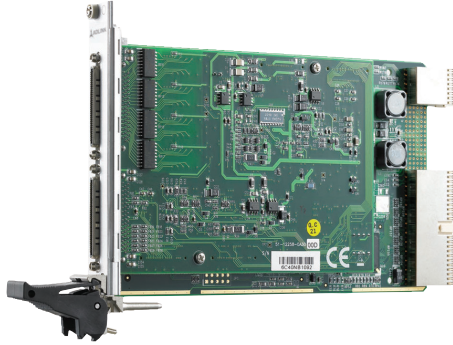


DATA SHEET



# PXI-2204/2205

64-CHANNEL, UP TO 3 MS/S, PXI-H SCANNING  
DIGITIZER WITH INTEGRATED WAVEFORM  
GENERATOR, DIGITAL I/O AND COUNTER

## FEATURES

### ANALOG PERFORMANCE

64-CH single ended/32-CH differential, 16-bit analog inputs

Up to 3 MSa/s

Multiple programmable ranges from 0.05V (min) to 10V with unipolar or bipolar modes

2-CH, 12-bit multiplying analog outputs with waveform generation

24-CH TTL Digital I/O

2-CH 16-bit general purpose timer/counter

Analog and digital triggering

Auto-calibration

Driver and SDK support for Windows and Linux, and for third-party applications including Visual Studio, LabVIEW and MATLAB.



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RELIABLE DATA FIRST TIME EVERY TIME

# OVERVIEW

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The PXI-2205 and PXI-2204 are high-density and high-performance multi-function DAQ card that can sample up to 64 AI channels. Channel gain settings and scan sequences are adjustable, making it ideal for dealing with high-density analog signals with various input ranges and sampling speeds. These devices also offer differential mode for 32 AI channels in order to achieve maximum noise elimination.

The PXI-2204/05 also feature analog and digital triggering, 2-CH 12-bit analog outputs with waveform generation capability, 24-CH programmable digital I/O lines, and 2-CH 16-bit general-purpose timer/counter. The auto-calibration functions adjust the gain and offset to within specified accuracies such that you do not have to adjust trimpots to calibrate the cards.

Software drivers and SDK support are provided for Windows and Linux environments. Wide range of application development environments including Visual Studio, Labview, Matlab and VEE are supported.

## Detailed Specifications

|   | PXI-2204   | PXI-2205                            |
|---|--|-------------------------------------|
| <b>ANALOG INPUT</b>                     |  |                                     |
| CHANNELS                                | 64 single-ended or 32 differential (software selectable per channel)           |                                     |
| RESOLUTION                              | 12 bits, no missing codes  | 16 bits, no missing codes           |
| MAX SAMPLING RATE                       | 3 MS/s   | 500 kS/s                            |
| PROGRAMMABLE GAIN                       | 1, 2, 4, 5, 8, 10, 20, 40, 50, 200   | 1, 2, 4, 8                          |
| BIPOLAR INPUT RANGES                    | $\pm 0.05$ V to $\pm 10$ V   | $\pm 1.25$ V to $\pm 10$ V          |
| UNIPOLAR INPUT RANGES                   | 0-0.1 V to 0-10 V  | 0-1.25 V to 0-10 V                  |
| OFFSET ERROR                            | $\pm 2$ mV   | $\pm 1$ mV                          |
| GAIN ERROR                              | $\pm 0.06\%$ of FSR  | $\pm 0.08\%$ of FSR                 |
| INPUT COUPLING                          | DC   | DC                                  |
| OVERVOLTAGE PROTECTION                  | Power on: Continuous $\pm 35$ V, Power off: Continuous $\pm 15$ V              |                                     |
| INPUT IMPEDANCE                         | 1 G $\Omega$ / 100 pF  | 1 G $\Omega$ / 100 pF               |
| CMRR (GAIN = 1)                         | 90 dB  | 83 dB                               |
| SETTLING TIME                           | 1 $\mu$ s to 0.1% error  | 2 $\mu$ s to 0.1% error             |
| -3 DB SMALL SIGNAL BANDWIDTH (GAIN = 1) | 2 MHz  | 850 kHz                             |
| TRIGGER SOURCES                         | Software, external digital/analog  |                                     |
| TRIGGER MODES                           | Pre-trigger, post-trigger, middle-trigger, delay-trigger, and repeated trigger |                                     |
| FIFO BUFFER SIZE                        | 1 kSa  | 1 kSa                               |
| DATA TRANSFERS                          | Polling, scatter-gather DMA  |                                     |
| <b>ANALOG OUTPUT</b>                    |  |                                     |
| CHANNELS                                | 2 voltage outputs  | 2 voltage outputs                   |
| RESOLUTION                              | 12 bits  | 12 bits                             |
| OUTPUT RANGE                            | 0-10 V, $\pm 10$ V, 0-AOEXTREF, $\pm$ AOEXTREG                                 |                                     |
| MAXIMUM UPDATE RATE                     | 1 $\mu$ s  | 1 $\mu$ s                           |
| SLEW RATE                               | 20 V/ $\mu$ s  | 20 V/ $\mu$ s                       |
| SETTLING TIME                           | 3 $\mu$ s t0 $\pm 0.5$ LSB accuracy  | 3 $\mu$ s t0 $\pm 0.5$ LSB accuracy |
| OFFSET ERROR                            | $\pm 1$ mV   | $\pm 2$ mV                          |
| GAIN ERROR                              | 0.02% of max output  | $\pm 0.04\%$ of max output          |
| DRIVING CAPACITY                        | 5 mA   | 5 mA                                |
| STABILITY                               | Any passive load, up to 1500 pF  |                                     |
| TRIGGER SOURCES                         | Software, external digital/analog  |                                     |
| TRIGGER MODES                           | Post-trigger, delay-trigger and repeated trigger                               |                                     |
| FIFO BUFFER SIZE                        | 1 kSa  | 1 kSa                               |
| DATA TRANSFERS                          | Programmed I/O, scatter-gather DMA   |                                     |

