

2, 3 & 4-Wire Compatible 10-Channel RTD Signal Conditioning Module w/Precision Multiplexed Current Excitation and Programmable Digital Moving-Average Filtering



Applications

- Data acquisition systems
- Flight test instrumentation
- Lab test
- Factory automation and process control

Features

- 10-channel RTD conditioner module
- Precision constant current excitation per channel
- Compatible with all TTC Miniature Data Acquisition Systems
- Makes 2-wire, more accurate 3-wire or most accurate 4-wire RTD measurements selectable on a per-channel basis
- Built in reference resistors, no external reference resistors required
- Linearized temperature output provided for most common RTD types including the American ($\alpha = 0.00392 \Omega/\Omega/^\circ\text{C}$) and European ($\alpha = 0.00385\Omega/\Omega/^\circ\text{C}$) curves
- Resistance mode provides output proportional to resistance
- $\pm 0.25\%$ system accuracy with error correction enabled
- Programmable digital moving average filters provide a choice of channel filtering options
 - Choices are 1 sample (no MAV filter), 2, 4, 8, 16, 32, 64 or 128 samples
- High data update rate, 312.5 updates/sec
- Configurable using TTC's Programmable Software Application

Description

The MRTD-110B-1 is a 10-channel, DSP-based RTD conditioning module for use in all of TTC's Miniature Data Acquisition Systems. Multiplexed constant current excitation is provided to reduce sensor self-heating and total power dissipation of the system. The constant current value is software programmable to 0.512, 1.024, 2.048 and 4.096 mA on a per-channel basis. The module supports 2-wire, the more accurate 3-wire and the most accurate 4-wire RTD measurements for Platinum RTDs having a 0°C resistance of up to 1,000 Ohms. Linearized output proportional to the measured temperature is provided for most common RTD types including the American ($\alpha = 0.00392$) and European ($\alpha = 0.00385$) curves. Other RTD types may be used without linearization support providing an output proportional to the sensor resistance. The interface is configured to allow for sensor wire resistance compensation when used in the 3-wire mode. No external reference resistors are required. The MRTD-110B-1 automatically programs channel gain and offset to allow the user to "zoom-in" on a particular temperature range. The module provides continuous gain and parasitic offset error correction and offers an accuracy of ± 0.25 percent over the operating temperature range with error correction enabled. Programmable digital moving average filters provide a choice of channel filtering options. Each channel is sampled at a fixed rate of 312.5 SPS per channel and the result is stored in a Current Value Table at 16-bit resolution. The system can sample this data at any rate.

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MRTD-110B Datasheet

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Management System
 AS9100C
 ISO 9001:2008