

Thermocouple Reader Datasheet

SA13931

General Description

The Subinitial Thermocouple Reader is a multi-type thermocouple reader with 8 independent and isolated channels and built-in cold junction compensation (CJC) per channel. All channels may be sampled simultaneously for coordinated measurements and increased acquisition speed, and each channel has built-in open detection to identify broken or missing thermocouples.

The Thermocouple Reader is controlled by Python from a host computer via Ethernet. Any number of Thermocouple Readers may be connected on the same network and controlled from the same computer.

A full bodied anodized aluminum enclosure provides physical protection for the Thermocouple Reader, and mounting holes assist in field deployment.

Electrically, each thermocouple input is isolated from all other channels, chassis, and input power to allow various common mode voltages on each channel. This simplifies thermocouple application on energized equipment & electrical components.



Applications

- Environmental Testing
- Design Verification
- Rapid Prototyping

Features

- 8 Thermocouple Channels
- Up to 32 Measurements per Second
- Open Thermocouple Detection
- Channel-to-Channel Isolation
- Rugged Aluminum Enclosure
- Ethernet Connectivity

Specifications

Number of Channels	8
Input Connectors	Miniature Thermocouple
Temperature Accuracy ⁽²⁾	±0.1% ±2°C at 2 Samples per Second (SPS)
Thermocouple Type	K, J, T, N, S, E, B, R
Measurement Range	Type K: -200°C to +1372°C Type J: -150°C to +1200°C Type T: -200°C to +400°C Type N: -150°C to +1300°C Type E: -200°C to +1000°C Type S: 250°C to +1664°C Type B: 1000°C to +1800°C Type R: 250°C to +1664°C

Resolution	18-bit or 16-bit, user-selectable
Measurement Rate	32 measurements per second with 16-bit resolution (4 SPS on each channel) 16 measurements per second with 18-bit resolution (2 SPS on each channel)
Conversion Time	250ms in 16-bit mode, simultaneous on all channels 500ms in 18-bit mode, simultaneous on all channels
Open Thermocouple Detection	Configurable, All channels
Channel-to-Channel Common Mode Isolation	±50V
Maximum Thermocouple Resistance ⁽³⁾	3kOhms
Differential Maximum Input Voltage	±3.3VDC
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Power Input	12V 0.5A via 5.5 x 2.1mm Barrel Jack (center positive) <i>OR</i> 5V 0.5A via Micro-USB
Connectivity	Ethernet: 10/100 Auto-MDIX
Computer Requirements	Windows or Linux, with connectivity to Ethernet
Operating Temperature	0 to 45°C (32 to 113°F)
Dimensions	6.75" x 6.65" x 1.125"

(1) Specifications valid after 30-min warm-up.

(2) Accuracy specification are for the Thermocouple Reader and do not include any error present in the thermocouple wire itself.

(3) Higher resistance thermocouples may be used but will result in reduced accuracy.

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