



CERTIFICATE OF ACCREDITATION

ANSI National Accreditation Board
11617 Coldwater Road, Fort Wayne, IN 46845 USA

This is to certify that

Process Measurement Company
5735 Lindsay Street
Minneapolis, MN 55422

has been assessed by ANAB and meets the requirements of international standard

ISO/IEC 17025:2017

and national standard

ANSI/NCSL Z540-1-1994 (R2002)

while demonstrating technical competence in the field of

CALIBRATION

Refer to the accompanying Scope of Accreditation for information regarding the types of activities to which this accreditation applies

AC-1959

Certificate Number


ANAB Approval

Certificate Valid Through: 06/26/2021
Version No. 007 Issued: 05/20/2019



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. 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).



**SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017
AND ANSI/NCSL Z540-1-1994 (R2002)**

Process Measurement Company

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CALIBRATION

Valid to: **June 26, 2021**

Certificate Number: **AC-1959**

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Voltage – Source	(1 to 202) mV	36 μ V/V	Transmille 4010 Multiproduct Calibrator
	202 mV to 2.02 V	19 μ V/V	
	(2.02 to 20.2) V	17 μ V/V	
	(20.2 to 202) V	15 mV/V	
	(202 to 1 020) V	20 mV/V	
DC Voltage – Measure	(1 to 100) mV	8.6 μ V/V	Agilent 3458A Multimeter
	100 mV to 1 V	6.8 μ V/V	
	(1 to 10) V	4.5 μ V/V	
	(10 to 100) V	6.5 μ V/V	
	100 V to 1 kV	8.2 μ V/V	
	(12 to 120) kV	0.15 % of reading	Ross Engineering VD120 Voltage Divider w/ Agilent 34401A Multimeter
DC Current – Source	(1 to 202) μ A	590 μ A/A	Transmille 4010 Multiproduct Calibrator
	202 μ A to 2.02 mA	199 μ A/A	
	(2.02 to 20.2) mA	75 μ A/A	
	(20.2 to 202) mA	75 μ A/A	
	202 mA to 2.02 A	0.17 mA/A	
	(2.02 to 20.2) A	0.3 mA/A	
	(20.2 to 30) A	0.3 mA/A	



Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Current – Measure	(0.5 to 1) μ A (1 to 10) μ A (10 to 100) μ A 100 μ A to 1 mA (1 to 10) mA (10 to 100) mA 100 mA to 1 A	1.5 mA/A 0.2 mA/A 0.12mA/A 51 μ A/A 48 μ A/A 57 μ A/A 0.12 mA/A	Agilent 3458A Multimeter
	(1 to 3) A	0.38 mA/A	Agilent 34401A Multimeter
AC Voltage – Measure	(1 to 10) mV (1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	0.8 mV/V 0.66 mV/V 0.66 mV/V 1.2 mV/V 1.5mV/V 7.2 mV/V	Agilent 3458A Multimeter
	(10 to 100) mV (1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz 100 mV to 1 V (1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz (1 to 10) V (1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz	0.14 mV/V 0.2 mV/V 0.2 mV/V 0.49 mV/V 0.82 mV/V 1.5 mV/V 4.7mV/V 0.36 mV/V 0.08 mV/V 0.25 mV/V 0.17 mV/V 0.27 mV/V 0.84 mV/V 2.9 mV/V 0.87 mV/V 78 μ V/V 90 μ V/V 0.17 mV/V 0.22 mV/V 0.64 mV/V 3.1 mV/V	

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment		
AC Voltage – Measure	(10 to 100) V 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.11 mV/V 69 μ V/V 0.11 mV/V 0.21 mV/V	Agilent 3458A Multimeter		
	(100 to 700) V 40 Hz to 1 kHz	0.14 mV/V			
	(8.5 to 85) kV 60 Hz	0.6 % of reading	Ross Engineering VD120 Voltage Divider w/ Agilent 34401A Multimeter		
AC Voltage – Source	(2.2 to 200) mV 10 Hz to 1 kHz (1 to 100) kHz (100 to 500) kHz	38 μ V 34 μ V 310 μ V	Transmille 4010 Multiproduct Calibrator		
	200 mV to 2 V 10 Hz to 1 kHz (1 to 100) kHz 100 kHz to 1 MHz	45 μ V 68 μ V 950 μ V			
	(2 to 20) V 10 Hz to 1 kHz (1 to 10) kHz (10 to 50) kHz	42 μ V 55 μ V 7.1 mV			
	(20 to 200) V 10 Hz to 1 kHz (1 to 40) kHz (40 to 100) kHz	5 mV 6 mV 16 mV			
	(200 to 1 000) V 10 Hz to 1 kHz (1 to 10) kHz	40 mV 52 mV			
	AC Voltage - Source	(2.2 to 200) μ A 10 Hz to 1 kHz (1 to 10) kHz (10 to 30) kHz		0.17 μ A 0.37 μ A 0.67 μ A	Transmille 4010 Multiproduct Calibrator
		200 μ A to 2 mA 10 Hz to 1 kHz (1 to 10) kHz (10 to 30) kHz		0.28 μ A 13 μ A 25 μ A	

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage - Source	(2 to 20) mA		Transmille 4010 Multiproduct Calibrator
	10 Hz to 1 kHz	3 μ A	
	(1 to 10) kHz	58 μ A	
	(10 to 30) kHz	30 μ A	
	(20 to 200) mA		
	10 Hz to 1 kHz	350 μ A	
	(1 to 10) kHz	0.82 mA	
	(10 to 30) kHz	1.6 mA	
	200 mA to 2 A		
	10 Hz to 1 kHz	2.8 mA	
	(1 to 10) kHz	1.3 mA	
	(10 to 30) kHz	5.4 mA	
AC Current – Source	(2 to 30) A		Transmille 4010 Multiproduct Calibrator
	10 Hz to 1 kHz	8.7 mA	
	(1 to 10) kHz	8.7 mA	
	(1 to 220) μ A		
	(10 to 20) Hz	5.9 mA/A	
	(20 to 40) Hz	2.9 mA/A	
	40 Hz to 1 kHz	1.5 mA/A	
	(1 to 5) kHz	1.9 mA/A	
	(5 to 10) kHz	8.2 mA/A	
	220 μ A to 2.2 mA		
	(10 to 20) Hz	5.9 mA/A	
	(20 to 40) Hz	0.91 mA/A	
40 Hz to 1 kHz	5 mA/A		
(1 to 5) kHz	2 mA/A		
(5 to 10) kHz	2 mA/A		
AC Current – Source	(2.2 to 22) mA		Transmille 4010 Multiproduct Calibrator
	(10 to 20) Hz	5.9 mA/A	
	(20 to 40) Hz	0.9 mA/A	
	40 Hz to 1 kHz	1.7 mA/A	
	(1 to 5) kHz	5.0 mA/A	
	(5 to 10) kHz	8.2 mA/A	
	(22 to 220) mA		
	(10 to 20) Hz	5.9 mA/A	
	(20 to 40) Hz	3.1 mA/A	
	40 Hz to 1 kHz	2.4 mA/A	
	(1 to 5) kHz	5 mA/A	
	(5 to 10) kHz	5 mA/A	

