

## Universal Thermocouple Scanner

### Features

- Accepts type E, J, K, N, R, S, T, and B
- Engineering Unit output, °C, °F, °R, or K
- Ethernet TCP/IP & UDP protocol
- 1000Vdc channel-to-channel isolation
- 600Vdc input isolation
- 50 - 60 Hz noise rejection
- Open thermocouple test
- 1000 Vdc input isolation
- 16, 32, and 64 channel

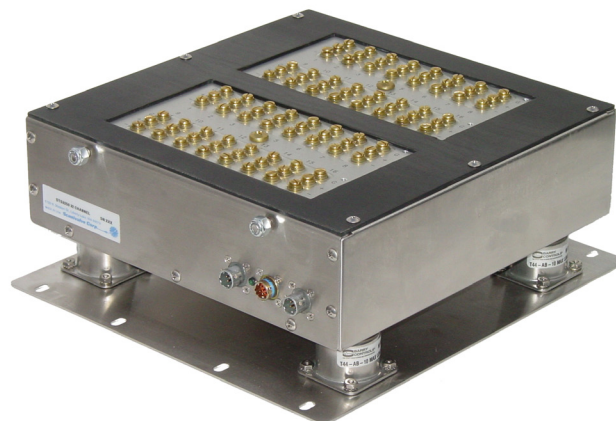
### General Description

The DTS3250 series temperature acquisition system represents the next generation of intelligent thermocouple scanning. Model DTS3250, Digital Temperature Scanner, accepts 16, 32, or 64 pairs of thermocouple inputs. It incorporates RAM, Integral Low Pass Filters, 22 bit A/D converters, and a microprocessor, in a rugged stand alone module. The DTS module is specifically designed for high-noise environments and as such can withstand unmatched common mode noise.

An isothermal block is incorporated for the Uniform Temperature Reference (UTR) for each 16 channel input. NIST thermocouple tables for standard thermocouple types are stored in flash memory. The microprocessor uses these look-up tables to convert mV inputs to Engineering Units. Temperature data are output in °C, °F, °R, K, millivolts and counts.

The DTS3250 accuracy for types E, J, K, N, and T is  $\pm .25^{\circ}\text{C}$  to  $\pm 0.5^{\circ}\text{C}$  depending on the thermocouple type and the useful temperature range. (Refer to accuracy table for a complete listing of supported thermocouples and associated accuracies)

Multiple standard thermocouple types may be used with one Intelligent Temperature Scanner, Model DTS3250.



*DTS3250/32 Channel  
(shown)*

### Applications

The DTS3250 Digital Temperature Scanner is ideal for use in turbine engine, diesel engine, and compressor test cells, as well as other industrial environments such as boiler and oven temperature monitoring. The module has a stainless steel enclosure with a locking lid for input terminal access. The standard DTS is insulated, rugged, and splash resistant and is mounted on environmental shock mounts.

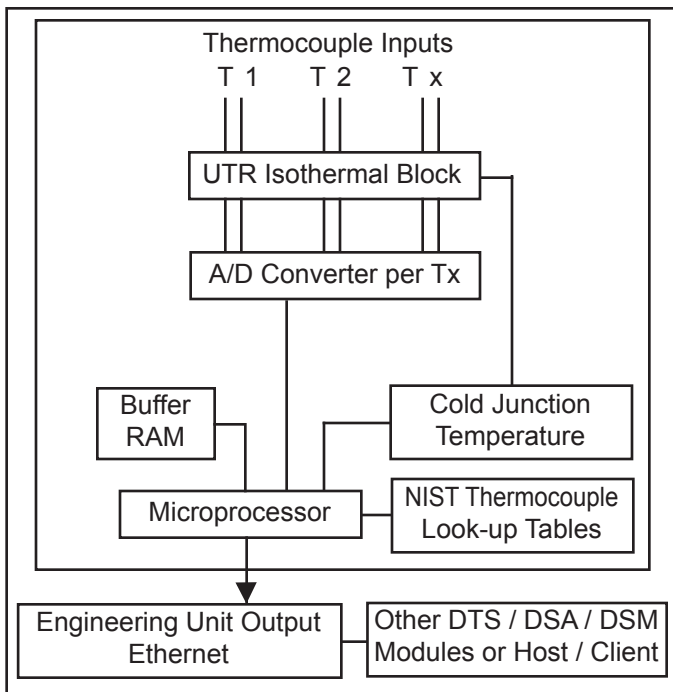
The DTS3250's electronics were specifically designed to endure punishing high EMI noise environments while still being able to provide accurate engineering data.

The 32 & 64 channel DTS3250 modules are optionally available with a 19 inch rack mount kit.

