

Embedded PCI Data Acquisition



DESCRIPTION

The **PCI04PLUS-30C** is the latest in PC/104-Plus data acquisition boards. Extremely compact the board features 16 analog input channels, 24 digital i/o channels and four analog outputs all on one board.

The 16 input channels have an overall sampling speed of 100KHz with an accurate 14-bit resolution. Digital I/O on the board is PPI-compatible and can be programmed as inputs or outputs in banks of eight. It also has three onboard counters which can be used to generate interrupts. A digital trigger is also featured which can be used for starting measurements.

Software & hardware wise, the PCI04PLUS is compatible with our PCI-730 which means users can develop on a desktop using the PCI board and change over to PCI04-PLUS for the embedded system. The driver for both boards is identical and connector pinouts the same.

The PCI04-PLUS-30C utilises software calibration for each individual channel and range. This means errors are automatically calculated out when using a different voltage input range. A software calibration application is provided with each board. Also included with the PCI04-PLUS-30C is our free data acquisition package, WaveView for Windows which allows the user to start sampling as soon as the card is plugged in. Our EDRE software developer's kit caters for OEMs wanting to write their own software and has support for most popular software packages such as Visual Basic & Delphi.

FEATURES

- Analog Input Channels: 16 SE or 8 Diff
- Resolution: 14 bit
- A/D Sampling Rate: 100kHz
- Input Voltage Ranges: ± 2.5 , ± 5 , ± 10 V
- Analog Output: 4x 14-bit D/A Channels
- Output Voltage Ranges: ± 10 V
- Digital I/O: 24 (3 x 8) TTL Level DIO Channels
- Counter/Timers: 3 x 16-bit (User)
- Trigger Modes: Digital External Hardware Trigger or Software Trigger
- FIFO: 2048 buffer with programmable word count Software Calibration
- Connectors: 2mm Pitch IDC26 (A/D & D/A); 2mm Pitch IDC40 (DIO)
- PC/104-Plus Version 1.2 Compatible
- OS Support: Windows 98/ME/2000/XP (NT on request)
- Linux OS Support
- WaveView for Windows Data Acquisition & Logging Software
- Third Part Support: Labview, Testpoint & Agilent-VEE Driver Support
- Includes EDRE SDK with examples, drivers & example source code

PC/104-Plus has all the great benefits of the embedded PC/104 standard but with the added feature of the high performance PCI bus. The physical size and mounting configuration remain unchanged with a 2nd stack-through connector on the opposite side of the board. This 120-Pin connector is similar to the standard PCI-bus, but with no JTAG, PRSNT or CLKRUN signals present. A rotational dipswitch on the side of the board allows the user to select PCI board position when more than one PC/104-Plus is used at a time.

Specifications

| ANALOG INPUTS (A/D) | |
|---------------------------------|---|
| Input Characteristics | |
| Input Channels: | 16 SE or 8 Differential |
| Input Ranges: | ± 2.5 V, ± 5 V, ± 10 V |
| Maximum Working Voltage: | ± 11 V relative to module ground |
| Resolution: | 14-bit (1 in 16384) |
| Input Coupling: | DC |
| A/D Conversion Characteristics | |
| Max sampling rate: | 100KHz |
| Relative Accuracy: | ± 2 LSB maximum |
| A/D FIFO buffer size: | 2048 samples |
| Acquisition Modes: | Digital Hardware or Software Trigger |
| Input Impedance: | 1M Ohm |
| System Noise: | 1 LSB |
| ANALOG OUTPUT (D/A) | |
| No of Channels: | 4x 14-bit |
| Output Ranges: | ± 10 V |
| Full Scale Error: | ± 2 LSB |
| Settling Time: | 1mS to 0.1% of full scale 2mS to 0.015% of full scale |
| Output Drive: | ± 10 V @ 5mA |
| Power On State: | 0V |
| DIGITAL I/O (DIO) | |
| No of TTL I/O lines: | 24 |
| Logic Levels: | Input Low Voltage: -0.5V to 0.8V Input High Voltage: 2.0V to 5.0V Output High Voltage Min: 2.4V Output Low Voltage Max: 0.45V Maximum Output Current: 2mA |
| DIGITAL TRIGGER | |
| Trigger Source: | External Trigger |
| Compatibility: | TTL |
| Pulse Width: | 100nS |
| COUNTER/TIMERS | |
| Number of Counters: | 3 (16-bit resolution) (82C54/TTL) |
| Clock Source: Jumper Selectable | Scaled Internal up to 8MHz (External) |
| Gate Source: Jumper Selectable | Software Controlled (External) |
| External Interface | |
| Connector Types: | 2mm Pitch IDC26 (A/D & D/A); 2mm Pitch IDC40 (DIO) |
| PC/104-Plus Interface | |
| Compliant: | PC104-Plus 1.2 3.3V or 5.0V compatible with auto-detect Auto selected |
| Environmental / Physical | |
| Dimensions: | 90 x 96 mm |
| Rel. Humidity: | 0% to 90% (non-condensing) |
| Operating Temp: | 0°C to 70°C |
| Power Requirements | +5V @ 1.5A typ |

IDC-40M

| | | | |
|-------------|----|----|----------|
| CH1 | 2 | 1 | CH0 |
| CH3 | 4 | 3 | CH2 |
| CH5 | 6 | 5 | CH4 |
| CH7 | 8 | 7 | CH6 |
| CH9 | 10 | 9 | CH8 |
| CH11 | 12 | 11 | CH10 |
| CH13 | 14 | 13 | CH12 |
| CH15 | 16 | 15 | CH14 |
| DAC0 | 18 | 17 | AGND |
| DAC2 | 20 | 19 | DAC1 |
| +VDD | 22 | 21 | DAC3 |
| EXT_TRIGGER | 24 | 23 | -VDD |
| NOT USED | 26 | 25 | NOT USED |

IDC-40M

| | | | |
|-------|----|----|----------|
| PA0 | 1 | 2 | PA1 |
| PA2 | 3 | 4 | PA3 |
| PA4 | 5 | 6 | PA5 |
| PA6 | 7 | 8 | PA7 |
| PB0 | 9 | 10 | PB1 |
| PB2 | 11 | 12 | PB3 |
| PB4 | 13 | 14 | PB5 |
| PB6 | 15 | 16 | PB7 |
| PC0 | 17 | 18 | PC1 |
| PC2 | 19 | 20 | PC3 |
| PC4 | 21 | 22 | PC5 |
| PC6 | 23 | 24 | PC7 |
| DGND | 25 | 26 | NOT USED |
| CLK0 | 27 | 28 | NOT USED |
| COUT0 | 29 | 30 | GATE0 |
| GATE1 | 31 | 32 | CLK1 |
| CLK2 | 33 | 34 | COUT1 |
| COUT2 | 35 | 36 | GATE2 |
| +5V | 37 | 38 | DGND |
| DGND | 39 | 40 | DGND |

Optional Accessories

- ADPT-3740** DB37 (M) & IDC40 (M) to 41way Screw Terminal Adaptor
- ADPT-2526** DB25 (M) & IDC26 (M) to 27way Screw Terminal Adaptor

Ordering Information

Supplied with EDRE Software, Plastic PC/104 Mounting Kit and Ribbon Cables
PCI04PLUS-30C 16 Channel 14-bit PC/104+ A/D Board with 4 D/A Outputs