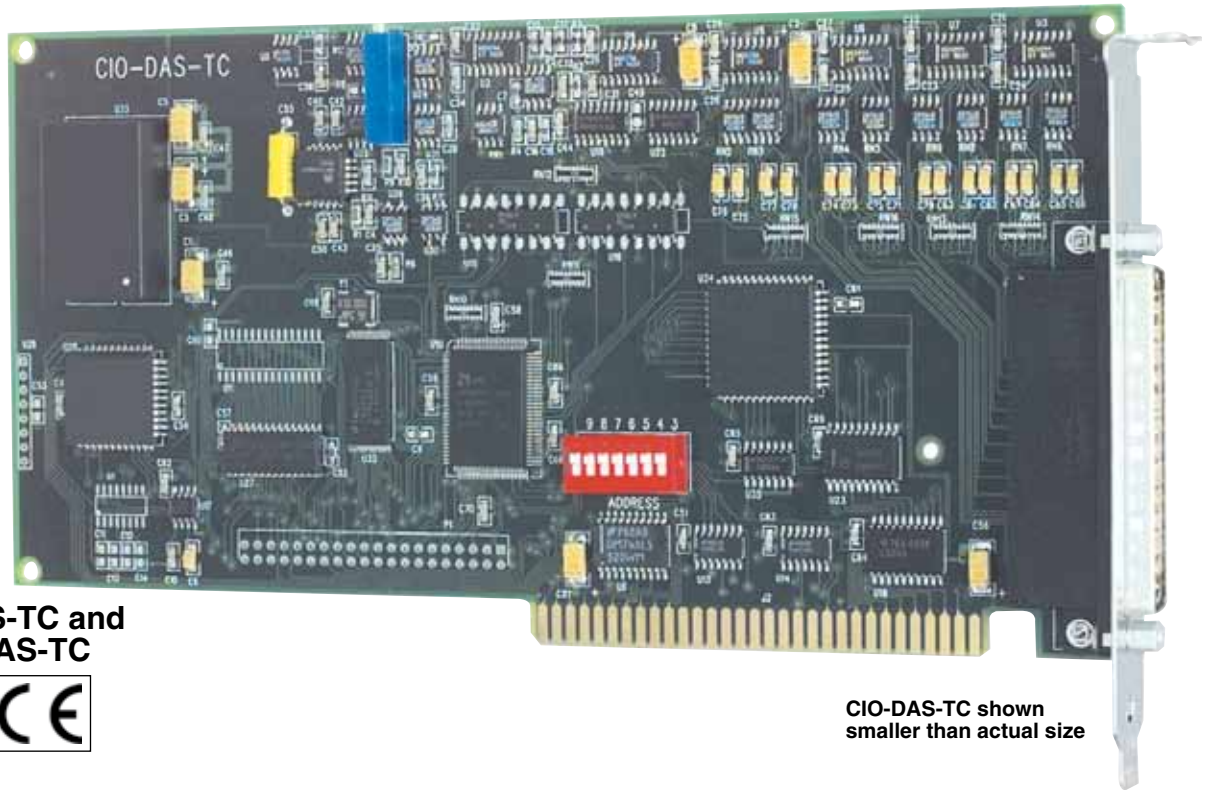


16-Channel, High Accuracy Thermocouple Input Board for ISA or PCI Bus



CIO-DAS-TC and PCI-DAS-TC



CIO-DAS-TC shown smaller than actual size

- ✓ 16 Thermocouple Inputs
- ✓ ISA Bus and PCI Bus Versions Available
- ✓ On-Board Processor
- ✓ Utilizes Noise-Immune V/F Converter
- ✓ J, K, E, T, R, S, B Thermocouple Types
- ✓ SWD-DASWizard Software Included
- ✓ 50 Hz, 60 Hz or 400 Hz Noise Rejection

The PCI-DAS-TC and CIO-DAS-TC are extremely accurate, easy-to-use, 16-channel thermocouple input boards for the PCI and ISA bus respectively for an IBM or compatible PC. The DAS-TC boards utilize an on-board microprocessor to convert the input measurements directly into °C or °F as well as provide Cold Junction Compensation. Your PC is not burdened with the conversion overhead.

The boards use an extremely noise immune V/F (voltage to frequency) analog to digital converter to assure quiet, accurate measurements. Software selectable sample rates of 50 Hz, 60 Hz and 400 Hz allow the user to select the sample rate that offers the best AC line noise rejection.

The DAS-TC boards are shipped complete with a screw terminal board and a 5-foot shielded cable. The screw terminal board provides an isothermal block assuring that the cold junction temperature device and all of the screw terminals are at the same temperature, while the shielded cable helps protect the system from external noise.

The analog input section of the board is completely electrically isolated from the computer. The 500 V isolation protects your computer if one of the systems thermocouples inadvertently comes in contact with high voltage (although the board's front end may be damaged by these high voltages).

Plug-and-Play

The PCI-DAS-TC is completely plug-and-play. There are no switches, or jumpers on the board. The board base address, interrupt channels etc., are set by your computer's plug-and-play software.

