



Artisan Technology Group is your source for quality new and certified-used/pre-owned equipment

- FAST SHIPPING AND DELIVERY
- TENS OF THOUSANDS OF IN-STOCK ITEMS
- EQUIPMENT DEMOS
- HUNDREDS OF MANUFACTURERS SUPPORTED
- LEASING/MONTHLY RENTALS
- ITAR CERTIFIED SECURE ASSET SOLUTIONS

SERVICE CENTER REPAIRS

Experienced engineers and technicians on staff at our full-service, in-house repair center

*InstraView*SM REMOTE INSPECTION

Remotely inspect equipment before purchasing with our interactive website at www.instraview.com ↗

WE BUY USED EQUIPMENT

Sell your excess, underutilized, and idle used equipment. We also offer credit for buy-backs and trade-ins. www.artisanng.com/WeBuyEquipment ↗

LOOKING FOR MORE INFORMATION?

Visit us on the web at www.artisanng.com ↗ for more information on price quotations, drivers, technical specifications, manuals, and documentation

Contact us: (888) 88-SOURCE | sales@artisanng.com | www.artisanng.com

PCI-DAS6402/16

Specifications



**MEASUREMENT
COMPUTING™**

Document Revision 1.2, February, 2010
© Copyright 2010, Measurement Computing Corporation

Specifications

Typical for 25 °C unless otherwise specified.

Specifications in *italic text* are guaranteed by design.

Analog input

Table 1. Analog input specifications

| | |
|--------------------------------|--|
| A/D converter type | AD976A, successive approximation ADC |
| Resolution | 16 bits |
| Number of channels | 64 single ended; 32 differential |
| Input ranges (SW programmable) | Bipolar: ± 10 V, ± 5 V, ± 2.5 V, ± 1.25 V Unipolar: 0 to 10 V, 0 to 5 V, 0 to 2.5 V, 0 to 1.25 V |
| Polarity | Unipolar/Bipolar, software selectable |
| A/D pacing (SW programmable) | Internal counter – ASIC |
| | External source (A/D external pacer) |
| | Software polled |
| Burst mode | Software selectable option, burst rate = 5 μ S. Valid for a fixed input range only. |
| A/D gate sources | External digital (A/D Pacer Gate) |
| | External analog (Analog Trigger In) |
| A/D gating modes | External digital: Programmable, active high or active low, level, or edge |
| | External analog: Software-configurable for: <ul style="list-style-type: none"> ▪ Above or below reference ▪ Positive or negative hysteresis ▪ In or out of window Trigger levels set by D/A OUT 0 and/or D/A OUT 1. |
| A/D trigger sources | External digital (A/D start trigger in and A/D stop trigger in) |
| | External analog (analog trigger in) |
| A/D triggering modes | External digital: Software-configurable for rising or falling edge. |
| | External analog: Software-configurable for positive or negative slope. Trigger levels set by D/A OUT 0 and/or D/A OUT 1. |
| | Pre-/post-trigger: Unlimited number of pre-trigger samples, 16 Meg post-trigger samples. Compatible with both digital and analog trigger options. |
| Data transfer | From 8k RAM buffer via DMA (demand or non-demand mode) using scatter gather. |
| | Programmed I/O |
| Configuration memory | 8K words |
| Channel/gain queue | <i>Up to 8K elements. Programmable channel, gain, and offset.</i> |
| A/D conversion time | 5 μ S |
| Calibration | <i>Auto-calibration, calibration factors for each range stored on board in non-volatile RAM.</i> |

Accuracy

200 kHz sampling rate, single channel operation and a 60 minute warm-up. Accuracies are listed for operational temperatures within ± 2 °C of internal calibration temperature. Calibrator test source high side tied to Channel 0 High and low side tied to Channel 0 Low. Low-level ground is tied to Channel 0 Low at the user connector.

