PXI/DAQ/DAQe-2200 Series

64-CH 12/16-Bit Up to 3 MS/s Multi-Function DAQ Cards

DAQ-2204

DAQe-2204

PXI-2204

Introduction

ADLINK's PXI/DAQ/DAQe-2200 series are high-density and high-performance multi-function DAQ cards. These devices can sample up to 64 AI channels with different gain settings and scan sequences, making them 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/DAQ/DAQe-2200 series 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. Like all the other members in the PXI/DAQ/DAQe-2200 family, the PXI/DAQ/DAQe-2200 is able to perform the analog input and output functions at full speed simultaneously and multiple cards can be synchronized through the SSI (System Synchronization Interface) bus. 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.

Features

- **Supports a 32-bit 3.3 V or 5 V PCI bus (DAQ-2200 series)**
- **x1 lane PCI Express® Interface (DAQe-2200 series)**
- **PXI specification Rev 2.2 compliant (PXI-2200 series)**
- **64-CH single-ended or 32-CH differential analog inputs**
- **Onboard 1 k-sample A/D FIFO**
- **Bipolar or unipolar analog input ranges**
- **Programmable gains:**
  - **x1, x2, x4, x5, x8, x10, x20, x40, x50, x200 (DAQ/DAQe-2204)**
  - **x1, x2, x4, x8 (DAQ/DAQe-2205 & DAQ/DAQe-2206)**
- **512-configuration channel gain queue**
- **Scatter-gather DMA for both analog inputs and outputs**
- **2-CH 12-bit multiplying analog outputs with waveform generation**
- **Onboard 1 k-sample D/A FIFO**
- **24-CH TTL digital input/output**
- **2-CH 16-bit general-purpose timer/counter**
- **Analog and digital triggering**
- **Fully auto calibration**
- **Multiple cards synchronization through SSI (System Synchronization Interface) bus or PXI trigger bus**

Operating Systems

- Windows 7/Vista/XP/2000/2003 Server
- Linux

Recommended Software

- AD-Logger
- VB.NET/VC.NET/VB/VC++/BCB/Delphi
- DAQBench

Driver Support

- DAQPilot for LabVIEW™
- DAQ-MTLB for MATLAB®
- D2K-DASK for Windows
- D2K-DASK/X for Linux

Terminal Boards & Cables

DIN-68S-01

Terminal Board with One 68-pin SCSI-II Connector and DIN-Rail Mounting (Cables are not included.)

ACL-10568-1

68-pin SCSI-VHDCI cable (mating with AMP-787082-7), 1 M

*** For more information on mating cables, please refer to P2-61/62.**

SSI Bus Cables (for multiple cards synchronization)

- ACL-SSI-2
  SSI Bus cable for 2 devices
- ACL-SSI-3
  SSI Bus cable for 3 devices
- ACL-SSI-4
  SSI Bus cable for 4 devices

