

Current Measurement Board

Features

- Measure bipolar DC currents up to 1A
- Measure AC currents up to 5A
- Controlled via IEEE-1394 serial interface
- Filtering options
- Eight channels per board
- Programmable gain for each channel up to x8

Description

The Distributed I/O System (DIOS) supports a family of current measurement boards which sense and measure current. The current measurement family of boards can measure either DC or AC current. The board operates by passing an input current through a low value sense resistor, amplifying and (in some versions) filtering the resultant voltage.

There are currently two boards which comprise this family:

- A DC board which measures bipolar DC currents up to 1A. Both filtered and unfiltered measurements are provided.
- An AC board which measures AC currents up to 5A.

Each board provides programmable gain for each channel of x1, x2, x4, or x8. The maximum current range of these boards can be changed by using a different value sense resistor; this is a factory option.

The current measurement boards incorporate an IEEE-1394 interface. Results from the measurement circuitry are passed to model software running in an ADI real-time system (rtX or RTS) over the IEEE-1394 link.

The IEEE 1394 interface provides two IEEE-1394a compliant ports. This allows for daisy-chaining the 1394 bus to up to 30 additional boards. The IEEE 1394 cable plugs into the current measurement I/O boards at the front panel. Input current signals connect to the board at the front panel, using pluggable headers.

Specifications

DC Current Measurement Board

IEEE-1394 interface

- IEEE 1394a-2000 Compliant
- 100/200/400 Mbits/s
- OHCI Compliant

Embedded processor

- PowerPC-based
- On-chip PCI & Local Bus Interfaces
- 4MB On-board Flash Memory
- 8MB On-board SDRAM

Current measurement circuit

- 8 channels
- Channel-to-channel input isolation
- Current input ranges:

0 to ±1.0 A
0 to ±0.5 A
0 to ±0.25 A
0 to ±0.125 A

- Current resolution: 16 bits
- Accuracy (calibrated): ±4LSB max (each range must be calibrated independently)
- Temperature drift: ±25 ppm/°C max ± 310 μ A/°C max

AC Current Measurement Board

IEEE-1394 interface

- IEEE 1394a-2000 Compliant
- 100/200/400 Mbits/s
- OHCI Compliant

Embedded processor

- PowerPC-based
- On-chip PCI & Local Bus Interfaces
- 4MB On-board Flash Memory
- 8MB On-board SDRAM

Current measurement circuit

- 8 channels
- Channel-to-channel input isolation
- Current input ranges:

0 to 5.0 A
0 to 2.5 A
0 to 1.25 A
0 to 0.625 A

- Current resolution: 16 bits
- Accuracy (calibrated): ±4LSB max (each range must be calibrated independently)
- Temperature drift: ±25 ppm/°C max ± 1.5 mA/°C max