Table 2. Absolute accuracy

| Range | Absolute accuracy |
|--------------------|-------------------|
| ± 10.000 V | ± 3.0 LSB |
| ± 5.000 V | ± 3.0 LSB |
| ± 2.500 V | ± 4.5 LSB |
| ± 1.250 V | ± 4.5 LSB |
| 0 V to $+10.000$ V | ± 3.0 LSB |
| 0 V to $+5.000$ V | ± 3.0 LSB |
| 0 V to $+2.500$ V | ± 4.5 LSB |
| 0 V to $+1.250$ V | ± 4.5 LSB |

Table 3. Accuracy components

| Range | Gain error | Offset error | DLE | ILE |
|-----------------|---------------|---------------|----------------|-------------|
| ± 10.00 V | ± 1.5 max | ± 1.5 max | ± 1.75 max | ± 2 max |
| ± 5.000 V | ± 1.5 max | ± 1.5 max | ± 1.75 max | ± 2 max |
| ± 2.500 V | ± 2.0 max | ± 2.5 max | ± 1.75 max | ± 2 max |
| ± 1.250 V | ± 2.0 max | ± 2.5 max | ± 1.75 max | ± 2 max |
| 0 to $+10.00$ V | ± 1.5 max | ± 1.5 max | ± 1.75 max | ± 2 max |
| 0 to $+5.000$ V | ± 1.5 max | ± 1.5 max | ± 1.75 max | ± 2 max |
| 0 to $+2.500$ V | ± 1.5 max | ± 3.0 max | ± 1.75 max | ± 2 max |
| 0 to $+1.250$ V | ± 1.5 max | ± 3.0 max | ± 1.75 max | ± 2 max |

Each PCI-DAS6402/16 is tested at the factory to assure the board's overall error does not exceed accuracy limits described in Table 2 above.

As shown in Table 3, total analog input error is a combination of gain, offset, differential linearity and integral linearity error. The theoretical worst-case error of the board may be calculated by summing these component errors. Worst case errors are realized only in the unlikely event that each of the component errors are at their maximum level, and causing error in the same direction.

System throughput

Table 4. System throughput specifications

| Condition | Calibration coefficients | ADC rate (max) |
|---|---|----------------|
| 1. Single channel, single input range. | Per specified range | 200 kHz |
| 2. Multiple channel, single input range | Per specified range | 200 kHz |
| 3. Single channel, multiple input ranges. All samples in unipolar OR bipolar mode. | Default to value for <code>cbAInScan()</code> range | 200 kHz |
| 4. Multiple channels, multiple input ranges. All samples in unipolar OR bipolar mode. | Default to value for <code>cbAInScan()</code> range | 200 kHz |
| 5. Multiple channels, multiple input ranges, switching Unipolar/bipolar mode | Default to value for <code>cbAInScan()</code> range | 200 kHz |
| 6. Multiple channel, single input range, switching Unipolar/bipolar mode. | Default to value for <code>cbAInScan()</code> range | 200 kHz |

Note 1: For conditions 1-2 above, specified accuracy is maintained at rated throughput. Conditions 3-6 apply calibration coefficients which correspond to the range value selected in `cbAIInScan()`. These coefficients remain unchanged throughout the scan. Errors of up to 25 counts may be incurred when switching gains while in bipolar or unipolar mode only (conditions 3 and 4). Errors of up to 100 counts may be incurred when mixing unipolar/bipolar modes (conditions 5 and 6).

Crosstalk

Crosstalk is defined here as the influence of one channel upon another when scanning two channels at the maximum rate. A full scale 100 Hz triangle wave is input on Channel 1; Channel 0 is tied to Analog Ground at the 100 pin user connector. The table below summarizes the influence of Channel 1 on Channel 0 with the effects of noise removed. The residue on Channel zero is described in LSBs.