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current – Source	220 mA to 1 A		Transmille 4010 Multiproduct Calibrator
	40 Hz to 1 kHz	4.5 mA/A	
	(1 to 5) kHz	1.3 mA/A	
	(5 to 10) kHz	3.7 mA/A	
	(1 to 2.2) A		
	40 Hz to 1 kHz	3.6 mA/A	
	(1 to 5) kHz	3.5 mA/A	
	(5 to 10) kHz	20 mA/A	
	(2.02 to 30) A		
	(30 to 99) Hz	14 mA/A	
	(45 to 99) Hz	14 mA/A	
	100 Hz to 1 kHz	15 mA/A	
(1 to 5) kHz	18 mA/A		
(5 to 10) kHz	22 mA/A		
AC Current – Source	(2.2 to 11) A		Fluke 5500A/6 Multiproduct Calibrator
	(45 to 65) Hz	7 mA/A	
	(65 to 500) Hz	7 mA/A	
	500 Hz to 1 kHz	8.1 mA/A	
AC Current – Measure	(1 to 100) μ A		Agilent 3458A Multimeter
	(10 to 20) Hz	0.58 mA/A	
	(20 to 45) Hz	0.4 mA/A	
	(45 to 100) Hz	0.4 mA/A	
	100 Hz to 5 kHz	0.57 mA/A	
	100 μ A to 1 mA		
	(10 to 20) Hz	0.36 mA/A	
	(20 to 45) Hz	0.24 mA/A	
	(45 to 100) Hz	0.22 mA/A	
	100 Hz to 5 kHz	0.39 mA/A	
	(1 to 10) mA		
	(10 to 20) Hz	0.39 mA/A	
	(20 to 45) Hz	0.27 mA/A	
	(45 to 100) Hz	0.27 mA/A	
	100 Hz to 5 kHz	0.36 mA/A	
	(10 to 100) mA		
	(10 to 20) Hz	0.39 mA/A	
	(20 to 45) Hz	0.26 mA/A	
(45 to 100) Hz	0.26 mA/A		
100 Hz to 5 kHz	0.34 mA/A		

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current – Measure	100 mA to 1 A (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz	0.45 mA/A 0.41 mA/A 0.41 mA/A 0.65 mA/A	Agilent 3458A Multimeter
Resistance – Source	1 Ω 1.9 Ω 10 Ω 19 Ω 100 Ω 190 Ω 1 kΩ 1.9 kΩ 10 kΩ 19 kΩ 100 kΩ 190 kΩ 1 MΩ 1.9 MΩ 10 MΩ 19 MΩ 100 MΩ	0.12 mΩ 0.09 mΩ 0.11 mΩ 0.88 mΩ 0.99 mΩ 7.8 mΩ 9.1 mΩ 79 mΩ 0.09 Ω 0.76 Ω 1.5 Ω 8.2 Ω 8.8 Ω 0.15 kΩ 0.5 kΩ 2.8 kΩ 28 kΩ	Fluke 5720A Multiproduct Calibrator
Resistance – Source	1 GΩ	1.2 kΩ	IET SRL-1G Resistance Standard
Resistance – Measure	Up to 1 Ω (1 to 10) Ω (10 to 100) Ω 100 V to 1 kΩ (1 to 10) kΩ (10 to 100) kΩ 100 kΩ to 1 MΩ (1 to 10) MΩ (10 to 100) MΩ	0.15 mΩ 0.49 mΩ 13 mΩ 13 mΩ 0.13 Ω 1.5 Ω 25 Ω 0.49 kΩ 27 kΩ	Agilent 3458A Multimeter



Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Oscilloscopes DC Voltage, 50 Ω	(0 to 2.2) V	5.4 mV/V	Fluke 5500A/6 Multiproduct Calibrator
DC Voltage, 1 MΩ	(0 to 33) V	3.6 mV/V	
Square Wave Signal 50 Ω at 1 kHz	1.8 mV to 2.2 V	6 mV/V	
Square Wave Signal 1 MΩ at 1 kHz	1.8 mV to 105 V	4.8 mV/V	
Leveled Sine Wave Flatness (relative to 50 kHz)	50 kHz to 100 MHz (100 to 300) MHz	35 mV/V 27 mV/V	
Time Marker 50Ω	2 ns to 5 s	1.3 μs/s	
Rise/Fall Time	400 ps	170 ps	
Capacitance – Source @ 1 kHz	(330 to 500) pF 500 pF to 1.1 nF (1.1 to 3.3) nF (3.3 to 11) nF (11 to 33) nF (33 to 110) nF (110 to 330) nF 330 nF to 1.1 μF (1.1 to 3.3) μF	38 mF/F 20 mF/F 10 mF/F 7.3 mF/F 6.6 mF/F 4.1 mF/F 4.2 mF/F 3.1 mF/F 5.8 mF/F	Fluke 5500A/6 Multiproduct Calibrator
Capacitance – Source @ 400 Hz	(3.3 to 11) μF (11 to 33) μF	5.2 mF/F 5.8 mF/F	Fluke 5500A/6 Multiproduct Calibrator
Capacitance – Source @ 100 Hz	(33 to 110) μF (110 to 330) μF 330 μF to 1.1 mF	7 mF/F 8.8 mF/F 13 mF/F	

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of Thermocouple Indicators	Type E (-250 to -100) °C (-100 to -25) °C (-25 to 350) °C (350 to 650) °C (650 to 1 000) °C Type J (-210 to -100) °C (-100 to -30) °C (-30 to 150) °C (150 to 760) °C (760 to 1 200) °C Type K (200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 1 000) °C (1 000 to 1 372) °C Type T (-250 to -150) °C (-150 to 0) °C (0 to 120) °C (120 to 400) °C	0.59 °C 0.19 °C 0.17 °C 0.19 °C 0.25 °C 0.32 °C 0.19 °C 0.17 °C 0.2 °C 0.27 °C 0.39 °C 0.21 °C 0.19 °C 0.30 °C 0.47 °C 0.73 °C 0.28 °C 0.19 °C 0.17 °C	Fluke 5500A/6 Multiproduct Calibrator
Electrical Simulation of RTD Indicators	Pt 385 100 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 (630 to 800) °C Pt 3926 100 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	0.06 °C 0.06 °C 0.08 °C 0.11 °C 0.12 °C 0.14 °C 0.14 °C 0.27 °C 0.06 °C 0.06 °C 0.08 °C 0.11 °C 0.12 °C 0.14 °C	Fluke 5500A/6 Multiproduct Calibrator

