



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005
& ANSI/NCSL Z540-1-1994

THERMOTRON INDUSTRIES
 291 Kollen Park Drive
 Holland, MI 49423
 Gray H. Warner Phone: 616 392 1491

CALIBRATION

Valid To: September 30, 2012

Certificate Number: 1917.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations¹:

I. Electrical – DC & Low Frequency

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
DC Voltage – Generate ³	(0 to 200) mV 200 mV to 2 V (2 to 20) V	0.015 % + 0.58 mV 0.015 % + 0.63 mV 0.015 % + 3.8 mV	Transcat 23894E
DC Voltage – Measure ³	(0 to 300) mV 300 mV to 3 V (3 to 30) V	0.025 % + 0.34 mV 0.025 % + 0.42 mV 0.025 % + 2.5 mV	Fluke 45
DC Current – Generate ³	(0 to 24) mA	0.015 % + 9.7 µA	Transcat 23894E

Parameter/Range	Frequency	CMC ^{2,4} (±)	Comments
AC Voltage – Measure ³			Fluke 45
0 to 3 V	(20 to 50) Hz 50 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz	1 % + 7.6 mV 0.2 % + 1.9 mV 0.5 % + 4.0 mV 2 % + 18 mV	
(3 to 30) V	(20 to 50) Hz 50 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz	1 % + 76 mV 0.2 % + 19 mV 0.5 % + 40 mV 2 % + 160 mV	

Parameter/Equipment	Range	CMC ² (±)	Comments
Electrical Simulation of Thermocouple Indicating Systems ³ –			
Type T	(-200 to -47) °C (-47 to 399) °C	0.68 °C 0.40 °C	Omega CL-27 or Transcat 23700T
Type J	(-210 to -47) °C (-47 to 760) °C	0.68 °C 0.40 °C	
Type K	(-200 to -46) °C (-46 to 1372) °C	0.68 °C 0.40 °C	
Electrical Simulation of RTD Indicating Systems ³ –			
100 Ω	(-200 to 800) °C	0.40 °C	Fluke 712 or Omega CL-27
1000 Ω	(-200 to 630) °C	0.40 °C	

Peter Abney

II. Thermodynamic

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
Temperature – Measure ³	(-80 to -46) °C (-46 to 260) °C	0.75 °C 0.52 °C	Omega CL-27 or Transcat 23700T with type T thermocouple
Relative Humidity – Measuring Equipment ³	11.3 % RH 33.1 % RH 75.5 % RH 97.6 % RH	1.4 % 1.3 % 1.6 % 2.1 %	Vaisala HMK-15 with: LiCl MgCl ₂ NaCl K ₂ SO ₄
Relative Humidity – Measure ³	(10 to 90) % RH (90 to 95) % RH	1.8 % 2.9 %	Vaisala HM -70 with HMP-77 humidity probe

¹ This laboratory offers commercial calibration service and field calibration service.

² Calibration and Measurement Capability (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. Calibration and Measurement Capabilities represent expanded uncertainties expressed at approximately the 95 % level of confidence, usually using a coverage factor of $k = 2$. The actual measurement uncertainty of a specific calibration performed by the laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.

³ Field calibration service is available for this calibration and this laboratory meets A2LA R104 – *General Requirements: Accreditation of Field Testing and Field Calibration Laboratories* for these calibrations. Please note the actual measurement uncertainties achievable on a customer's site can normally be expected to be larger than the CMC found on the A2LA Scope. Allowance must be made for aspects such as the environment at the place of calibration and for other possible adverse effects such as those caused by transportation of the calibration equipment. The usual allowance for the actual uncertainty introduced by the item being calibrated, (e.g. resolution) must also be considered and this, on its own, could result in the actual measurement uncertainty achievable on a customer's site being larger than the CMC.

⁴ In the statement of CMC, % represents % of reading unless otherwise noted.





World Class Accreditation

The American Association for Laboratory Accreditation

Accredited Laboratory

A2LA has accredited

THERMOTRON INDUSTRIES

Holland, MI

for technical competence in the field of

Calibration

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General Requirements for the Competence of Testing and Calibration Laboratories*. This laboratory also meets the requirements of ANSI/NCSL Z540-1-1994 and any additional program requirements in the field of calibration. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009*).

Presented this 4th day of August 2010.



A handwritten signature in black ink, appearing to read "Peter Meyer".

President & CEO
For the Accreditation Council
Certificate Number 1917.01
Valid to September 30, 2012

For the calibrations to which this accreditation applies, please refer to the laboratory's Calibration Scope of Accreditation.