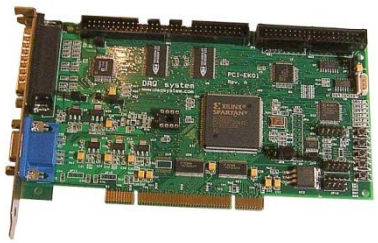
PCI-EK01(A/B)

PCI Multi-function data acquisition (AD/DA/Digital) board



INTRODUCTION

This product is specially designed for PCI master and target logic development and an analog data acquisition board. Also it can be used for multi-purpose applications, for example waveform generator, high current driver and high speed analog data logger.

GENERAL DESCRIPTION

- ◆ Multi-function Data acquisition board
- ◆ PCI target 32bit/33Mhz
- ◆ 12bit 8 channel A/D input
- ◆ 12bit 4 channel D/A output
- ◆ 24 general purpose I/O
- ◆ 32bit Timer/Counter
- ◆ 8M bit(4M bit with Type A) High speed (12nSEC) SRAM

APPLICATION

- ◆ PCI development and evaluation
- ◆ Data acquisition
- ◆ Laboratory instrumentation
- ◆ Process control systems
- ◆ Factory automation

SOFTWARE

▣ **Operating System**

- ▪ Windows 2000/XP

▣ **Application Programming Interface**

- ▪ Direct control through WDM driver
- ▪ Windows DLL API

▣ **Software Development Kits**

- ▪ User who have strong interest in developing PCI DAQ board can buy SDK.
- ▪ SDK contents
  Basic VHDL source, WDM Driver source, DLL source, Test Application(Waveform generator/Waveform Display)

SPECIFICATION

▣ Flexible Board

- PCI Target 32bit/33Mhz
- PCI 5V/3.3V compatible
- Full 33Mhz burst read/write operation
- Average data rate is 30MB data to, 8MB data from the board without DMA.
- Very flexible to upgrade because of FPGA is used as PCI bridge and overall board control.
- Spartan 3 (XC3S500-type A)
- Spartan 3 (XC3S200-type B)
- 4Mbit(256K x 16) fast SRAM
- 5 User input tact switch
- 6 User definable output LED indication
- User expandable local memory through 64pin header connector.(3.3V operation)
- User selectable oscillator
- Video interface (type B only)
- UART interface (type B only)

▣ Analog Input

- 12bit resolution
- 8 Single ended or 4 differential input
- 0 to +3.3V, ±1.65V input range
- MAX 200Ksps(5uSEC) conversion time
- Can change sampling interval in auto scanning mode by 2.5uSEC increment
- Power on auto-calibration
- ±1 (LSB) INL/DNL
- ±1uA analog input leakage current
- 20pF analog input capacitance
- On-board 1024 x 16 data FIFO
- On-board 512K(type B) x 16 data SRAM
- User can select ADC data storage, FIFO or SRAM
- In auto scanning mode, user can select any channel order.

▣ Analog Output

- 12bit resolution
- 4 channel output
- 0 to +3.3V output range
- MAX 1M (1uSEC) update rate ▪ Can change update interval in waveform generation mode by 1uSEC increment
- Simultaneous update of outputs ▪ ±16 (LSB) INL
- ±1 (LSB) DNL
- ±3 (LSB) Offset error
- ±1 (LSB) Gain error
- Slew Rate 0.7V/usec
- On-board 1024 x 16 waveform generation dual-port RAM
- In waveform generation mode, user can select any channel order.

▣ Digital I/O

- On-board 82C55 chip
- 24bit general purpose I/O
- Three 8bit group(Port A/B/C)
- Port B has high current sink capability (Max. 500mA)
- 3.3V CMOS logic level
- Power on floating or logic low