Table 5. Crosstalk specifications

| Condition | Crosstalk | Per channel rate | ADC rate |
|--------------------------|-------------|------------------|----------|
| Same range to same range | 3 LSB pk-pk | 100 kHz | 200 kHz |
| Any range to any range | 6 LSB pk-pk | 100 kHz | 200 kHz |

Analog input drift

Table 6. Analog input drift specifications

| | |
|------------------------------------|---|
| Analog input full-scale gain drift | 0.25 LSB/°C max |
| Analog input zero drift | 0.21 LSB/°C max |
| Overall analog input drift | 0.46 LSB/°C max |
| Common mode range | ±10 V |
| CMRR @ 60 Hz | -80 dB min |
| Input impedance | 10 MegOhm min |
| Absolute maximum input voltage | <ul style="list-style-type: none"> ▪ Channel 0: ±15 V, power on or off ▪ Channels 1-63: -40 V to +55 V, power on or off |
| Warm-up time | 60 minutes |

Noise performance

Table 7 below summarizes the noise performance for the PCI-DAS6402/16. Noise distribution is determined by gathering 50K samples with inputs tied to ground at the user connector.

Table 7. Board noise performance

| Range | Standard Deviation | % within ±2 counts | % within ±1 count | MaxCounts | LSB _{rms} * |
|---------------|--------------------|--------------------|-------------------|-----------|----------------------|
| ±10.00 V | 0.8 | 98% | 78% | 9 | 1.4 |
| ±5.000 V | 0.8 | 98% | 78% | 9 | 1.4 |
| ±2.500 V | 0.8 | 98% | 78% | 9 | 1.4 |
| ±1.250 V | 0.9 | 97% | 73% | 10 | 1.5 |
| 0 to +10.00 V | 0.9 | 97% | 73% | 10 | 1.5 |
| 0 to +5.000 V | 0.9 | 97% | 73% | 10 | 1.5 |
| 0 to +2.500 V | 0.9 | 97% | 73% | 10 | 1.5 |
| 0 to +1.250 V | 1.0 | 95% | 68% | 11 | 1.7 |

* RMS noise is defined as the peak-to-peak bin spread divided by 6.6.

Analog output

Table 8. Analog output specifications

| | |
|--|---|
| <i>A/D converter type</i> | <i>AD669BR</i> |
| <i>Resolution</i> | <i>16-bits</i> |
| <i>Number of Channels</i> | <i>2</i> |
| <i>Voltage ranges</i> | <i>±10 V, ±5 V, 0 to 10 V, 0 to 5 V. Each channel independently programmable.</i> |
| <i>Monotonicity</i> | <i>Guaranteed monotonic over temperature</i> |
| <i>Analog output full-scale gain drift</i> | <i>±0.55 LSB/°C</i> |
| <i>Analog output zero drift</i> | <i>10 V ranges: ±0.25 LSB/°C; 5 V ranges: ±0.45 LSB/°C</i> |
| <i>Overall analog output drift</i> | <i>10 V ranges: ±0.8 LSB/°C; 5 V ranges: ±1.0 LSB/°C</i> |
| <i>Slew rate</i> | <i>10 V Ranges: 5 V/μs; 5 V ranges: 2.5 V/μs;</i> |
| <i>Settling time</i> | <i>20 V step to .0008%:13 μs max; 10 V step to .0008%:6 μs typ</i> |
| <i>Current drive</i> | <i>±15 mA</i> |
| <i>Output short-circuit duration</i> | <i>Indefinite @ 25 mA</i> |
| <i>Output coupling</i> | <i>DC</i> |
| <i>Output impedance</i> | <i>0.1 ohms</i> |
| <i>Power up and reset</i> | <i>DACs cleared to 0 volts ±75 mV max</i> |

Accuracy

Table 9. Absolute accuracy specifications

| Range | Absolute accuracy |
|----------------|--------------------------|
| ±10.000 V | ±4.0 LSB |
| ±5.000 V | ±4.0 LSB |
| 0 to +10.000 V | ±4.0 LSB |
| 0 to +5.000 V | ±4.0 LSB |

Table 10. Typical accuracy specifications

| Range | Typical accuracy |
|---------------|-------------------------|
| ±10.000 V | ±3.5 LSB |
| ±5.000 V | ±3.5 LSB |
| 0 to +10.00 V | ±3.5 LSB |
| 0 to +5.000 V | ±3.5 LSB |