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of RTD Indicators	Pt 3916 100 Ω		Fluke 5500A/6 Multiproduct Calibrator
	(-200 to -190) $^{\circ}\text{C}$	0.29 $^{\circ}\text{C}$	
	(-190 to -80) $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$	
	(-80 to 0) $^{\circ}\text{C}$	0.06 $^{\circ}\text{C}$	
	(0 to 100) $^{\circ}\text{C}$	0.07 $^{\circ}\text{C}$	
	(100 to 260) $^{\circ}\text{C}$	0.08 $^{\circ}\text{C}$	
	(260 to 300) $^{\circ}\text{C}$	0.09 $^{\circ}\text{C}$	
	(300 to 400) $^{\circ}\text{C}$	0.11 $^{\circ}\text{C}$	
	(400 to 600) $^{\circ}\text{C}$	0.12 $^{\circ}\text{C}$	
	(600 to 630) $^{\circ}\text{C}$	0.27 $^{\circ}\text{C}$	
	Pt 385 200 Ω		
	(-200 to -80) $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$	
	(-80 to 0) $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$	
	(0 to 100) $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$	
	(100 to 260) $^{\circ}\text{C}$	0.06 $^{\circ}\text{C}$	
	(260 to 300) $^{\circ}\text{C}$	0.14 $^{\circ}\text{C}$	
	(300 to 400) $^{\circ}\text{C}$	0.15 $^{\circ}\text{C}$	
	(400 to 600) $^{\circ}\text{C}$	0.17 $^{\circ}\text{C}$	
	(600 to 630) $^{\circ}\text{C}$	0.19 $^{\circ}\text{C}$	
	Pt 385 500 Ω		
	(-200 to -80) $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$	
	(-80 to 0) $^{\circ}\text{C}$	0.06 $^{\circ}\text{C}$	
	(0 to 100) $^{\circ}\text{C}$	0.06 $^{\circ}\text{C}$	
	(100 to 260) $^{\circ}\text{C}$	0.07 $^{\circ}\text{C}$	
	(260 to 300) $^{\circ}\text{C}$	0.09 $^{\circ}\text{C}$	
	(300 to 400) $^{\circ}\text{C}$	0.09 $^{\circ}\text{C}$	
	(400 to 600) $^{\circ}\text{C}$	0.11 $^{\circ}\text{C}$	
	(600 to 630) $^{\circ}\text{C}$	0.13 $^{\circ}\text{C}$	
	Pt 385 1 000 Ω		
	(-200 to -80) $^{\circ}\text{C}$	0.04 $^{\circ}\text{C}$	
(-80 to 0) $^{\circ}\text{C}$	0.04 $^{\circ}\text{C}$		
(0 to 100) $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$		
(100 to 260) $^{\circ}\text{C}$	0.06 $^{\circ}\text{C}$		
(260 to 300) $^{\circ}\text{C}$	0.07 $^{\circ}\text{C}$		
(300 to 400) $^{\circ}\text{C}$	0.08 $^{\circ}\text{C}$		
(400 to 600) $^{\circ}\text{C}$	0.08 $^{\circ}\text{C}$		
(600 to 630) $^{\circ}\text{C}$	0.27 $^{\circ}\text{C}$		
PtNi 385 120 Ω (Ni120)			
(-80 to 0) $^{\circ}\text{C}$	0.09 $^{\circ}\text{C}$		
(0 to 100) $^{\circ}\text{C}$	0.09 $^{\circ}\text{C}$		
(100 to 260) $^{\circ}\text{C}$	0.17 $^{\circ}\text{C}$		

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of RTD Indicators	Cu 427 10 Ω (-100 to 260) $^{\circ}\text{C}$	0.35 $^{\circ}\text{C}$	Fluke 5500A/6 Multiproduct Calibrator

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Pipettes	(0.1 to 5) μL (5 to 25) μL (25 to 100) μL (100 to 200) μL	0.2 μL 0.31 μL 0.72 μL 1.4 μL	Artel PCS 3 Photometric Pipette Calibration System
Torque Tools	(5 to 50) lbf-in (30 to 400) lbf-in (100 to 1 000) lbf-in (20 to 250) lbf-ft (100 to 1 000) lbf-ft	1.3 % of reading 0.66 % of reading 0.43 % of reading 0.49 % of reading 1.3 % of reading	CDI Torque Calibrator
Pressure (Pneumatic)- Air	(-14.5 to -0.01) psi (0.01 to 300) psi	0.2 % of reading 0.1 % of reading	Pressure Calibrator
Pressure (Pneumatic) - Nitrogen	(0.2 to 50) psi (2 to 1 000) psi	0.02 % of reading 0.02 % of reading	Gas Piston Pressure System
Pressure (Hydraulic)	(200 to 10 000) psi	0.06 % of reading	Dead Weight Tester

Thermodynamic

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Temperature – Measure	(-40 to -15) $^{\circ}\text{C}$ (-15 to 0) $^{\circ}\text{C}$ (0 to 50) $^{\circ}\text{C}$ (50 to 250) $^{\circ}\text{C}$ (250 to 400) $^{\circ}\text{C}$	0.11 $^{\circ}\text{C}$ 0.07 $^{\circ}\text{C}$ 0.08 $^{\circ}\text{C}$ 0.06 $^{\circ}\text{C}$ 0.08 $^{\circ}\text{C}$	ASL F250 Thermometer with 935-14-16 Probe

Time and Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Frequency - Source	10 MHz	13×10^{-9} Hz	Agilent 53220A Counter
Frequency – Measure	0.1 Hz to 350 MHz	1.1 uHz/Hz	Agilent 53220A Counter
Tachometers – Non-Contact	(1 to 100 000) RPM	0.015 % of reading	Agilent 33250A Signal Generator

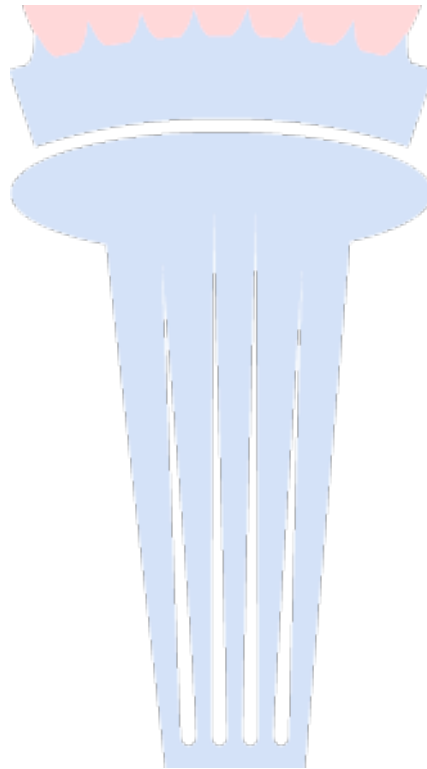
Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement 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 all parameters, 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. This scope is formatted as part of a single document including Certificate of Accreditation No. AC-1959.



Vice President





CERTIFICATE OF ACCREDITATION

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2475 West 2nd Avenue, Unit 34A
Denver, CO 80223

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ANSI/NCSL Z540-1-1994 (R2002)

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CALIBRATION

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ANAB Approval

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ANSI National Accreditation Board

**SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017
AND ANSI/NCSL Z540-1-1994 (R2002)**

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CALIBRATION

Valid to: **June 26, 2021**

Certificate Number: **AC-1959.01**

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Voltage – Source	(2.2 to 200) mV	36 μ V/V	Transmille 4010 Multiproduct Calibrator
	200 mV to 2 V	19 μ V/V	
	(2 to 20) V	17 μ V/V	
	(20 to 200) V	15 μ V/V	
	(200 to 1 000) V	20 μ V/V	
DC Voltage – Measure	Up to 100 mV	0.11 mV/V	Agilent 3458A Multimeter
	100 mV to 1 V	16 μ V/V	
	(1 to 10) V	65 μ V/V	
	(10 to 100) V	71 μ V/V	
	100 V to 1 kV	66 μ V/V	
	(19 to 195) kV	0.68 % of reading	Ross Engineering VD195 Voltage Divider w/ Agilent 34401A Multimeter
DC Current – Source	(2.2 to 200) μ A	590 μ A/A	Transmille 4010 Multiproduct Calibrator
	200 μ A to 2 mA	199 μ A/A	
	(2 to 20) mA	75 μ A/A	
	(20 to 200) mA	75 μ A/A	
	200 mA to 2 A	166 μ A/A	
	(2 to 30) A	0.3 mA/A	



Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Current – Measure	(0.1 to 1) μ A (1 to 10) μ A (10 to 100) μ A (0.1 to 1) mA (1 to 10) mA (10 to 100) mA (0.1 to 1) A	1.5 mA/A 20 μ A/A 0.12 μ A/A 49 μ A/A 48 μ A/A 53 μ A/A 0.11 mA/A	Agilent 3458A Multimeter
DC Current – Measure	(1 to 3) A	0.38 mA/A	Agilent 34401A Multimeter
AC Voltage – Source	(2.2 to 200) mV 10 Hz to 1 kHz (1 to 100) kHz (100 to 500) kHz 200 mV to 2 V 10 Hz to 1 kHz (1 to 100) kHz 100 kHz to 1 MHz (2 to 20) V 10 Hz to 1 kHz (1 to 10) kHz (10 to 50) kHz (20 to 200) V 10 Hz to 1 kHz (1 to 40) kHz (40 to 100) kHz (200 to 1 000) V 10 Hz to 1 kHz (1 to 10) kHz	38 μ V 34 μ V 310 μ V 45 μ V 68 μ V 950 μ V 42 μ V 55 μ V 7.1 mV 5 mV 6 mV 16 mV 40 mV 52 mV	Transmille 4010 Multiproduct Calibrator
AC Voltage – Measure	(0.1 to 10) mV (1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	0.81 mV/V 0.61 mV/V 0.61 mV/V 0.75 mV/V 1.3 mV/V 2.5 mV/V	Agilent 3458A Multimeter

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Measure	(10 to 100) mV		Agilent 3458A Multimeter
	(1 to 40) Hz	0.47 mV/V	
	40 Hz to 1 kHz	0.19 mV/V	
	(1 to 20) kHz	0.19 mV/V	
	(20 to 50) kHz	0.34 mV/V	
	(50 to 100) kHz	0.75 mV/V	
	(100 to 300) kHz	1.3 mV/V	
	300 kHz to 1 MHz	3.8 mV/V	
	100 mV to 1 V		
	(1 to 40) Hz	0.43 mV/V	
	40 Hz to 1 kHz	69 uV/V	
	(1 to 20) kHz	69 uV/V	
	(20 to 50) kHz	0.12 mV/V	
	(50 to 100) kHz	0.17 mV/V	
	(100 to 300) kHz	0.59 mV/V	
	300 kHz to 1 MHz	2.37 mV/V	
	(1 to 10) V		
	(1 to 40) Hz	0.45 mV/V	
	40 Hz to 1 kHz	85 uV/V	
	(1 to 20) kHz	84 uV/V	
(20 to 50) kHz	0.12 mV/V		
(50 to 100) kHz	0.16 mV/V		
(100 to 300) kHz	0.43 mV/V		
300 kHz to 1 MHz	2.4 mV/V		
(10 to 100) V			
(1 to 40) Hz	0.44 mV/V		
40 Hz to 1 kHz	91 uV/V		
(1 to 20) kHz	79 uV/V		
(20 to 50) kHz	0.14 mV/V		
(50 to 100) kHz	0.23 mV/V		
(100 to 750) V			
45 Hz to 1 kHz	0.41 mV/V		
(1 to 20) kHz	94 uV/V		
AC Voltage – Measure	(13 to 138) kV 60 Hz	0.55 % of reading	Ross Engineering VD85 Voltage Divider w/ Agilent 34401A Multimeter



Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current – Source	(2.2 to 200) μ A		Transmille 4010 Multiproduct Calibrator
	10 Hz to 1 kHz	0.17 μ A	
	(1 to 10) kHz	0.37 μ A	
	(10 to 30) kHz	0.67 μ A	
	200 μ A to 2 mA		
	10 Hz to 1 kHz	0.28 μ A	
	(1 to 10) kHz	13 μ A	
	(10 to 30) kHz	25 μ A	
	(2 to 20) mA		
	10 Hz to 1 kHz	3 μ A	
	(1 to 10) kHz	58 μ A	
	(10 to 30) kHz	30 μ A	
	(20 to 200) mA		
	10 Hz to 1 kHz	350 μ A	
(1 to 10) kHz	0.82 mA		
(10 to 30) kHz	1.6 mA		
200 mA to 2 A			
10 Hz to 1 kHz	2.8 mA		
(1 to 10) kHz	1.3 mA		
(10 to 30) kHz	5.4 mA		
(2 to 30) A			
10 Hz to 1 kHz	8.7 mA		
(1 to 10) kHz	8.7 mA		
AC Current – Measure	(1 to 100) μ A		Agilent 3458A Multimeter
	(10 to 20) Hz	0.56 mA/A	
	(20 to 45) Hz	1.3 mA/A	
	(45 to 100) Hz	1.3 mA/A	
	100 Hz to 5 kHz	0.58 mA/A	
	100 μ A to 1 mA		
	(10 to 20) Hz	0.45 mA/A	
	(20 to 45) Hz	0.59 mA/A	
	(45 to 100) Hz	0.59 mA/A	
	100 Hz to 5 kHz	1.2 mA/A	
	(1 to 10) mA		
	(10 to 20) Hz	0.46 mA/A	
(20 to 45) Hz	0.22 mA/A		
(45 to 100) Hz	0.21 mA/A		
100 Hz to 5 kHz	0.33 mA/A		

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current – Measure	(10 to 100) mA (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz	0.43 mA/A 0.21 mA/A 0.21 mA/A 0.32 mA/A	Agilent 3458A Multimeter
	100 mA to 1 A (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz	0.38 mA/A 0.37 mA/A 0.37 mA/A 0.66 mA/A	
AC Current – Measure	(1 to 3) A (10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz	2.6 mA/A 1.4 mA/A 9 mA/A	Agilent 34401A Multimeter
Resistance – Source	0.1 Ω 1 Ω 10 Ω 100 Ω 1 k Ω 10 k Ω 100 k Ω 1 M Ω 10 M Ω 100 M Ω 1 G Ω	6 m Ω 6 m Ω 6 m Ω 7 m Ω 23 m Ω 0.13 Ω 2.4 Ω 30 Ω 1.4 K Ω 0.18 M Ω 13 M Ω	Transmille 4010 Multiproduct Calibrator
Resistance – Measure 4 Wire	(0 to 1) Ω (1 to 10) Ω (10 to 100) Ω (0.1 to 1) k Ω (1 to 10) k Ω (10 to 100) k Ω 100 k Ω to 1 M Ω (1 to 10) M Ω (10 to 100) M Ω 100 M Ω to 1 G Ω	0.12 m Ω 29 m Ω 13 m Ω 10 m Ω 0.1 Ω 0.13 Ω 24 Ω 0.49 k Ω 14 k Ω 0.31 M Ω	Agilent 3458A Multimeter

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Oscilloscopes DC Voltage, 50 Ω DC Voltage, 1 MΩ	(0 to 2.2) V (0 to 33) V	4.1 mV/V 2.9 mV/V	Fluke 5500A/3 Multiproduct Calibrator
Square Wave Signal 50 Ω at 1 kHz	1.8 mV to 2.2 V	4.2 mV/V	
Square Wave Signal 1 MΩ at 1 kHz	1.8 mV to 105 V	2.8 mV/V	
Leveled Sine Wave Flatness (relative to 50kHz)	50 kHz to 100 MHz (100 to 300) MHz	0.41 V/V 0.34 V/V	
Time Marker 50 Ω	2 ns to 5 s	1.2 μs/s	
Rise/ Fall Time	400 ps	80 ps	
Capacitance – Source @ 400 Hz	(1.1 to 3.3) μF (3.3 to 11) μF	5.7 mF/F 5.2 mF/F	Fluke 5500A/3 Multiproduct Calibrator
Capacitance – Source @ 1 kHz	(330 to 500) pF 500 pF to 1.1 nF (1.1 to 3.3) nF (3.3 to 11) nF (11 to 33) nF (33 to 110) nF (110 to 330) nF 330 nF to 1.1 μF	40 mF/F 18 mF/F 9.7 mF/F 7 mF/F 7 mF/F 4 mF/F 4.3 mF/F 3 mF/F	Fluke 5500A/3 Multiproduct Calibrator
Capacitance – Source @ 100 Hz	(11 to 33) μF (33 to 110) μF (110 to 330) μF 330 μF to 1.1 mF	6 mF/F 7.1 mF/F 9.3 mF/F 13 mF/F	Fluke 5500A/3 Multiproduct Calibrator
Electrical Simulation of Thermocouple Indicators	Type E (-250 to -100) °C (-100 to -25) °C (-250 to 350) °C (350 to 650) °C (650 to 1 000) °C	0.58 °C 0.2 °C 0.18 °C 0.2 °C 0.25 °C	Fluke 5500A/3 Multiproduct Calibrator

