Specifications

USB-DIO96H/50

MEASUREMENT COMPUTING™

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Specifications

This specification applies to revision 2 hardware and later

This specification covers revision 2 of the USB-DIO96H/50 hardware, which uses a 5 V power supply. Revision 1 of the USB-DIO96H/50 hardware was designed with a 9 V power supply and daisy chained hub. For revision 1 hardware specifications, refer to www.mccdaq.com/pdfs/USB-DIO96H-50_R1.pdf.

Typical for 25 °C unless otherwise specified.

Specifications in *italic text* are guaranteed by design.

Digital input/output

Table 1. Digital I/O specifications

Output	74ABT244A
Input	74ACT373
Configuration	Eight banks of 8, eight banks of 4, programmable by bank as input or output
Pull-up/pull-down	High impedance pull-up/pull -down selectable via DIP switch for each digital input port.
Number of I/O	96
Output high	2.0 V minimum @ -24 mA
Output low	0.5 V maximum @ 64 mA
Input high	2.0 V minimum, 5.5 V maximum
Input low	0.8 V maximum, -0.5 V absolute minimum
Input impedance	47 kΩ (series resistance)
Source current	Maximum = 24 mA per output
Sink current	Maximum = 64 mA per output
Power up/reset state	Input mode
Debounce mode	Debouncing option available through firmware that samples all inputs eight times over a specified interval and latches out the input state only when eight consecutive samples are identical (all 0s or all 1s). Available debouncing intervals are 1 ms, 2 ms, 5 ms, 10 ms, 20 ms, 50 ms, 100 ms, 200 ms, and 400 ms.
Debounce interval accuracy	+0% / -12.5%

Power

Table 2. Power specifications

Parameter	Conditions	Specification
USB +5 V input voltage range		4.75 V minimum to 5.25 V maximum
USB +5 V supply current	All modes of operation	<100 mA
External power input (Note 1)		5 VDC ± 5% (5 VDC power supply provided)
External power supply (included)	MCC p/n PS-5V3AEPS	5 VDC, 15 W, 5% regulation
Alternate external power supply	From PC auxiliary power (cable not included)	Jumper selectable Molex® connector internal to case
Voltage supervisor limits	4.13 V > V_{ext} or V_{ext} > 5.59 V	PWR LED = Off (power fault)
	4.13 V < V_{ext} < 5.59 V	PWR LED = On
Power supply current		2.7 A maximum
User 5 V output voltage range	Available at +5 V pins	4.0 V minimum, 5.25 V maximum
User 5 V output current available	Total from all +5 V pins	50 mA maximum

Note 1: Voltage specification applies at barrel plug power input. The power supply provided with the board meets this specification at the rated total power supply current. If a different power supply is used, small line resistances could cause significant voltage drop between the power supply and the barrel plug input.

Environmental

Table 3. Environmental specifications

Operating temperature range	*0 to 60 °C*
Storage temperature range	*-40 to 85 °C*
Humidity	*0 to 90% non-condensing*

USB specifications

Table 4. USB specifications

USB "B" connector	Input
USB device type	USB 2.0 (full-speed)
Device compatibility	USB 1.1, USB 2.0
USB cable type	*A-B cable, UL type AWM 2527 or equivalent. (minimum 24 AWG VBUS/GND, minimum 28 AWG D+/D-)*
USB cable length	3 meters maximum

Data transfer rates

Table 5. Data transfer rate specifications

Digital I/O transfer rates (software paced)	System-dependent, 33 to 250 port reads/writes or single-bit reads/writes per second typical

Mechanical

Table 6. Mechanical specifications

Card dimensions	304.8 mm (L) x 121.9 mm (W) x 20.0 mm (H)
	12.0" (L) x 4.8" (W) x 0.8" (H)
Enclosure dimensions	342.9 mm (L) x 125.7 mm (W) x 58.9 mm (H)
	13.50" (L) x 4.95" (W) x 2.32" (H)

Main connectors and pin out

Table 7. Ribbon connector specifications

Connectors	P1-P2: 50-pin 0.1" IDC type box header
Compatible cables	C-50FF-x, 50-pin ribbon cable
Compatible accessory products	SCB-50 CIO-MINI50 (2) CIO-TERM100 CIO-SPADE50 (2) CIO-ERB24 CIO-SERB24/FD CIO-ERB48 CIO-SERB48 SSR-RACK24 SSR-RACK48

