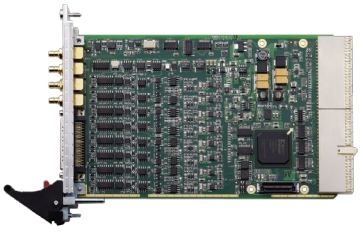
PXI-2020/2022

8/16-CH 16-Bit 250 KS/s Simultaneous Sampling Cards



PXI-2022

Introduction

ADLINK's PXI-2022 is a simultaneous-sampling multi-function DAQ card to meet a wide range of application requirements. The device can simultaneously sample 16 AI channels with differential input configurations in order to achieve maximum noise elimination. If more analog input or output channels are required, multiple cards can be synchronized through the PXI Trigger bus. The PXI-2022 features digital triggering, 4-CH programmable digital I/O lines, and 2-CH 32-bit general-purpose timer/counters. The auto-calibration functions adjust the gain and offset to within specified accuracies such that you do not have to adjust trim pots to calibrate the cards.

Features

- **Supports 3.3 V and 5 V PCI signaling**
- **PXI specification Rev 2.2 compliant**
- **8/16-CH differential analog inputs (PXI-2020/PXI-2022)**
- **Bipolar analog input**
- **Programmable gains of x1, x4**
- **Scatter gather DMA transfer for AI continuously data acquisition**
- **4-CH TTL digital input/output**
- **3U EuroCard form factor**
- **2-CH 32-bit general purpose timer/counters**
- **Digital triggering**
- **Fully auto calibration**
- **Multiple cards synchronization through PXI trigger bus**
- **Onboard 8 K-sample (16 KB) memory for data storage**

Operating Systems

- Windows Vista/XP/2000/2003

Recommended Software

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

Driver Support

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

Accessories

SMB-SMB-1M

1 meter SMB to SMB cable

SMB-BNC-1M

1 meter SMB to BNC cable

Terminal Boards

DIN-68S-01

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

SSI Bus Cable

(for multiple cards synchronization)

ACL-10568-1

68-pin SCSI-VHDCI cable, 1 M

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

Pin Assignment

PXI-2022

DGND	34	68	DGND
DIO1	33	67	DIO0
DIO3	32	66	DIO2
DGND	31	65	AFI0/AD_TRIG_OUT
AFI1/AD_SAMPLE_CLK_OUT	30	64	AFI2/GPTC_CLK0
DGND	29	63	AFI3/GPTC_GATE0
AFI4/GPTC_CLK1	28	62	AFI5/GPTC_GATE1
AFI6/GPTC_Out1	27	61	AFI7/GPTC_Out0
NC	26	60	NC
NC	25	59	NC
AIL0	24	58	AIH0
AIL8	23	57	AIH8
AGND	22	56	AGND
AIL1	21	55	AIH1
AIL9	20	54	AIH9
AGND	19	53	AGND
AIL2	18	52	AIH2
AIL10	17	51	AIH10
AGND	16	50	AGND
AIL3	15	49	AIH3
AIL11	14	48	AIH11
AGND	13	47	AGND
AIL4	12	46	AIH4
AIL12	11	45	AIH12
AGND	10	44	AGND
AIL5	9	43	AIH5
AIL13	8	42	AIH13
AGND	7	41	AGND
AIL6	6	40	AIH6
AIL14	5	39	AIH14
AGND	4	38	AGND
AIL7	3	37	AIH7
AIL15	2	36	AIH15
AGND	1	35	AGND

Note: Pins 2, 5, 8, 11, 14, 17, 20, 23, 36, 39, 42, 45, 48, 51, 54 and 57 are NC for the PXI-2020.

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	Output range	No. of channels	No. of channels
PXI-2020	8-CH DI	16 bits	250 kS/s	± 2.5 V to ± 10 V	-	-	-	4 DI/4 DO	2-CH, 32-bit
PXI-2022	16-CH DI	16 bits	250 kS/s	± 2.5 V to ± 10 V	-	-	-	4 DI/4 DO	2-CH, 32-bit

Specifications

Model Name	PXI-2020	PXI-2022
Analog Input		
A/D converter	ADI AD7685	
Resolution	16 bits	
Number of Channels	8 differential channels	16 differential channels
Input Impedance	1 GΩ/pF	
Input Coupling	DC	
Bipolar Input Signal Range	± 10 V, ± 2.5 V	
Programmable gain	1, 4	
Overvoltage Protection	Power on: ± 30 V continuous Power off: ± 30 V continuous	
Max Sampling Rate	250 KS/s	
ADC Resolution	16 bits, 1 in 65535	
Data FIFO Size	8 K-sample (16 KB)	
DNL (gain = 1)	± 0.8 LSB	
INL (gain = 1)	± 1.5 LSB (typical), ± 3.0 LSB (MAX)	
Offset Error (gain = 1)	0.6 mV (typical)	
Gain Error (gain = 1)	0.05 % of input	
Offset Temperature Drift	0.1 mV/°C (typical)	
-3dB Bandwidth	gain = 1 : 1 MHz gain = 4 : 700 KHz	
System noise	gain = 1 : 0.5 mV_{RMS} gain = 4 : 0.2 mV_{RMS}	
CMRR	gain = 1 : 80 dB gain = 4 : 80 dB	
Spurious-free dynamic range (SFDR)	87 dB	
Signal-to-noise and distortion ratio (SINAD)	82 dB	
Total harmonic distortion (THD)	–85 dB	
Signal-to-noise ration (SNR)	84 dB	
Data Transfer	Scatter-gather DMA, Polling Mode	
Digital I/O		
Number of Channel	4 input/output	
Compatibility	TTL / CMOS	
Input Logic Levels	Input low voltage: 0.8 V (max) Input high voltage: 2.0 V(min)	
Output Logic Levels	Output low voltage: 0.4 V (max) Output high voltage: 2.8 V (min)	
Output Driving Capacity	±24 mA	
Power-on State	Input, pull-low with 10 KΩ resistor	
Data Transfer	Polling mode	
Auto Calibration		
Onboard reference	+5.000 V	
Recommended warm-up time	15 minutes	
Temperature drift	±3 ppm°C	
Stability	50 ppm/1000 hrs	
General		
Dimensions	Single 3U PXI module, 100 mm x 160 mm (not including connector)	
Connector	ACL-10568-1, 68-pin VHDCI-type female	
Operating Environment	Ambient temperature: 0 to 55°C Relative humidity: 10 % to 90 % non-condensing	
Storage Environment	Ambient temperature: -20 to 80°C Relative humidity: 5 % to 95 % non-condensing	