



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

HONEYWELL, INC.
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CALIBRATION

Valid To: December 31, 2019

Certificate Number: 4413.01

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} (\pm) | Comments |
|------------------------------------|---|--|----------------|
| DC Voltage – Generate | (0 to 329.9999) mV (0 to 3.299999) V (0 to 32.99999) V (30 to 329.9999) V (100 to 1000) V | 16 μ V/V + 1.1 μ V 8 μ V/V + 12 μ V 10 μ V/V + 60 μ V 14 μ V/V + 400 μ V 19 μ V/V + 4.7 mV | Fluke 5520A |
| DC Voltage ³ – Generate | Up to 110 mV (0.11 to 1.1) V (1.1 to 15) V | 0.017 mV 0.17 mV 2.3 mV | Honeywell 2020 |
| DC Current – Generate | (0 to 329.999) μ A (0.330 to 3.299 99) mA (3.3 to 32.9999) mA (33 to 329.999) mA (0.33 to 1.099 99) A | 0.012 % + 0.02 μ A 0.01 % + 0.04 μ A 0.01 % + 0.21 μ A 0.01 % + 6 μ A 0.02 % + 46 μ A | Fluke 5520A |
| DC Current ³ – Generate | (2 to 22) mA | 5.7 μ A | Honeywell 2020 |

| Parameter/Equipment | Range | CMC ^{2,4} (±) | Comments |
|-----------------------|--|---|--|
| Resistance – Generate | (0 to 11) Ω (11 to 33) Ω (33 to 110) Ω (110 to 330) Ω (0.33 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 (0.33 to 1.1) MΩ (1.1 to 3.3) MΩ (3.3 to 11) MΩ | 30 μΩ/Ω + 0.0011 Ω 34 μΩ/Ω + 0.0015 Ω 22 μΩ/Ω + 0.0017 Ω 21 μΩ/Ω + 0.0027 Ω 23 μΩ/Ω + 0.0023 Ω 20 μΩ/Ω + 0.03 Ω 23 μΩ/Ω + 0.023 Ω 23 μΩ/Ω + 0.21 Ω 20 μΩ/Ω + 0.8 Ω 28 μΩ/Ω + 2.0 Ω 27 μΩ/Ω + 3.3 Ω 47 μΩ/Ω + 54 Ω 0.010 % + 130 Ω | Fluke 5520A (applies to a 4-wire compensation within 12 hours/± 1 °C of ohms zero) |

| Parameter/Range | Frequency | CMC ^{2,4} (±) | Comments |
|-----------------------|---|---|-------------|
| AC Voltage – Generate | | | |
| (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 (100 to 500) kHz | 0.078 % + 9 μV 0.015 % + 7 μV 0.021 % + 7 μV 0.1 % + 7 μV 0.33 % + 13 μV 0.8 % + 51 μV | Fluke 5520A |
| (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 (100 to 500) kHz | 0.034 % + 7 μV 0.015 % + 9 μV 0.016 % + 8 μV 0.035 % + 11 μV 0.08 % + 33 μV 0.16 % + 56 μV | |
| (0.33 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 (100 to 500) kHz | 0.027 % + 31 μV 0.012 % + 49 μV 0.015 % + 53 μV 0.023 % + 57 μV 0.054 % + 120 μV 0.19 % + 480 μV | |
| (3.3 to 33) V | (10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz | 0.027 % + 390 μV 0.012 % + 480 μV 0.019 % + 480 μV 0.027 % + 710 μV 0.069 % + 1500 μV | |

| Parameter/Range | Frequency | CMC ^{2,4} (±) | Comments |
|---------------------------------|--|--|-------------|
| AC Voltage – Generate (cont) | | | |
| (33 to 330) V | 45 Hz to 1 kHz (1 to 10) kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz | 0.016 % + 2.8 mV 0.016 % + 4.7 mV 0.020 % + 4.7 mV 0.024 % + 7.7 mV 0.16 % + 40 mV | Fluke 5520A |
| (330 to 1000) V | 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz | 0.023 % + 8.1 mV 0.019 % + 16 mV 0.023 % + 15 mV | |
| AC Current – Generate | | | |
| (30 to 330) µA | 45 Hz to 1 kHz (1 to 5) kHz | 0.095 % + 89 nA 0.23 % + 120 nA | Fluke 5520A |
| (0.33 to 3.3) mA | 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz | 0.078 % + 0.12 µA 0.16 % + 0.17 µA 0.21 % + 6 µA | |
| (3.3 to 33) mA | 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz | 0.032 % + 1.6 µA 0.062 % + 1.6 µA 0.16 % + 2.3 µA | |
| (33 to 330) mA | 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz | 0.031 % + 21 µA 0.078 % + 39 µA 0.16 % + 78 µA | |
| (0.33 to 1) A | 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz | 0.04 % + 77 µA 0.47 % + 780 µA 1.9 % + 3900 µA | |

| Parameter/Equipment | Range | CMC ² (±) | Comments |
|--|---|---|----------------|
| Electrical Calibration of Thermocouple Indicating Systems – | | | |
| Type K | (-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 1000) °C (1000 to 1372) °C | 0.29 °C 0.19 °C 0.19 °C 0.23 °C 0.33 °C | Fluke 5520A |
| Type N | (-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 410) °C (410 to 1300) °C | 0.35 °C 0.23 °C 0.21 °C 0.21 °C 0.26 °C | |
| Type S | (0 to 250) °C (250 to 1000) °C (1000 to 1400) °C (1400 to 1767) °C | 0.46 °C 0.32 °C 0.32 °C 0.41 °C | |
| Type T | (-250 to -150) °C (-150 to 0) °C (0 to 120) °C (120 to 400) °C | 0.54 °C 0.24 °C 0.18 °C 0.18 °C | |
| Type J | (-210 to -100) °C (-100 to -30) °C (-30 to 150) °C (150 to 760) °C (760 to 1200) °C | 0.24 °C 0.18 °C 0.19 °C 0.18 °C 0.21 °C | |
| Electrical Calibration of Thermocouple Indicating Systems ³ – | | | |
| Type J | (-210 to -100) °C (-100 to 800) °C (800 to 1200) °C | 0.51 °C 0.41 °C 0.41 °C | Honeywell 2020 |
| Type K | (-200 to -100) °C (-100 to 400) °C (400 to 1200) °C (1200 to 1372) °C | 0.61 °C 0.51 °C 0.51 °C 0.51 °C | |
| Type N | (-200 to -100) °C (-100 to 900) °C (900 to 1300) °C | 0.81 °C 0.71 °C 0.51 °C | |

| Parameter/Equipment | Range | CMC ² (±) | Comments |
|---|--|------------------------------|----------------|
| Electrical Calibration of Thermocouple Indicating Systems ³ – (cont) | | | |
| Type T | (-250 to -200) °C (-200 to 0) °C (0 to 400) °C | 1.1 °C 0.61 °C 0.51 °C | Honeywell 2020 |

II. Mechanical

| Parameter/Equipment | Range | CMC ² (±) | Comments |
|-----------------------|-------------------|----------------------|--------------|
| Pressure ³ | (0 to 10 000) psi | 8.3 psi | Fluke 700P31 |

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

² 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.

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 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. CMCs 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.



Accredited Laboratory

A2LA has accredited

HONEYWELL LTD., HONEYWELL MONTREAL METROLOGY LABORATORY

Lachine, QC, CANADA

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 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 1st day of March 2018.

A handwritten signature in black ink, likely of the President and CEO, is shown above the text.

President and CEO

For the Accreditation Council

Certificate Number 4413.01

Valid to December 31, 2019

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