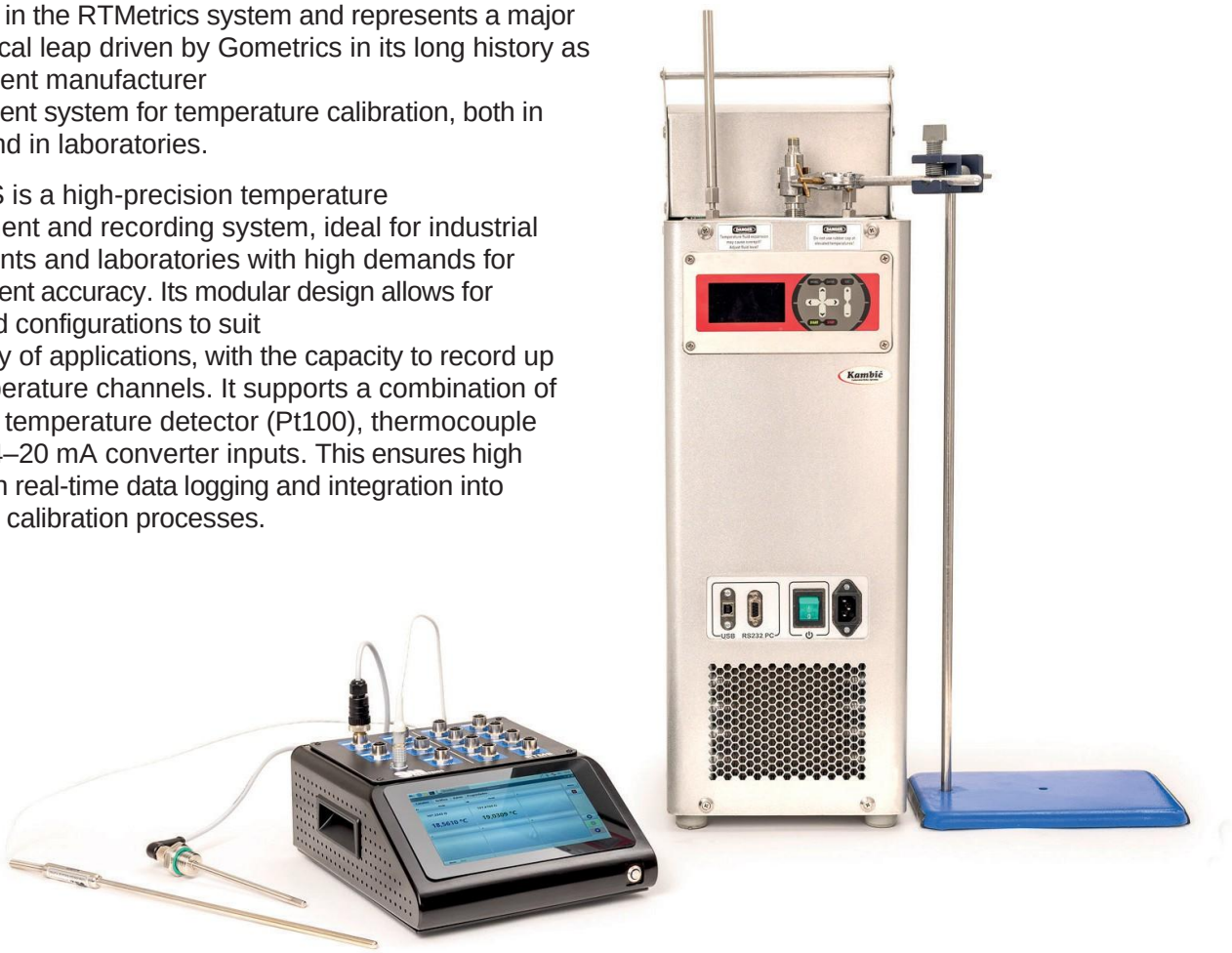
RTMS RTMetrics

Customisable multi-channel reference thermometer for the calibration of temperature probes and transmitters

The RTMS *(Reference Temperature Monitor System*) is a customisable reference thermometer with built-in software and high
metrological performance. The RTMS is the new generation of instrument in the RTMetrics system and represents a major technological leap driven by Gometrics in its long history as an instrument manufacturer
measurement system for temperature calibration, both in industry and in laboratories.

The RTMS is a high-precision temperature measurement and recording system, ideal for industrial environments and laboratories with high demands for measurement accuracy. Its modular design allows for customised configurations to suit
for a variety of applications, with the capacity to record up to 20 temperature channels. It supports a combination of resistance temperature detector (Pt100), thermocouple (TC) and 4–20 mA converter inputs. This ensures high versatility in real-time data logging and integration into automated calibration processes.



Designed with meticulous attention to detail, the RTMS is a precise and versatile system. Throughout both the design and assembly phases, the client's process requirements are given the utmost consideration: the instrument is configured with the number and type of reading channels required for each specific application, and the types of electrical connectors approved by the client are selected. Thanks to this customisation, every RTMS is a unique and one-of-a-kind piece of equipment.

The instrument comes as standard with the RTMS-SW-Basic software for data management and configuration of the various channels, whilst the RTMS-SW-Pro version offers advanced functions for automating *calibrations and communicating with ovens or*
thermostatic baths, and enables the creation of more sophisticated reports.
In both cases, the software is intuitive and easy to use.

