

AM25T

Solid State Multiplexer for Thermocouples



The AM25T sequentially connects up to 25 thermocouples¹ to a differential analog input on a CR800, CR850, CR10X, CR1000, CR3000, CR5000, CR7, or CR9000X datalogger. A PRT attached to the multiplexer's grounding bar provides a temperature reference for the thermocouple measurements. The heat capacity of the grounding bar and an insulated aluminum cover reduce thermal gradients along the length of the multiplexer. Reducing the thermal gradients allow more accurate measurements.

Features

- Operates at -40° to +85°C
- Provides spark gaps on all inputs
- Measures the panel (reference) temperature using a built-in PRT that has an accuracy of $\pm 0.2^\circ\text{C}$ over -25° to +50°C range, $\pm 0.4^\circ\text{C}$ over -40° to +85°C range
- Contains multi-layered circuit boards (uses a metallic, internal ground plane to reduce thermal gradients)
- Allows one datalogger to control several AM25Ts
- Provides a vertical package for a smaller “foot-print” in enclosure
- Supports a maximum cable length of 500 feet when lightning protection is used

Connections

Up to 25 thermocouples are wired into paired terminal sets on the AM25T. The 4-wire reference PRT is measured by the datalogger via the EXcitation, Analog Ground, HI, and LO terminals. Subsequent pulses switch each pair of AM25T terminals into continuity from the thermocouple junction, through the input and HI/LO terminals of the multiplexer, to a differential analog input on the datalogger.

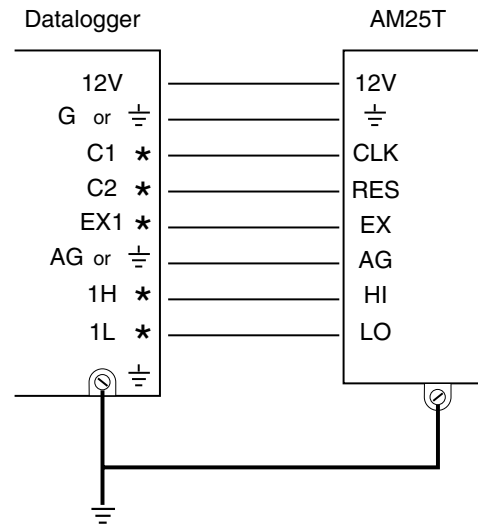
Two CABLE4CBL-L cables carry control, power, and measurement signals between the AM25T and the datalogger. A separate 10 to 12 AWG single-conductor wire connects AM25T ground to datalogger ground.

Scanning Multiple AM25Ts

Multiple AM25T's can be connected to the datalogger. The dataloggers are then programmed to measure sensors from each multiplexer sequentially.



AM25T cover not shown.



Channel numbers shown are for example only and may vary depending on the application.

Environmental Enclosures

The AM25T operates in most field conditions but requires a non-condensing environment. Outdoor applications require a weather-resistant enclosure augmented by desiccant; a Campbell Scientific enclosure is recommended.

Our ENC12/14 enclosure can house up to two AM25Ts, a CR800, CR850, CR10X, CR1000, or CR3000, and a power supply. The ENC16/18 houses several AM25Ts, a CR800, CR850, CR10X, CR1000, CR3000, or CR5000, and a power supply.

These white fiberglass-reinforced polyester enclosures can attach either to a wall with lag bolts or to a 1.25-in. IPS pipe (1.66-in. O.D.) with U-bolts. Please note that the ENC10/12 is not deep enough to house the AM25T. Consult the factory for CR7 and CR9000X enclosure options.

¹Other low-level voltage output sensors that do not exceed the common mode range of the datalogger can also be measured. The AM25T should NOT be used to measure resistive bridges or configured with a voltage divider between the AM25T and the datalogger; ask about our AM16/32B multiplexer for these applications.

Ordering Information

Multiplexer

AM25T 25-Channel Solid State Multiplexer (-40° to +85°C)

Calibration Certificate

-CC If specified, the multiplexer is shipped with a two-page calibration certificate.

Cable

CABLE4CBL-L 4-conductor, 22-AWG cable with drain wire and Santoprene jacket. Enter cable length, in feet, after the -L. A 2-ft cable length should be sufficient if the datalogger and AM25T are housed in the same ENC16/18 Enclosure. Must choose a cable termination option (see below).

Cable Termination Options (choose one)

-PT Cable terminates in stripped and tinned leads for direct connection to a datalogger's terminals.

-PW Cable terminates in connector for attachment to a prewired enclosure.

Specifications

Expandability¹:

- 2 AM25Ts per CR800 or CR850
- 4 AM25Ts per CR1000, CR3000, or CR10(X)
- 6 AM25Ts per CR23X or 21X
- 7 AM25Ts per CR725 card for the CR7s

Electrical

Power: 9.6 to 16 Vdc (under load), unregulated

Current Drain (typical)

Quiescent: 0.5 mA
Active: 1.0 mA

Enable Levels

Inactive: <0.9 V
Active: 3.5 to 5 V

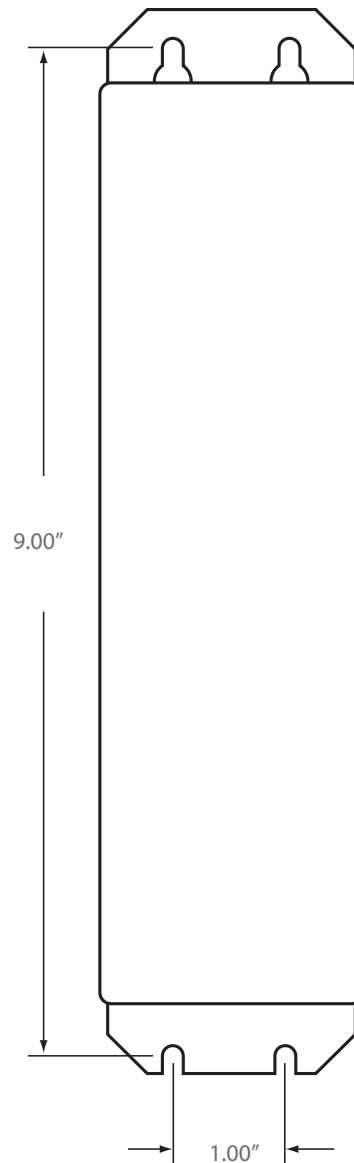
Clock

Levels: Scan advance occurs on the falling edge of the clock pulse (from above 3.5 V to below 1.5 V).

Minimum ON Time: 50 µs
Minimum OFF Time: 60 µs

Typical Relay Resistance: 500 ohms

Maximum Switching Current²: 25 mA



Footprint for Mounting

Physical

Operating Temperature: -40° to +85°C

Operating Humidity: 0 to 95%, non-condensing

Dimensions: 9.3-in L x 5.2-in H x 2-in W (23.6 cm x 13.2 cm x 5.1 cm)

Weight: 2.0 lbs (0.9 kg)

¹Assumes sequential activation of multiplexers and that each datalogger channel is uniquely dedicated.

²Switching currents greater than 25 mA will damage the relays and render them unusable.

