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PCI-DAS1200

Specifications



**MEASUREMENT
COMPUTING™**

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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

Parameter	Specification
<i>A/D converter type</i>	7800
Resolution	12 bits
Number of channels	8 differential or 16 single-ended, software selectable
Input ranges	Bipolar: $\pm 10\text{ V}$, $\pm 5\text{ V}$, $\pm 2.5\text{ V}$, $\pm 1.25\text{ V}$ Unipolar: 0 to 10 V, 0 to 5 V, 0 to 2.5 V, 0 to 1.25 V Software selectable
A/D pacing	Programmable: internal counter or external source (A/D External Pacer) or software polled
Burst mode	Software selectable option, burst rate = 3 μs
A/D trigger sources	External digital: A/D External Trigger
<i>A/D triggering modes</i>	<i>External digital: Software enabled, rising edge, hardware trigger</i> <i>Pre-trigger: Unlimited pre- and post-trigger samples. Total # of samples must be > 512.</i>
Data transfer	From 1024 sample FIFO via REPINSW, interrupt or software polled
<i>A/D conversion time</i>	3 μs
Throughput	330 kHz min
Relative accuracy	$\pm 1.5\text{ LSB}$
Differential linearity error	$\pm 0.75\text{ LSB}$
Integral linearity error	$\pm 0.5\text{ LSB typ}$, $\pm 1.5\text{ LSB max}$
Gain error (relative to calibration reference)	$\pm 0.02\%$ of reading max
<i>No missing codes guaranteed</i>	<i>12 bits</i>
<i>Gain drift (A/D specs)</i>	<i>$\pm 6\text{ ppm}/^\circ\text{C}$</i>
<i>Zero drift (A/D specs)</i>	<i>$\pm 1\text{ ppm}/^\circ\text{C}$</i>
Common mode range	$\pm 10\text{ V}$
CMRR @ 60 Hz	70 dB
<i>Input leakage current</i>	200 nA
<i>Input impedance</i>	10 MOhm, min
<i>Absolute maximum input voltage</i>	$\pm 35\text{ V}$
Noise distribution:	Rate = 1-330 KHz, average % ± 2 bins, average % ± 1 bin, average # bins ▪ All ranges: 100% / 100% / 3 bins

Analog output

Table 2. Analog output specifications

Parameter	Specification
<i>D/A type</i>	AD7847AR
<i>Resolution</i>	12 bits
<i>Number of channels</i>	2
Output ranges	±10 V, ±5 V, 0 to 5 V, 0 to 10 V Each channel independently programmable.
D/A pacing	Software
Data transfer	Programmed I/O
Offset error	±600 µV max, all ranges (calibrated)
Gain error	±0.02% FSR max (calibrated)
Differential nonlinearity	±1 LSB max
Integral nonlinearity	±1 LSB max
<i>Monotonicity</i>	12 bits
D/A gain drift	±2 ppm/°C max
D/A bipolar offset drift	±5 ppm/°C max
D/A unipolar offset drift	±5 ppm/°C max
Throughput	PC dependent
Settling time (to .01% of 10 V step)	4 µs typ
Slew rate	7 V/µS
<i>Current drive</i>	±5 mA min
<i>Output short-circuit duration</i>	25 mA indefinite
<i>Output coupling</i>	DC
<i>Amp output impedance</i>	0.1 Ohms max
Miscellaneous	Power up and reset, all DAC's cleared to 0 volts, ±200 mV

Digital input/output

Table 3. DIO specifications

Parameter	Specification
<i>Digital type</i>	82C55A
<i>Configuration</i>	2 banks of 8, 2 banks of 4, programmable by bank as input or output
<i>Number of I/O</i>	24 (FIRSTPORTA 0 through FIRSTPORTC 7)
<i>Output high</i>	3.0 volts @ -2.5 mA min
<i>Output low</i>	0.4 volts @ 2.5 mA max
<i>Input high</i>	2.0 volts min, Vcc+0.5 volts absolute max
<i>Input low</i>	0.8 volts max, GND-0.5 volts absolute min
<i>Power-up / reset state</i>	Input mode (high impedance)
Interrupts	INTA# - mapped to IRQn via PCI BIOS at boot-time
Interrupt enable	Programmable
Interrupt sources	Residual counter, End-of-channel-scan, AD-FIFO-not-empty, AD-FIFO-half-full

