TCD-216B

High Speed 16-Channel Thermocouple Conditioner Card w/Reference Junction Compensation, 4x Range “Zoom” and Multiple Channel Filtering Options

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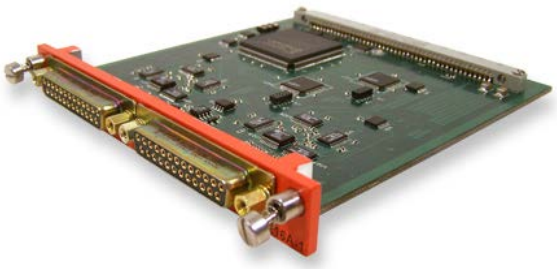


Key Features

- 16-Channels per card
- Two user-selectable data update rates
  - 250 updates/sec. and
  - 1000 updates/sec.
- High resolution
  - 16-Bit resolution @ 250 updates/sec.
  - 12-Bit resolution @ 1000 Hz updates/sec.
- True real-time linearization
- Compatible with thermocouple types J, K, T, E, C & S
- Programmable on per-channel basis
- Mixed types in the same module
- Programmable measurement range
  - User selects required zero-scale and full-scale temperatures. Range is “zoomed” accordingly.
  - Up to 4x “Zoom” (> ¼ of full TC range)
- Software selectable channel filters:
  - 22-Tap FIR with automatic slew-rate detector
  - Programmable moving average, 1 sample (no MAV filter), 2, 4, 8, 16, 32, 64 or 128 samples
- ±0.3% system accuracy
- ±35$_{VDC}$ overvoltage protection
- Open thermocouple detection
- Windows software included

Overview

The TCD-216B is a 16-channel plug-in signal-conditioning card for use in Curtiss-Wright’s EDAU/CDAU/WDAU-20xx products. The card is intended for applications that require high speed and high performance thermocouple signal conditioning, true real-time linearization, multiple channel filtering options and compatibility with multiple ANSI thermocouple types, all on a single card. Each card is provided with two (2) 8-channel RJC-108, Reference Junction Compensator units. Thermocouple data is digitized to 16-bit resolution at a channel update rate of 250 Hz or 12-bit resolution at a channel update rate of 1000 Hz for transmission in the system PCM output format.

Applications

- Flight test instrumentation
- Factory automation
- Engine testing, aerodynamics testing

Specifications

General

- Supply current: +15V @18mA; -15V @10mA; +5V @330mA
- Power consumption: 2.07 Watts (exclusive of RJC sensor excitation)
- Temperature:
  - Operating Temperature: -31°F to +185°F (-35°C to +85°C) (box ambient temp)
  - Storage Temperature: -67°F to +212°F (-55°C to +100°C)

Dimensions and Mechanical

- Compatibility: Operates in any EDAU/CDAU/WDAU-2000 series equipment
- Weight: 5.6 ounces (158 grams) not including the mating connector
- Unit connectors (2): Cannon™ DBM25SD
- Mating connectors (2): Cannon™ DBMA25P
- Backshell (optional): DB24659 - Various other styles available.

Inputs

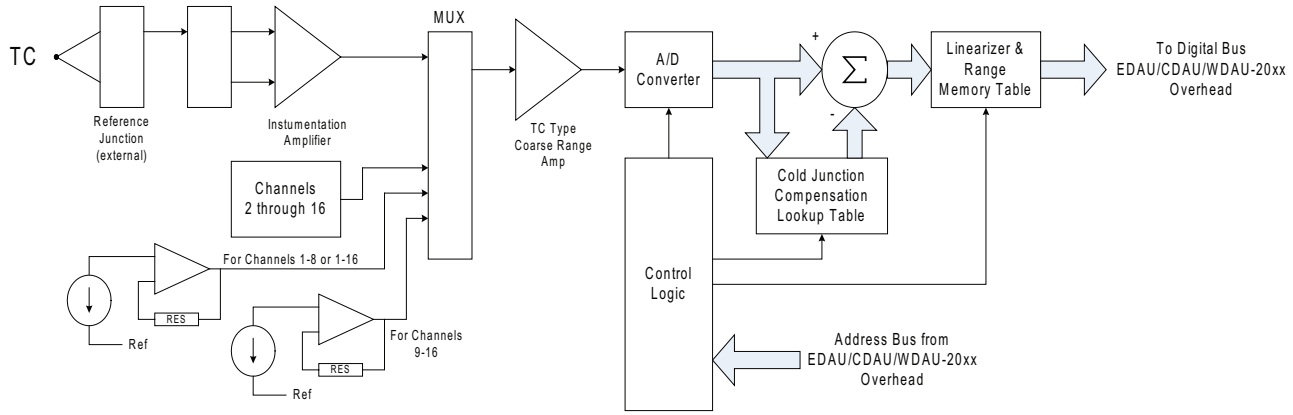
- Input type: Thermocouple connection to the Reference Junction (RJC-108) via crimp pins. Cu wire from the Reference Junction (RJC-108) to the card. 2 wires per channel.
- Input common mode voltage: -1.3V < Vcm < 1.6V (with respect to AGND)
- Number of inputs: 16 channel inputs per card
- Thermocouple type: Six (6) ANSI types provided on a per-channel basis: Types J, K, T, E, C and S
- Ranges: User selects required Zero-scale and full-scale temperatures. Output range is “Zoomed” accordingly. Up to 4x “Zoom” capability (> ¼ of full TC range).
- System gain accuracy: ±0.3% max over the operating temperature range
- RJC temperature range for stated accuracy: -67°F to +302°F (-55°C to + 150°C)
- CMRR: > 110dB from DC to 75 Hz with 10-ohm unbalance at maximum resolution
- Overvoltage: +35 Volts max

Output

- Data update rates: 250 Hz or 1000 Hz, selectable on a card-wide basis
- Resolution: Up to 16-bits (@ lower update rate) or up to 12-bits (@ higher update rate). Up to 12-bits for RJC temperature output.
- Digital filtering: The digitized temperature data is applied to a [(SIN x) / x]3 filter with -3dB @ 66 Hz (@ lower update rate) or 264 Hz (@ higher update rate). A 22-Tap low pass FIR filter with -3dB @ 10 Hz (@ lower update rate) or 40 Hz (@ higher update rate) may be software selected on a per channel basis. This filter employs a slew rate detector that suspends filtering when it encounters a rapid rate of change in the data of significant amplitude. An additional programmable moving average filter (MAV) may also be software selected on a per channel basis independent of the FIR filter above. MAV Filter options are: Last 1 sample (no MAV filter), last 2, 4, 8, 16, 32, 64 or 128 samples.
- Data linearization: The temperature data from the TCD-216B card is electronically linearized prior to placement in the PCM output format

Ordering Information

Contact Curtiss-Wright for ordering information.



TCD-216B block diagram