Specifications

PC-CARD-DAS16/330

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Specifications

Typical for 25 °C unless otherwise specified.

Specifications in *italic text* are guaranteed by design.

Analog input

Table 1. Analog input specifications

A/D converter type	ADS7800
Resolution	12 bits
Number of channels	16 single-ended
Input ranges	±10 V, ±5 V - software programmable
A/D pacing (software programmable)	▪ Internal counter - 82C54 ▪ External source - A/D External Pacer, software programmable for rising or falling edge ▪ Software polled
A/D trigger sources	External edge trigger (A/D External Trigger)
A/D triggering modes	Rising or falling edge trigger - software selectable
A/D gate sources	A/D External Trigger, gate high or low, software selectable
	A/D Pacer Gate, gate high
Burst mode	Software selectable option, burst rate = 333 kHz
Data transfer	From 4 k sample FIFO via REPINSW
	Programmed I/O
A/D conversion time	*3 µs max*
Calibrated throughput	330 kS/s, minimum system requirement is Pentium II, 400 MHz.
Calibration	Auto-calibration, calibration factors for each range stored on board in nonvolatile RAM

Accuracy

Accuracies are listed for a 333 kS/s sampling rate, single channel operation, a 60 minute warm-up, and operational temperatures within ±2 °C of internal calibration temperature. The calibrator test source high side is tied to Channel 0 In and the low side tied to AGND.

Table 2. Absolute accuracy specifications

Range	Absolute Accuracy
±10.000 V	±3.0 LSB
±5.000 V	±3.0 LSB

Each PC-CARD-DAS16/330 is tested at the factory to assure the board's overall error does not exceed accuracy limits described in Table 2.

Table 3. Calibrated accuracy components (LSB)

Range	Gain Error	Offset Error	DLE (Note 1)	ILE (Note 1)
±10.00 V	±1.0 max	±1.0 max	±1.0 max	±1.0 max
±5.000 V	±1.0 max	±1.0 max	±1.0 max	±1.0 max

Note 1: These are the intrinsic specifications of the ADC. Software calibration may introduce a small additional amount of linearity error.

As shown in Table 3, total board error is a combination of gain, offset, differential linearity and integral linearity error. The theoretical worst-case error of the board may be calculated by summing these component errors. Worst case errors are realized only in the unlikely event that each of the component errors are at their maximum level, and causing error in the same direction.

Analog input full-scale gain drift	±0.66 LSB/°C max
Analog input zero drift	±0.61 LSB/°C max
Overall analog input drift	±1.27 LSB/°C max
Input leakage current	*±20 nA max*
Input impedance	*10 MOhms min*
Absolute maximum input voltage	*±30 V*

Crosstalk

Crosstalk is defined here as the influence of one channel upon another when scanning two channels at the maximum rate. A full scale 100 Hz triangle wave is input on channel 1; channel 0 is tied to analog ground at the connector. Table 4 summarizes the influence of channel 1 on channel 0 with the effects of noise removed. The residue on channel zero is described in LSB's.

Table 4. Channel to channel crosstalk specifications

Condition	Crosstalk	Per channel rate	ADC rate
All ranges	1LSB $_{pk-pk}$	165 kS/s	330 kS/s

Noise Performance

Table 5 summarizes the noise performance for the PC-CARD-DAS16/330. Noise distribution is determined by gathering 50 k samples at 330 kS/s with inputs tied to ground at the user connector.

Table 5. Noise performance specifications

Range	% within ±2 LSBs	% within ±1 LSB	Typical LSBrms*	Max LSBrms*
All ranges	100%	90%	0.60	0.90

* RMS noise is defined as the peak-to-peak bin spread divided by 6.6.

