

CIO-DAS802/16

Specifications



**MEASUREMENT
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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
<i>A/D converter type</i>	<i>AD7805PB, successive approximation</i>
Resolution	16 bits
Number of channels	8
Input ranges	$\pm 10\text{ V}$, $\pm 5\text{ V}$, $\pm 2.5\text{ V}$, $\pm 1.25\text{ V}$, 0 to 10 V, 0 to 5 V, 0 to 2.5 V, 0 to 1.25 V
Polarity	Unipolar/Bipolar programmable, 11 ms max switching delay
A/D pacing	Programmable: <ul style="list-style-type: none"> ▪ internal counter ▪ external source (IR Input / XCLK, falling edge) ▪ 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	10 μs (including signal acquisition time)
Throughput	100 kHz
Accuracy	$\pm 0.0015\%$ of reading $\pm 1.5\text{ LSB}$
Differential linearity error	+1.5/-1 LSB max
Integral linearity error	$\pm 1.5\text{ LSB}$ max
No missing codes (guaranteed)	16 bits
Gain drift (A/D specs)	$\pm 10\text{ ppm}/^\circ\text{C}$
Zero drift (A/D specs)	$\pm 5\text{ ppm}/^\circ\text{C}$
Common mode range	$\pm 10\text{ V}$
CMRR @ 60 Hz	90 dB min
<i>Input leakage current (@ 25 °C)</i>	<i>100 nA</i>
<i>Input impedance</i>	<i>10 Mohms</i>
<i>Absolute maximum input voltage</i>	<i>$\pm 35\text{ V}$</i>
Noise distribution (results presented as Average % ± 2 bins, Average % ± 1 bin, Average # bins)	
Bipolar	10 V 98% / 85% / 9 bins
	5 V, 2.5 V 98% / 80% / 9 bins
	1.25 V 95% / 75% / 10 bins
Unipolar	10 V, 5 V 85% / 65% / 12 bins
	2.5 V, 1.25 V 85% / 60% / 14 bins

Digital input/output

Table 2. Digital I/O specifications

<i>Digital type</i>	<i>Output:</i> FPGA <i>Input:</i> 74LS08
Configuration	Two ports, 3 input and 4 output
<i>Input low voltage</i>	0.8 V max
<i>Input high voltage</i>	2.0 V min
<i>Output low voltage (IOL = 8 mA)</i>	0.25 V typical, 0.4 V max
<i>Output high voltage (IOH = -0.4 mA)</i>	3.4 V typical, 2.7 V min
<i>Absolute maximum input voltage</i>	-0.5 V, +5.5 V
Interrupts	Jumper selectable: levels 2, 3, 4, 5, 6, 7. Positive edge triggered
Interrupt enable	Programmable
Interrupt sources	External (IR In / XCLK), A/D End-of-conversion, A/D FIFO-half-full

Counters

Table 3. Counter specifications

Counter type	82C54
Configuration	3 down counters , 16 bit 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 (CTR 2 Gate) Output: User connector (CTR2 Out) and optionally to CTR1 input, software selectable
<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 4. Power consumption specifications

+5V quiescent	430 mA typical, 675 mA max
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Environmental

Table 5. 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 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-TERMINAL CIO-EXP16 CIO-EXP32 ISO-RACK08

Table 7. Single-ended mode 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	DOU1	26	DIN2
8	DOU2	27	DIN3
9	DOU3	28	DGND
10	DOU4	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		

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