## Detailed Specifications

|                               | PXI-2010                                   | PXI-2005                                      |
|-------------------------------|--|---|
| <b>DIGITAL I/O</b>            |  |   |
| NUMBER OF CHANNELS            | 24-CH, 8255 programmable input/output      |   |
| COMPATIBILITY                 | 5 V/TTL                                    | 5 V/TTL                                       |
| DATA TRANSFERS                | Programmed I/O                             | Programmed I/O                                |
| <b>TIMER/COUNTER</b>          |  |   |
| NUMBER OF CHANNELS            | 2  | 2   |
| RESOLUTION                    | 16 bits                                    | 16 bits                                       |
| BASE CLOCK AVAILABILITY       | 40 MHz, external clock up to 10 MHz        |   |
| <b>AUTO CALIBRATION</b>       |  |   |
| ONBOARD REFERENCE             | +5 V                                       | +5 V  |
| TEMPERATURE DRIFT             | ±2 ppm/°C                                  | ±2 ppm/°C                                     |
| STABILITY                     | 6 ppm/1000 Hrs                             | 6 ppm/1000 Hrs                                |
| <b>GENERAL SPECIFICATIONS</b> |  |   |
| PXI BUS TYPE                  | PXI Hybrid Compatible                      |   |
| MAXIMUM THROUGHPUT            | 132 MB/s                                   | 132 MB/s                                      |
| CONNECTOR                     | 68-pin VHDCI-type female                   | 68-pin VHDCI-type female                      |
| OPERATING TEMPERATURE         | 0 to 55°C                                  | 0 to 55°C                                     |
| STORAGE TEMPERATURE           | -20 to 70°C                                | -20 to 70°C                                   |
| HUMIDITY                      | 5 to 95% non-condensing                    |   |
| POWER REQUIREMENTS            | +5 V 1.3A<br>+3.3 V 0.9 A<br>+12 V 0.564 A | +5 V 2.04 A<br>+3.3 V 0.81 A<br>+12 V 0.568 A |

Notes:

- 1) All specifications are typical unless otherwise stated as a minimum or maximum.
- 2) For current detailed specification please refer to the on-line manual at [www.vtiinstruments.com](http://www.vtiinstruments.com).
- 3) All specifications subject to change without notice.
- 4) All specifications assume within 24 hours and 5°C of self-calibration temperature unless otherwise specified.
- 5) Distributed product. These products are manufactured and supported by other leading vendors.

## Ordering Information

|          |  |
|----------|--|
| PXI-2204 | Multifunction, 64-CH, 3 MS/s 12-bit, PXI Hybrid Module   |
| PXI-2205 | Multifunction, 64-CH, 500 kS/s 16-bit, PXI Hybrid Module |

### RELATED PRODUCTS

|          |   |
|----------|---|
| EMX-4350 | 4-Channel, 625k Sa/s Smart Dynamic Signal Analyzer  |
| EMX-4250 | 16-Channel, 200k Sa/s Smart Dynamic Signal Analyzer |
| CMX09    | 9-slot, 3U PXI Express Chassis                      |
| CMX18    | 18-slot 3U PXI Express Chassis                      |