PXI/DAQ/DAQe-2000 Series

4-CH 14/16-Bit Up to 2 MS/s Simultaneous-Sampling Multi-Function DAQ Cards

DAQ-2010

PXI-2010

DAQe-2010

Introduction

ADLINK's PXI/DAQ/DAQe-2000 series of products are simultaneous-sampling multi-function DAQ cards to meet a wide range of application requirements. The devices can simultaneously sample 4 AI channels with differential input configurations in order to achieve maximum noise elimination. They also provide 2-CH 12-bit analog outputs with waveform generation capability, which can be performed together with analog input functions. If more analog input or output channels are required, multiple cards can be synchronized through the SSI (System Synchronization Interface) bus. This makes the PXI/DAQ/DAQe-2000 series ideal for stimulus/response testing.

The PXI/DAQ/DAQe-2000 series also features analog and digital triggering, 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.

Features

- **Supports a 32-bit 3.3 V or 5 V PCI bus (DAQ-2000 series)**
- **x1 lane PCI Express® Interface (DAQe-2000 series)**
- **PXI specification Rev. 2.2 compliant (PXI-2000 series)**
- **4-CH differential analog inputs**
- **Bipolar or unipolar analog input ranges**
- **Programmable gains of x1, x2, x4, x8**
- **Scatter-gather DMA for both analog inputs and outputs**
- **2-CH 12-bit multiplying analog outputs with waveform generation**
- **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.**

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

SSI Bus Cables (for multiple cards synchronization)

ACL-SSI-2/3/4

SSI Bus cable for two, three, and four devices

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

Pin Assignment

Connector Pin Assignment

CH0+	1	35	CH0-
CH1+	2	36	CH1-
CH2+	3	37	CH2-
CH3+	4	38	CH3-
EXTATRIG	5	39	AIGND
DA1OUT	6	40	AOGND
DA0OUT	7	41	AOGND
AOEXTREF	8	42	AOGND
SDI3_1 / NC*	9	43	SDI3_0 / NC*
SDI2_1 / NC*	10	44	SDI2_0 / NC*
SDI1_1 / NC*	11	45	SDI1_0 / NC*
SDI0_1 / NC*	12	46	SDI0_0 / NC*
AO_TRIG_OUT	13	47	EXTWFTRG
AI_TRIG_OUT	14	48	EXTDTRIG
GPTC1_SRC	15	49	DGND
GPTC0_SRC	16	50	DGND
GPTC0_GATE	17	51	GPTC1_GATE
GPTC0_OUT	18	52	GPTC1_OUT
GPTC0_UPDOWN	19	53	GPTC1_UPDOWN
EXTTIMEBASE	20	54	DGND
AFI1	21	55	AFI0
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 9-12 and pin 43-46 are SDI<0..3>_n for 2010; NC for 2016, 2005, and 2006

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-2010	4-CH DI	14 bits	2 MS/s	±1.25 V to ±10 V	2	12 bits	1 MS/s	24-CH 8255 PIO	2-CH, 16-bit
PXI/DAQ/DAQe-2016	4-CH DI	16 bits	800 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-2005	4-CH DI	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-2006	4-CH DI	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-2010	PXI/DAQ/DAQe-2016	PXI/DAQ/DAQe-2005	PXI/DAQ/DAQe-2006
Analog Input				
Resolution	14 bits	16 bits, no missing codes	16 bits, no missing codes	16 bits, no missing codes
Number of channels	4 simultaneous-sampling channels with differential input			
Maximum sampling rate	2 MS/s	800 kS/s	500 kS/s	250 kS/s
Programmable gain	1, 2, 4, 8			
Bipolar input ranges	±10 V, ±5 V, ±2.5 V, ±1.25 V			
Unipolar input ranges	0-10 V, 0-5 V, 0-2.5 V, 0-1.25 V			
Offset error	±3 mV	±1 mV	±1 mV	±1 mV
Gain error	±0.1% of FSR	±0.01% of FSR	±0.01% of FSR	±0.01% of FSR
Input Coupling	DC			
Overvoltage protection	Power on: Continuous ±35 V, Power off: Continuous ±15 V			
Input Impedance	1 GΩ/100 pF			
CMRR (gain = 1)	85 dB			
-3 dB small signal bandwidth (gain = 1)	1 MHz	1 MHz	1 MHz	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	8 k samples	512 samples	512 samples	512 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	±3 mV			
Gain error	±0.05% 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	2 k samples			
Data transfers	Programmed I/O, scatter-gather DMA			
Digital I/O				
Number of channels	8255 24-bit programmable input/output			
Compatibility	5 V/TTL			
Data transfers	Programmed I/O			
Timer/Counter				
Number of channels	2			
Resolution	16 bits			
Compatibility	5 V/TTL			
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-2000 series) 175 mm x 107 mm (not including connectors) (DAQ-2000 series) 168 mm x 107 mm (not including connectors) (DAQe-2000 series)			
Connector	68-pin VHDCI-type female			
Operating temperature	0 to 55˚C			
Storage temperature	-20 to 70˚C			
Humidity	5 to 95%, non-condensing			
Power requirements	+5 V 1.82 A typical (PXI/DAQ-2010) +3.3 V 1.246 A, +12 V 0.448 A typical (DAQe-2010)	+5 V 2.26 A typical (PXI/DAQ-2016) +3.3 V 0.569 A, +12 V 1.097 A typical (DAQe-2016)	+5 V 2.04 A typical (PXI/DAQ-2005) +3.3 V 1.03 A, +12 V 0.75 A typical (DAQe-2005)	+5 V 1.82 A typical (DAQ-2006) +3.3 V 1.02 A, +12 V 0.67 A typical (DAQe-2006)