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of Thermocouple Indicators	Type J (-210 to -100) °C (-100 to -30) °C (-30 to 150) °C (150 to 760) °C (760 to 1 200) °C Type K (-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 1 000) °C (1 000 to 1 372) °C Type T (-250 to -150) °C (-150 to 0) °C (0 to 120) °C (120 to 400) °C	0.32 °C 0.2 °C 0.18 °C 0.21 °C 0.28 °C 0.39 °C 0.22 °C 0.2 °C 0.31 °C 0.47 °C 0.73 °C 0.29 °C 0.2 °C 0.18 °C	Fluke 5500A/3 Multiproduct Calibrator
Electrical Simulation of RTD Indicators	Pt 385 100 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 (630 to 800) °C Pt 3926 100 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	0.06 °C 0.06 °C 0.08 °C 0.11 °C 0.12 °C 0.14 °C 0.27 °C 0.06 °C 0.06 °C 0.08 °C 0.11 °C 0.12 °C 0.14 °C	Fluke 5500A/3 Multiproduct Calibrator

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of RTD Indicators	Pt 3916 100 Ω		Fluke 5500A/3 Multiproduct Calibrator
	(-200 to -190) °C	0.29 °C	
	(-190 to -80) °C	0.05 °C	
	(-80 to 0) °C	0.06 °C	
	(0 to 100) °C	0.07 °C	
	(100 to 260) °C	0.08 °C	
	(260 to 300) °C	0.09 °C	
	(300 to 400) °C	0.11 °C	
	(400 to 600) °C	0.12 °C	
	(600 to 630) °C	0.27 °C	
	Pt 385 200 Ω		
	(-200 to -80) °C	0.05 °C	
	(-80 to 0) °C	0.05 °C	
	(0 to 100) °C	0.05 °C	
	(100 to 260) °C	0.06 °C	
	(260 to 300) °C	0.14 °C	
	(300 to 400) °C	0.15 °C	
	(400 to 600) °C	0.17 °C	
	(600 to 630) °C	0.19 °C	
	Pt 385 500 Ω		
	(-200 to -80) °C	0.05 °C	
	(-80 to 0) °C	0.06 °C	
	(0 to 100) °C	0.06 °C	
	(100 to 260) °C	0.07 °C	
	(260 to 300) °C	0.09 °C	
	(300 to 400) °C	0.09 °C	
	(400 to 600) °C	0.11 °C	
	(600 to 630) °C	0.13 °C	
	Pt 385 1 000 Ω		
	(-200 to -80) °C	0.04 °C	
(-80 to 0) °C	0.04 °C		
(0 to 100) °C	0.05 °C		
(100 to 260) °C	0.06 °C		
(260 to 300) °C	0.07 °C		
(300 to 400) °C	0.08 °C		
(400 to 600) °C	0.08 °C		
(600 to 630) °C	0.27 °C		

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of RTD Indicators	PtNi 385 120 Ω (Ni120)		Fluke 5500A/3 Multiproduct Calibrator
	(-80 to 0) °C	0.09 °C	
	(0 to 100) °C	0.09 °C	
	(100 to 260) °C	0.17 °C	
	Cu 427 10 Ω		
	(-100 to 260) °C	0.35 °C	

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Torque Tools	(5 to 50) lbf-in	0.69 % of reading	CDI Torque Calibrator
	(30 to 400) lbf-in	0.61 % of reading	
	(100 to 1 000) lbf-in	1.2 % of reading	
	(20 to 250) lbf-ft	0.77 % of reading	
	(60 to 600) lbf-ft	0.85 % of reading	
Pressure	(100 to 10 000) psi	0.006 9 % of reading	Deadweight Tester

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. This scope is formatted as part of a single document including Certificate of Accreditation No. AC-1959.01.



Vice President



CERTIFICATE OF ACCREDITATION

ANSI National Accreditation Board
11617 Coldwater Road, Fort Wayne, IN 46845 USA

This is to certify that

Process Measurement Company
3100 44th Street
Kansas City, KS 66106

has been assessed by ANAB and meets the requirements of international standard

ISO/IEC 17025:2017

and national standard

ANSI/NCSL Z540-1-1994 (R2002)

while demonstrating technical competence in the field of

CALIBRATION

Refer to the accompanying Scope of Accreditation for information regarding the types of activities to which this accreditation applies

AC-1959.03
Certificate Number


ANAB Approval

Certificate Valid Through: 06/26/2021
Version No. 005 Issued: 05/20/2019



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. 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).



**SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017
AND ANSI/NCSL Z540-1-1994 (R2002)**

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CALIBRATION

Valid to: **June 26, 2021**

Certificate Number: **AC-1959.03**

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Voltage – Source	Up to 330 mV	88 μ V/V	Fluke 5500A/6 Multiproduct Calibrator
	330 mV to 3.3 V	70 μ V/V	
	(3.3 to 33) V	76 μ V/V	
	(33 to 330) V	85 μ V/V	
	330 V to 1 kV	65 μ V/V	
DC Voltage – Measure	(1 to 100) mV	15 μ V/V	Agilent 3458A Multimeter
	100 mV to 1 V	6.8 μ V/V	
	(1 to 10) V	4.5 μ V/V	
	(10 to 100) V	6.4 μ V/V	
	100 V to 1 kV	8.2 μ V/V	Ross Engineering VD30 Voltage Divider w/ Fluke 8846A Multimeter
	(5 to 30) kV	0.15 % of reading	
DC Current – Source	Up to 3.3 mA	0.25 mA/A	Fluke 5500A/6 Multiproduct Calibrator
	(3.3 to 33) mA	0.17 mA/A	
	(33 to 330) mA	0.2 mA/A	
	330 mA to 2.2 A	0.38 mA/A	
	(2.2 to 11) A	2.6 mA/A	
DC Current – Measure	(0.1 to 1) μ A	6.9 mA/A	Agilent 3458A Multimeter
	(1 to 10) μ A	0.9 mA/A	
	(10 to 100) μ A	0.24 mA/A	
	(0.1 to 1) mA	83 μ A/A	
	(1 to 10) mA	0.11 mA/A	
	(10 to 100) mA	0.13 mA/A	
	(0.1 to 1) A	0.16 mA/A	



Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Current – Measure	(1 to 3) A	1.6 mA/A	Fluke 8846A Multimeter
AC Voltage – Source	(1 to 33) mV (10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz	12 mV/V 9.7 mV/V 1.1 mV/V 3.7 mV/V 5.3 mV/V	Fluke 5500A/6 Multiproduct Calibrator
AC Voltage – Source	(33 to 330) mV (10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz 330 mV to 3.3 V (10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (3.3 to 33) V (20 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 100) kHz (33 to 330) V 45 to 1 kHz (1 to 10) kHz (10 to 20) kHz 330 V to 1.02 kV 45 to 1 kHz (1 to 5) kHz (5 to 20) kHz	4.9 mV/V 1.3 mV/V 1.2 mV/V 2 mV/V 3.7 mV/V 1.8 mV/V 0.4 mV/V 0.97 mV/V 1.7 mV/V 3.7 mV/V 1.8 mV/V 0.5 mV/V 1 mV/V 3.7 mV/V 0.61 mV/V 1 mV/V 1.2 mV/V 0.71 mV/V 2.6 mV/V 3.2 mV/V	Fluke 5500A/6 Multiproduct Calibrator
AC Voltage – Measure	Up to 100 mV (5 to 10) Hz 10 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	4.9 mV/V 1.2 mV/V 12 mV/V 13 mV/V 14 mV/V	Agilent 3458A Multimeter

