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HIGHLAND TECHNOLOGY

V410 16-channel VME RTD / resistance input module

Features

- 16 independent, non-isolated input channels
- 4-wire, 3-wire, and 2-wire sensor compatibility
- Measures 1 ohm to 3 Megohms
- 0.3% accuracy, equivalent to 0.75°C for a 100 ohm RTD at 0°C
- Includes RTD linearization; readout in ohms or °C
- Fault protected to ± 30 volts DC
- Readout at full VMEbus speed without handshaking
- Clearly labeled dipswitches set VME address; no jumpers, headers, or trimpots
- Multiple built-in self-test modes (BIST): Online BIST runs continuously and transparently, while full BIST can be called as needed to perform more comprehensive tests



The V410 is a 6U VME module that provides sixteen independent analog inputs that may be used to read RTDs, thermistors, and other similar resistive sensors. It can also read cryogenic diodes. Users may set input range and adjust other settings at VMEbus speed, and depending on the range selected the microprocessor will do the necessary calculations and output voltage, resistance, or temperature. Temperature conversion is available for 100Ω and 1000Ω, series 385 and 392, platinum RTDs.

The V410 works by applying a current to the sensor and measuring the voltage across it. It has four current settings which allows it to accurately read resistance from tens of ohms up to 3MΩ. A look-up table with interpolation allows it to convert resistance to temperature.

Two front-panel 50-pin SCSI connectors interface to external sensors. Each connector provides 8 4-wire inputs, which may also be used as 3-wire or 2-wire connections using external jumpers. A D9 connector provides in-crate calibration check. Each channel incorporates a software controlled DPDT relay that allows the channel output to be diverted to the test connector.

A built-in-self-test (BIST) subsystem adds additional switching, onboard test resistors, a voltage reference, and firmware that allows the invocation of a full closed-loop test of all ranges of all 16 channels. Another BIST subsystem runs continuously and checks for open connections on the SCSI input.

18 Otis Street San Francisco, CA www.HighlandTechnology.com tel: 415 551-1700 fax: 415 551-5129

Specifications : V410 16-channel VME RTD/resistance input module

FUNCTION	16-channel resistor/RTD input VME module
DEVICE TYPE	16-bit VME register-based slave: A24:A16:D16; Implements 128 16-bit registers at switch selectable addresses in the VME 16 or 24 bit addressing spaces
INPUTS	Sixteen 4-wire resistive sensors Usable in 3-wire and 2-wire modes using external jumpers
RANGES	Voltage range: -0.5 – 3 V Five current source ranges: Off, 1 µA, 10 µA, 200 µA, and 2 mA Four resistance ranges: 3 MΩ, 300 KΩ, 15 KΩ, and 1500 Ω Four pre-programmed RTD temperature conversions: 100 and 1000 Ω 0.00385 platinum RTD; 100 and 1000 Ω 0.00392 platinum RTD
SAMPLE RATE	15 samples per second
FILTERING	Analog, 16 Hz 1st order pre-ADC lowpass
PROTECTION	± 30 volts any input to ground
OPERATING TEMPERATURE	-40 to 85°C operating; -50 to 85°C storage
POWER	VME supplies: + 5 volts, 0.4 amp max ± 12 volts, 0.05 amp max
CONNECTORS	Two VME connectors: P1 must be connected but P2 is optional Two 50-pin SCSI females, each 8 channels One D9 male for testing through the BIST bus
INDICATORS	LEDs indicate VME access, CPU activity, error conditions; additional LED is user programmable
PACKAGING	6U single-wide VME module
CONFORMANCE	ANSI/VITA 1-1994 (R2002) VMEbus spec Resistance to temperature conversion of 0.00385 RTDs based on DIN/IEC 60751

4-Wire Measurement Accuracy:

MEASUREMENT	RANGE	TYPICAL	LIMIT 15-35°C*	LIMIT 0-70°C*
100 ohm RTD	-200 – 660°C	±0.1°C ±0.05%†	±0.5°C ±0.1%†	±0.5°C ±0.2%†
1000 ohm RTD	-200 – 660°C	±0.03°C ±0.1%†	±0.08°C ±0.1%†	±0.08°C ±0.2%†
Resistance	1500 ohms	±0.04Ω ±0.05%	±0.2Ω ±0.1%	±0.2Ω ±0.2%
Resistance	15K ohms	±0.1Ω ±0.1%	±0.3Ω ±0.1%	±0.3Ω ±0.2%
Resistance	300K ohms	±1Ω ±0.1%	±4Ω ±0.1%	±4Ω ±0.2%
Resistance	3M ohms	±30Ω ±0.05%	±40Ω ±0.15%	±40Ω ±0.4%
Voltage	-0.5 – 3 Volts	±20µV ±0.02%	±100µV ±0.1%	±100µV ±0.2%

* V410 module temperature

† For RTD accuracy, percentage is of RTD temperature in kelvins. For 100ohm RTDs at 0°C, the 15-35°C error is ±(0.5 + 0.273)°C.

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