



**SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017**

**Heat Treating Services Unlimited, Inc.**

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 Simpsonville, SC 29681  
 Neil Revis 864-289-0644

**CALIBRATION**

Valid to: **August 3, 2021**

Certificate Number: **L2138**

**Electrical – DC/Low Frequency**

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
DC Current – Source and Measure	(0 to 4) mA (4 to 20) mA	1.5 $\mu$ A 3.8 $\mu$ A	Martel 3001 Calibrator with Agilent 3458A Multimeter
DC Voltage – Source and Measure	(0 to 110) mV (0.11 to 1.1) V (1.1 to 11) V	21 $\mu$ V 6.1 mV 0.72 mV	
Resistance Simulation of RTD Indicators – Source and Measure	PT 385 100 $\Omega$ (0 to 400) $^{\circ}$ C (400 to 800) $^{\circ}$ C PT 385 1 000 $\Omega$ (0 to 195) $^{\circ}$ C	0.11 $^{\circ}$ C 0.062 $^{\circ}$ C 0.22 $^{\circ}$ C	Martel 3001 Calibrator with Agilent 3458A Multimeter
Electrical Simulation of Thermocouple Indicators – Source/Measure <sup>1</sup>	Type E (-200 to 0) $^{\circ}$ C (0 to 982) $^{\circ}$ C Type J (-100 to 800) $^{\circ}$ C (800 to 1 200) $^{\circ}$ C Type K (-100 to 400) $^{\circ}$ C (400 to 1 372) $^{\circ}$ C Type N (-100 to 900) $^{\circ}$ C (900 to 1 300) $^{\circ}$ C Type R (-20 to 0) $^{\circ}$ C (0 to 100) $^{\circ}$ C (100 to 1 750) $^{\circ}$ C	0.21 $^{\circ}$ C 0.31 $^{\circ}$ C 0.29 $^{\circ}$ C 0.32 $^{\circ}$ C 0.28 $^{\circ}$ C 0.3 $^{\circ}$ C 0.31 $^{\circ}$ C 0.3 $^{\circ}$ C 0.42 $^{\circ}$ C 0.4 $^{\circ}$ C 0.41 $^{\circ}$ C	Thermocouple Half Junction with Agilent 3458A Multimeter and Ice point





Electrical – DC/Low Frequency

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
Electrical Simulation of Thermocouple Indicators – Source/Measure <sup>1</sup>	Type S (0 to 200) °C	0.42 °C	Thermocouple Half Junction with Agilent 3458A Multimeter and Ice point
	(200 to 1 400) °C	0.4 °C	
(1 400 to 1 752) °C	0.41 °C		
Type T (-200 to 0) °C	0.29 °C		
	(0 to 400) °C	0.32 °C	

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Pressure – Hydraulic <sup>1</sup>	(0 to 10 000) psig	5.0 psi	Comparison to Fluke 700G Pressure Gage

Thermodynamic

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
Uniformity survey of Furnaces & Ovens	(0 to 1 093) °C	1.1 °C	In accordance with AMS 2750E using a Datalogger and Type K thermocouples
	(1 093 to 1 250) °C	2.7 °C	
Temperature System Accuracy Tests	Type K (0 to 1 093) °C	1.2 °C	Thermocouple Calibrator with reference TC wire in accordance with AMS 2750E
	(1 093 to 1 250) °C	2.2 °C	
	Type N (0 to 1 093) °C	1.3 °C	
	(1 093 to 1 250) °C	2.1 °C	

## Time and Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Timers <sup>1</sup>	(0 to 1) min (1 to 30) min (30 to 60) min	2.9 s 4.6 s 4.6 s	Reference Stopwatch

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 ( $k=2$ ), corresponding to a confidence level of approximately 95%.

Notes:

1. On-site calibration service is available for this parameter, since on-site conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected on-site than what is reported on the accredited scope.
2. Heat Treating Services Unlimited, Inc. has resident technicians in Detroit, MI as well as Wichita, KS.
3. This scope is formatted as part of a single document including Certificate of Accreditation No. L2138.



Vice President