Digital input/output

Table 6. Digital I/O specifications

Digital type	FPGA
Number of I/O	8
Configuration	Two ports, four bits each. Programmable as 8 input, 8 output, or 4 input and 4 output
Input low voltage	0.8 V max
Input high voltage	2.0 V min
Output low voltage (IOL = 4 mA)	0.32 V max
Output high voltage (IOH = -4 mA)	3.86 V min
Absolute maximum input voltage	*-0.5 V , +5.5 V*
Power-up / reset state	Input mode (high impedance)

Interrupt

Table 7. Interrupt specifications

Interrupts	Programmable: levels 2 – 15
Interrupt enable	Programmable (default = disabled)
Interrupt sources	External (External Interrupt)
	A/D End-of-channel-scan
	A/D FIFO-not-empty
	A/D FIFO-half-full
	A/D Pacer

Counter

Table 8. Counter specifications

Counter type	82C54	
Configuration	3 down counters, 16 bits each	
Counter 1 - User counter	Source:	Programmable external (Ctr 1 Clk) or 100kHz internal source
	Gate:	Available at connector (Ctr 1 Gate), pulled to logic high via 10k resistor (See Note 2).
	Output:	Available at connector (Ctr 1 Out)
Counter 2 - ADC Pacer Lower Divider	Source:	Programmable, 1 MHz or 10 MHz internal source
	Gate:	Available at connector (A/D Pacer Gate), pulled to logic high via 10 k resistor.
	Output:	Chained to Counter 3 Clock
Counter 3 - ADC Pacer Upper Divider	Source:	Counter 2 Output
	Gate:	Internal
	Output:	Programmable as ADC Pacer clock. Available at user connector (ADC Pacer out)
Clock input frequency	*10 MHz max*	
High pulse width (clock input)	*30 ns min*	
Low pulse width (clock input)	*50 ns min*	
Gate width high	*50 ns min*	
Gate width low	*50 ns min*	
Input low voltage	*0.8 V max*	
Input high voltage	*2.0 V min*	
Output low voltage	*0.4 V max*	
Output high voltage	*3.0 V min*	
Crystal oscillator frequency	10 MHz	
Frequency accuracy	50 ppm	

Note 2: If you are not driving the gate of User Counter 1, it is strongly recommended that it be connected to +5V (VDD).

Miscellaneous

Table 9. Miscellaneous specifications

+5 Volts	Available at I/O connector (+5V Power)
	Protected by resettable fuse:
	Hold current: 350 mA max @ 20 °C still air
	Trip current: 700 mA min @ 20 °C still air
	Trip and recovery time: 100 mS max
	On resistance: 1.3 Ohms max

Power consumption

Table 10. Power consumption specifications

+5V quiescent	85 mA typical, 125 mA max

Environmental

Table 11. Environmental specifications

Operating temperature range	0 to 70 °C
Storage temperature range	-40 to 100 °C
Humidity	0 to 95% non-condensing

Mechanical

Table 12. Mechanical specifications

Card dimensions	PCMCIA type II: 85.6 mm (L) x 54.0mm (W) x 5.0 mm (H)

Connector and pin out

Table 13. Connector specifications

Connector type	50-pin connector
Compatible cables	CPCC-50F-39: 50-pin Micro connector to 50-pin female IDC, one-meter cable (39 inches).
	▪ CPCC-50M-4: 50-pin Micro connector to 50-pin male IDC, 4 inch adapter cable. and ▪ C50FF-x: 50-pin IDC female to female cable.
Compatible accessory products	CIO-MINI50 SCB-50 ISO-RACK-16/P

Table 14. Connector pin out

Pin	Signal Name	Pin	Signal Name
1	AGND	26	DGND
2	CH0 IN	27	DIO0
3	CH8 IN	28	DIO1
4	CH1 IN	29	DIO2
5	CH9 IN	30	DIO3
6	CH2 IN	31	DIO4
7	CH10 IN	32	DIO5
8	CH3 IN	33	DIO6
9	CH11 IN	34	DIO7
10	CH4 IN	35	N/C
11	CH12 IN	36	N/C
12	CH5 IN	37	N/C
13	CH13 IN	38	N/C
14	CH6 IN	39	CTR1 CLK
15	CH14 IN	40	CTR1 GATE
16	CH7 IN	41	CTR1 OUT
17	CH15 IN	42	A/D EXTERNAL PACER
18	AGND	43	EXTERNAL INTERRUPT
19	N/C	44	A/D PACER GATE
20	N/C	45	A/D EXTERNAL TRIGGER
21	N/C	46	N/C
22	N/C	47	A/D PACER OUT
23	N/C	48	+5V POWER
24	N/C	49	N/C
25	N/C	50	DGND

Do not connect digital grounds to an analog ground (AGND) pin. Use the cable shield or a digital ground (DGND) pin.

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