With the new RTMetrics, Gometrics aims to make the day-to-day work of plant and laboratory technicians and instrument technicians easier. The system automates and optimises the calibration process for temperature probes and transmitters, thereby improving operational efficiency.

"We are very satisfied with the performance of the RTMS because it meets our expectations by enabling the simultaneous measurement and recording of temperature at multiple points in a convenient and intuitive way"

José María Gómez
Equipment Control Manager, LOEMCO.

Features

- **High precision and stability:** resolution of 0.001 °C and accuracy of 0.006% of the reading ±0.02 °C.
- **Customisable modular system:** configurable for up to 16 RTD channels, 20 thermocouple channels, 2 PRT/SPRT channels and analogue signals (4–20 mA or 0–10 Vdc).
- **7" HD touchscreen:** intuitive interface for real-time display and configuration.
- **Advanced integration:** communication via USB, RS232/RS485 and LEMO ports for reference probes.
- **Management software:** RTMS-SW-BASIC and RTMS-SW-PRO versions for data analysis and calibration automation.

Advantages

- **Total versatility:** compatible with a wide variety of sensors and applications.
- **Calibration automation:** optimises metrological processes with the RTMS-SW-PRO software.
- **Real-time data logging:** export to standard formats for documentation.
- **FAST mode:** rapid scanning of up to 10 channels per second for thermal mapping.
- **Reliability and regulatory compliance:** factory calibration certificate and ENAC option.

Applications

- **Calibration of instruments** in metrology and maintenance laboratories.
- **Quality control** in environments where thermal accuracy is critical.
- **Thermal mapping** in ovens, climatic chambers and industrial processes.
- **Calibration automation** in combination with ovens and thermostatic baths.

Technical specifications

MEASUREMENT	RANGE	RESOLUTION	RANGE °C	± UNCERTAINTY [5]
T/C B	0...+1 820 °C	0.01 °C	100...200 200...500 500–800	4.3 °C [1] 2.0 °C [1] 0.8 °C [1]
T/C E	-200...+1 000 °C	0.01 °C	100...200 0...600 600...1,000	0.26 °C [1] 0.21 °C [1] 0.23 °C [1]
T/C J*	-210...+1 200 °C	0.01 °C	-210...-200 -200...0 0...1 200	0.29 °C [1] 0.27 °C [1] 0.24 °C [1]
T/C K	-200...+1 372 °C	0.01 °C	-150...0 0...1 000 1,000...1,372	0.33 °C [1] 0.25 °C [1] 0.28 °C [1]
T/C N	-200...+1 300 °C	0.01°C	-200...-100 -100...0 0...750 750...1 300	0.45 °C [1] 0.28 °C [1] 0.25 °C [1] 0.26 °C [1]
T/C R	-50...+1 768 °C	0.01°C	-50...0 0...150 150...1,400 1,400...1,768	1.1 °C [1] 0.8 °C [1] 0.52 °C [1] 0.42 °C [1]
T/C S	-50...+1,781 °C	0.01°C	-50...0 0...150 150...1,400 1,400...1,768	1.0 °C [1] 0.8 °C [1] 0.54 °C [1] 0.47 °C [1]
T/C T	-200...+ 400 °C	0.01°C	-200...0 0...400	0.33 °C [1] 0.23 °C [1]
Pt25 RTD [4][*]	-190...+960 °C	0.005°C	-190...0 0...960	0.07 °C [2] 0.010% RDG + 0.07 °C [2]
RTDPt100 [3][4][*]	-200...+850 °C	0.001°C	-200...0 0...850	0.035 °C [2] 0.010% RDG + 0.035 °C [2]
mV	-25...+100 mV	0.001 mV		0.010% of full scale + 4 µV
Resistance [7]	0...400 Ω	0.001 Ω		0.005% of full scale + 4 mΩ [2]
Resistance [8]	0...4000 Ω	0.01 Ω		0.005% of reading + 40 mΩ [2]
mA	0...40 mA	0.001 mA		0.02 % RDG + 1.5 µA

[1] Including internal junction reference ±0.2 °C
[2] Specification valid for 4-wire connections. For 3-wire connections, add 10 mΩ. Maximum line compensation 10 Ω.
[3] Resistance α = 0.00385 Ω/Ω/°C; α = 0.003926 Ω/Ω/°C; α = 0.00391 Ω/Ω/°C.
[4] Pt25, Pt100 according to ITS-90 deviation coefficients in the range -190...+960 °C
[5] Uncertainty includes: non-linearity, hysteresis, repeatability, thermal drift between 15 and 35 °C and stability over a period of one year.
[6] Maximum difference between channels in two consecutive measurements.
[7] Supply current 1 mA (+/- 2%); regardless of the selected channel, this maintains the RTD's self-heating.
[8] Supply current 0.15 mA (+/- 2%); regardless of the selected channel, this maintains the RTD's self-heating.
* B, E, J, R, S, T, in accordance with international standard IEC 584-1; Pt-100 in accordance with international standard IEC 751 and ITS-90 temperature coefficient values.

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Instrumentation · Calibration · Qualifications · Validations

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