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HIGHLAND TECHNOLOGY

V450 analog / thermocouple input module

Features



- 16 channels of fully isolated analog input acquisition, each independently programmable for mode and input range
- 24-bit voltage mode ranges from ±25 mV to ±250 volts
- 1/16 °C thermocouple mode supports types J K E T R S B N
- Four non-isolated precision RTD signal conditioners, plus one on-board temperature sensor
- Continuous error-free detection for open thermocouples
- Thermocouple loop resistance reporting for long-term system reliability
- No realtime handshaking required; once channel parameters are set up, measurements appear in dual-port memory registers with VMEbus-speed access
- Test connector supports in-crate calibration check, optional built-in self test (BIST) available
- Clearly labeled dipswitches set VME address; no jumpers, headers, or trimpots

The V450 is a 16-channel 24-bit VME isolated analog-to-digital converter module which can acquire a wide range of DC voltages, including thermocouple readings with automatic cold junction compensation. Each channel is independently isolated with it's own A/D converter, signal conditioning, input protection circuits, and test relay.

All data I/O is managed through a transparent, VMEbus-speed dual-port memory. Conversions are continuously available with no need for handshaking; provisions are available for synchronized simultaneous data acquisition.

Programmable parameters such as voltage input range, thermocouple type, and sample rate, and data acquisition results and status flags are accessible in per-channel VME registers. Independently programmable digital filters and optional plug-in analog front-end filters simplify data-acquisition systems on both software and hardware sides.

Thermocouple channels can be individually programmed to work with any of four external RTD reference junctions, or thermocouple wire can be brought directly into the front panel D25 connectors and referenced to the on-board temperature sensor. Cold-junction compensation uses high-density table lookups rather than straight line approximations, and all reference junction temperatures are readable at any time.

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Specifications : V450 analog/thermocouple input module

FUNCTION	16-channel isolated voltage/thermocouple input
DEVICE TYPE	16-bit VME register-based slave: A24:A16:D16 Implements 256 16-bit registers at switch selectable addresses in the VME 16- or 24-bit addressing spaces
CHANNELS	16, programmable functions, galvanically isolated
RANGES	Programmable per channel Voltage: 14 bipolar ranges, ±25 mV, 50 mV, 80 mV, 125 mV, 250 mV, 500 mV, 1.25 V, 2.5 V, 5 V, 12.5 V, 25 V, 50 V, 125 V, 250 V Thermocouples: Types J K E T R S B N
RESOLUTION	Voltage mode, 24 bits Temperature mode, 0.0625°C
SAMPLE RATE	Programmable per channel, 4 to 500 readings/second Default rate of 16/second rejects 50/60 Hz noise
OFFSET ERROR (0-60°C)	Range > 20V ± 10 ppm range ± 250 µV 1V < Range < 20V ± 10 ppm range ± 20 µV Range < 1V ± 10 ppm range ± 2 µV
OFFSET ERROR (-40-80°C)	Range > 20V ± 15 ppm range ± 1000 µV 1V < Range < 20V ± 15 ppm range ± 50 µV Range < 1V ± 15 ppm range ± 5 µV
GAIN ERROR	(15-35°C) ± 300 ppm of measurement ± 30 ppm/°C outside this range
INPUT IMPEDANCE	Range < 1 V: 100 MΩ min Range > 1 V: 1 MΩ min
PROTECTION	±350 volts differential ±750 volts common-mode ESD to 15KV, human body model
NOISE REJECTION	> 80 dB rejection of 50/60 Hz noise at default sample rate of 16.7/second
RTD INPUTS	Four non-isolated external reference junction inputs for 4-wire platinum RTD sensor, 100Ω or 1 kΩ, ISO "385" curve Protected against shorts, ESD
ONBOARD SENSOR	Semiconductor reference junction temperature sensor, ±2°C typical accuracy
OPERATING TEMPERATURE	0 to 60°C; extended -40 to 80°C MIL/COTS range available
CALIBRATION INTERVAL	One year
POWER	Standard VME supplies: +5 V, 1.0 A max +12 V, 5 mA max -12 V, 5 mA max
CONNECTORS	2 D25 female for channels and RTDs D9 male for test
INDICATORS	LEDs indicate VME access, CPU activity, error conditions Additional user programmable LED
PACKAGING	6U single-wide VME module
CONFORMANCE	ANSI/VITA 1-1994 (R2002) VMEbus spec; does not support byte writes Thermocouple tables based on NIST/ITS-90 RTD tables per IEC-751 for "385" curve RTDs

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