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Measure	100 mV to 1 V (5 to 10) Hz	4.8 mV/V	Agilent 3458A Multimeter
	10 Hz to 20 kHz (20 to 50) kHz	1.1 mV/V 2 mV/V	
	(50 to 100) kHz (1 to 10) V	7.9 mV/V	
	(5 to 10) Hz	2.1 mV/V	
	10 Hz to 20 kHz (20 to 50) kHz	0.54 mV/V 2.8 mV/V	
	(10 to 100) V		
	45 Hz to 1 kHz (1 to 10) kHz	0.7 mV/V 1.5 mV/V	
	(10 to 10) kHz	1.5 mV/V	
	(100 to 750) V		
	45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	2.6 mV/V 3.1 mV/V 3.1 mV/V	
AC Voltage – Measure	(13 to 138) kV 60Hz	0.6 % of reading	Ross Engineering VD30 Voltage Divider w/ Fluke 8846A Multimeter
AC Current – Source	(3.3 to 33) mA (10 to 20) Hz	2.5 mA/A	Fluke 5500A/6 Multiproduct Calibrator
	(20 to 45) Hz	1.3 mA/A	
	45 Hz to 1 kHz (1 to 5) kHz	12 mA/A 2.4 mA/A	
	(5 to 10) kHz	7.3 mA/A	
	(33 to 330) mA (10 to 20) Hz	2.4 mA/A	
	(20 to 45) Hz	0.23 mA/A	
	45 Hz to 1 kHz (1 to 5) kHz	1.2 mA/A 2.4 mA/A	
	(5 to 10) kHz	7 mA/A	
	330 mA to 2.2 A 45 Hz to 1 kHz (1 to 5) kHz	2.5 mA/A 2.9 mA/A	
	(2.2 to 11) A (45 to 65) Hz	1 mA/A	
	(65 to 500) Hz	1.5 mA/A	
	500 Hz to 1 kHz	4.1 mA/A	

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current – Measure	(1 to 100) μ A		Agilent 3458A Multimeter
	(10 to 20) Hz	1.6 mA/A	
	(20 to 45) Hz	0.52 mA/A	
	(45 to 100) Hz	0.36 mA/A	
	100 Hz to 5 kHz	0.73 mA/A	
	100 μ A to 1 mA		
	(10 to 20) Hz	0.39 mA/A	
	(20 to 45) Hz	0.23 mA/A	
	(45 to 100) Hz	0.25 mA/A	
	100 Hz to 5 kHz	0.43 mA/A	
	(1 to 10) mA		
	(10 to 20) Hz	0.43 mA/A	
	(20 to 45) Hz	0.2 mA/A	
	(45 to 100) Hz	0.21 mA/A	
	100 Hz to 5 kHz	0.33 mA/A	
	(10 to 100) mA		
(10 to 20) Hz	0.45 mA/A		
(20 to 45) Hz	0.23 mA/A		
(45 to 100) Hz	0.21 mA/A		
100 Hz to 5 kHz	0.32 mA/A		
100 mA to 1 A			
(10 to 20) Hz	0.38 mA/A		
(20 to 45) Hz	0.4 mA/A		
(45 to 100) Hz	0.37 mA/A		
100 Hz to 5 kHz	0.66 mA/A		
AC Current – Measure	(1 to 3) A		Fluke 8846A Multimeter
	(10 to 45) Hz	3.1 mA/A	
	45 Hz to 1 kHz	2.3 mA/A	
	(1 to 5) kHz	9 mA/A	
Capacitance – Source @ 1 kHz	(3.3 to 11) nF	6.9 mF/F	Fluke 5500A/6 Multiproduct Calibrator
	(11 to 33) nF	7 mF/F	
	(33 to 110) nF	4 mF/F	
	(110 to 330) nF	4.3 mF/F	
	(0.33 to 1.1) μ F	3 mF/F	
	(1.1 to 3.3) μ F	5.7 mF/F	
	(3.3 to 11) μ F	5.2 mF/F	
	(11 to 33) μ F	6 mF/F	
Capacitance – Source @ 400 Hz	(33 to 110) μ F	7.1 mF/F	Fluke 5500A/6 Multiproduct Calibrator
	(110 to 330) μ F	9.3 mF/F	

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Capacitance – Source @ 100 Hz	(0.33 to 1.1) mF	13 mF/F	Fluke 5500A/6 Multiproduct Calibrator
Resistance – Source	Up to 11 Ω (11 to 33) Ω (33 to 110) Ω (110 to 330) Ω 330 Ω to 1.1 k Ω (1.1 to 3.3) k Ω (3.3 to 11) k Ω (11 to 33) k Ω (33 to 110) k Ω (110 to 330) k Ω 330 k Ω to 1.1 M Ω (1.1 to 3.3) M Ω (3.3 to 11) M Ω (11 to 33) M Ω (33 to 110) M Ω	11 m Ω 22 m Ω 30 m Ω 50 m Ω 0.19 Ω 0.39 Ω 1.9 Ω 4.2 Ω 21 Ω 53 Ω 0.26 k Ω 0.64 k Ω 8.4 k Ω 39 k Ω 0.65 M Ω	Fluke 5500A/6 Multiproduct Calibrator
Resistance – Measure 4 Wire	(10 to 100) Ω 100 Ω to 1 k Ω (1 to 10) k Ω (10 to 100) k Ω 100 k Ω to 1 M Ω (1 to 10) M Ω (10 to 100) M Ω	28 m Ω 0.18 Ω 1.8 Ω 20 Ω 0.24 k Ω 7.6 k Ω 12 k Ω	Agilent 3458A Multimeter
Oscilloscopes DC Voltage, 50 Ω DC Voltage, 1 M Ω Square Wave Signal 50 Ω at 1 kHz Square Wave Signal 1 M Ω at 1 kHz Leveled Sine Wave Flatness (relative to 50 kHz)	(0 to 2.2) V (0 to 33) V 1.8 mV to 2.2 V 1.8 mV to 105 V 50 kHz to 100 MHz (100 to 300) MHz	4.1 mV/V 2.9 mV/V 4.2 mV/V 2.9 mV/V 42 mV/V 34 mV/V	Fluke 5500A/6 Multiproduct Calibrator

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Oscilloscopes Time Marker 50Ω Rise/Fall Time	2 ns to 5 s 400 ps	1.2 ms/s 80 ps	Fluke 5500A/6 Multiproduct Calibrator
Electrical Simulation of Thermocouple Indicators	Type E (-250 to -100) °C (-100 to -25) °C (-250 to 350) °C (350 to 650) °C (650 to 1 000) °C Type J (-210 to -100) °C (-100 to -30) °C (-30 to 150) °C (150 to 760) °C (760 to 1 200) °C Type K (-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 1 000) °C (1 000 to 1 372) °C Type T (-250 to -150) °C (-150 to 0) °C (0 to 120) °C (120 to 400) °C	0.58 °C 0.2 °C 0.18 °C 0.2 °C 0.25 °C 0.32 °C 0.2 °C 0.18 °C 0.21 °C 0.28 °C 0.39 °C 0.22 °C 0.2 °C 0.31 °C 0.47 °C 0.73 °C 0.29 °C 0.2 °C 0.18 °C	Fluke 5500A/6 Multiproduct Calibrator
Electrical Simulation of RTD Indicators	Pt 385 100 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 (630 to 800) °C	0.06 °C 0.06 °C 0.08 °C 0.11 °C 0.12 °C 0.14 °C 0.27 °C	Fluke 5500A/6 Multiproduct Calibrator



