Thermometer T12

Precision Multichannel Thermometer System

- **Twelve channel temperature measurement**
- **High precision, stability and repeatability**
- **Internal reference resistors**
- **PC software for system control and data acquisition**
- **Simple to configure and use**

Typical applications:

- **Climatic chamber validation**
- **Calibration Systems**

- **Temperature Calibration**

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Multi-Channel Reference Thermometer

The T12 is a highly precise and stable platinum resistance thermometer (PRT) based multichannel temperature measurement system. Using a custom designed high quality measurement circuit, 24 bit analog to digital converters and multiplexor sampling; the T12 provides 12 channels of low uncertainty temperature data for validation and calibration engineers.

Using one of three user selectable currents, the T12 repeatedly scans all 12 channels. Employing a full reversal current source, the T12 eliminates polarity sensitive errors normally inherent in DC measuring techniques. Accuracy is further enhanced by referencing all measurements to high stability internal reference resistors.

The supplied software allows each channel to be individually programmed with ITS-90 or Callendar-Van Dusen coefficients for direct conversion of resistance measurements to temperature. The T12 connects to a PC over the RS-232 interface.

Internal Reference Resistors

Measurements are compensated against drift using two high precision, high stability internal reference resistors. During each sampling sequence, the T12 measures a high and low range reference resistor to define the measuring range and accurately determine the unknown values of each of the 12 channels. The result of this specific reference resistor measurement technique is a significant reduction in overall uncertainty.
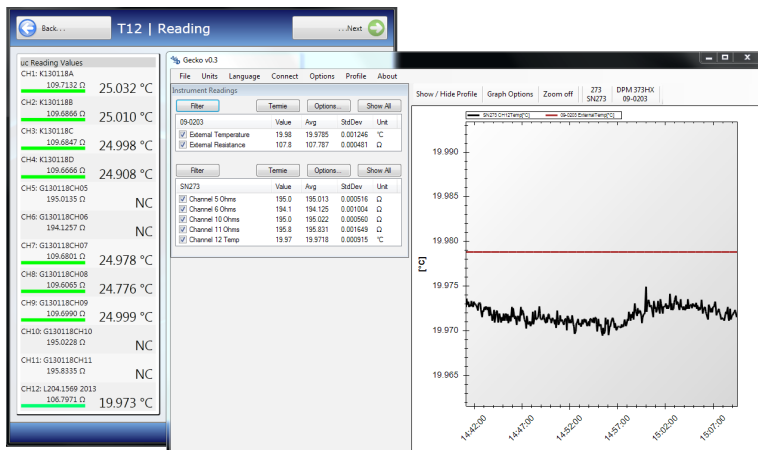
Fast Sampling Rates

For applications where fast sampling rates are needed, the T12 is the ideal choice. The system can be configured to sample all 12 channels in under five seconds. When needed, faster sampling of individual input channels can be programmed.

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Intelligent Data Acquisition

The T12 is supplied with two types of software; the T12 Software and the Gecko Software. The T12 software is for configuration, display and logging of the T12 measurement data. Once the PRT's are connected to the instrument, the readings are displayed and the measurement data is automatically saved with time and date stamps.

The Gecko software provides enhanced functionality of simultaneously reading additional instruments such as dew point mirrors, humidity generators or other instruments. Channel selection and data storage interval are user selectable. Data is automatically written into separate instrument specific files as well as one combined file.

Probe Choice

The T12 is equipped with 5-pin Lemo sockets for shielded connection of user's own 4-wire, 100 Ω, PRT probes. MBW also supplies probes in a variety of types, sizes and specifications with connectors pre-fitted ready for immediate use.

473 - showing with SH2 Measuring Head

Climatic Chamber Validation

The T12 is an excellent choice for chamber validation. In environmental chambers, temperature gradients can be a significant contributor to the overall uncertainty of measurement. The multiple probes of the T12 allow for spatial temperature measurement to map out the gradients within the chamber.

With the addition of our 473 Dew Point Mirror each of the T12 temperature readings may be used along with the dew point measurement to determine relative humidity gradients.

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Specifications:	Thermometer T12
Measuring Ranges	
Temperature	-200...800 °C (PRT Pt-100)
Resistance	1...380 Ω
Performance	**for the range of -200...250 Ω**
Resolution	0.1 mK
Accuracy (T12 only)	≤ ± 2 mK @ 23 °C (95% confidence level, 1 year)
Temperature coefficient	0.1 mK / °C
Standard Features	
Available inputs	12 channels
Input type	Pt-100 Platinum Resistance Thermometer (PRT), 4-wire, shielded
Supported coefficients	ITS-90, Callendar-Van Dusen
Excitation current	0.33, 0.66 and 1mA (range dependent), reversing DC
Reference resistors	2 internal
Data output	RS-232 (incl. USB adapter)
Control and data acquisition	Control Software "Gecko"
Logging intervals	User programmable from 5 seconds to 60 minutes
Sampling rate	< 0.5 seconds per channel
Enclosure type	Aluminum
Power supply	External AC/DC power supply with 1.5 m cable (indoor use only)
Operating instructions	English
Factory calibration certificate	Resistance calibration
CE compliance	Safety and EMC
Accessories	
Probes	Calibrated and uncalibrated PRT's available
Connectors	Lemo plugs (305 FGG.1B CLAD42)
Additional Information	
Digital I/O	Bi-directional RS-232
AC power	Power supply: 110-230 V, 50/60 Hz, 0.3 A
DC power	12 V, 0.3 A
Maximum operating conditions	0 °C...+50 °C, maximum 98 %rh, non-condensing
Storage temperature	-20 °C...+50 °C
Weight & Dimensions	**Instrument**
Dimensions (W x H x D)	235 x 40 x 180 mm
Weight	1.8 kg

T12 V2.0 9.2013 We reserve the right to change design or technical data without notice.

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Ordering Information

Description:	Order code
Thermometer T12 (incl. software and serial cable with USB adapter)	104158

Accessories:	
Lemo connector 305 FGG.1B CLAD42, per piece (for users to fit own PRTs to T12)	102596
Temperature Probe, ø2 x 100 mm, wire wound PRT, calibrated -50 ... +100 °C, with 3 m cable and lemo connector	103638
Temperature Probe, ø3 x 40 mm, 1/10th wire wound PRT, with 3 m cable and lemo connector	105042
Temperature Probe, ø3 x 40 mm, 1/10th wire wound PRT, calibrated -50 ... +100 °C, with 3 m cable and lemo connector	105043
Additional 1 year warranty upgrade (max. 3 years)	103632

For a complete range of options and accessories, please contact us and request our pricelist.	

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