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Specifications

CIO-DAS08



Revision 5.1, January, 2007
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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			
A/D converter type	*AD574*			
Resolution	12-bits			
Number of channels	8 single-ended			
Input ranges	±10 V, ±5 V, 0 to +10 V, switch selectable			
Polarity	Unipolar/Bipolar, switch selectable			
A/D pacing	Software polled (typically through ISR paced by on-board counter)			
A/D trigger sources	External polled digital input trigger (Digital In 1)			
Data transfer	Software polled (typically through ISR paced by on-board counter)			
DMA	None			
A/D conversion time	*25 µs*			
Throughput	20 kHz, PC dependent			
Accuracy	±0.01% of reading ±1 LSB			
Differential linearity error	±1 LSB			
Integral linearity error	±0.5 LSB			
No missing codes guaranteed	*12-bits*			
Gain drift (A/D specs)	*±25 ppm/°C*			
Zero drift (A/D specs)	*±10 µV/°C*			
Common Mode Range	±10 V			
CMRR	72 dB			
Input leakage current (@ 25 °C)	*100 nA*			
Input impedance	*10 Meg Ohms min*			
Absolute maximum input voltage	*±35 V*			
Noise Distribution (Rate = 1 to 20 kHz)		Avg % ± 2 bins	Avg % ± 1 bin	Avg # bins
	Bipolar (10 V)	100%	100%	3 bins
	Bipolar (5 V)	100%	100%	3 bins
	Unipolar (10 V)	100%	100%	3 bins

Digital Input / Output

Table 2. Digital input/output specifications (main connector – J1)

Digital type (main connector J1)	*Output: 74LS273* *Input: 74LS244*
Configuration	*4 fixed output bits, 3 fixed input bits*
Number of channels	*4 out, 3 in*
Output high	*2.7 volts min @ -0.4 mA*
Output low	*0.4 volts max @ 8 mA*
Input high	*2.0 volts min, 7 volts absolute max*
Input low	*0.8 volts max, -0.5 volts absolute min*
Output power-up / reset state	

Table 3. Digital input/output specifications (digital connector – J2)

Digital type (digital I/O connector J2)	*82C55*
Configuration	*2 banks of 8, 2 banks of 4, programmable by bank as input or output*
Number of channels	*24 I/O*
Output high	*3.0 volts min @ -2.5 mA*
Output low	*0.4 volts max @ 2.5 mA*
Input high	*2.0 volts min, 5.5 volts absolute max*
Input low	*0.8 volts max, -0.5 volts absolute min*
Power-up / reset state	*Input mode (high impedance)*

Table 4. Interrupt specifications

Interrupts	2 - 7, jumper selectable
Interrupt enable	Programmable
Interrupt sources	External (Interrupt In), rising edge; on-board counter, jumper selectable

Counters

Table 5. Counter specifications

Counter type	*82C54*
Configuration	3 down counters, 16-bits each
Counter 0 — Independent, user configurable	Source: User connector (Counter 0 In) Gate: User connector (Gate 0) Output: User connector (Counter 0 Out)
Counter 1 — Independent, user configurable	Source: User connector (Counter 1 In) Gate: User connector (Gate 1) Output: User connector (Counter 1 Out)
Counter 2 — Independent, user configurable	Source: PC SysClk via divide by 2 circuit Gate: User connector (Gate 2) Output: User connector (Counter 2 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*

Power consumption

Table 6. Power consumption specifications

Parameter	Specification
+5V	250 mA typical, 312 mA max
+12V	15 mA typical, 21 mA max
-12V	25 mA typical, 35 mA max

Environmental

Table 7. Environmental specifications

Operating temperature range	*0 to 50 ° C*
Storage temperature range	*-20 to 70 ° C*
Humidity	*0 to 90% non-condensing*

Main connectors and pin out

Table 8. Connector specifications

Connector type	Analog connector (J1): 37-pin male "D" connector
	Digital connector (J2): 37-pin male "D" connector
Compatible cables with analog connector J1	C37FF-x C37-FFS-x
Compatible cables with digital connector J2	BP-37
Compatible accessory products with the C37FF-x cable, C37FFS-x cable, and the BP-37 cable	CIO-MINI37 CIO-TERMINAL CIO-SPADE50 CIO-EXP16 CIO-EXP32

Analog connector J1 pin out

Table 9. Analog connector J1 pin out

Pin	Signal Name	Pin	Signal Name
1	+12V PC Bus	20	-12V PC Bus
2	Counter 0 In	21	Gate 0
3	Counter 0 Out	22	Gate 1
4	Counter 1 In	23	Gate 3
5	Counter 1 Out	24	Interrupt Input
6	Counter 2 Out	25	Digital In 1
7	Digital Out 1	26	Digital In 2
8	Digital Out 2	27	Digital In 3
9	Digital Out 3	28	Dig GND
10	Digital Out 4	29	+5V
11	Dig Common	30	CH7 High
12	LLGND	31	CH6 High
13	LLGND	32	CH5 High
14	LLGND	33	CH4 High
15	LLGND	34	CH3 High
16	LLGND	35	CH2 High
17	LLGND	36	CH1 High
18	LLGND	37	CH0 High
19	+10V Ref		

Digital connector J2 pin out

Table 10. Digital connector J2 pin out

Pin	Signal Name	Pin	Signal Name
1	NC	20	+5V
2	NC	21	GND
3	FIRSPORTB Bit 7	22	FIRSPORTC Bit 7
4	FIRSPORTB Bit 6	23	FIRSPORTC Bit 6
5	FIRSPORTB Bit 5	24	FIRSPORTC Bit 5
6	FIRSPORTB Bit 4	25	FIRSPORTC Bit 4
7	FIRSPORTB Bit 3	26	FIRSPORTC Bit 3
8	FIRSPORTB Bit 2	27	FIRSPORTC Bit 2
9	FIRSPORTB Bit 1	28	FIRSPORTC Bit 1
10	FIRSPORTB Bit 0	29	FIRSPORTC Bit 0
11	GND	30	FIRSPORTA Bit 7
12	-5V	31	FIRSPORTA Bit 6
13	GND	32	FIRSPORTA Bit 5
14	-12V	33	FIRSPORTA Bit 4
15	GND	34	FIRSPORTA Bit 3
16	+12V	35	FIRSPORTA Bit 2
17	GND	36	FIRSPORTA Bit 1
18	+5V	37	FIRSPORTA Bit 0
19	GND		

Measurement Computing Corporation
10 Commerce Way
Suite 1008
Norton, Massachusetts 02766
(508) 946-5100
Fax: (508) 946-9500
E-mail: info@mccdaq.com
www.mccdaq.com

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