

DAQ-2000 Series

Simultaneously Sampling Multi-function Cards

Features

- 32-bit PCI Bus, plug and play
- 4-channel simultaneous analog inputs
- Bipolar/Unipolar analog input
- Analog and Digital trigger
- Data transfer: Software Polling, FIFO half-full Interrupt, & Bus-mastering DMA with Scatter/Gather
- 2 channel D/A output with waveform generation
- Bipolar/Unipolar analog output
- D/A: I/O update and Bus-mastering DMA with Scatter/Gather
- System Synchronization Interface
- Fully auto-calibration
- Fully software configuration
- Easy Upgrade to PXI form factor

Introduction

DAQ-2000 series are simultaneously sampling multi-function data acquisition cards with four-channel simultaneous analog inputs, two-channel analog outputs, digital I/O and timer/counter functions. The four high speed A/D converters provide simultaneous sampling to allow sample four channels at the same time. If more channels required, multiple cards can be synchronized by the system synchronization interface provided by DAQ-2000 series. The two analog output function can operate together with analog input function. This makes DAQ-2000 series the ideal devices for the stimulus/response test.

Specifications

Analog Input (A/D)

- Converter
 - LTC1414 (DAQ-2010)
 - AD7665 (DAQ-2005)
 - AD7663 (DAQ-2006)
- Sampling rate: (sampling)
 - 2MS/s (DAQ-2010)
 - 500KS/s (DAQ-2005)
 - 250KS/s (DAQ-2006)
- Resolution
 - 14-bit (DAQ-2010)
 - 16-bit (DAQ-2005 & DAQ-2006)
- Number of channels: 4-channel simultaneous with differential input
- Analog input range: (programmable)
 - Bipolar: $\pm 10V$, $\pm 5V$, ± 2.5 , $\pm 1.25V$
 - Unipolar: 0~10V, 0~5.0V, 0~2.5V, 0~1.25V
- Over-voltage protection: Continuous $\pm 25V$ maximum
- FIFO Size
 - 8K samples (DAQ-2010)
 - 512 samples (DAQ-2005 & DAQ-2006)

- Time base sources: 40MHz internal clock, external clock source
- Trigger sources: software trigger, external digital/analog trigger
- Trigger modes: pre-trigger, post-trigger, middle-trigger, delay-trigger and repeated trigger
- Data transfer mode: polling, and bus-mastering DMA transfer with Scatter/Gather

Analog Output (D/A)

- Converter: LTC7545A
- Update rate: 1MHz max
- Resolution: 12-bit
- Number of channels: 2 simultaneous channels
- Analog output range
 - Unipolar: 0~10V
 - Bipolar: $\pm 10V$
- Trigger mode: Post and Delay trigger
- FIFO Size: 2K samples
- Data transfer mode: I/O instruction update and bus-mastering DMA transfer with Scatter/Gather

Digital Input/Output

- Number of channels: 24-bit 8255 Programmable DIO
- Signal type: TTL compatible

General Purpose Timer / Counter

- Two 16-bit up/down timer/counter

System Synchronization Interface

- Timebase
- ADCONV(AD)
- UPDATE(DA)
- TRIG(AD)
- WFTRIG(DA)

Calibration

- Fully auto-calibration
- On board precision reference: +5V
- T/C: 2 ppm/ $^{\circ}C$
- L.T. Stability: 6ppm/1000Hr

General Specifications

- Connector
 - AMP-787254-1 or equivalent 68-pin connector x 1
- Operating temperature: 0 $^{\circ}C$ ~65 $^{\circ}C$
- Storage temperature: -20 $^{\circ}C$ ~ 80 $^{\circ}C$
- Humidity: 5 ~ 95%, non-condensing
- Dimension: 174mmx107mm