Accuracy components

Table 11. Accuracy component specifications

| Range | Gain error (LSB) | Offset error (LSB) | DLE (LSB) | ILE (LSB) |
|---------------|-------------------------|---------------------------|--------------------|--------------------|
| ±10.000 V | ±2.0 max, ±1.5 typ | ±2.0 max, ±1.0 typ | ±1.0 max, ±0.5 typ | ±1.0 max, ±0.5 typ |
| ±5.000 V | ±2.0 max, ±1.5 typ | ±2.0 max, ±1.0 typ | ±1.0 max, ±0.5 typ | ±1.0 max, ±0.5 typ |
| 0 to +10.00 V | ±2.0 max, ±1.5 typ | ±2.0 max, ±1.0 typ | ±1.0 max, ±0.5 typ | ±1.0 max, ±0.5 typ |
| 0 to +5.000 V | ±2.0 max, ±1.5 typ | ±2.0 max, ±1.0 typ | ±1.0 max, ±0.5 typ | ±1.0 max, ±0.5 typ |

Each PCI-DAS6402/16 is tested at the factory to assure the board's overall error does not exceed ±4.0 LSB.

Total analog output error is a combination of gain, offset, integral linearity, and differential linearity error. The theoretical worst-case error of the board may be calculated by summing these component errors. Worst case error is realized only in the unlikely event that each of the component errors are at their maximum level, and causing error in the same direction. Although an examination of the chart and a summation of the maximum theoretical errors shows that the board could theoretically exhibit a ±6.0 LSB error, our testing assures this error is never realized in a board that we ship.

Typical accuracy is derived directly from the various component typical errors. This typical, maximum error calculation for the PCI-DAS6402/16 yields ± 3.5 LSB. However, this again assumes that each of the errors contributes in the same direction and the ± 3.5 LSB specification is quite conservative.

Analog output pacing and triggering

Table 12. Analog output pacing and triggering specifications

| | |
|---------------------------------------|--|
| D/A pacing (SW programmable) | Internal counter – ASIC |
| | External source (D/A external pacer) |
| | Software paced |
| D/A gate sources (SW programmable) | <ul style="list-style-type: none"> ▪ External digital (external D/A trigger/pacer gate) ▪ External analog (analog trigger in) |
| D/A gating modes | <ul style="list-style-type: none"> ▪ External digital: Programmable, active high or active low, level or edge ▪ External analog: Software-configurable for above or below reference. Gating levels set by DAC0 or DAC1 |
| D/A trigger sources | External digital (external D/A trigger/pacer gate) |
| | Software triggered |
| D/A triggering modes | External digital: Software-configurable for rising or falling edge. |
| Data transfer | <ul style="list-style-type: none"> ▪ From 16k RAM buffer via DMA (demand or non-demand mode) using scatter gather. ▪ Programmed I/O ▪ Update DACs individually or simultaneously (SW selectable) |
| Throughput | 100 kHz max per channel, 2 channels simultaneous |

Digital input/output

Table 13. Digital input/output specifications (main connector)

| | |
|---|---|
| Digital type (main connector) | Output: 74LS175 |
| | Input: 74LS244 |
| Configuration | 4 inputs, 4 outputs (DIN0 through DIN3; DOUT0 to DOUT3) |
| Output high voltage ($I_{OH} = -0.4$ mA) | 2.7 V min |
| Output low voltage ($I_{OL} = 8$ mA) | 0.5 V max |
| Input high voltage | 2.0 V min, 7 volts absolute max |
| Input low voltage | 0.8 V max, -0.5 volts absolute min |

