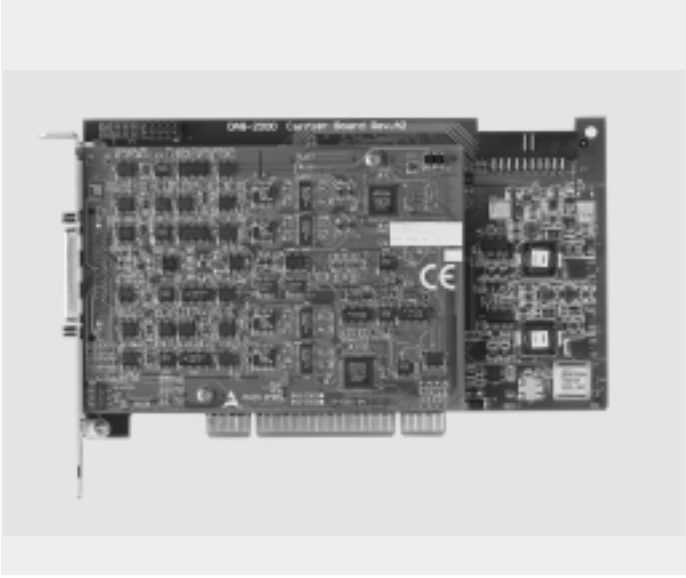
DAQ-2500 Series

High Performance Analog Output Multi-function Cards

Features

- 32-bit PCI bus
- Up to 1MS/s analog output rate
- Up to 8-channel waveform generators
- Up to 8-channel 400KS/s A/D input
- Bus-mastering DMA with scatter-gather
- Fully auto calibration
- Multiple cards synchronization
- Easy to upgrade to PXI bus



Introduction

DAQ-2500 series are 4 or 8 Channels 12-bit high performance analog output cards. Each of the analog output channel can generate up to 1MS/s waveform up to 8 channels simultaneously.

Using the DMA data transfer, DAQ-2500 can generate waveforms simultaneously up to 8 channels at full speed. If more channels are required, up to four DAQ-2500 cards can chained together with the SSI bus of the DAQ-2000.

Specifications

- Number of channels: 4-CH for DAQ-2501, 8-CH for DAQ-2502
- DA converter: AD7945
- Max update rate: 1MS/s
- Resolution: 12 bits
- FIFO buffer size: 8K for DAQ-2501, 16K for DAQ-2502
- Data transfer: Programmed I/O, and bus-mastering DMA with scatter/gather
- Voltage reference: internal 10V or external up to ±10V
- Output range
  - Bipolar: ±10V or ±external reference
  - Unipolar: 0~10V or 0~ external reference
- Settling time for -10~+10V step: 3μs
- Slew rate: 20V/μs
- Output coupling: DC
- Protection: Short-circuit to ground
- Output impedance: 0.1Ω. max.
- Output current: ±5mA max.
- Power-on state: 0V steady-state
- Offset error
  - Before calibration: ±80mV max
  - After calibration: ±2mV max
- Gain error
  Before calibration: ±0.8% of output max
  After calibration: ±0.02% of output max

Analog Input (AI)

- Number of channels: 4 single-ended for DAQ-2502, 8 single-ended for DAQ-2501
- AD converter: LTC1416
- Max sampling rate: 400KS/s
- Resolution: 14 bits
- FIFO buffer size: 1K samples
- Input range: Bipolar: ±10V, unipolar: 0~10V
- Over voltage protection: Continuous ±35V maximum
- Input impedance: 1GΩ | 6pF
- Trigger mode: Pre-trigger, post-trigger, mid dle-trigger, and delay trigger
- Data transfers: Programmed I/O, and bus-mastering DMA with scatter/gather
- Input coupling: DC
- Offset error
  - Before calibration: ±40mV max
  - After calibration: ±1mV max
- Gain error
  - Before calibration: ±0.4 % of output max
  - After calibration: ±1mV of output max

General Purpose Digital I/O (G.P. DIO)

- Number of channels: 24 programmable Input/Output
- Compatibility: TTL/CMOS
- Input voltage
  - Logic Low: VIL=0.8V max.; IIL=0.2mA max.
  - High: VIH=2.0V max.; IIH=0.02mA max
- Output voltage
  - Low: VOL=0.5 V max.; IOL=8mA max.
  - High: VOH=2.7V min; IOH=400(A
- General Purpose Timer/ Counter (GPTC)

General Purpose Timer/Counter (GPTC)

- Number of channel: 2 Up/Down Timer/ Counters
- Resolution: 16 bits
- Compatibility: TTL/CMOS
- Clock source: Internal or external
- Max source frequency: 10MHz

