



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

RMH ENTERPRISES, INC DBA SCHLEMMER ASSOCIATES  
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CALIBRATION

Valid To: August 31, 2020

Certificate Number: 4924.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations<sup>1,5</sup>:

I. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC <sup>2,4</sup> (±)	Comments
DC Voltage – Measure <sup>3</sup>	(0 to 10) V (10 to 100) V	0.0083 % of reading + 0.12 mV 0.0059 % of reading + 1.2 mV	Martel 3001 calibrator
DC Voltage – Generate <sup>3</sup>	(0 to 100) mV (0.1 to 1) V (1 to 10) V (10 to 100) V	0.0039 % of reading + 1.7 µV 0.0036 % of reading + 5.8 µV 0.0036 % of reading + 58 µV 0.0037 % of reading + 0.58 mV	Martel 3001 calibrator
DC Current – Measure <sup>3</sup>	(0 to 50) mA	0.012 % of reading + 0.58 µA	Martel 3001 calibrator
DC Current – Generate <sup>3</sup>	(0 to 100) mA	0.0068 % of reading + 0.58 µA	Martel 3001 calibrator
DC Resistance - Generate <sup>3</sup>	(5 to 400) Ω (0.4 to 4) kΩ	0.25 Ω 0.40 Ω	Martel 3001 calibrator
DC Resistance - Measure <sup>3</sup>	(5 to 400) Ω (0.4 to 4) kΩ	0.13 Ω 0.050 Ω	Martel 3001 calibrator

Parameter/Equipment	Range	CMC <sup>2,4</sup> (±)	Comments
Electrical Simulation of Thermocouple Indicators <sup>3</sup> –			
Type N	(-270 to -100) °C (-25 to 410) °C (410 to 1300) °C	0.51 °C 0.28 °C 0.35 °C	Martel 3001 calibrator
Type J	(-210 to -100) °C (-100 to -30) °C (-30 to 760) °C (760 to 1200) °C	0.35 °C 0.26 °C 0.22 °C 0.32 °C	
Type K	(-270 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 1000) °C (1000 to 1372) °C	0.45 °C 0.28 °C 0.21 °C 0.33 °C 0.51 °C	
Type R	(-50 to 250) °C (250 to 400) °C (400 to 1000) °C (1000 to 1767) °C	0.73 °C 0.44 °C 0.42 °C 0.51 °C	
Type S	(-50 to 250) °C (250 to 1000) °C (1000 to 1400) °C (1400 to 1767) °C	1.5 °C 0.46 °C 0.47 °C 0.58 °C	
Type T	(-270 to -150) °C (-150 to 0) °C (0 to 400) °C	0.80 °C 0.33 °C 1.3 °C	
Electrical Simulation of RTD Indicators – Measuring Equipment <sup>3</sup>			
Pt 385, 100 Ω	(-200 to 100) °C (100 to 300) °C (300 to 600) °C (600 to 800) °C	0.25 °C 0.38 °C 0.51 °C 0.51 °C	Martel 3001 calibrator
Pt 385, 200 Ω	(-200 to 100) °C (100 to 300) °C (300 to 630) °C	1.0 °C 1.1 °C 1.3 °C	
Pt 385, 500 Ω	(-200 to 100) °C (100 to 300) °C (300 to 630) °C	0.50 °C 0.63 °C 0.76 °C	

Parameter/Equipment	Range	CMC <sup>2, 4</sup> (±)	Comments
Electrical Simulation of RTD Indicators – Measuring Equipment <sup>3</sup> (cont)			
Pt 385, 1000 Ω	(-200 to 800) °C	0.67 °C	Martel 3001 calibrator
Pt 3926, 100 Ω	(-200 to 630) °C	0.67 °C	
Pt 3916, 100 Ω	(-200 to 630) °C	0.63 °C	
Pt 385, 200 Ω	(-200 to 400) °C (400 to 630) °C	0.55 °C 0.63 °C	
Pt 385, 500 Ω	(-200 to 630) °C	0.21 °C	
Pt 385, 1000 Ω	(-200 to 630) °C	0.11 °C	
Electrical Simulation of RTD Indicators – Measure <sup>3</sup>			
Pt 385, 100 Ω	(-200 to -80) °C	0.016 °C	Martel 3001 calibrator
	(-80 to 100) °C	0.024 °C	
	(100 to 300) °C	0.029 °C	
	(300 to 400) °C	0.031 °C	
	(400 to 630) °C	0.040 °C	
	(630 to 800) °C	0.046 °C	
Pt 3926, 100 Ω	(-200 to -80) °C	0.016 °C	
	(-80 to 0) °C	0.018 °C	
	(0 to 100) °C	0.022 °C	
	(100 to 300) °C	0.027 °C	
	(300 to 400) °C	0.031 °C	
	(400 to 630) °C	0.039 °C	
Pt 3916, 100 Ω	(-200 to -190) °C	0.013 °C	
	(-190 to -80) °C	0.016 °C	
	(-80 to 0) °C	0.018 °C	
	(0 to 100) °C	0.021 °C	
	(100 to 300) °C	0.027 °C	
	(300 to 400) °C	0.031 °C	
	(400 to 600) °C	0.037 °C	
	(600 to 630) °C	0.040 °C	

