MBW calibration

Thermometer T12

Precision Multichannel Thermometer System

- Twelve channel temperature measurement
- Integrated scanner
- High precision, stability and repeatability
- Negligible temperature coefficient
- Internal reference resistors
- PC software for system control and data acquisition
- Simple to configure and use
- Pt 100 Ω, Pt 500 Ω and Pt 25 Ω versions

Typical applications:

- Climatic chamber validation
- Temperature calibration
- Energy performance testing
- Sensor production calibration systems

ISO/IEC 17025
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SCS 0125

Thermometer T12

Multi-Channel Reference Thermometer

The T12 is a precise and stable platinum resistance thermometer (PRT) multi-channel temperature measurement system. Based on a high precision resistance bridge, 22 bit analog to digital converter and multiplexor sampling, the T12 provides 12 channels of low uncertainty temperature data for calibration, validation, development and test engineers. Using one of three user selectable current settings, the T12 scans all 12 channels in a continuous cycle. Polarity related errors inherent with DC measuring techniques are eliminated by the use of current reversal in every measurement cycle, and precision is optimised by the inclusion of high stability internal reference resistors.

Gecko R2 software is included with the T12 and this includes functions to configure each measurement channel with PRT specific ITS90 or Callendar-Van Dusen coefficients. The T12 connects to a PC using an RS232 interface with a USB converter included, and Gecko R2 software provides numerical and graphical data display and automatic data acquisition.

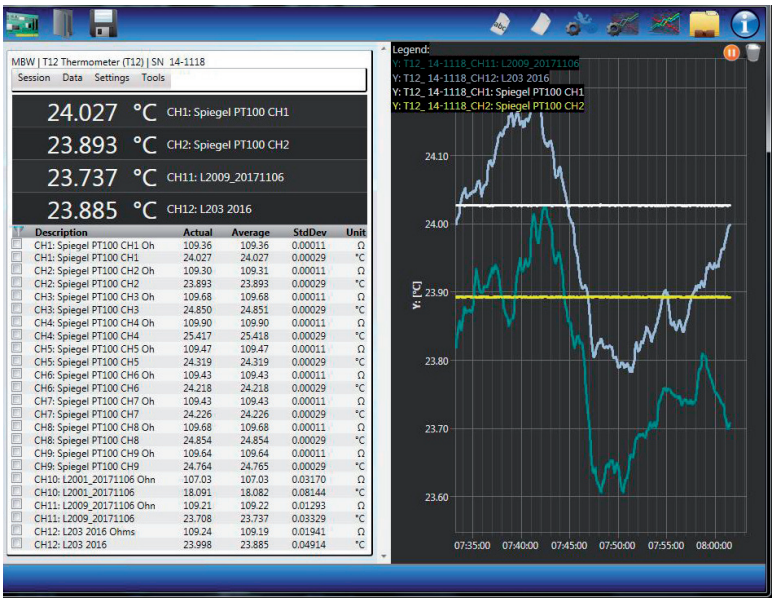
Internal Reference Resistors

During each measurement cycle, the T12 measures low and high range reference resistance values to confirm linearity and quantify any thermal effects on the measurement circuit. This means that for all measurement and operational conditions, the uncertainty component for linearity and temperature coefficients is minimized.

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.

Thermometer T12



Intelligent Data Acquisition

The T12 is supplied with Gecko R2 software for configuration, data display and recording of measurement data. As soon as the T12 is connected to Gecko, data acquisition starts automatically and a date and time stamped data file is created so that all measurement data is recorded.

Gecko R2 includes the feature to simultaneously connect different types of instruments such as dew point mirrors, humidity generators and temperature baths. On request, any metrology product with a serial interface can be integrated within Gecko.

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 ideally suited for climatic chamber validation applications where temperature uniformity can be a significant contribution to the overall uncertainty. The high precision and long temperature stability of the T12 and Pt100 probes allows test engineers to precisely define temperature and its distribution.
In combination with a dew point mirror, the temperature data from the T12 can be combined with dew or frost point data to define relative humidity distribution within a test or stability chamber. This methodology is defined within test standards and guidelines such as EC60068-1, DKD-R 5-7, Euramet-cg-20 and NF X 15-140.

Thermometer T12

Specifications:	Thermometer T12	Thermometer T12-E
Measuring Ranges		
Temperature	-200...800 °C (PRT Pt-100)	-200...800 °C (PRT Pt-100)
Resistance	1...380 Ω, 5...50 Ω, 10...1000 Ω,	1...380 Ω
Performance	**for the range of -200...250 °C**	
Resolution	0.1 mK	0.1 mK
Accuracy (T12 only)	≤ ± 2 mK @ 23 °C	≤ ± 20 mK @ 23 °C
Temperature coefficient	0.1 mK / °C	0.2 mK / °C
Standard Features		
Available inputs	12 channels	
Input type	Platinum Resistance Thermometer (PRT), 4-wire, shielded	
Supported coefficients	ITS-90, Callendar-Van Dusen	
Excitation current (reversing DC)	Pt-25 1 and $\sqrt{2}$ mA Pt-100 0.33, 0.66 and 1mA (range dependent) Pt-500 85µA, with PT-100 (dual mode option) 0.4mA and 0.5mA	
Reference resistors	2 internal, low and high end of Ω Range	
Data output	RS-232 (incl. USB adapter)	
Control and data acquisition	Control Software “Gecko” R2	
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, see seperate datasheet	
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	
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 V3.0 12.2017 We reserve the right to change design or technical data without notice.

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Ordering Information

Description	Order code
Thermometer T12 (12 channel, 4-wire PRT-inputs, incl. PC software, serial cable with USB adapter and transport case)	104158
Thermometer T12-E (12 channel, 4-wire PRT-inputs, incl. PC software, serial cable with USB adapter and transport case)	141678
Options	
T12-Upgrade to SCS accredited calibration (ISO 17025), up to 12 probes, 5 temp points in the range -100…+100 °C	105092
T12 range 5…50 Ω (PT-25)	141679
T12 range 5…1000 Ω (PT-500)	141680
Accessories	
Lemo connector 305 FGG.1B CLAD42, per piece (for users to fit own PRTs to T12)	102596
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
(* Calibrated together with T12 when ordered at the same time)	
For a complete range of options and accessories, please contact us and request our pricelist.	

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For more information, visit
www.cik-solutions.com
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