Ordering Information

DAQ-2010

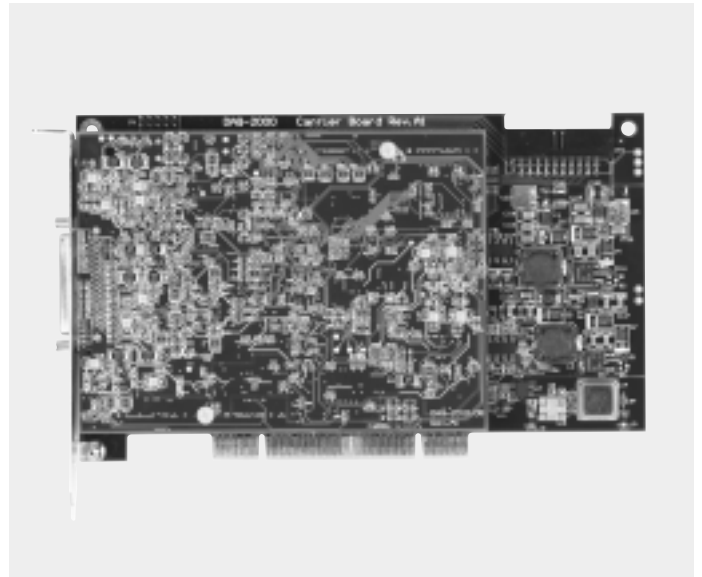
4-CH 2MS/s simultaneously sampling multi-function card

DAQ-2005

4-CH 500KS/s simultaneously sampling multi-function card

DAQ-2006

4-CH 250KS/s simultaneous A/D multi-function card



Pin Assignment table

Pin#	Signal Name	Reference	Direction	Description
1~4	CH<0..3>+	CH0<0..3>-	Input	Differential positive for AI channel <0..3>
5	EXTATRIG	AIGND	Input	External AI analog trigger
6	DA0OUT	AOGND	Output	AO channel 0
7	DA1OUT	AOGND	Output	AO channel 1
8	AOEXTREF	AOGND	Input	External reference for AO channels
9~12	SDI<3..0>_1 (2010) NC (2005/2006)	DGND	Input	Synchronous digital inputs
13	AO_TRIG_OUT	DGND	Output	AO trigger signal
14	AI_TRIG_OUT	DGND	Output	AI trigger signal
15,16	GPTC<0,1>_SRC	DGND	Input	Source of GPTC<0,1>
17,51	GPTC<0,1>_GATE	DGND	Input	Gate of GPTC<0,1>
18,52	GPTC<0,1>_OUT	DGND	Input	Output of GPTC<0,1>
19,53	GPTC<0,1>_UPDOWN	DGND	Input	Up/Down of GPTC<0,1>
20	EXTTIMEBASE	DGND	Input	External TIMEBASE
21,28,49,50,54,62	DGND	--	--	Digital ground
22,56,23,57,24,58,25,59	PB<7,0>	DGND	PIO*	Programmable DIO pins of 8255 Port B
26,60,27,61,29,63,30,64	PC<7,0>	DGND	PIO*	Programmable DIO pins of 8255 Port C
31,65,32,66,33,67,34,68	PA<7,0>	DGND	PIO*	Programmable DIO pins of 8255 Port A
35~38	CH<0..3>-	--	Input	Differential negative input for AI channel <0..3>
39	AIGND	--	--	Analog ground for AI
40~42	AOGND	--	--	Analog ground for AO
43~46	SDI<3..0>_0 (2010) NC (2005/2006)	DGND	Input	Synchronous digital inputs
47	EXTWFTRIG	DGND	Input	External AO waveform trigger
48	EXTDTRIG	DGND	Input	External AI digital trigger
21	AF1	DGND	Input	Auxiliary Function Input 1 (ADCONV, AD_START)
55	AF0	DGND	Input	Auxiliary Function Input 0 (DAWR, DA_START)

68-pin 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	EXTWFTRIG
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
AF1	21	55	AF0
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