CIO-DAS801

Specifications

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Specifications

All specifications are subject to change without notice.

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	*AD674A, successive approximation*	
Resolution	12-bits	
Number of channels	8	
Input ranges	±10 V, ±5 V , ±1 V, ±0.5 V , ±0.1 V, ±0.05 V, ±0.01 V , ±0.005 V, 0 to 10 V, 0 to 1 V, 0 to 0.1 V, 0 to 0.01 V, fully programmable	
Polarity	Unipolar/Bipolar programmable	
A/D pacing	Programmable: internal counter or external source (IR Input / XCLK, falling edge) or software polled	
A/D trigger sources	External hardware (DIN1 / Trig, rising edge)	
Data transfer	Interrupt or software polled from 256 sample FIFO buffer	
Channel configuration	Differential (or pseudo-differential with installation of a SIP resistor) or single-ended, switch selectable for each channel	
DMA	None	
A/D conversion time	*20 µs*	
Throughput	50 kHz	
Accuracy	±0.01% of full scale ±1 LSB typ, ±0.05% of full scale ±1 LSB max	
Differential linearity error	±0.5 LSB max	
Integral linearity error	±1 LSB	
No missing codes (guaranteed)	*12-bits*	
Gain drift (A/D specs)	±50 ppm/°C	
Zero drift (A/D specs)	±10 ppm/°C	
Common mode range	±10 V	
CMRR @ 60 Hz	Gain = 1 Gain = 10 Gain ≥ 100	70 dB min 90 dB min 100 dB min
Input leakage current (@ 25 °C)	*± 30 nA*	
Input leakage current (over temperature)	*±250 nA*	
Input impedance	*>1 Gohm typical*	
Absolute maximum input voltage	*±35 V*	
Noise distribution (results presented as Average % ±2 bins, Average % ±1 bin, Average # bins):		
Bipolar	10 V, 5 V, 1 V 0.5 V, 0.1 V 0.05 V 0.01 V 0.005 V	100% / 100% / 3 bins 100% / 99.3% / 4 bins 100% / 99.1% / 5 bins 95.2% / 79.8% / 11 bins 72% / 48.3% / 21 bins
Unipolar	10 V 1 V 0.1 V 0.01 V	100% / 99.96% / 4 bins 100% / 99.59% / 4 bins 99.95% / 98.73% / 6 bins 72.8% / 49% / 24 bins

Digital input/output

Table 2. Digital I/O specifications

Digital type	FPGA
Configuration	Two ports, 3 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
Interrupts	Jumper selectable: levels 2, 3, 4, 5, 6, 7 or not connected Positive edge triggered
Interrupt enable	Programmable
Interrupt sources	External (IR Input / XCLK), A/D End-of-conversion, A/D FIFO-half-full

Counters

Table 3. Counter specifications

Counter type	*82C54*	
Configuration	*3 down counters, 16-bits resolution*	
Counter 0 — Independent, user counter	Source:	External, user connector (CTR0 In)
	Gate:	External, user connector (CTR0 Gate)
	Output:	User connector (CTR0 Out)
Counter 1 — ADC Pacer Lower Divider or independent user counter	Source:	User connector (CTR1 In) and optionally CTR2 Out, selectable by software
	Gate:	Programmable, disabled or user connector (CTR1 Gate)
	Output:	User connector (CTR1 Out) and optionally to A/D start convert, software selectable
Counter 2 — ADC Pacer Upper Divider	Source:	Internal 1 MHz oscillator
	Gate:	Programmable, disabled or user connector (CTR2 Gate)
	Output:	User connector (CTR2 Out) and optionally to CTR1 In, software selectable
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:	100 ppm

Power consumption

Table 4. Power consumption specifications

+5 V quiescent	500 mA typical, 750 mA max

Environmental

Table 5. Environmental specifications

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

Main connector and pin out

Table 6. Main connector specifications

Connector type	37-pin D type connector
Compatible cable	C37FF-x
Compatible accessory products with the C37FF-x cable	CIO-MINI37 CIO-EXP16 CIO-EXP32 CIO-TERMINAL ISO-RACK08

Table 7. Connector pin out

Pin	Signal Name	Pin	Signal Name
1	+15V from DC/DC	20	-15V from DC/DC
2	CTR0 In	21	CTR0 Gate
3	CTR0 Out	22	CTR1 Gate
4	CTR1 In	23	CTR2 Gate
5	CTR1 Out	24	IR Input / XCLK
6	CTR2 Out	25	DIN1 / Trig
7	DOUT1	26	DIN2
8	DOUT2	27	DIN3
9	DOUT3	28	DGND
10	DOUT4	29	PC +5V
11	LLGND	30	CH7 HI
12	CH7 LO	31	CH6 HI
13	CH6 LO	32	CH5 HI
14	CH5 LO	33	CH4 HI
15	CH4 LO	34	CH3 HI
16	CH3 LO	35	CH2 HI
17	CH2 LO	36	CH1 HI
18	CH1 LO	37	CH0 HI
19	CH0 LO		

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