SSI bus cable for multiple card synchronization for DAQ/DAQe-2000 series

Terminal board DIN-68S-01 & 68-Pin SCSI-VHDCI cable ACL-10568-1

Pin Assignment

Connector CN1 Pin Assignment

AI0 (AIH0)	1	35	(AIL0) AI32
AI1 (AIH1)	2	36	(AIL1) AI33
AI2 (AIH2)	3	37	(AIL2) AI34
AI3 (AIH3)	4	38	(AIL3) AI35
AI4 (AIH4)	5	39	(AIL4) AI36
AI5 (AIH5)	6	40	(AIL5) AI37
AI6 (AIH6)	7	41	(AIL6) AI38
AI7 (AIH7)	8	42	(AIL7) AI39
AI8 (AIH8)	9	43	(AIL8) AI40
AI9 (AIH9)	10	44	(AIL9) AI41
AI10 (AIH10)	11	45	(AIL10) AI42
AI11 (AIH11)	12	46	(AIL11) AI43
AI12 (AIH12)	13	47	(AIL12) AI44
AI13 (AIH13)	14	48	(AIL13) AI45
AI14 (AIH14)	15	49	(AIL14) AI46
AI15 (AIH15)	16	50	(AIL15) AI47
AISENSE	17	51	AIGND
AI16 (AIH16)	18	52	(AIL16) AI48
AI17 (AIH17)	19	53	(AIL17) AI49
AI18 (AIH18)	20	54	(AIL18) AI50
AI19 (AIH19)	21	55	(AIL19) AI51
AI20 (AIH20)	22	56	(AIL20) AI52
AI21 (AIH21)	23	57	(AIL21) AI53
AI22 (AIH22)	24	58	(AIL22) AI54
AI23 (AIH23)	25	59	(AIL23) AI55
AI24 (AIH24)	26	60	(AIL24) AI56
AI25 (AIH25)	27	61	(AIL25) AI57
AI26 (AIH26)	28	62	(AIL26) AI58
AI27 (AIH27)	29	63	(AIL27) AI59
AI28 (AIH28)	30	64	(AIL28) AI60
AI29 (AIH29)	31	65	(AIL29) AI61
AI30 (AIH30)	32	66	(AIL30) AI62
AI31 (AIH31)	33	67	(AIL31) AI63
EXTATRIG	34	68	AIGND

Pin Assignment

Connector CN2 Pin Assignment

DA0OUT	1	35	AOGND
DA1OUT	2	36	AOGND
AOEXTREF	3	37	AOGND
N/C	4	38	N/C
DGND	5	39	DGND
EXTWFTRIG	6	40	DGND
EXTDTRIG	7	41	DGND
SSHOUT	8	42	SDI0 / DGND*
RESERVED	9	43	SDI1 / DGND*
RESERVED	10	44	SDI2 / DGND*
AFI1	11	45	SDI3 / DGND*
AFI0	12	46	DGND
GPTC0_SRC	13	47	DGND
GPTC0_GATE	14	48	DGND
GPTC0_UPDOWN	15	49	DGND
GPTC0_OUT	16	50	DGND
GPTC1_SRC	17	51	DGND
GPTC1_GATE	18	52	DGND
GPTC1_UPDOWN	19	53	DGND
GPTC1_OUT	20	54	DGND
EXTTIMEBASE	21	55	DGND
PB7	22	56	PB6
PB5	23	57	PB4
PB3	24	58	PB2
PB1	25	59	PB0
PC7	26	60	PC6
PC5	27	61	PC4
DGND	28	62	DGND
PC3	29	63	PC2
PC1	30	64	PC0
PA7	31	65	PA6
PA5	32	66	PA4
PA3	33	67	PA2
PA1	34	68	PA0

*Pin 42-45 are SDI<0..3> for 2204; DGND for 2205 and 2206

Ordering Information / Quick Selection Guide

Model Name	Analog Input				Analog Output			DIO	Timer/Counter
	No. of channels	Resolution	Sampling rate	Input range	No. of channels	Resolution	Update rate	No. of channels	No. of channels
PXI/DAQ/DAQe-2204	32 DI/64 SE	12 bits	3 MS/s	±0.05 V to ±10 V	2	12 bits	1 MS/s	24-CH 8255 PIO	2-CH, 16-bit
PXI/DAQ/DAQe-2205	32 DI/64 SE	16 bits	500 kS/s	±1.25 V to ±10 V	2	12 bits	1 MS/s	24-CH 8255 PIO	2-CH, 16-bit
PXI/DAQ/DAQe-2206	32 DI/64 SE	16 bits	250 kS/s	±1.25 V to ±10 V	2	12 bits	1 MS/s	24-CH 8255 PIO	2-CH, 16-bit