The CIO-DAS-TC is similar, but utilizes a base address switch to determine its location in your computer's I/O space. All other functions are set up and controlled by software.

Auto/Self-Calibrating

The PCI- and CIO-DAS-TC boards are fully auto-calibrating. This calibration is performed by the microprocessor and is based on an on-board, high precision reference, and a unique input multiplexer.

Unlike some boards that use software lookup tables for post-acquisition error correction, the PCI-DAS-TC's auto-calibration happens in real time, and data is accurate when written into your computer's memory.

Software

The CIO-DAS-TC and PCI-DAS-TC are supplied with InstaCal software for calibration and test and the SWD-DAS Wizard software for data acquisition (see section B in the data acquisition handbook for details). In addition, they are also supported by the optional Universal Library. The Universal Library is a set of I/O libraries and drivers for those users creating their own custom programs. The Universal Library is compatible with most Windows based languages (The PCI-DAS-TC is only supported by 32-bit Windows languages) and supports the entire CIO-PCI-DAS family of boards.

The Library includes an extensive set of programming examples written in Visual Basic and C for Windows 95/98/NT/2000/XP. An optional driver for LabVIEW is also available.

Specifications

ANALOG INPUTS

A/D Converter Type:
AD652 V/F Converter

Overvoltage Protection:
-40 to 55 V

Isolation to PC: 500V min through DC/DC converter and opto-isolators

Thermocouple Types:
J, K, E, T, R, S, B

A/D Pacing: Continuous conversions, software programmable resolution for 50 Hz, 60 Hz, or 400 Hz

A/D Trigger Sources:
software triggered

Data Transfer:
Single I/O register transfer through dual port RAM

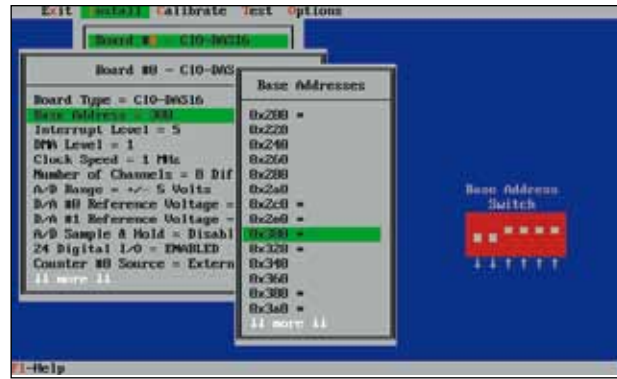
Number of Channels:
16 differential thermocouple inputs plus CJC

Conversion Rates

(Integrated Time): 50 Hz, 60 Hz, 400 Hz, software programmable

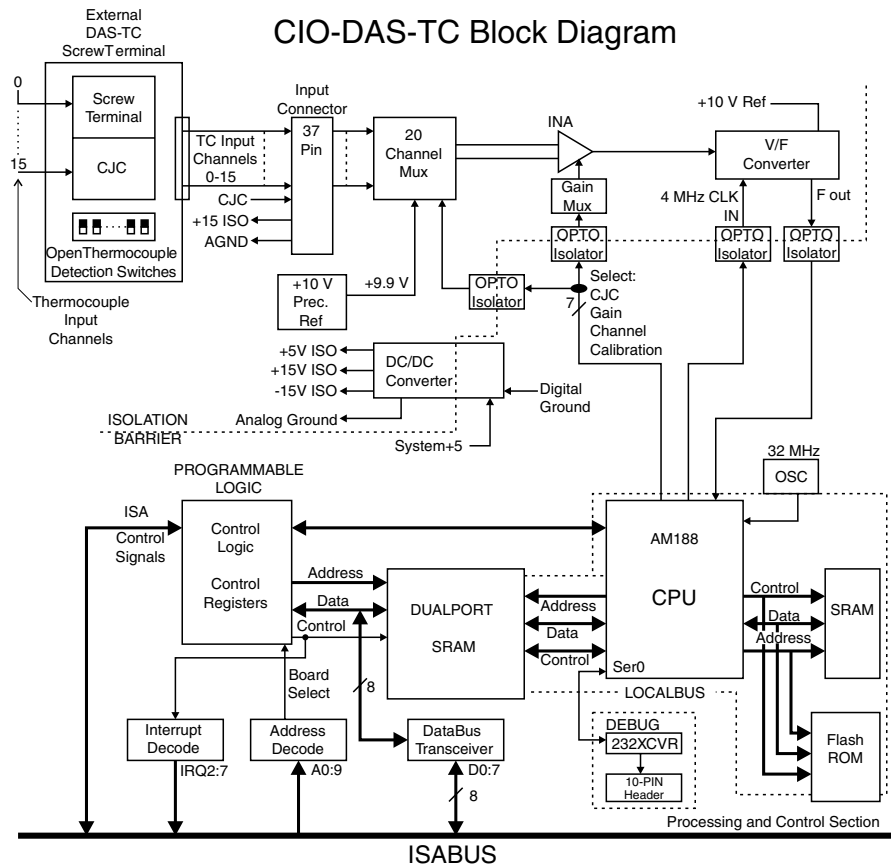
***Conversion Rates (per channel):**
22.2 msec @ 50 Hz typical, 22.3 msec max
18.8 msec @ 60 Hz typical, 18.9 msec max
4.6 msec @ 400 Hz typical, 4.7 msec max

