

USB-DIO96H/50

Specifications



**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

| | |
|------------------------|---|
| Output | 74ABT244A |
| Input | 74ACT373 |
| Configuration | 8 banks of 8, 8 banks of 4, programmable by bank as input or output |
| Number of I/O | 96 |
| Output high | 2.0 volts min @ -24 mA |
| Output low | 0.5 volts max @ 64 mA |
| Input high | 2.0 volts min, 5.5 volts max |
| Input low | 0.8 volts max, -0.5 volts absolute min |
| Source current | Maximum = 24 mA per output |
| Sink current | Maximum = 64 mA per output |
| Power up / reset state | Input mode (10 K ohm pulled-up by default) |

Power

Table 2. Power specifications

| Parameter | Conditions | Specification |
|-------------------------------------|---|---|
| USB +5 V input voltage range | | 4.75V min. to 5.25V max. |
| USB +5 V supply current | All modes of operation | <100 mA |
| External power input | | 6.0 VDC to 12.5 VDC (9 VDC power supply provided) |
| External power supply (included) | MCC p/n CB-PWR-9V3A | 9 V \pm 10% @ 3 A |
| Voltage supervisor limits - PWR LED | 6.0 V > V _{ext} or V _{ext} > 12.5 V | PWR LED = Off (power fault) |
| | 6.0 V < V _{ext} < 12.5 V | PWR LED = On |
| Power supply current | | 2.6 A max |
| User 5 V output voltage range | Available at 5 V output pins (pin 49) | 4.0 V min., 5.25 V max. |
| User 5 V output current available | Total from all 5 V output pins | 50 mA max |

External power output

Table 3. External power output specifications

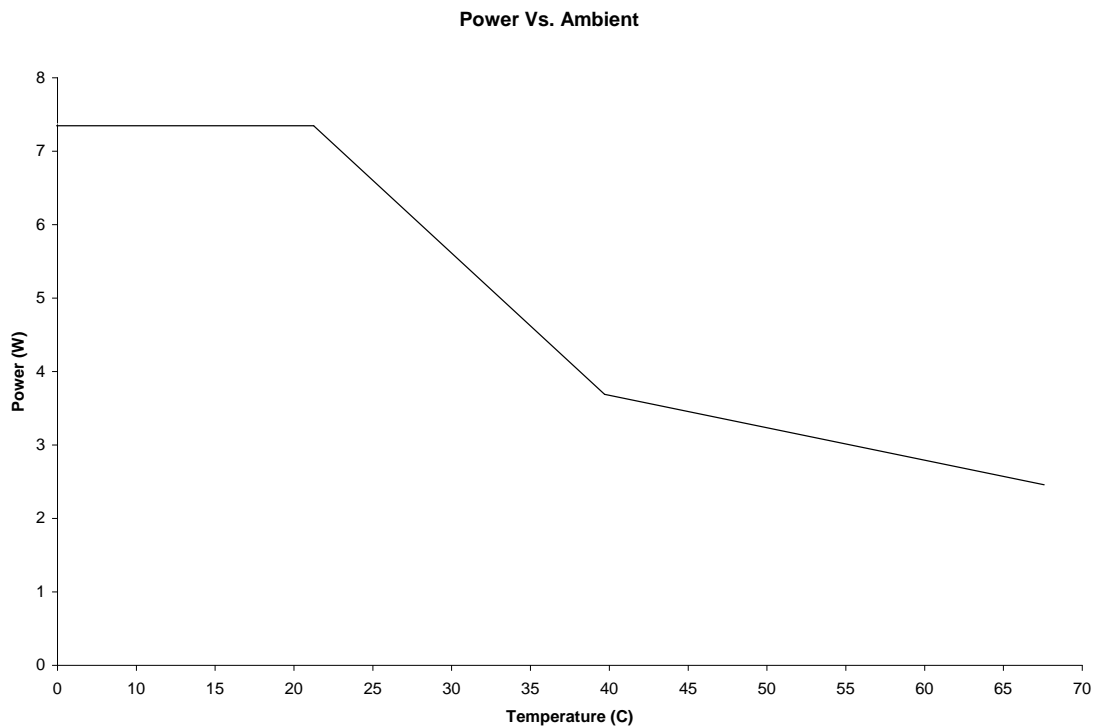
| Parameter | Conditions | Specification |
|---------------------------------------|--|---------------------|
| External power output - current range | Note 1 | 4.0 A max. @ 25 °C |
| External power output - voltage range | The input voltage minus the output voltage at the daisy chain output | 0.5 V max |
| Compatible cable(s) for daisy chain | C-MAPWR-x | x = 2, 3, or 6 feet |

Note 1: The daisy chain power output allows multiple MCC USB Series boards with a USB hub output port to be powered from a single external power source in a daisy chain fashion.

The voltage drop between the input of one module and its daisy chain output is 0.5 V maximum. You should plan for this voltage drop when configuring a daisy chain system to assure functionality of the last board in the chain.

Environmental

Graph 1. Operating temperature de-rating curve (Note 2)



Note 2: There is a total of 24 I/O per bank (PORTA, PORTB, PORTCH, PORTCL). These specifications are for a power supply input voltage of 9 volts. Higher input voltages will increase the power dissipation and will further reduce the total current available from each port.