Table 14. Digital input/output specifications (DIO connector)

| | |
|---|--|
| Digital type (digital I/O connector) | 82C55 |
| Number of I/O | 24 (FIRSTPORTA Bit 0 through FIRSTPORTC Bit 7) |
| Configuration | <ul style="list-style-type: none"> ▪ 2 banks of 8 and 2 banks of 4 or ▪ 3 banks of 8 or ▪ 2 banks of 8 with handshake |
| Input high voltage | 2.0 V min, 5.5 V absolute max |
| Input low voltage | 0.8 V max, -0.5 V absolute min |
| Output high voltage ($I_{OH} = -2.5$ mA) | 3.0 V min |
| Output low voltage ($I_{OL} = 2.5$ mA) | 0.4 V max |
| Power-up / reset state | Input mode (high impedance) |

Table 15. Simultaneous sample and hold specifications

| | |
|--------------|--|
| SSH output | TTL-compatible output, HOLD is asserted from start of the conversion for Channel 0 through conversion of the last channel in the scan. Available at user connector (SSH OUT / D/A PACER OUT). This pin is software selectable as SSH OUT or D/A PACER OUT. |
| SSH polarity | HOLD high (default) or HOLD low, software selectable |

Interrupts

Table 16. Interrupt specifications

| | | |
|--|---|---|
| Interrupts | PCI INTA# - mapped to IRQn via PCI BIOS at boot-time | |
| Interrupt enable | Programmable through PLX9080 | |
| ADC interrupt sources (sw programmable) | DAQ_ACTIVE: | Interrupt is generated when a DAQ sequence is active. |
| | DAQ_STOP: | Interrupt is generated when A/D Stop Trigger In is detected. |
| | DAQ_DONE: | Interrupt is generated when a DAQ sequence completes. |
| | DAQ_FIFO_1/4_FULL: | Interrupt is generated when ADC FIFO is ¼ full. |
| | DAQ_SINGLE: | Interrupt is generated after each conversion completes. |
| | DAQ_EOSCAN: | Interrupt is generated after the last channel is converted in multi-channel scans. |
| | DAQ_EOSEQ: | Interrupt is generated after each interval delay during multi-channel scans. |
| DAC interrupt sources (sw programmable) | DAC_ACTIVE: | Interrupt is generated when DAC waveform circuitry is active. |
| | DAC_DONE: | Interrupt is generated when a DAC sequence completes. |
| | DAC_FIFO_1/4_EMPTY: | Interrupt is generated DAC FIFO is ¼ empty. |
| | DAC_HIGH_CHANNEL: | Interrupt is generated when the DAC high channel output is updated. |
| | DAC_RETRANSMIT: | Interrupt is generated when the end of a waveform sequence has occurred in retransmit mode. |
| External interrupt | Interrupt is generated via edge-sensitive transition on the External Interrupt pin. Rising/falling edge polarity software selectable. | |

Counters

Table 17. Counter specifications

| | |
|---------------------------------------|---|
| User counter type | 82C54 |
| Configuration | One down counter, 16 bits. Counters 2 and 3 not used. |
| Counter 1 source | External from connector (CTR1 CLK) |
| Counter 1 gate | Available at connector (CTR1 GATE). |
| Counter 1 output | Available at connector (CTR1 OUT). |
| <i>Clock input frequency</i> | <i>10 MHz max</i> |
| <i>High pulse width (clock input)</i> | <i>30 nS min</i> |
| <i>Low pulse width (clock input)</i> | <i>50 nS min</i> |
| <i>Gate width high</i> | <i>50 nS min</i> |
| <i>Gate width low</i> | <i>50 nS min</i> |
| <i>Input low voltage</i> | <i>0.8 V max</i> |
| <i>Input high voltage</i> | <i>2.0 V min</i> |
| <i>Output low voltage</i> | <i>0.4 V max</i> |
| <i>Output high voltage</i> | <i>3.0 V min</i> |