Counter

Table 4. Counter specifications

Parameter	Specification
<i>Counter type</i>	82C54
<i>Configuration</i>	Two 82C54 devices. 3 down counters per 82C54, 16 bits each
<i>82C54A:</i>	
Counter 0 - ADC residual sample counter.	<ul style="list-style-type: none"> ▪ Source: ADC Clock. ▪ Gate: Internal programmable source. ▪ Output: End-of-Acquisition interrupt.
Counter 1 - ADC pacer lower divider	<ul style="list-style-type: none"> ▪ Source: 10 MHz oscillator ▪ Gate: tied to counter 2 gate, programmable source. ▪ Output: chained to counter 2 clock.
Counter 2 - ADC pacer upper divider	<ul style="list-style-type: none"> ▪ Source: counter 1 output. ▪ Gate: Tied to counter 1 gate, programmable source. ▪ Output: ADC pacer clock (if software selected), available at user connector.
<i>82C54B:</i>	
Counter 0 - pretrigger mode	<ul style="list-style-type: none"> ▪ Source: ADC clock ▪ Gate: external trigger ▪ Output: End-of-Acquisition interrupt
Counter 0 - user counter 4 (when in non-pretrigger mode)	<ul style="list-style-type: none"> ▪ Source: User input at 100-pin connector (CLK4) or internal 10 MHz (software selectable) ▪ Gate: user input at 100-pin connector (GATE4) ▪ Output: available at 100-pin connector (OUT4)
Counter 1 - user counter 5	<ul style="list-style-type: none"> ▪ Source: user input at 100-pin connector (CLK5) ▪ Gate: user input at 100-pin connector (GATE5) ▪ Output: available at 100-pin connector (OUT5)
Counter 2 - user counter 6	<ul style="list-style-type: none"> ▪ Source: user input at 100-pin connector (CLK6) ▪ Gate: user input at 100-pin connector (GATE6) ▪ Output: available at 100-pin connector (OUT6)
<i>Clock input frequency</i>	10 MHz max
<i>High pulse width (clock input)</i>	30 ns min
<i>Low pulse width (clock input)</i>	50 ns min
<i>Gate width high</i>	50 ns min
<i>Gate width low</i>	50 ns min
<i>Input low voltage</i>	0.8 V max
<i>Input high voltage</i>	2.0 V min
<i>Output low voltage</i>	0.4 V max
<i>Output high voltage</i>	3.0 V min

Power consumption

Table 5. Power consumption specifications

Parameter	Specification
+5 V operating (A/D converting to FIFO)	0.8 A typical, 1.0 A max

Environmental

Table 6. Environmental specifications

Parameter	Specification
<i>Operating temperature range</i>	0 to 70 °C
<i>Storage temperature range</i>	-40 to 100 °C
<i>Humidity</i>	0 to 90% non-condensing

Main connector and pin out

Table 7. I/O connector specifications

Connector type	100-pin high density
Compatible cable	C100FF-x, unshielded ribbon cable. x = length in feet
Compatible accessory products (with the C100FF-x cable)	ISO-Rack16/P ISO-DA02/P CIO-ERB08 (DADP-5037 adaptor and TN-MC78M05CT voltage regulator required *) CIO-ERB24 (DADP-5037 adaptor required) CIO-SERB24 (DADP-5037 adaptor required) SSR-RACK08 (DADP-5037 adaptor required *) SSR-RACK24 (DADP-5037 adaptor required *) BNC-16SE BNC-16DI CIO-MINI50 (2 required) CIO-TERM100 (1 required) SCB-50 (1 required) * Details on the DADP-5037 adaptor board are available on our web site at www.mccdaq.com/cbicatalog/cbiproduct.asp?dept_id=103&pf_id=1381