Specifications

Model Name	PXI/DAQ/DAQe-2204	PXI/DAQ/DAQe-2205	PXI/DAQ/DAQe-2206
Analog Input			
Resolution	12 bits, no missing codes	16 bits, no missing codes	16 bits, no missing codes
Number of channels	64 single-ended or 32 differential (software selectable per channel)		
Channel gain queue size	512		
Maximum sampling rate	3 MS/s	500 kS/s	250 kS/s
Programmable gain	1, 2, 4, 5, 8, 10, 20, 40, 50, 200	1, 2, 4, 8	1, 2, 4, 8
Bipolar input ranges	Max. : ±10 V, Min. : ±0.05 V±10 V, ±5 V, ±2.5 V, ±1.25 V±10 V, ±5 V, ±2.5 V, ±1.25 V		
Unipolar input ranges	Max. : 0-10 V, Min. : 0-0.1 V0-10 V, 0-5 V, 0-2.5 V, 0-1.25 V0-10 V, 0-5 V, 0-2.5 V, 0-1.25 V		
Offset error	±2 mV	±1 mV	±2 mV
Gain error	±0.06% of FSR	±0.08% of FSR	±0.06% of FSR
Input coupling	DC		
Overvoltage protection	Power on: Continuous ±30 V, Power off: Continuous ±15 V		
Input impedance	1 GΩ/100 pF		
CMRR (gain = 1)	90 dB	83 dB	83 dB
Settling time	1 µs to 0.1% error *	2 µs to 0.1% error	4 µs to 0.01% error
-3 dB small signal bandwidth (@Bipolar +/-10V Gain=1)	2 MHz	850kHz	600 kHz
Trigger sources	Software, external digital/analog trigger, SSI bus		
Trigger modes	Pre-trigger, post-trigger, middle-trigger, delay-trigger, and repeated trigger		
FIFO buffer size	1 k samples		
Data transfers	Polling, scatter-gather DMA		
Analog Output			
Number of channels	2 voltage outputs		
Resolution	12 bits		
Output ranges	0-10 V, ±10 V, 0-AOEXTREF, ±AOEXTREF		
Maximum update rate	1 µs		
Slew rate	20 V/µs		
Settling time	3 µs to ±0.5 LSB accuracy		
Offset error	±1 mV	±2 mV	±1 mV
Gain error	±0.02% of max. output	±0.04% of max. output	±0.02% of max. output
Driving capacity	±5 mA		
Stability	Any passive load, up to 1500 pF		
Trigger sources	Software, external digital/analog trigger, SSI bus		
Trigger modes	Post-trigger, delay-trigger, and repeated trigger		
FIFO buffer size	1 k samples		
Data transfers	Programmed I/O, scatter-gather DMA		
Digital I/O			
Number of channels	24-CH 8255 programmable input/output		
Compatibility	5 V/TTL		
Data transfers	Programmed I/O		
General-Purpose Timer/Counter			
Number of channels	2		
Resolution	16-bit		
Base clock available	40 MHz, external clock up to 10 MHz		
Auto Calibration			
Onboard reference	+5 V		
Temperature drift	±2 ppm/°C		
Stability	±6 ppm/1000 Hrs		
General Specifications			
Dimensions	160 mm x 100 mm (not including connectors) (PXI-2200 series) 175 mm x 107 mm (not including connectors) (DAQ-2200 series) 168 mm x 107 mm (not including connectors) (DAQe-2200 series)		
Connector	68-pin VHDCI female x 2		
Operating temperature	0 to 55°C		
Storage temperature	-20 to 70°C		
Humidity	5 to 95%, non-condensing		
Power requirements	+5 V 1.3 A typical (PXI/DAQ-2204) +3.3 V 0.9 A, +12 V 0.564 A typical (DAQe-2204)	+5 V 1.2 A typical (PXI/DAQ-2205) +3.3 V 0.81 A, +12 V 0.568 A typical (DAQe-2205)	+5 V 1.2 A typical (PXI/DAQ-2206) +3.3 V 0.756 A, +12 V 0.584 A typical (DAQe-2206)

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