Table 4. Environmental specifications

| | |
|------------------------------------|--------------------------------|
| <i>Operating temperature range</i> | <i>0 to 70 °C</i> |
| <i>Storage temperature range</i> | <i>-40 to 85 °C</i> |
| <i>Humidity</i> | <i>0 to 90% non-condensing</i> |

USB specifications

Table 5. USB specifications

| | |
|--|---|
| USB "B" connector | Input |
| USB device type | USB 2.0 (full-speed) |
| Device compatibility | USB 1.1, USB 2.0 |
| USB "A" connector | Downstream hub output port |
| USB hub type | Supports USB 2.0 high-speed, full-speed and low-speed operating points Self-powered, 100 mA max downstream VBUS capability |
| Compatible products | MCC USB Series products with a USB hub output port |
| USB cable type (upstream and downstream) | A-B cable, UL type AWM 2527 or equivalent. (min 24 AWG VBUS/GND, min 28 AWG D+/D-) |
| USB cable length | 3 meters max. |

Data transfer rates

Table 6. Data transfer rate specifications

| | |
|---|---|
| Digital I/O transfer rates (software paced) | System dependent, 33 to 1000 port reads/writes or single bit reads/writes per second typ. |
|---|---|

Mechanical

Table 7. Mechanical specifications

| | |
|----------------------|---|
| Card dimensions | 304.8 mm (L) x 121.9 mm (W) x 15.2 mm (H) |
| | 12.0" (L) x 4.8" (W) x 0.6" (H) |
| Enclosure dimensions | 309.9 mm (L) x 132.1 mm (W) x 40.6 mm (H) |
| | 12.2" (L) x 5.2" (W) x 1.6" (H) |

Main connector and pin outs

Table 8. Ribbon connector specifications

| | |
|-------------------------------|---|
| Connector | 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 9. 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 | SECONDPORC Bit 0 | 23 | SECONDPORC Bit 1 |
| 22 | SECONDPORC Bit 2 | 21 | SECONDPORC Bit 3 |
| 20 | SECONDPORC Bit 4 | 19 | SECONDPORC Bit 5 |
| 18 | SECONDPORC Bit 6 | 17 | SECONDPORC Bit 7 |
| 16 | SECONDPORB Bit 0 | 15 | SECONDPORB Bit 1 |
| 14 | SECONDPORB Bit 2 | 13 | SECONDPORB Bit 3 |
| 12 | SECONDPORB Bit 4 | 11 | SECONDPORB Bit 5 |
| 10 | SECONDPORB Bit 6 | 9 | SECONDPORB Bit 7 |
| 8 | SECONDPORA Bit 0 | 7 | SECONDPORA Bit 1 |
| 6 | SECONDPORA Bit 2 | 5 | SECONDPORA Bit 3 |
| 4 | SECONDPORA Bit 4 | 3 | SECONDPORA Bit 5 |
| 2 | SECONDPORA Bit 6 | 1 | SECONDPORA Bit 7 |

P2

Table 10. P2 pin out

| Pin | Signal Name | Pin | Signal Name |
|-----|------------------|-----|------------------|
| 100 | GND | 99 | +5V |
| 98 | THIRDPORC Bit 0 | 97 | THIRDPORC Bit 1 |
| 96 | THIRDPORC Bit 2 | 95 | THIRDPORC Bit 3 |
| 94 | THIRDPORC Bit 4 | 93 | THIRDPORC Bit 5 |
| 92 | THIRDPORC Bit 6 | 91 | THIRDPORC Bit 7 |
| 90 | THIRDPORB Bit 0 | 89 | THIRDPORB Bit 1 |
| 88 | THIRDPORB Bit 2 | 87 | THIRDPORB Bit 3 |
| 86 | THIRDPORB Bit 4 | 85 | THIRDPORB Bit 5 |
| 84 | THIRDPORB Bit 6 | 83 | THIRDPORB Bit 7 |
| 82 | THIRDPORA Bit 0 | 81 | THIRDPORA Bit 1 |
| 80 | THIRDPORA Bit 2 | 79 | THIRDPORA Bit 3 |
| 78 | THIRDPORA Bit 4 | 77 | THIRDPORA Bit 5 |
| 76 | THIRDPORA Bit 6 | 75 | THIRDPORA Bit 7 |
| 74 | FOURTHPORC Bit 0 | 73 | FOURTHPORC Bit 1 |
| 72 | FOURTHPORC Bit 2 | 71 | FOURTHPORC Bit 3 |
| 70 | FOURTHPORC Bit 4 | 69 | FOURTHPORC Bit 5 |
| 68 | FOURTHPORC Bit 6 | 67 | FOURTHPORC Bit 7 |
| 66 | FOURTHPORB Bit 0 | 65 | FOURTHPORB Bit 1 |
| 64 | FOURTHPORB Bit 2 | 63 | FOURTHPORB Bit 3 |
| 62 | FOURTHPORB Bit 4 | 61 | FOURTHPORB Bit 5 |
| 60 | FOURTHPORB Bit 6 | 59 | FOURTHPORB Bit 7 |
| 58 | FOURTHPORA Bit 0 | 57 | FOURTHPORA Bit 1 |
| 56 | FOURTHPORA Bit 2 | 55 | FOURTHPORA Bit 3 |
| 54 | FOURTHPORA Bit 4 | 53 | FOURTHPORA Bit 5 |
| 52 | FOURTHPORA Bit 6 | 51 | FOURTHPORA Bit 7 |

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