Parameter/Equipment	Range	CMC <sup>2,4</sup> (±)	Comments
Electrical Simulation of RTD Indicators – Measure <sup>3</sup> (cont)			
Pt 385, 200 Ω	(-200 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 300) °C (300 to 400) °C (400 to 630) °C	0.064 °C 0.067 °C 0.072 °C 0.083 °C 0.086 °C 0.11 °C	Martel 3001 calibrator
Pt 385, 500 Ω	(-200 to 0) °C (0 to 100) °C (100 to 300) °C (300 to 400) °C (400 to 630) °C	0.030 °C 0.034 °C 0.041 °C 0.046 °C 0.054 °C	
Pt 385, 1000 Ω	(-200 to 0) °C (0 to 100) °C (100 to 300) °C (300 to 400) °C (400 to 630) °C	0.018 °C 0.022 °C 0.029 °C 0.031 °C 0.040 °C	

## II. Thermodynamics

Parameter	Range	CMC <sup>2,4</sup> (±)	Comments
Temperature – Measuring Equipment <sup>3</sup>			
System Accuracy Tests	(0 to 1372) °C	1.6 °C	Process calibrator, Type N, S, R, T reference thermocouples, AMS 2750

Parameter	Range	CMC <sup>2, 4</sup> , ( $\pm$ )	Comments
Temperature – Measure <sup>3</sup>	(50 to 1200) °C	2.6 °C + 0.14 %	Process calibrator, type S TC
	(0 to 750) °C	2.7 °C + 0.43 %	Process calibrator, type J TC
	(50 to 1200) °C	4.8 °C + 0.43 %	Process calibrator, type N TC
	(0 to 350) °C	1.4 °C + 0.43 %	Process calibrator, type T TC
Temperature Uniformity Surveys	(0 to 1372) °C	1.6 °C	Process calibrator, type K reference thermocouples, AMS 2750
IR Thermometers <sup>3</sup>	(50 to 500) °C	3.5 °C + 0.0092 °C/°C	Blackbody calibrator $\epsilon = 0.95$ $\lambda = (8 \text{ to } 14) \mu\text{m}$
	(500 to 1200) °C	8.5 °C + 0.0092 °C/°C	Blackbody calibrator $\epsilon = 0.98$ $\lambda = (0.9 \text{ to } 7.9) \mu\text{m}$

<sup>1</sup> This laboratory offers commercial and field calibration service.

<sup>2</sup> Calibration and Measurement Capability Uncertainty (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. CMCs 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.

<sup>3</sup> 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.

<sup>4</sup> The stated measured values are determined using the indicated instrument (see Comments). This capability is suitable for the calibration of the devices intended to measure or generate the measured value in the ranges indicated. CMC's are expressed as either a specific value that covers the full range or as a percent or fraction of the reading plus a fixed floor specification.

<sup>5</sup> This scope meets A2LA's *P112 Flexible Scope Policy*.





## Accredited Laboratory

A2LA has accredited

**RMH ENTERPRISES INC. DBA SCHLEMMER ASSOCIATES**

*Cincinnati, OH*

for technical competence in the field of

**Calibration**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets *R205 – Specific Requirements: Calibration Laboratory Accreditation Program*. 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 April 2017).



Presented this 11<sup>th</sup> day of September 2018.

A blue ink signature of the Vice President of Accreditation Services, written over a horizontal line.

Vice President, Accreditation Services  
For the Accreditation Council  
Certificate Number 4924.01  
Valid to August 31, 2020

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