**This is the total time to convert the channel, process the data, and provide a delay to switch the gain and channel.*



InstaCal Software

CIO-DAS-TC Block Diagram



Thermocouple Measurement Accuracy & Resolution (not including CJC errors)

Type	Range	Accuracy (Worst Case)	Resolution		
			@ 50Hz	@ 60Hz:	@400Hz
J	-210 to 1200 °C	±0.4 °C	0.05°C	0.05°C	0.40°C
K	-270 to 1372 °C	±0.4 °C	0.04°C	0.05°C	0.40°C
E	-270 to 1000 °C	±0.3 °C	0.03°C	0.04°C	0.25°C
T	-270 to 400 °C	±0.3 °C	0.03°C	0.04°C	0.25°C
R	-50 to 1768 °C	±0.4 °C	0.06°C	0.07°C	0.44°C
S	-50 to 1768 °C	±0.5 °C	0.06°C	0.08°C	0.52°C
B	0 to 1820 °C	±0.6 °C	0.07°C	0.08°C	0.54°C



Visit OMEGA for a complete line of thermocouples.

Conversion Rates

(Integrated Time): 50 Hz, 60 Hz, 400 Hz, software programmable

***Conversion Rates (per channel):**

22.2 msec @ 50 Hz typical,
22.3 msec max
18.8 msec @ 60 Hz typical,
18.9 msec max
4.6 msec @ 400 Hz typical,
4.7 msec max

**This is the total time to convert the channel, process the data, and provide a delay to switch the gain and channel.*

Sample Rate with SWD-DASWizard Software:

1 Hz maximum

Linearity Error (A/D specs):

±0.05% @ 4 Mhz Fclock

Gain Drift (A/D specs):

±75 uV/°C max

Zero Drift (A/D specs):

±50 uV/°C max

Power Supply Rejection Ratio:

0.01%/V

CMRR @ 60Hz: 80 dB min

Input Leakage Current :

±80 nA max

Input Impedance: 100 MΩ min

Absolute Maximum Input Voltage:

-40 V to 55 V

Open Thermocouple Reading:

Full scale reading, On/Off switch selectable on included terminal panel

Averaging: Moving average, 1 to 16 samples, software selectable

COLD JUNCTION COMPENSATION

CJC: AD592CN

Calibration Error: @25°C:

0.3 typ/0.5 max °C @25°C

0.5 typ/1.0 max °C over

-25 to 105°C

Linearity Error:

0.1 typ / 0.35 max °C

over -25 to 105°C

Temperature Coefficient:

1 typ uA/°C

Long Term Stability:

0.1°C/month

Processor Reset:

On power-up, watchdog timeout, or software command, processor boots within 1 second of reset, active low

Watchdog Timer:

1.6 seconds nominal, processor generates watchdog disable signal after boot-up

Interrupts: 2,3,4,5,6,7

Interrupt Enable: Programmable

Interrupt Sources: Dual port

RAM when the Processor

Mailbox has data

CRYSTAL OSCILLATOR

Frequency: 32 MHz

Frequency Accuracy:

100 ppm

POWER CONSUMPTION

+5 V Operating:

887 mA typical, 1441 mA max

ENVIRONMENTAL

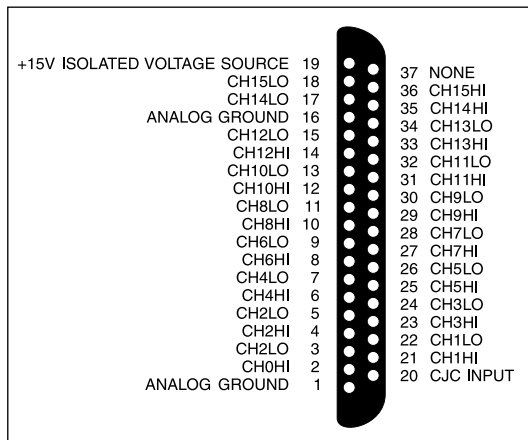
Operating Temperature Range:

0 to 70°C (32 to 158°F)

Storage Temperature Range:

-45 to 125°C (-49 to 257°F)

Humidity: 0 to 90% non-condensing



The CIO-DAS-TC, and PCI-DAS-TC, use a standard 37-pin D-type connector.



OMEGACARESM extended warranty program is available for models shown on this page. Ask your sales representative for full details when placing an order. OMEGACARESM covers parts, labor and equivalent loaners.

To Order

Model No.	Description
CIO-DAS-TC	16-channel thermocouple board for the ISA bus
PCI-DAS-TC	16-channel thermocouple board for the PCI bus

CIO-DAS-TC and PCI-DAS-TC comes with terminal panel, cable, operator's manual and InstaCal setup software.

Ordering Example: CIO-DAS-TC and OCW-1, OMEGACARESM extends standard 3-year warranty to a total of 4 years.