2 form a 32-bit counter and there is a 1 MHz input. Pulse width measurement of slowly changing signals is easy because the slow-changing signal can be applied to Counter 1's gate input and the 1 MHz oscillator provides a known input frequency. Frequency measurement is simplified because Counter 0 can be used to generate a variable gating signal. Finally, transition counting can be performed by Counter 0 if events to be counted are applied to the clock input. Basically, Counter 0 input is used for frequency measurement and event counting. The Counter 1 gate input is used for pulse measurement and the Counter 2 output is used for frequency generation. In each case, you need to apply or read a signal at only one connector pin.

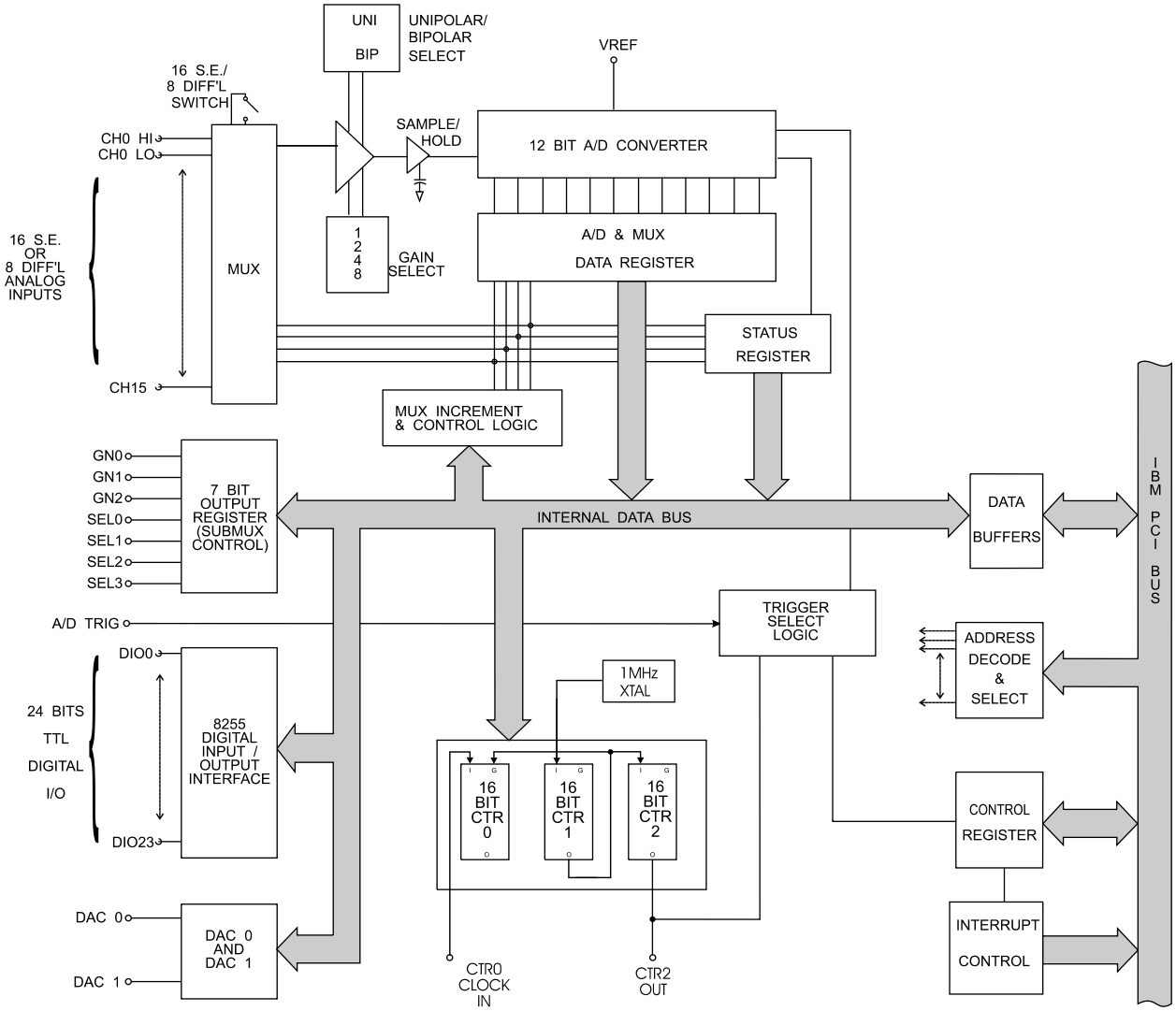
INTERRUPTS

When software enabled, the PCI-A12-16A board has Interrupt capability. An IntA can be initiated by completion of A/D conversions. Interrupt can be initiated when the FIFO data buffer is half full. The FIFO's permits data acquisition without timing concerns.

PRECISION EXCITATION VOLTAGE

A +10VDC (±0.2V) reference voltage is developed from the A/D converter reference source. That reference voltage is available at the I/O connector for external use and can source up to 200 mA.

BLOCK DIAGRAM



SOFTWARE

The PCI-A12-16A is supported for use in most operating systems and includes a DOS, Linux, and Windows 95/98/Me/NT/ 2000/2003/XP compatible software package. This contains sample programs and source code in "C" and Pascal for DOS, and Visual Basic, Delphi, C++ Builder, and Visual C++ for Windows. Also incorporated is a graphical setup program in Windows. Third party support includes a Windows standard dll interface usable from the most popular application programs, along with LabView .VI samples. Linux support consists of installation files and basic samples for programming from user level via an open source kernel driver.

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