P1

Table 8. P1 pin out

Pin	Signal name	Pin	Signal name
50	GND	49	+5V
48	FIRSTPORTC Bit 0	47	FIRSTPORTC Bit 1
46	FIRSTPORTC Bit 2	45	FIRSTPORTC Bit 3
44	FIRSTPORTC Bit 4	43	FIRSTPORTC Bit 5
42	FIRSTPORTC Bit 6	41	FIRSTPORTC Bit 7
40	FIRSTPORTB Bit 0	39	FIRSTPORTB Bit 1
38	FIRSTPORTB Bit 2	37	FIRSTPORTB Bit 3
36	FIRSTPORTB Bit 4	35	FIRSTPORTB Bit 5
34	FIRSTPORTB Bit 6	33	FIRSTPORTB Bit 7
32	FIRSTPORTA Bit 0	31	FIRSTPORTA Bit 1
30	FIRSTPORTA Bit 2	29	FIRSTPORTA Bit 3
28	FIRSTPORTA Bit 4	27	FIRSTPORTA Bit 5
26	FIRSTPORTA Bit 6	25	FIRSTPORTA Bit 7
24	SECONDPORTC Bit 0	23	SECONDPORTC Bit 1
22	SECONDPORTC Bit 2	21	SECONDPORTC Bit 3
20	SECONDPORTC Bit 4	19	SECONDPORTC Bit 5
18	SECONDPORTC Bit 6	17	SECONDPORTC Bit 7
16	SECONDPORTB Bit 0	15	SECONDPORTB Bit 1
14	SECONDPORTB Bit 2	13	SECONDPORTB Bit 3
12	SECONDPORTB Bit 4	11	SECONDPORTB Bit 5
10	SECONDPORTB Bit 6	9	SECONDPORTB Bit 7
8	SECONDPORTA Bit 0	7	SECONDPORTA Bit 1
6	SECONDPORTA Bit 2	5	SECONDPORTA Bit 3
4	SECONDPORTA Bit 4	3	SECONDPORTA Bit 5
2	SECONDPORTA Bit 6	1	SECONDPORTA Bit 7

P2

Table 9. P2 pin out

Pin	Signal name	Pin	Signal name
100	GND	99	+5V
98	THIRDPORTC Bit 0	97	THIRDPORTC Bit 1
96	THIRDPORTC Bit 2	95	THIRDPORTC Bit 3
94	THIRDPORTC Bit 4	93	THIRDPORTC Bit 5
92	THIRDPORTC Bit 6	91	THIRDPORTC Bit 7
90	THIRDPORTB Bit 0	89	THIRDPORTB Bit 1
88	THIRDPORTB Bit 2	87	THIRDPORTB Bit 3
86	THIRDPORTB Bit 4	85	THIRDPORTB Bit 5
84	THIRDPORTB Bit 6	83	THIRDPORTB Bit 7
82	THIRDPORTA Bit 0	81	THIRDPORTA Bit 1
80	THIRDPORTA Bit 2	79	THIRDPORTA Bit 3
78	THIRDPORTA Bit 4	77	THIRDPORTA Bit 5
76	THIRDPORTA Bit 6	75	THIRDPORTA Bit 7
74	FOURTHPORTC Bit 0	73	FOURTHPORTC Bit 1
72	FOURTHPORTC Bit 2	71	FOURTHPORTC Bit 3
70	FOURTHPORTC Bit 4	69	FOURTHPORTC Bit 5
68	FOURTHPORTC Bit 6	67	FOURTHPORTC Bit 7
66	FOURTHPORTB Bit 0	65	FOURTHPORTB Bit 1
64	FOURTHPORTB Bit 2	63	FOURTHPORTB Bit 3
62	FOURTHPORTB Bit 4	61	FOURTHPORTB Bit 5
60	FOURTHPORTB Bit 6	59	FOURTHPORTB Bit 7
58	FOURTHPORTA Bit 0	57	FOURTHPORTA Bit 1
56	FOURTHPORTA Bit 2	55	FOURTHPORTA Bit 3
54	FOURTHPORTA Bit 4	53	FOURTHPORTA Bit 5

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