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CIO-EXP16

Specifications



**MEASUREMENT
COMPUTING™**

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Specifications

Typical for 25 °C unless otherwise specified.

Specifications in *italic text* are guaranteed by design.

Analog input

Table 1. Analog input specifications

| Parameter | Specification |
|---------------------------------------|---|
| Number of channels | 16 differential (1 bank) |
| Input range | ±10 V |
| Gain | Switch selectable by bank, additive values of X1, X10, X100, X200 and X500 |
| Calibration | Two offset potentiometers per bank (16 channels) and one Cold Junction Compensation adjustment potentiometer per board. |
| Gain error | Gain = 1 0.002% typical, 0.02% max Gain = 10 0.005% typical, 0.05% max Gain = 100 0.01% typical, 0.1% max Gain = 200 0.02% typical, 0.2% max Gain = 500 0.05% typical, 0.5% max |
| Non-linearity | Gain = 1 0.0005% typical, 0.005% Gain = 10 0.001% typical, 0.01% max Gain = 100 0.002% typical, 0.01% max Gain = 200 0.003% typical, 0.01% max Gain = 500 0.005% typical, 0.02% max |
| Temperature coefficient | Gain = 1 ± 20 ppm / °C Gain = 10 ± 20 ppm / °C Gain = 100 ± 40 ppm / °C Gain = 200 ± 60 ppm / °C Gain = 500 ± 100 ppm / °C Offset ± 15 µV / °C |
| Common mode range | ±10 V |
| CMRR @ 60 Hz | 90 dB |
| Input filter | 7 Hz, selectable through solder bridge (C pad) |
| Open thermocouple detect | -50 mV at positive input when thermocouple is open, selectable through solder bridge (V pad) |
| Input ground reference | 100k ohms to ground, selectable through solder bridge (G pad) |
| <i>Input leakage current</i> | <i>V and G pads open: 2 nA typical, 6 nA max</i> |
| <i>Input impedance</i> | <ul style="list-style-type: none"> ▪ <i>V and G pads open: >100 Meg Ohms min</i> ▪ <i>V and G pads shorted 100 k Ohms min</i> |
| <i>Absolute maximum input voltage</i> | <ul style="list-style-type: none"> ▪ <i>Power on: ±35 V</i> ▪ <i>Power off: ±20 V</i> |

Cold junction compensation

Table 2. Cold junction compensation specifications

| Parameter | Specification |
|--------------------|---------------|
| CJC output voltage | 24 mV / °C |
| CJC zero crossing | 0 mV at 0 °C |

Analog output

Table 3. Analog output specifications

| Parameter | Specification |
|----------------------|---|
| Number of channels | 2 (one from multiplexed inputs, one from CJC circuit) |
| Output voltage range | ± 10 V |
| Configuration | Single – ended |
| Current drive | ± 5 mA |
| Output coupling | DC |
| Output impedance | 0.1 Ohms max |

Digital input

Table 4. Analog input specifications

| Parameter | Specification |
|--------------------|--|
| Digital input: | 74LS14 |
| Configuration | Four bits for selecting multiplexer channel 0 through 15 |
| Number of channels | 4 input |
| Input high | 2.0 volts min, 7 volts absolute max |
| Input low | 0.8 volts max, -0.5 volts absolute min |

Power consumption

Table 5. Power consumption specifications

| Parameter | Specification |
|-----------|----------------------------|
| +5 V | 120 mA typical, 155 mA max |

Environmental

Table 6. Environmental specifications

| | |
|-----------------------------|-------------------------|
| Operating temperature range | 0 to 60 °C |
| Storage temperature range | -40 to 100 °C |
| Humidity | 0 to 90% non-condensing |

Main connector and pin out

Table 7. Connector specifications

| | |
|-------------------------------------|---|
| Connector type | P1 and P2: 37-pin D type connectors |
| Compatible cables with connector P1 | C37FF-x (connecting to additional CIO-EXP16 boards) |
| Compatible cables with connector P2 | <ul style="list-style-type: none"> ▪ C37FF-x (connecting to a DAS08 board) ▪ C-EXP2DAS16-10 (connecting to a DAS16 board) |

Table 8. Connector pin out

| Pin | Signal Name | Pin | Signal Name |
|-----|----------------|-----|-------------|
| 1 | +12V PC Bus | 20 | -12V PC Bus |
| 2 | NC | 21 | NC |
| 3 | NC | 22 | NC |
| 4 | NC | 23 | NC |
| 5 | NC | 24 | NC |
| 6 | NC | 25 | NC |
| 7 | MUX Addr 1 | 26 | NC |
| 8 | MUX Addr 2 | 27 | NC |
| 9 | MUX Addr 3 | 28 | Power GND |
| 10 | MUX Addr 4 | 29 | +5V |
| 11 | Output 15 | 30 | Output 7 |
| 12 | Output 14 | 31 | Output 6 |
| 13 | Output 13 | 32 | Output 5 |
| 14 | Output 12 | 33 | Output 4 |
| 15 | Output 11 | 34 | Output 3 |
| 16 | Output 10 | 35 | Output 2 |
| 17 | Output 9 | 36 | Output 1 |
| 18 | LLGND / Output | 37 | Output 0 |
| 19 | NC / LLGND | | |

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