Pacer

Table 18. Pacer specifications

| | |
|-----------------------------------|--|
| ADC pacer type | ASIC |
| Configuration | 1 down counter, 24 bits (1 scan interval, 1 sample interval) |
| ADC pacer Source | 40 MHz |
| ADC pacer Gate | Internally controlled by software/hardware trigger. |
| ADC pacer Out | ADC pacer clock, available at user connector (A/D pacer out) |
| DAC Pacer type | ASIC |
| Configuration | 1 down counter, 24 bits (1 scan interval, 1 sample interval) |
| DAC pacer source | 40 MHz or 100 kHz internal source. Software selectable |
| DAC pacer gate | Internally controlled by software/hardware trigger. |
| DAC pacer out | DAC pacer clock. Available at connector. (SSH OUT / D/A PACER OUT). This pin is software selectable as SSH OUT or D/A PACER OUT. |
| Internal pacer crystal oscillator | 40 MHz |
| Frequency accuracy | 50 ppm |

Power consumption

Table 19. Power consumption specifications

| | |
|------|-----------------------|
| +5 V | 2.9A typical, 3.3 max |
|------|-----------------------|

Environmental

Table 20. Environmental specifications

| | |
|-----------------------------|-------------------------|
| Operating temperature range | 0 to 70 °C |
| Storage temperature range | -40 to 100 °C |
| Humidity | 0 to 95% non-condensing |

Mechanical

Table 21. Mechanical specifications

| | |
|-----------------|---------------------------------------|
| Card dimensions | 312 mm (L) x 100.6 mm (W) x 16 mm (H) |
|-----------------|---------------------------------------|

Main connector and pin out

Table 22. Main connector specifications

| | |
|-------------------------------|---|
| Connector type | 100-pin high-density unshielded Robinson Nugent |
| Compatible cables | C100FF-x cable (x = length in feet) |
| Compatible accessory products | BNC-16SE BNC-16DI CIO-MINI50 CIO-TERM100 SCB-50 |

Table 23. 32-channel differential mode pin out

| Pin | Signal name | Pin | Signal name |
|-----|-------------------------|-----|---------------------------------|
| 1 | LLGND | 51 | LLGND |
| 2 | CH0 HI | 52 | CH16 HI |
| 3 | CH0 LO | 53 | CH16 LO |
| 4 | CH1 HI | 54 | CH17 HI |
| 5 | CH1 LO | 55 | CH17 LO |
| 6 | CH2 HI | 56 | CH18 HI |
| 7 | CH2 LO | 57 | CH18 LO |
| 8 | CH3HI | 58 | CH19 HI |
| 9 | CH3 LO | 59 | CH19 LO |
| 10 | CH4 HI | 60 | CH20 HI |
| 11 | CH4 LO | 61 | CH20 LO |
| 12 | CH5 HI | 62 | CH21 HI |
| 13 | CH5 LO | 63 | CH21 LO |
| 14 | CH6 HI | 64 | CH22 HI |
| 15 | CH6 LO | 65 | CH22 LO |
| 16 | CH7 HI | 66 | CH23 HI |
| 17 | CH7 LO | 67 | CH23 LO |
| 18 | LLGND | 68 | LLGND |
| 19 | CH8 HI | 69 | CH24 HI |
| 20 | CH8 LO | 70 | CH24 LO |
| 21 | CH9 HI | 71 | CH25 HI |
| 22 | CH9 LO | 72 | CH25 LO |
| 23 | CH10 HI | 73 | CH26 HI |
| 24 | CH10 LO | 74 | CH26 LO |
| 25 | CH11 HI | 75 | CH27 HI |
| 26 | CH11 LO | 76 | CH27 LO |
| 27 | CH12 HI | 77 | CH28 HI |
| 28 | CH12 LO | 78 | CH28 LO |
| 29 | CH13 HI | 79 | CH29 HI |
| 30 | CH13 LO | 80 | CH29 LO |
| 31 | CH14 HI | 81 | CH30 HI |
| 32 | CH14 LO | 82 | CH30 LO |
| 33 | CH15 HI | 83 | CH31 HI |
| 34 | CH15 LO | 84 | CH31 LO |
| 35 | D/A GND 0 | 85 | DOUT0 |
| 36 | D/A OUT 0 | 86 | DOUT1 |
| 37 | D/A GND 1 | 87 | DOUT2 |
| 38 | D/A OUT 1 | 88 | DOUT3 |
| 39 | CTR1 CLK | 89 | GND |
| 40 | CTR1 GATE | 90 | +12V |
| 41 | CTR1 OUT | 91 | GND |
| 42 | A/D EXTERNAL PACER | 92 | -12V |
| 43 | ANALOG TRIGGER IN | 93 | DIN2 |
| 44 | DIN0 | 94 | DIN3 |
| 45 | A/D START TRIGGER IN | 95 | A/D INTERNALPACER OUTPUT |
| 46 | DIN1 | 96 | D/A EXTERNAL PACER INPUT |
| 47 | A/D STOP TRIGGER IN | 97 | EXTERNAL D/A TRIGGER/PACER GATE |
| 48 | PC +5V | 98 | A/D PACER GATE |
| 49 | SSH OUT / D/A PACER OUT | 99 | EXTERNAL INTERRUPT |
| 50 | GND | 100 | GND |