8-channel differential mode pin out

Pin	Signal Name	Pin	Signal Name
1	LLGND	51	FIRSTPORTA Bit 0
2	CH0 IN HI	52	FIRSTPORTA Bit 1
3	CH0 IN LO	53	FIRSTPORTA Bit 2
4	CH1 IN HI	54	FIRSTPORTA Bit 3
5	CH1 IN LO	55	FIRSTPORTA Bit 4
6	CH2 IN HI	56	FIRSTPORTA Bit 5
7	CH2 IN LO	57	FIRSTPORTA Bit 6
8	CH3 IN HI	58	FIRSTPORTA Bit 7
9	CH3 IN LO	59	FIRSTPORTB Bit 0
10	CH4 IN HI	60	FIRSTPORTB Bit 1
11	CH4 IN LO	61	FIRSTPORTB Bit 2
12	CH5 IN HI	62	FIRSTPORTB Bit 3
13	CH5 IN LO	63	FIRSTPORTB Bit 4
14	CH6 IN HI	64	FIRSTPORTB Bit 5
15	CH6 IN LO	65	FIRSTPORTB Bit 6
16	CH7 IN HI	66	FIRSTPORTB Bit 7
17	CH7 IN LO	67	FIRSTPORTC Bit 0
18	LLGND	68	FIRSTPORTC Bit 1
19	N/C	69	FIRSTPORTC Bit 2
20	N/C	70	FIRSTPORTC Bit 3
21	N/C	71	FIRSTPORTC Bit 4
22	N/C	72	FIRSTPORTC Bit 5
23	N/C	73	FIRSTPORTC Bit 6
24	N/C	74	FIRSTPORTC Bit 7
25	N/C	75	N/C
26	N/C	76	N/C
27	N/C	77	10 MHz OUT
28	N/C	78	N/C
29	N/C	79	N/C
30	N/C	80	CTR6 CLK
31	N/C	81	CTR6 GATE
32	N/C	82	CTR6 OUT
33	N/C	83	N/C
34	N/C	84	N/C
35	D/A GND 0	85	CTR5 CLK
36	D/A OUT 0	86	CTR5 GATE
37	D/A GND 1	87	CTR5 OUT
38	D/A OUT 1	88	N/C
39	CTR4 CLK	89	GND
40	CTR4 GATE	90	+12V
41	CTR4 OUT	91	GND
42	A/D EXTERNAL PACER	92	-12V
43	N/C	93	N/C
44	N/C	94	N/C
45	A/D EXTERNAL TRIGGER IN	95	A/D INTERNAL PACER OUTPUT
46	N/C	96	N/C
47	N/C	97	N/C
48	PC +5V	98	N/C
49	N/C	99	N/C
50	GND	100	GND

16-channel single-ended mode pin out

Pin	Signal Name	Pin	Signal Name
1	LLGND	51	FIRSTPORTA Bit 0
2	CH0 IN	52	FIRSTPORTA Bit 1
3	CH8 IN	53	FIRSTPORTA Bit 2
4	CH1 IN	54	FIRSTPORTA Bit 3
5	CH9 IN	55	FIRSTPORTA Bit 4
6	CH2 IN	56	FIRSTPORTA Bit 5
7	CH10 IN	57	FIRSTPORTA Bit 6
8	CH3 IN	58	FIRSTPORTA Bit 7
9	CH11 IN	59	FIRSTPORTB Bit 0
10	CH4 IN	60	FIRSTPORTB Bit 1
11	CH12 IN	61	FIRSTPORTB Bit 2
12	CH5 IN	62	FIRSTPORTB Bit 3
13	CH13 IN	63	FIRSTPORTB Bit 4
14	CH6 IN	64	FIRSTPORTB Bit 5
15	CH14 IN	65	FIRSTPORTB Bit 6
16	CH7 IN	66	FIRSTPORTB Bit 7
17	CH15 IN	67	FIRSTPORTC Bit 0
18	LLGND	68	FIRSTPORTC Bit 1
19	N/C	69	FIRSTPORTC Bit 2
20	N/C	70	FIRSTPORTC Bit 3
21	N/C	71	FIRSTPORTC Bit 4
22	N/C	72	FIRSTPORTC Bit 5
23	N/C	73	FIRSTPORTC Bit 6
24	N/C	74	FIRSTPORTC Bit 7
25	N/C	75	N/C
26	N/C	76	N/C
27	N/C	77	10 MHz OUT
28	N/C	78	N/C
29	N/C	79	N/C
30	N/C	80	CTR6 CLK
31	N/C	81	CTR6 GATE
32	N/C	82	CTR6 OUT
33	N/C	83	N/C
34	N/C	84	N/C
35	D/A GND 0	85	CTR5 CLK
36	D/A OUT 0	86	CTR5 GATE
37	D/A GND 1	87	CTR5 OUT
38	D/A OUT 1	88	N/C
39	CTR4 CLK	89	GND
40	CTR4 GATE	90	+12V
41	CTR4 OUT	91	GND
42	A/D EXTERNAL PACER	92	-12V
43	N/C	93	N/C
44	N/C	94	N/C
45	A/D EXTERNAL TRIGGER IN	95	A/D INTERNAL PACER OUTPUT
46	N/C	96	N/C
47	N/C	97	N/C
48	PC +5V	98	N/C
49	N/C	99	N/C
50	GND	100	GND

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