

TEMPERATURE CALIBRATION SERVICE



Features:

- RvA accredited temperature calibrations
- Traceability guaranteed
- Impartial
- Independent
- Effective quality system
- Validated calibration methods
- Technical competence

Confidence in Calibrations

Quality

Competent calibration and traceable measurements are key for manufacturers to meet high-quality standards in today's industrial environment. They're also vital for obtaining and retaining the latest ISO 9000 certification. Clear evidence of competence can address product liability concerns. The trustworthiness of test results hinges on their accuracy, precision, and repeatability. This trust is built on the competence of the laboratory and the validity of its methods. Therefore, customers need to be confident that calibration service providers are skilled and that their results are recognised as valid by both external inspectors and their own customers. While every calibration service claims to be the best, choosing an accredited laboratory ensures these needs are met.

Services

Thermo Electric boasts an RvA-accredited temperature calibration laboratory, ensuring we can offer calibration services to meet even the most stringent requirements.

Accreditation System

The ISO17025 standard is an accreditation system for measurement and calibration laboratories. In the Netherlands, the RvA (Raad van Accreditatie) is responsible for granting and renewing these accreditations. Laboratories seeking accreditation are evaluated based on European criteria (ISO-17025 latest revision). An RvA-accredited laboratory maintains a comprehensive quality assurance system. Their measurements follow agreed-upon procedures, and the results can be traced back to national or international standards. This traceability is vital for meeting the latest ISO-9000 and other standards. Within their accreditation scope, RvA-accredited laboratories can issue calibration certificates featuring the official RvA logo at the top of each page.

Mutually Recognised Agreements

At the European level, national calibration services, including the RvA, collaborate through the EAL (European Cooperation for Accreditation of Laboratories). After a comprehensive review of each member's quality systems and methods, most members have entered into a Multilateral Agreement. EAL members can be found in countries including Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom. RvA certificates are recognised and accepted across all these nations.

Traceability Guaranteed

An RvA calibration certificate ensures the international traceability of measurements in line with recognised international standards, and each certificate displays the RvA logo.

For measuring ranges and optimal measurement capabilities, please refer to the information overleaf.

TEMPERATURE CALIBRATION SERVICE

TEMPERATURE CALIBRATION SERVICES

best measurement capability

TEMPERATURE

Range	thermocouples	resistance thermometers	selfind. thermometers and temp. sensors with transmitters
-195 °C	0,084 °C	0,02 °C	0,02 °C
0 °C	0,048 °C	0,012 °C	0,011 °C
0,01 °C	0,047 °C	0,007 °C	0,004 °C
26,868 °C	0,047 °C	0,009 °C	0,006 °C
122,33 °C	0,047 °C	0,026 °C	0,011 °C
-15 °C to 90 °C	0,084 °C	0,074 °C	0,071 °C
90 °C to 150 °C	0,092 °C	0,074 °C	0,071 °C
150 °C to 200 °C	0,094 °C	0,087 °C	0,084 °C
200 °C to 630 °C	0,14 °C	0,13 °C	0,13 °C
630 °C to 1050 °C	1,2 °C	1,1	1,2 °C

TEMPERATURE INDICATORS AND SIMULATORS

Range	thermocouples	Pt100
-270 °C to 1000 °C	0,046 °C	-
1000 °C to 1200 °C	0,056 °C	-
1200 °C to 1372 °C	0,08 °C	-
1372 °C to 1768 °C	0,37 °C	-
1768 °C to 1820 °C	0,37 °C	-
-200 °C to 850 °C	-	0,08 °C

CALIBRATION FURNACES AND -BATHES

Range	capability
-195 °C to 630 °C	0,12 °C
630 °C to 1050 °C	1,1 °C

TRANSMITTERS

Range	Pt100 input	t/c type K
-200 °C to 850 °C	0,087 °C	-
-270 °C to 1372 °C	-	0,13 °C

ELECTRICITY

Range	DC Voltage	DC Current	DC Resistance
1 μV to 100 mV	$4 \cdot 10^{-6} \cdot U + 2 \mu V$	-	-
100 mV to 1 V	$(4 \cdot 10^{-6} - 4,6 \cdot 10^{-6}) \cdot U + 2 \mu V$	-	-
1 V to 10 V	$(4,6 \cdot 10^{-6} - 55 \cdot 10^{-6}) \cdot U + 2 \mu V$	-	-
100 μA to 1 mA	-	$1 \cdot 10^{-6} \cdot I + 8,5 \mu A$	-
1 mA to 10 mA	-	$1 \cdot 10^{-5} \cdot I + 8,5 \mu A$	-
10 mA to 50 mA	-	$(1 \cdot 10^{-5} - 1 \cdot 10^{-4}) \cdot I + 8,5 \mu A$	-
0,01 Ω to 10 Ω	-	-	$1 \cdot 10^{-6} \cdot R + 3 m\Omega$
10 Ω to 100 Ω	-	-	$(1 \cdot 10^{-6} - 1 \cdot 10^{-5}) \cdot R + 3 m\Omega$
100 Ω to 1 kΩ	-	-	$(1 \cdot 10^{-6} - 31 \cdot 10^{-6}) \cdot R + 4 m\Omega$
1 kΩ to 10 kΩ	-	-	$(1 \cdot 10^{-5} - 2,1 \cdot 10^{-5}) \cdot R + 25 m\Omega$

Calibrations are conducted at a nominal ambient temperature of 23°C. The best measurement capability refers to the highest precision attainable for a specific measurement point or range, factoring in both positive and negative measurement uncertainties. The measurement uncertainty is determined based on WECC Doc. 19 "Guidelines for the expression of uncertainty in measurements during calibrations". The scope of accreditations list pertains only to calibrations performed within the laboratory.