Table 24. 64-channel single-ended mode pin out

| Pin | Signal name | Pin | Signal name |
|-----|-------------------------|-----|---------------------------------|
| 1 | LLGND | 51 | LLGND |
| 2 | CH0 IN | 52 | CH16 IN |
| 3 | CH32 IN | 53 | CH48 IN |
| 4 | CH1 IN | 54 | CH17 IN |
| 5 | CH33 IN | 55 | CH49 IN |
| 6 | CH2 IN | 56 | CH18 IN |
| 7 | CH34 IN | 57 | CH50 IN |
| 8 | CH3 IN | 58 | CH19 IN |
| 9 | CH35 IN | 59 | CH51 IN |
| 10 | CH4 IN | 60 | CH20 IN |
| 11 | CH36 IN | 61 | CH52 IN |
| 12 | CH5 IN | 62 | CH21 IN |
| 13 | CH37 IN | 63 | CH53 IN |
| 14 | CH6 IN | 64 | CH22 IN |
| 15 | CH38 IN | 65 | CH54 IN |
| 16 | CH7 IN | 66 | CH23 IN |
| 17 | CH39 IN | 67 | CH55 IN |
| 18 | LLGND | 68 | LLGND |
| 19 | CH8 IN | 69 | CH24 IN |
| 20 | CH40 IN | 70 | CH56 IN |
| 21 | CH9 IN | 71 | CH25 IN |
| 22 | CH41 IN | 72 | CH57 IN |
| 23 | CH10 IN | 73 | CH26 IN |
| 24 | CH42 IN | 74 | CH58 IN |
| 25 | CH11 IN | 75 | CH27 IN |
| 26 | CH43 IN | 76 | CH59 IN |
| 27 | CH12 IN | 77 | CH28 IN |
| 28 | CH44 IN | 78 | CH60 IN |
| 29 | CH13 IN | 79 | CH29 IN |
| 30 | CH45 IN | 80 | CH61 IN |
| 31 | CH14 IN | 81 | CH30 IN |
| 32 | CH46 IN | 82 | CH62 IN |
| 33 | CH15 IN | 83 | CH31 IN |
| 34 | CH47 IN | 84 | CH63 IN |
| 35 | D/A GND 0 | 85 | DOUT0 |
| 36 | D/A OUT 0 | 86 | DOUT1 |
| 37 | D/A GND 1 | 87 | DOUT2 |
| 38 | D/A OUT 1 | 88 | DOUT3 |
| 39 | CTR1 CLK | 89 | GND |
| 40 | CTR1 GATE | 90 | +12V |
| 41 | CTR1 OUT | 91 | GND |
| 42 | A/D EXTERNAL PACER | 92 | -12V |
| 43 | ANALOG TRIGGER IN | 93 | DIN2 |
| 44 | DIN0 | 94 | DIN3 |
| 45 | A/D START TRIGGER IN | 95 | A/D INTERNALPACER OUTPUT |
| 46 | DIN1 | 96 | D/A EXTERNAL PACER INPUT |
| 47 | A/D STOP TRIGGER IN | 97 | EXTERNAL D/A TRIGGER/PACER GATE |
| 48 | PC +5V | 98 | A/D PACER GATE |
| 49 | SSH OUT / D/A PACER OUT | 99 | EXTERNAL INTERRUPT |
| 50 | GND | 100 | GND |