The DTS3250 Intelligent Scanner is typically mounted in close proximity to the test article, thus minimizing thermocouple wire lengths. Shorter thermocouple wires not only reduce errors, but also lower costs due to the elimination of extension cables. Field calibrations can be used to modify coefficients which can also improve overall system accuracy.

The standard DTS3250 module accepts two wire or three wire shielded thermocouples.

# DTS3250 Module



## Temperature Measurement

There are a number of standardized thermocouple types available on the market. Each has different properties, which makes them suitable for specific temperature ranges and environmental conditions.

Accuracy of a thermocouple measurement is highly dependent upon the reference junction connection, its material, installation techniques, and temperature.

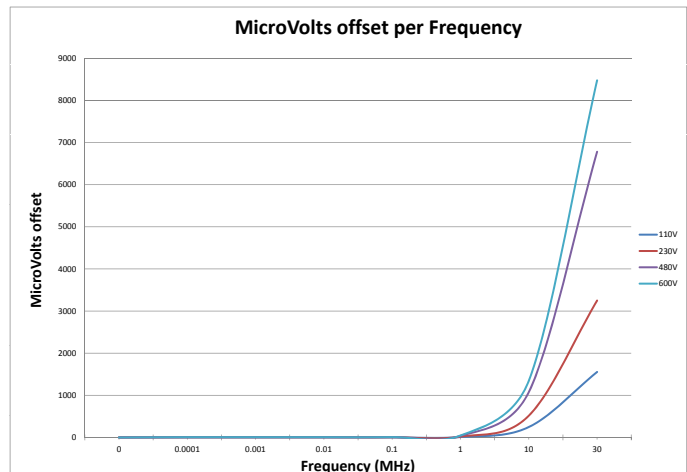
The DTS3250 intelligent temperature scanner measures the mV signal from the thermocouples and compensates for the temperature of the cold junction.

NIST mV-temperature tables for each type thermocouple listed in this brochure are stored in the DTS3250 flash memory. This table is broken down into increments of .1°C. The DTS3250 microprocessor utilizes the compensated EMF and the NIST look-up table for conversion to engineering units. Temperature data are then output via Ethernet with TCP/IP protocol.

## Common Mode Rejection

The DTS3250 product line was specifically designed to operate in environments high levels of EMI. The DTS' unique architecture allows it to precisely read microvolt signals even amongst hundreds of volts of common mode noise. Supporting this capability, the DTS is built around a robust front end. Every thermocouple input channel has its own dedicated A/D circuit providing a huge, 1000Vdc channel-to-channel isolation buffer. It is this unique parallel front end architecture that provides the DTS' unmatched common mode rejection ratio.

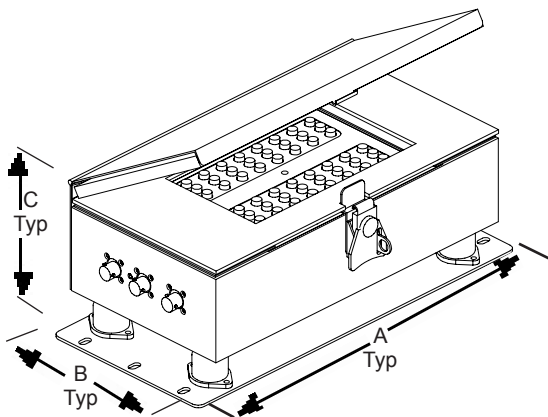
The specific common mode rejection ratio will vary between installations depending on the voltage, frequency, scan rate and thermocouple type used, but the graph below can be used to roughly determine the MicroVolt offset caused by various common voltages across the frequency spectrum. In addition to the 1000Vdc channel-to-channel isolation, the DTS also is built to endure a sustained 600Vdc per channel of input isolation, while still providing accurate engineering unit data output.



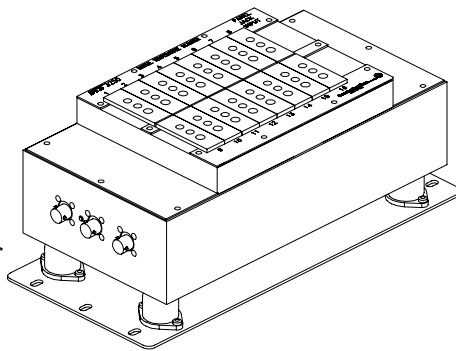
In order to take advantage of the DTS's high common mode rejection capability, the DTS was also designed to endure the physical stresses that can be associated with high-noise environments. The DTS is mounted on Mil-Spec rated shock mounts and enclosed in a rugged stainless steel chassis. The integrated UTR block and included insulation cover provide a stable, accurate reference point for all incoming thermocouple junctions.

