# CIO-CTR10

## Specifications


Document Revision 5.1, March, 2010

# Specifications

**All specifications are subject to change without notice.**

**Typical for 25 °C unless otherwise specified.**

**Specifications in *italic* text are guaranteed by design.**

## Counter

Refer to the CTS9513-2 data sheet for complete 9513 specifications and operating modes. The data sheet is available on our web site at www.mccdaq.com/PDFmanuals/9513A.pdf.

Table 1. Counter specifications

| Parameter | Conditions |
|---|---|
| Counter type | 9513 |
| Configuration | Two 9513 devices. Five up/down counters per 9513, 16-bits each. |
| Clock input frequency | 7 MHz max |
| X2 clock input source | 1 MHz (10 MHz Xtal divided by 10) |
| High pulse width (clock input) | 70 ns min |
| Cycle time (clock input) | 145 ns min |
| Gate pulse duration | 145 ns min |
| Input low voltage | –0.5 V min, 0.8 V max |
| Input high voltage | 2.2 V min, 5 V max |
| Output low voltage | 0.4 V max @ 3.2 mA |
| Output high voltage | 2.4 V min @ –200 µA |
| Crystal oscillator frequency | 10 MHz |
| Frequency accuracy | 100 ppm |

## Interrupts

Table 2. Interrupt specifications

| | |
|---|---|
| Number of interrupts | J2: 2 to 7, jumper selectable<br>J3: 2 to 7, jumper selectable |
| Interrupt enable | External, enabled with TTL low level on IR_A ENABLE (P1) and IR_B ENABLE (P2) |
| Interrupt sources | External<br>J2 sets the IR_A INPUT pin (P1)<br>J3 sets the IR_B INPUT pin (P2) |

## Digital input / output

Table 3. Digital I/O specifications

| | |
|---|---|
| Digital type | Output: 74ACT273 |
| | Input: 74LS373 |
| Configuration | 2 banks of 8 as output, 2 banks of 8 as strobed input |
| Number of I/O | 16 input, 16 output |
| Output high | 2.7 volts min @ –0.4 mA |
| Output low | 0.5 volts max @ 8 mA |
| Input high | 2.0 volts min, 7 volts absolute max |
| Input low | 0.8 volts max, –0.5 volts absolute min |

# Power consumption

Table 4. Power consumption specifications

| | |
|---|---|
| +5 V | 300 mA typical, 500 mA max. |

# Environmental

Table 5. Environmental specifications

| | |
|---|---|
| Operating temperature range | 0 to 55 °C |
| Storage temperature range | -20 to 70 °C |
| Humidity | 0 to 90% non-condensing |

# Main connectors and pin out

Table 6. Main connector specifications

| | |
|---|---|
| Connector type | P1: 37-pin D-type, right angle<br>P2: 37-pin D-type, straight |
| Compatible cable | C37FF-x |
| Compatible accessory products | CIO-MINI37<br>CIO-TERMINAL |

## P1 pin out

Table 7. P1 pin out

| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | IR_A INPUT | 20 | +5V |
| 2 | IR_A ENABLE | 21 | DIN STROBE_A |
| 3 | DOUT 7_A | 22 | DIN 7_A |
| 4 | DOUT 6_A | 23 | DIN 6_A |
| 5 | DOUT 5_A | 24 | DIN 5_A |
| 6 | DOUT 4_A | 25 | DIN 4_A |
| 7 | DOUT 3_A | 26 | DIN 3_A |
| 8 | DOUT 2_A | 27 | DIN 2_A |
| 9 | DOUT 1_A | 28 | DIN 1_A |
| 10 | DOUT 0_A | 29 | DIN 0_A |
| 11 | GND | 30 | OSC OUT_A |
| 12 | CTR5 GATE_A | 31 | CTR5 OUT_A |
| 13 | CTR5 IN_A | 32 | CTR4 OUT_A |
| 14 | CTR4 GATE_A | 33 | CTR3 OUT_A |
| 15 | CTR4 IN_A | 34 | CTR2 OUT_A |
| 16 | CTR3 GATE_A | 35 | CTR1 OUT_A |
| 17 | CTR3 IN_A | 36 | CTR1 IN_A |
| 18 | CTR2 GATE_A | 37 | CTR1 GATE_A |
| 19 | CTR2 IN_A | | |

## P2 pin out

Table 8. P2 pin out

| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | IR_B INPUT | 20 | +5V |
| 2 | IR_B ENABLE | 21 | DIN STROBE_B |
| 3 | DOUT 7_B | 22 | DIN 7_B |
| 4 | DOUT 6_B | 23 | DIN 6_B |
| 5 | DOUT 5_B | 24 | DIN 5_B |
| 6 | DOUT 4_B | 25 | DIN 4_B |
| 7 | DOUT 3_B | 26 | DIN 3_B |
| 8 | DOUT 2_B | 27 | DIN 2_B |
| 9 | DOUT 1_B | 28 | DIN 1_B |
| 10 | DOUT 0_B | 29 | DIN 0_B |
| 11 | GND | 30 | OSC OUT_B |
| 12 | CTR5 GATE_B | 31 | CTR5 OUT_B |
| 13 | CTR5 IN_B | 32 | CTR4 OUT_B |
| 14 | CTR4 GATE_B | 33 | CTR3 OUT_B |
| 15 | CTR4 IN_B | 34 | CTR2 OUT_B |
| 16 | CTR3 GATE_B | 35 | CTR1 OUT_B |
| 17 | CTR3 IN_B | 36 | CTR1 IN_B |
| 18 | CTR2 GATE_B | 37 | CTR1 GATE_B |
| 19 | CTR2 IN_B | | |

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