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Specifications

CIO-DAS08



**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>	<i>AD574</i>		
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		
<i>A/D conversion time</i>	<i>25 μs</i>		
Throughput	20 kHz, PC dependent		
Accuracy	±0.01% of reading ±1 LSB		
Differential linearity error	±1 LSB		
Integral linearity error	±0.5 LSB		
<i>No missing codes guaranteed</i>	<i>12-bits</i>		
<i>Gain drift (A/D specs)</i>	<i>±25 ppm/°C</i>		
<i>Zero drift (A/D specs)</i>	<i>±10 μV/°C</i>		
Common Mode Range	±10 V		
CMRR	72 dB		
<i>Input leakage current (@ 25 °C)</i>	<i>100 nA</i>		
<i>Input impedance</i>	<i>10 Meg Ohms min</i>		
<i>Absolute maximum input voltage</i>	<i>±35 V</i>		
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

<i>Operating temperature range</i>	<i>0 to 50 ° C</i>
<i>Storage temperature range</i>	<i>-20 to 70 ° C</i>
<i>Humidity</i>	<i>0 to 90% non-condensing</i>

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		

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