For 32 channel rack mount kit, order 21995-2  
For 64 channel rack mount kit, order 21195-1.

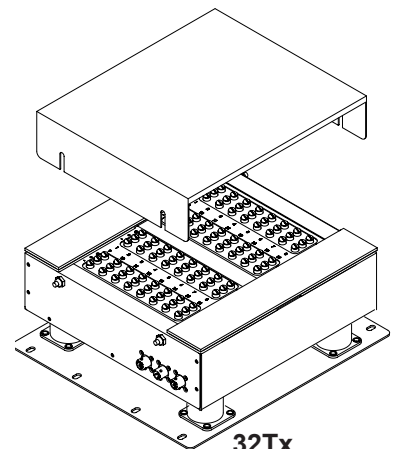
# DTS3250 Dimensions



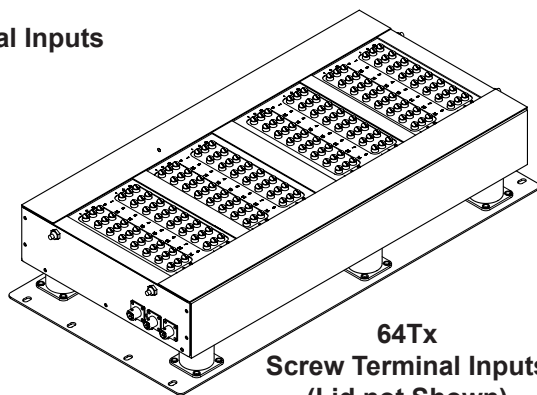
**16Tx**  
**Screw Terminal Inputs**



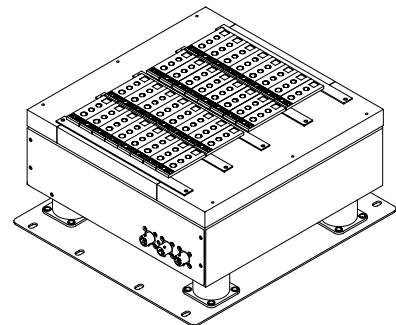
**16Tx**  
**Panel Jack Connector Inputs**



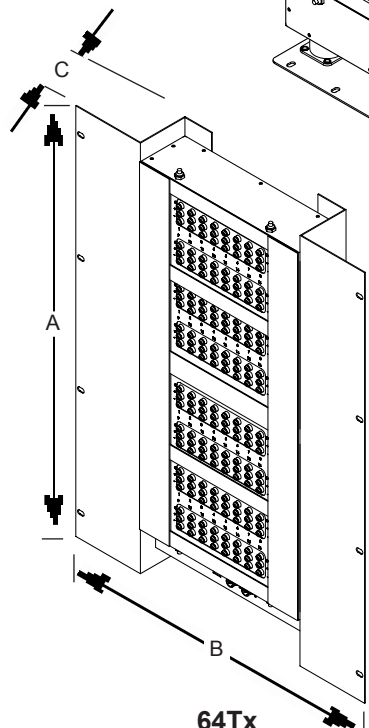
**32Tx**  
**Screw Terminal Inputs**



**64Tx**  
**Screw Terminal Inputs**  
**(Lid not Shown)**



**32Tx**  
**Panel Jack Connector Inputs**



**64Tx**  
**19" Rack Mount Screw**  
**Terminal Inputs**

Model DTS 3250	Dimensions (inches) Mounting Plate			Dimensions (cm) Mounting Plate		
	A (Length)	B (Width)	C (Height)	A (Length)	B (Width)	C (Height)
16Tx-screw terminal:	13.5	6.19	5.12	34.29	15.72	13.00
16Tx-panel jack:	13.5	6.19	5.34	34.29	15.72	13.00
32Tx-screw terminal:	12.0	10.75	5.58	30.48	27.31	14.17
32Tx-panel jack:	12.0	10.75	5.71	30.48	27.31	14.50
64Tx-screw terminal:	23.32	10.75	5.58	59.23	27.31	14.17
64Tx-rack mount screw terminal:	24.0	19.00	4.00	60.96	48.26	10.16

Specifications are subject to change without notice.

**Scanivalve Headquarters**  
1722 N. Madson Street  
Liberty Lake, WA 99019  
Tel: 509-891-9970  
800-935-5151  
Fax: 509-891-9481  
e-mail: [scanco@scanivalve.com](mailto:scanco@scanivalve.com)

**Scanivalve**  
[www.scanivalve.com](http://www.scanivalve.com)