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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of RTD Indicators	Pt 3926 100 Ω		Fluke 5500A/6 Multiproduct Calibrator
	(-200 to -80) °C	0.06 °C	
	(-80 to 0) °C	0.06 °C	
	(0 to 100) °C	0.08 °C	
	(100 to 300) °C	0.11 °C	
	(300 to 400) °C	0.12 °C	
	(400 to 630) °C	0.14 °C	
	Pt 3916 100 Ω		
	(-200 to -190) °C	0.29 °C	
	(-190 to -80) °C	0.05 °C	
	(-80 to 0) °C	0.06 °C	
	(0 to 100) °C	0.07 °C	
	(100 to 260) °C	0.08 °C	
	(260 to 300) °C	0.09 °C	
	(300 to 400) °C	0.11 °C	
	(400 to 600) °C	0.12 °C	
	(600 to 630) °C	0.27 °C	
	Pt 385 200 Ω		
	(-200 to -80) °C	0.05 °C	
	(-80 to 0) °C	0.05 °C	
	(0 to 100) °C	0.05 °C	
	(100 to 260) °C	0.06 °C	
	(260 to 300) °C	0.14 °C	
	(300 to 400) °C	0.15 °C	
(400 to 600) °C	0.17 °C		
(600 to 630) °C	0.19 °C		
Pt 385 500 Ω			
(-200 to -80) °C	0.05 °C		
(-80 to 0) °C	0.06 °C		
(0 to 100) °C	0.06 °C		
(100 to 260) °C	0.07 °C		
(260 to 300) °C	0.09 °C		
(300 to 400) °C	0.09 °C		
(400 to 600) °C	0.11 °C		
(600 to 630) °C	0.13 °C		

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of RTD Indicators	Pt 385 1 000 Ω		Fluke 5500A/6 Multiproduct Calibrator
	(-200 to -80) °C	0.04 °C	
	(-80 to 0) °C	0.04 °C	
	(0 to 100) °C	0.05 °C	
	(100 to 260) °C	0.06 °C	
	(260 to 300) °C	0.07 °C	
	(300 to 400) °C	0.08 °C	
	(400 to 600) °C	0.08 °C	
	(600 to 630) °C	0.27 °C	
	PtNi 385 120 Ω (Ni120)		
	(-80 to 0) °C	0.09 °C	
	(0 to 100) °C	0.09 °C	
	(100 to 260) °C	0.17 °C	
Cu 427 10 Ω			
(-100 to 260) °C	0.35 °C		

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Torque Tools	(5 to 50) lbf-in	0.69 % of reading	CDI Torque Calibrator
	(30 to 400) lbf-in	0.61 % of reading	
	(100 to 1 000) lbf-in	1.2 % of reading	
	(20 to 250) lbf-ft	0.77 % of reading	
	(60 to 600) lbf-ft	0.85 % of reading	

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. This scope is formatted as part of a single document including Certificate of Accreditation No. AC-1959.03.



Vice President





CERTIFICATE OF ACCREDITATION

ANSI National Accreditation Board
11617 Coldwater Road, Fort Wayne, IN 46845 USA

This is to certify that

Process Measurement Company
4865 G Street
Omaha, NE 68117

has been assessed by ANAB and meets the requirements of international standard

ISO/IEC 17025:2017

and national standard

ANSI/NCSL Z540-1-1994 (R2002)

while demonstrating technical competence in the field of

CALIBRATION

Refer to the accompanying Scope of Accreditation for information regarding the types of activities to which this accreditation applies

AC-1959.02
Certificate Number


ANAB Approval

Certificate Valid Through: 06/26/2021
Version No. 005 Issued: 05/20/2019



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. 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).



**SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017
AND ANSI/NCSL Z540-1-1994 (R2002)**

Process Measurement Company

4865 G Street
Omaha, NE 68117
Kyle Keracik 402-734-2434
kkericik@processmeasurementco.com

CALIBRATION

Valid to: **June 26, 2021**

Certificate Number: **AC-1959.02**

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Voltage – Source	Up to 330 mV 330 mV to 3.3 V (3.3 to 33) V (33 to 330) V 330 V to 1 kV	88 μ V/V 70 μ V/V 76 μ V/V 85 μ V/V 65 μ V/V	Fluke 5500 Multiproduct Calibrator
DC Voltage – Measure	Up to 100 mV 100 mV to 1 V (1 to 10) V (10 to 100) V 100 V to 1 kV	0.11 mV/V 56 μ V/V 48 μ V/V 60 μ V/V 66 μ V/V	Agilent 34401A Multimeter
DC Current – Source	Up to 3.3 mA (3.3 to 33) mA (33 to 330) mA 330 mA to 2.2 A (2.2 to 11) A	0.24 mA/A 0.17 mA/A 0.2 mA/A 0.55 mA/A 0.71 mA/A	Fluke 5500 Multiproduct Calibrator
DC Current – Measure	Up to 10 mA (10 to 100) mA 100 mA to 1 A (1 to 3) A	85 μ A/A 0.65 mA/A 1.3 mA/A 1.8 mA/A	Agilent 34401A Multimeter
AC Voltage – Source	(1 to 33) mV (10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz	12 mV/V 9.7 mV/V 1.1 mV/V 3.7 mV/V 5.3 mV/V	Fluke 5500 Multiproduct Calibrator

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment		
AC Voltage – Source	(33 to 330) mV (10 to 45) Hz	4.9 mV/V	Fluke 5500 Multiproduct Calibrator		
	45 Hz to 10 kHz (10 to 20) kHz	1.3 mV/V 1.2 mV/V			
	(20 to 50) kHz (50 to 100) kHz	2 mV/V 3.7 mV/V			
	330 mV to 3.3 V (10 to 45) Hz	1.8 mV/V			
	45 Hz to 10 kHz (10 to 20) kHz	0.4 mV/V 0.97 mV/V			
	(20 to 50) kHz (50 to 100) kHz	1.7 mV/V 3.7 mV/V			
	(3.3 to 33) V (20 to 45) Hz	1.8 mV/V			
	45 Hz to 10 kHz (10 to 20) kHz	0.5 mV/V 1.0 mV/V			
	(20 to 100) kHz	3.7 mV/V			
	(33 to 330) V 45 to 1 kHz	0.61 mV/V			
	(1 to 10) kHz (10 to 20) kHz	1 mV/V 1.2 mV/V			
	330 V to 1.02 kV 45 to 1 kHz	0.71 mV/V			
	(1 to 5) kHz (5 to 20) kHz	2.6 mV/V 3.2 mV/V			
	AC Voltage – Measure	Up to 100 mV (5 to 10) Hz		0.74 mV/V	Agilent 34401A Multimeter
		10 Hz to 20 kHz (20 to 50) kHz		1.3 mV/V 6.7 mV/V	
		(50 to 100) kHz (100 to 300) kHz		11 mV/V 54 mV/V	
		100 mV to 1 V (5 to 10) Hz		4.4 mV/V	
10 Hz to 20 kHz (20 to 50) kHz		1.1 mV/V 2.1 mV/V			
(50 to 100) kHz		8 mV/V			
(1 to 10) V (5 to 10) Hz		4.4 mV/V			
10 Hz to 20 kHz (20 to 50) kHz		1.1 mV/V 2.4 mV/V			

