



## 2432T

### 32 Channel Thermocouple Scanner

- Acquisition system for thermocouples
- Screw terminal inputs
- High integrity UTR design for accurate cold junction measurement
- Open circuit detection
- 24 bit resolution
- User configurable outputs over Ethernet - iDDS, Chell Protocol, IENA & Netscanner compatibility.
- With IEEE 1588 PTP V2.
- 250Hz per channel measurement frequency.
- Power-over-Ethernet (PoE) or DC supply (user configurable).
- Fully configurable over Ethernet with embedded web server.

The Chell 2432T is a complimentary product to our existing line of 2432, 2416, flightDaq and microDAQ pressure scanner products.

Using the powerful architecture and interfaces enables the 2432T to accurately measure 32 thermocouple input and the corresponding cold junction temperatures, convert the measurement to engineering units and then output the data over a number of configurable Ethernet interfaces. These interfaces can be the Chell protocol (TCP/IP or UDP), IENA, iDDS or Netscanner® simulation mode.

The 2432T consists of a set of 32 M3 screw terminal inputs. These inputs are embedded into a high-grade copper UTR to ensure a uniform cold junction temperature.

The cold junction temperature is measured by two precision RTD's to calculate the cold junction temperature.

Configuration of the inputs and the output stream is carried out via an embedded web server, using commands over the selected protocol or via an iDDS configuration server or by XML file download.

The user can choose between a number of standard look-up-tables (B,E,J,K,N,R,S and T-Type) or enter their own for conversion to engineering units of their choice (maximum size 448 lines - downloadable from a CSV file).

The 2432T features PoE as standard but can be user configured (via internal switches) for conventional DC supply.

## 2432T Input Types

Input Type	Channels	Notes
Voltage	32	Ranges of $\pm 78\text{mV}$
Thermocouple	32	Type B, E, J, K, N, R, S, T
Cold Junction (internal)	2	RTD 385
Connection type	32	2 x screw terminals (M3) plus 1 x GND terminal (M3) per channel
Open circuit detect (OCD)		Available on all channels

## 2432T Input Specifications

Measurement type		
Voltage ( $\pm 78\text{mV FS}$ )	Resolution	$\pm 0.02 \mu\text{V}$ or $0.001^\circ\text{C}$ (K type)
	Accuracy <sup>3</sup>	$< \pm 10 \mu\text{V}$ or $0.26^\circ\text{C}$ (K type) or $0.27^\circ\text{C}$ (N type) <sup>2</sup>
	Noise <sup>1</sup>	$< 3 \mu\text{V}$
	Common mode Voltage	14V max
Cold Junction	Resolution	$\pm 0.0005 \Omega$ or $0.001^\circ\text{C}$
	Accuracy <sup>3</sup>	$< \pm 0.05 \Omega$ or $0.1^\circ\text{C}$
	Noise <sup>1</sup>	$< 0.02^\circ\text{C}$
Cold Junction UTR Errors		$< 0.15^\circ\text{C}$

### NOTES:

- Noise figures based on an acquisition frequency of 250Hz and a running average setting of 8
- Thermocouple temperature errors are for hot junction measurement only. This does not include cold junction thermal (listed separately).
- All accuracy figures include all thermal errors between 0 and  $90^\circ\text{C}$

## 2432T System Specifications

System resolution	24 bit	
Dimensions	241.2 x 89 x 68mm (please contact us for a solid model)	
Weight (with DTC scanner)	1.53Kg	
Environmental sealing	IP67	
Measurement connector	Scre terminal (M3)	
Input supply	PoE	IEEE 802.3at
(user selectable with internal switches)	DC	24 to 50VDC (1.0A maximum at 24V)
Electrical connector	M12 X-Coded TE2232331-1	
System timing	IEEE1588-2008 PTP V2 accurate to 1% of the acquisition frequency ( $\pm 40 \mu\text{s}$ at 250Hz)	
Operating temperature range.	$-20$ to $+90^\circ\text{C}$ (lower range can be extended if unit is powered first)	
Maximum relative humidity	95% at $50^\circ\text{C}$ (non-condensing)	
Ethernet specification	Auto-negotiating 100Mbit TCP or UDP (fixed or DHCP)	

## 2432T Interface Types

Interface types	
Chell protocol	32-bit floating-point output (IEEE 754) via TCP or UDP max 250Hz (see manual 900204-X.X for details)
IENA	UDP max 250Hz (see manual 900204-X.X for details)
iDDS	Conforms to EIM 03869
Netscanner emulation	TCP / UDP max 250Hz, limited command set (please contact Chell for details)

### NOTES :

1. The interface type is user selectable via the embedded web server.
2. Configuration can be via embedded web server, using commands via one of the above protocols or, for iDDS applications via an appropriate iDDS configuration server or by XML file download.

## 2432T Environmental Specifications

Ambient altitude	100 mbar abs or nominally 52000 ft
Vibration	Engine standard vibration test to DO160E category S, curve W with duration of 1 hr/axis. Fan blade out case to DO160E category S, curve P.
	Fan blade out to DO160F section 7 (40g 11m/s)
Temperature	Engine load to +/- 40g per axis
	Engine temperature to DO160F section 4 cat D2 and section 5 cat A requirements
	General temperature -20 to+90°C
	Thermal transient : ±10°C/min
Radiated emissions	MIL standard 461-E: RE102
Conducted emissions	MIL standard 461-E/MIL standard 461-C

NOTES: To monitor the health of the 2432T, the excitation supplies, internal temperature and internal absolute pressure are available over the embedded web server

## Dimensions