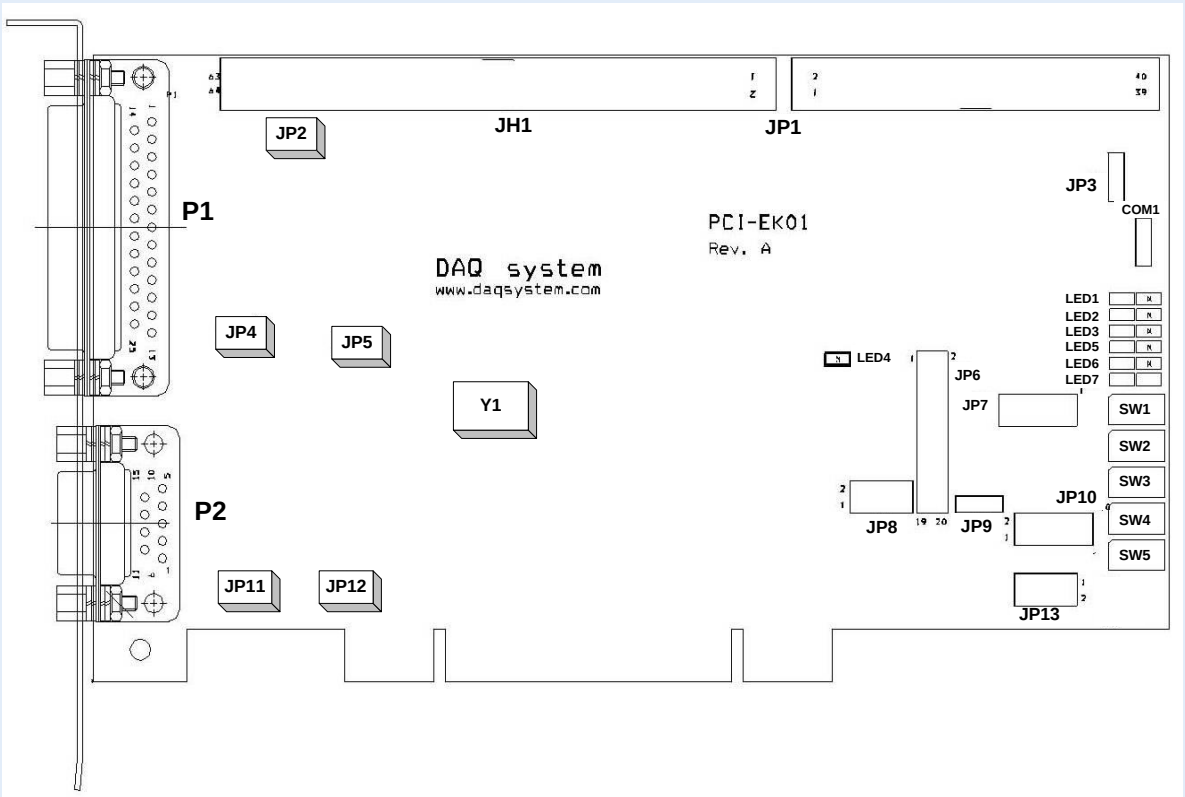
▣ Timer/Counter

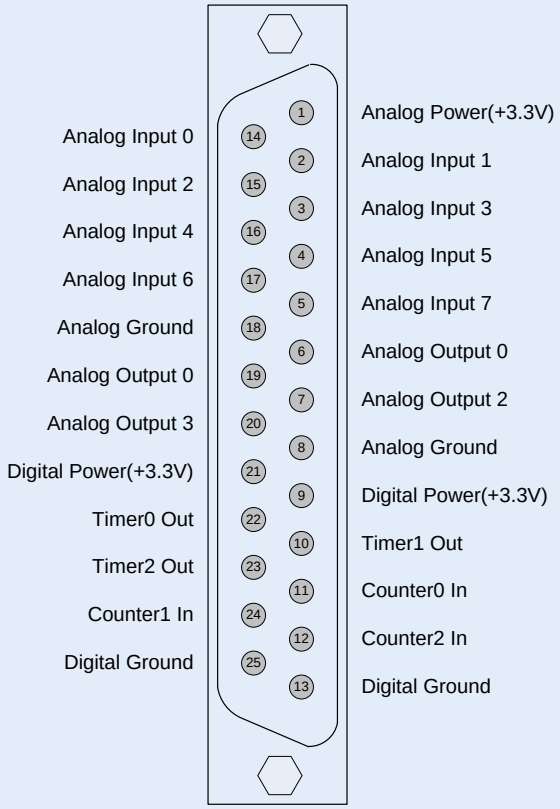
- Three 32-bit Timer
- Three 32-bit Counter
- Input frequency max 60Mhz
- 25n timer resolution
- One-shot or alternate timer output mode
- 3.3V CMOS logic level I/O interface

▣ External Connection

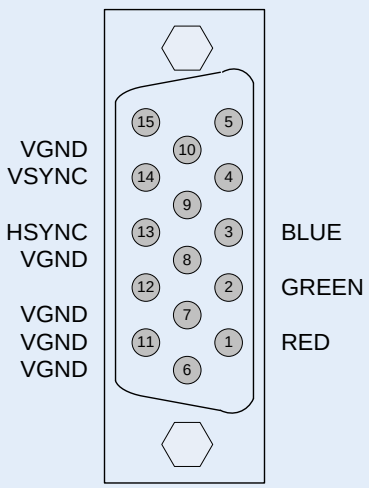
- 15pin D-sub (VGA Video)
- 25pin D-sub (Analog in-out, timer/counter)
- 64pin Box-header (Local memory bus)
- 40pin Box-header (Digital I/O)

▣ Board Feature





P1 :25pin D-sub(Analog in-out, timer/counter)



P2 : 15pin D-sub(Video Signal)