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Measure	(10 to 100) V 45 Hz to 1 kHz (1 to 10) kHz (10 to 10) kHz	1.1 mV/V 1.1 mV/V 1.2 mV/V	Agilent 34401A Multimeter
	(100 to 750) V 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	1.1 mV/V 1.1 mV/V 1.2 mV/V	
AC Current – Source	(3.3 to 33) mA (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	2.5 mA/A 1.8 mA/A 12 mA/A 2.9 mA/A 7.6 mA/A	Fluke 5500 Multiproduct Calibrator
	(33 to 330) mA (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	3.4 mA/A 0.23 mA/A 2.5 mA/A 8.5 mA/A 7 mA/A	
	330 mA to 2.2 A 45 Hz to 1 kHz (1 to 5) kHz	2.5 mA/A 2.7 mA/A	
	220 mA to 11 A 45 to 1 kHz	15 mA/A	
	Up to 1 A 10 Hz to 5 kHz	1.8 mA/A	
	(1 to 3) A 10 Hz to 5 kHz	3 mA/A	
	(3.3 to 11) nF (11 to 33) nF (33 to 110) nF (110 to 330) nF	6.9 mF/F 7 mF/F 4 mF/F 4.3 mF/F	
Capacitance – Source @ 1 kHz	(0.33 to 1.1) uF (1.1 to 3.3) uF (3.3 to 11) uF (11 to 33) uF	3 mF/F 5.7 mF/F 5.2 mF/F 6 mF/F	Fluke 5500 Multiproduct Calibrator
	(33 to 110) uF (110 to 330) uF	7.1 mF/F 9.3 mF/F	



Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Capacitance – Source @ 100 Hz	(0.33 to 1.1) mF	13 mF/F	Fluke 5500 Multiproduct Calibrator
Resistance – Source	Up to 11 Ω (11 to 33) Ω (33 to 110) Ω (110 to 330) Ω 330 Ω to 1.1 kΩ (1.1 to 3.3) kΩ (3.3 to 11) kΩ (11 to 33) kΩ (33 to 110) kΩ (110 to 330) kΩ 330 kΩ to 1.1 MΩ (1.1 to 3.3) MΩ (3.3 to 11) MΩ (11 to 33) MΩ (33 to 110) MΩ	11 mΩ 22 mΩ 30 mΩ 50 mΩ 0.19 Ω 0.39 Ω 1.9 Ω 4.2 Ω 21 Ω 53 Ω 26 Ω 64 Ω 8.4 kΩ 39 kΩ 0.65 MΩ	Fluke 5500 Multiproduct Calibrator
Resistance – Measure 4 Wire	(10 to 100) Ω 100 Ω to 1 kΩ (1 to 10) kΩ (10 to 100) kΩ 100 kΩ to 1 MΩ (1 to 10) MΩ (10 to 100) MΩ	17 mΩ 0.13 Ω 1.3 Ω 13 Ω 0.13 kΩ 4.8 kΩ 0.94 kΩ	Agilent 34401A Multimeter
Electrical Simulation of Thermocouple Indicators	Type E (-250 to -100) °C (-100 to -25) °C (-250 to 350) °C (350 to 650) °C (650 to 1 000) °C Type J (-210 to -100) °C (-100 to -30) °C (-30 to 150) °C (150 to 760) °C (760 to 1 200) °C	0.58 °C 0.2 °C 0.18 °C 0.2 °C 0.25 °C 0.32 °C 0.2 °C 0.18 °C 0.21 °C 0.28 °C	Fluke 5500 Multiproduct Calibrator

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of Thermocouple Indicators	Type K		Fluke 5500 Multiproduct Calibrator
	(-200 to -100) °C	0.39 °C	
	(-100 to -25) °C	0.22 °C	
	(-25 to 120) °C	0.2 °C	
	(120 to 1 000) °C	0.31 °C	
	(1 000 to 1 372) °C	0.47 °C	
	Type T		
	(-250 to -150) °C	0.73 °C	
	(-150 to 0) °C	0.29 °C	
	(0 to 120) °C	0.2 °C	
(120 to 400) °C	0.18 °C		
Electrical Simulation of RTD Indicators	Pt 385 100 Ω		Fluke 5500 Multiproduct Calibrator
	(-200 to -80) °C	0.06 °C	
	(-80 to 0) °C	0.11 °C	
	(0 to 100) °C	0.16 °C	
	(100 to 300) °C	0.11 °C	
	(300 to 400) °C	0.12 °C	
	(400 to 630) °C	0.14 °C	
	(630 to 800) °C	0.27 °C	
	Pt 3926 100 Ω		
	(-200 to -80) °C	0.06 °C	
	(-80 to 0) °C	0.06 °C	
	(0 to 100) °C	0.08 °C	
	(100 to 300) °C	0.11 °C	
	(300 to 400) °C	0.12 °C	
	(400 to 630) °C	0.14 °C	
	Pt 3916 100 Ω		
	(-200 to -190) °C	0.29 °C	
	(-190 to -80) °C	0.05 °C	
	(-80 to 0) °C	0.06 °C	
	(0 to 100) °C	0.07 °C	
	(100 to 260) °C	0.08 °C	
	(260 to 300) °C	0.09 °C	
	(300 to 400) °C	0.11 °C	
	(400 to 600) °C	0.12 °C	
	(600 to 630) °C	0.27 °C	
	Cu 427 10 Ω		
	(-100 to 260) °C	0.35 °C	

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of RTD Indicators	Pt 385 200 Ω		Fluke 5500 Multiproduct Calibrator
	(-200 to -80) °C	0.05 °C	
	(-80 to 0) °C	0.05 °C	
	(0 to 100) °C	0.05 °C	
	(100 to 260) °C	0.06 °C	
	(260 to 300) °C	0.14 °C	
	(300 to 400) °C	0.15 °C	
	(400 to 600) °C	0.17 °C	
	(600 to 630) °C	0.19 °C	
	Pt 385 500 Ω		
	(-200 to -80) °C	0.05 °C	
	(-80 to 0) °C	0.06 °C	
	(0 to 100) °C	0.06 °C	
	(100 to 260) °C	0.09 °C	
	(260 to 300) °C	0.09 °C	
	(300 to 400) °C	0.09 °C	
	(400 to 600) °C	0.11 °C	
	(600 to 630) °C	0.13 °C	
	Pt 385 1 000 Ω		
	(-200 to -80) °C	0.04 °C	
	(-80 to 0) °C	0.04 °C	
	(0 to 100) °C	0.05 °C	
	(100 to 260) °C	0.06 °C	
	(260 to 300) °C	0.07 °C	
	(300 to 400) °C	0.08 °C	
	(400 to 600) °C	0.08 °C	
	(600 to 630) °C	0.27 °C	
	PtNi 385 120 Ω (Ni120)		
(-80 to 0) °C	0.09 °C		
(0 to 100) °C	0.09 °C		
(100 to 260) °C	0.17 °C		

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Torque Tools	(5 to 50) lbf-in (30 to 400) lbf-in (100 to 1 000) lbf-in (20 to 250) lbf-ft (60 to 600) lbf-ft	0.69 % of reading 0.61 % of reading 1.2 % of reading 0.77 % of reading 0.85 % of reading	CDI Torque Calibrator

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Vice President