Auxiliary DIO connector and pin out

Table 25. DIO connector specifications

| | |
|--|---|
| Connector type | 40-pin header connector |
| Compatible cables | <ul style="list-style-type: none"> ▪ C40FF-x (x = length in feet) ▪ C40-37F-x (x = length in feet) ▪ BP40-37 (translates to a standard CIO-DIO24 type) |
| Compatible accessory products with the C40FF-x cable | CIO-MINI40 |
| Compatible accessory products with the C40-37F-x cable or with the BP40-37 and the C37FF-x or C37FFS-x cable | CIO-MINI37 SCB-37 CIO-ERB24 CIO-ERB08 SSR-RACK24 SSR-RACK08 |

Table 26. Digital I/O connector pin out

| Pin | Signal name | Pin | Signal name |
|-----|------------------|-----|------------------|
| 1 | NC | 2 | PC +5V |
| 3 | NC | 4 | DGND |
| 5 | FIRSTPORTB Bit 7 | 6 | FIRSTPORTC Bit 7 |
| 7 | FIRSTPORTB Bit 6 | 8 | FIRSTPORTC Bit 6 |
| 9 | FIRSTPORTB Bit 5 | 10 | FIRSTPORTC Bit 5 |
| 11 | FIRSTPORTB Bit 4 | 12 | FIRSTPORTC Bit 4 |
| 13 | FIRSTPORTB Bit 3 | 14 | FIRSTPORTC Bit 3 |
| 15 | FIRSTPORTB Bit 2 | 16 | FIRSTPORTC Bit 2 |
| 17 | FIRSTPORTB Bit 1 | 18 | FIRSTPORTC Bit 1 |
| 19 | FIRSTPORTB Bit 0 | 20 | FIRSTPORTC Bit 0 |
| 21 | DGND | 22 | FIRSTPORTA Bit 7 |
| 23 | NC | 24 | FIRSTPORTA Bit 6 |
| 25 | DGND | 26 | FIRSTPORTA Bit 5 |
| 27 | NC | 28 | FIRSTPORTA Bit 4 |
| 29 | DGND | 30 | FIRSTPORTA Bit 3 |
| 31 | NC | 32 | FIRSTPORTA Bit 2 |
| 33 | DGND | 34 | FIRSTPORTA Bit 1 |
| 35 | PC +5V | 36 | FIRSTPORTA Bit 0 |
| 37 | DGND | 38 | NC |
| 39 | NC | 40 | NC |

Measurement Computing Corporation
10 Commerce Way
Suite 1008
Norton, Massachusetts 02766
(508) 946-5100
Fax: (508) 946-9500
E-mail: info@mccdaq.com
www.mccdaq.com



Artisan Technology Group is your source for quality new and certified-used/pre-owned equipment

- FAST SHIPPING AND DELIVERY
- TENS OF THOUSANDS OF IN-STOCK ITEMS
- EQUIPMENT DEMOS
- HUNDREDS OF MANUFACTURERS SUPPORTED
- LEASING/MONTHLY RENTALS
- ITAR CERTIFIED SECURE ASSET SOLUTIONS

SERVICE CENTER REPAIRS

Experienced engineers and technicians on staff at our full-service, in-house repair center

*InstraView*SM REMOTE INSPECTION

Remotely inspect equipment before purchasing with our interactive website at www.instraview.com ↗

WE BUY USED EQUIPMENT

Sell your excess, underutilized, and idle used equipment. We also offer credit for buy-backs and trade-ins. www.artisanng.com/WeBuyEquipment ↗

LOOKING FOR MORE INFORMATION?

Visit us on the web at www.artisanng.com ↗ for more information on price quotations, drivers, technical specifications, manuals, and documentation

Contact us: (888) 88-SOURCE | sales@artisanng.com | www.artisanng.com