PHYSICAL/ENVIRONMENTAL

▣ Dimensions

- Dimension (not including connectors)
  : 175mm x 95mm

▣ Temperature

- 0 to 70℃, Operating
- -20 to 80℃ Storage

▣ Relative Humidity

- 20 to 80 percent, Non-condensing

▣ Power Requirement

- +5VDC(±5%) at Max. 1A

THE DIFFERENCE of TYPE A with B

▣ Fast SRAM

- 512KByte with A type
- 1MByte with B type

▣ Timer/Counter

- One 32bit timer/counter with A type
- Three 32bit timer/counter with A type

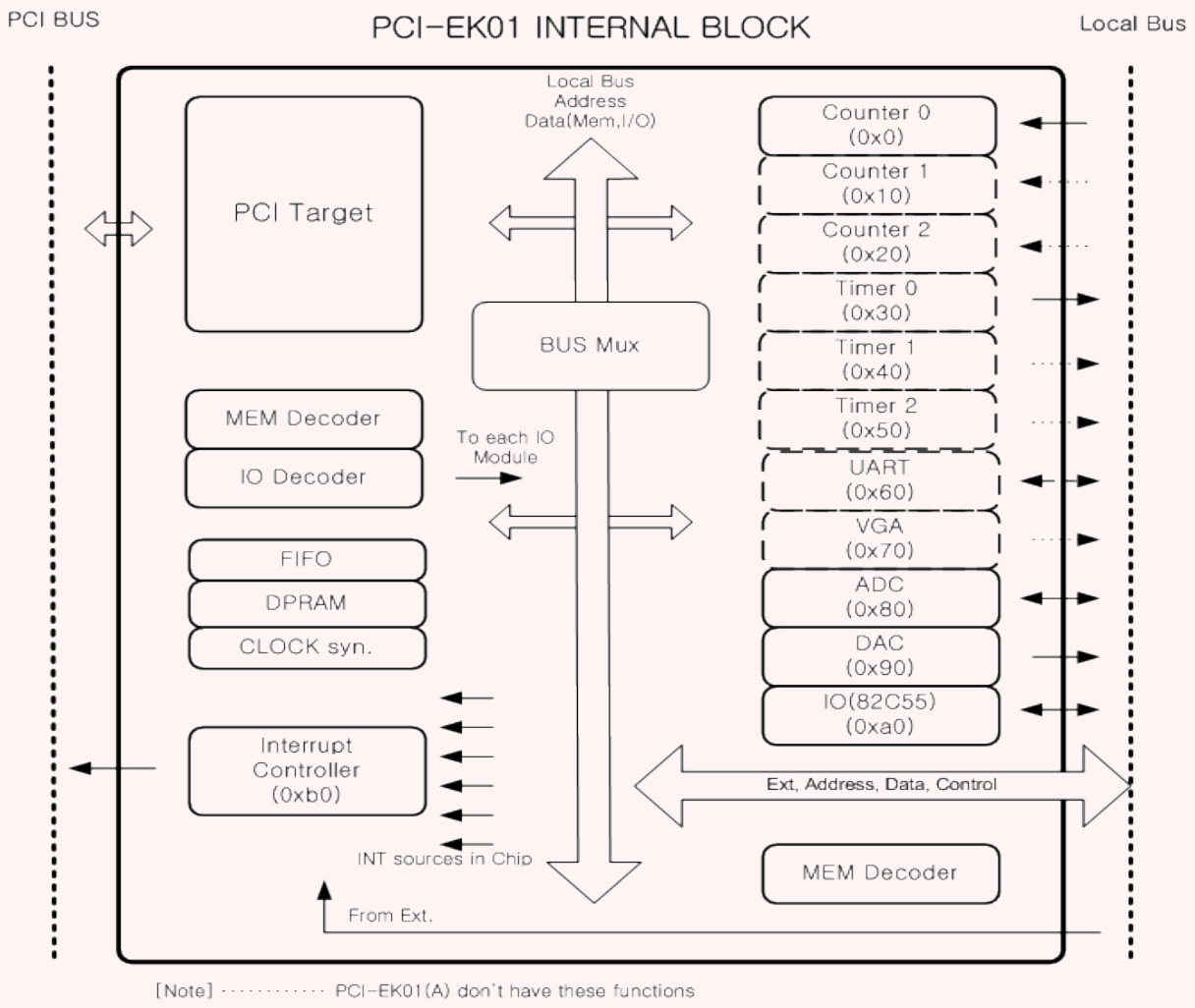
▣ Video Interface

- Type B has a video interface for future upgrade to display ADC data

▣ Serial Interface

- Type B has a UART(RS232C) interface for future upgrade to communicate with others.

ADDRESS MAP



BLOCK DIAGRAM