Analog Trigger (A. Trig)

- Source: external analog trigger (EXTATRIG)
- Level: ±10V external
- Resolution: 8 bits
- Slope: Positive or negative (software selec table)
- Hysteresis: Programmable
- Bandwidth: 400KHz
- Impedance: 40KΩ
- Coupling: DC
- Protection: Continuous ±35V maximum

System Synchronous Interface (SSI)

- Trigger lines: 7

Calibration

- Recommended warm-up time: 15 minutes
- On-board reference: 5.0V
- Temperature coefficient: (2ppm/˚C)
- Long-term stability: 6ppm/1000Hr

Physical

- Dimension: 175mm by 107mm
- I/O connector: 68-pin female mini-SCSI type (AMP 787254-1 or equivalent)
- Power Requirement: +5VDC; 1.6A typical

Operating Environment

- Ambient temperature: 0 to 55˚C
- Relative humidity: 10% to 90% non-condensing

Pin Assignment table

Pin#	Signal Name	Reference	Direction	Description
1~4	AO_<0..3>	AGND	Output	Voltage output of DA channel <0..3>
5	AOEXTREF_A / AI_0	AGND	Inpu	External reference for AO channel <0..3> / AI input 2
6	AI_1	AGND	Input	AI input 0
7	EXTATRIG/AI_2	AGND	Input	External analog trigger / AI input 1
8	AOEXTREF_B/AI_3	AGND	Input	External reference for AO channel <4..7> / AI input 3
9~12	AO_<4..7>/AI_<4..7>	AGND	Output /Input	Voltage output of DA channel <4..7> / AI channel <4..7> (only for DAQ-2501)
13,14	AO_TRIG_OUT_<A,B>	DGND	Output	AO trigger signal for channel <0..3> <4..7>
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	RESERVED	–	–	Reserved Pin
21,55	AFI<1,0>	DGND	Input	Auxiliary Function Input
22,56,23,57, 24,58,25,59	PB<7,0>	DGND	PIO	Programmable DIO of 8255 Port B
26,60,27,61, 29,63,30,64	PC<7,0>	DGND	PIO	Programmable DIO of 8255 Port C
31,65,32,66, 33,67,34,68	PA<7,0>	DGND	PIO	Programmable DIO of 8255 Port A
35~46	AGND	–	–	Analog ground
47,48	EXTWFTRIG_<A,B>	DGND	Input	External waveform trigger for AO channel <0..3>
49	VCC	DGND	Power (Output)	+5V Power Source
28,50,54,62	DGND	–	–	Digital gr

Connector Pin Assignment

AO_0	1	35	AGND
AO_1	2	36	AGND
AO_2	3	37	AGND
AO_3	4	38	AGND
AOEXTREF_A/AI_0	5	39	AGND
AI_1	6	40	AGND
EXTATRIG/AI_2	7	41	AGND
AOEXTREF_B/AI_3	8	42	AGND
AO_4/AI_4	9	43	AGND
AO_5/AI_5	10	44	AGND
AO_6/AI_6	11	45	AGND
AO_7/AI_7	12	46	AGND
AO_TRIG_OUTA	13	47	EXTWFTRG_A
AO_TRIG_OUTB	14	48	EXTWFTRG_B
GPTC1_SRC	15	49	VCC
GPTC0_SRC	16	50	DGND
GPTC0_GATE	17	51	GPTC1_GATE
GPTC0_OUT	18	52	GPTC1_OUT
GPTC0_UPDOWN	19	53	GPTC1_UPDOWN
RESERVED	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

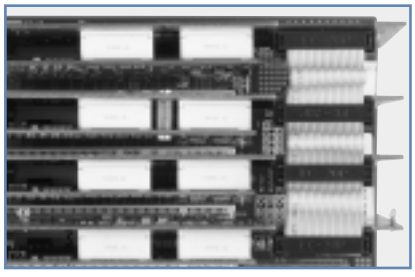
Storage Environment

■ Ambient temperature: -20 to 70°C
Relative humidity: 5% to 95%
non-condensing

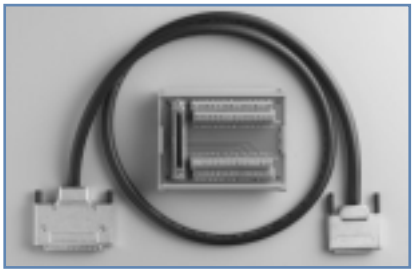
Ordering information

DAQ-2501
4-CH 1MS/s analog output multi-function card

DAQ-2502
8-CH 1MS/s analog output multi-function card



ACL-SSI cable for SSI Bus



Wiring terminals DIN-68S/1M