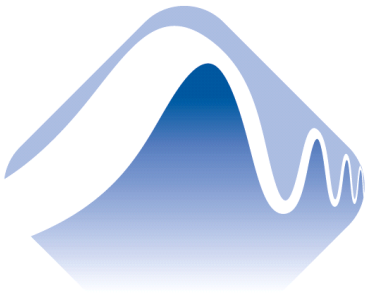
Specifications

USB-DIO24/37



MEASUREMENT COMPUTING™

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Specifications

Typical for 25 °C unless otherwise specified.

Specifications in *italic text* are guaranteed by design.

Digital input/output

Table 1. Digital I/O specifications

Digital type	82C55
Number of I/O	24 (Port A Bit 0 through Port C Bit7)
Configuration	2 banks of 8 and 2 banks of 4, or
	3 banks of 8
Pull up/pull-down configuration	All pins pulled up to Vs via 47K resistors (default). Selection available for pull down to ground. Hardware selectable via zero ohm resistor.
Input high voltage	2.0 V min, 5.5 V absolute max
Input low voltage	0.8 V max, –0.5 V absolute min
Output high voltage (IOH = -2.5 mA)	3.0 V min
Output low voltage (IOH = -2.5mA)	0.4V max
Power up / reset state	Input mode

Counter

Table 2. Counter specifications

Pin name (Note 1)	CTR
Counter type	Event counter
Number of channels	1
Input type	TTL, rising edge triggered
Input source	*CTR screw terminal*
Resolution	32 bits
Schmidt trigger hysteresis	*20 mV to 100 mV*
Input leakage current	*±1 µA*
Maximum input frequency	1 MHz
High pulse width	*500 ns min*
Low pulse width	*500 ns min*
Input low voltage	0 V min, 1.0 V max
Input high voltage	4.0 V min, 15.0 V max

Note 1: CTR is a Schmitt trigger input

Data transfer rates

Table 3. Data transfer rate specifications

Digital I/O transfer rates (software paced)	
Digital input	62 port reads or single bit reads per second (typical)
Digital output	125port writes or single bit writes per second (typical)
Counter/timer read/write rates (software paced)	
Counter read	62 port reads per second (typical)
Counter clear	125 port writes per second (typical)

Power

Table 4 . Power specifications

Parameter	Conditions	Specification
Supply current (Note 2)		20 mA typ, 40 mA max
+5V USB power available (Note3)	Connected to Self-Powered Hub	4.5 V min, 5.25 V max
	Connected to Bus-Powered Hub	4.1 V min, 5.25 V max
Output current (Note 4)	Connected to Self-Powered Hub	460 mA max
	Connected to Bus-Powered Hub	60 mA max

Note 2: This is the total current requirement for the USB-DIO24/37 which includes up to 5 mA for the status LED.

Note 3: Self-powered refers to USB hubs and hosts with a power supply. Bus-powered refers to USB hubs and hosts without their own power supply.

Note 4: This refers to the total amount of current that can be sourced from the USB +5V and digital outputs.

General

Table 5. General specifications

Parameter	Conditions	Specification
USB controller clock error	*25 °C*	*±30 ppm max*
	0 to 70 °C	*±50 ppm max*
Device type		USB 1.1 low-speed
Device compatibility		USB 1.1, USB 2.0

Environmental

Table 6. Environmental specifications

Operating temperature range	0 to 70 °C
Storage temperature range	-40 to 85 °C
Humidity	0 to 90% non-condensing

Mechanical

Table 7. Mechanical specifications

Dimensions	119 mm (L) x 84 mm (W) x 14 mm (H)
USB cable length	*3 meters max*
USB cable type	*A-B cable, UL type AWM 2527 or equivalent. (min 24 AWG VBUS/GND, min 28 AWG D+/D-)*
User connection length	*3 meters max*

Main connector and pin out

Table 8. Connector specifications

Connector type	37-pin D-type
Compatible cables	C37FF-x unshielded ribbon cable. x = length in feet. C37FFS-x cable shielded round cable. x = length in feet.
Compatible accessory products (with the C37FFS-x and C37FF-x cables)	SCB-37 CIO-MINI37 CIO-MINI37-VERT CIO-ERB08 CIO-SERB08 CIO-ERB24 CIO-SPADE50 SSR-RACK08 SSR-RACK24

Table 9. Connector pin out

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

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