



CERTIFICATE OF ACCREDITATION

ANSI-ASQ National Accreditation Board

500 Montgomery Street, Suite 625, Alexandria, VA 22314, 877-344-3044

This is to certify that

Premier Scales & Systems, Inc.

4901 N. St. Joseph Avenue

Evansville, IN 47720

(and satellite location as shown on the scope)

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

ISO/IEC 17025:2005

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 calibrations to which this accreditation applies.

AC-1222

Certificate Number


ANAB Approval

Certificate Valid: 11/08/2018-05/17/2020

Version No. 005 Issued: 11/08/2018



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. 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 17025:2005
AND ANSI/NCSL Z540-1-1994 (R2002)**

Premier Scales & Systems, Inc.

4901 N. St. Joseph Avenue, Evansville, IN 47720
Nathan Stone 812-422-9838
nstone@premierscales.com www.premierscales.com

CALIBRATION

Valid to: **May 17, 2020**

Certificate Number: **AC-1222**

Chemical Quantities

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|-----------------------|---|--|--|
| pH Meters | 4 pH 7 pH 10 pH | 0.06 pH 0.04 pH 0.05 pH | pH Buffer Solutions NAVAIR 17-20 OEM validated procedures |
| Conductivity Meters | 1 µS/cm 10 µs/cm 100 µS/cm 1 000 µS/cm | 0.65 µS/cm 0.56 µs/cm 2.3 µS/cm 6.1 µS/cm | Conductivity Solutions OEM validated procedures |
| Viscosity Cups | (34 to 124) cSt | 1 cSt + 0.43 % of reading | Viscosity Standards, solutions, Stop Watch fluid OEM validated procedures |
| Volumetric Dispensers | (1 to 100) mL (1 to 1 000) mL | 0.048 mL | Analytical Balance ASTM E 542-01 OEM validated procedures |

Electrical – DC/Low Frequency

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|----------------------------------|---|--|---|
| DC Voltage – Source ¹ | Up to 330 mV 330 mV to 3.3 V (3.3 to 33) V (33 to 330) V (100 to 1 000) V | 1.6 µV 16 µV 0.13 mV 1.3 mV 3.1 mV | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |



Electrical – DC/Low Frequency

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|---|---|---|--|
| DC Voltage - Measure ¹ | Up to 100 mV 100 mV to 1 V (1 to 10) V (10 to 100) V (100 to 1 000) V | 2.4 μ V 6.4 μ V 0.052 mV 0.67 mV 9.6 mV | Fluke 8846A Multimeter OEM, GIDEP, Met/Cal Sourced Procedures |
| DC Current - Source ¹ | Up to 330 μ A 330 μ A to 3.3 mA (3.3 to 33) mA (33 to 330) mA 330 mA to 1.1 A (1.1 to 3) A (3 to 11) A (11 to 20.5) A | 0.014 μ A 0.19 μ A 0.48 μ A 4.4 μ A 77 μ A 0.31 mA 1.5 mA 23 mA | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |
| DC Current - Source for Clamp on Current Meters ¹ | (20 to 200) A (200 to 500) A (500 to 1 000) A | 0.41 A 1.1 A 2.1 A | Fluke 5520A Multiproduct Calibrator w/ 50 turn coil. OEM, GIDEP, Met/Cal Sourced Procedures |
| DC Current - Measure ¹ | Up to 100 μ A 100 μ A to 1 mA (1 to 10) mA (10 to 100) mA (100 to 400) mA 400 mA to 1 A (1 to 3) A (3 to 10) A | 0.018 μ A 0.67 μ A 1.7 μ A 6.7 μ A 20 μ A 0.27 mA 1.1 mA 3.5 mA | Fluke 8846A Multimeter OEM, GIDEP, Met/Cal Sourced Procedures |
| Resistance - Source ¹ | Up to 11 Ω (11 to 33) Ω (33 to 110) Ω (110 to 330) Ω (0.33 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 (0.33 to 1.1) M Ω (1.1 to 3.3) M Ω | 0.67 m Ω 1.4 m Ω 1.7 m Ω 3.4 m Ω 9.6 m Ω 38 m Ω 96 m Ω 0.39 Ω 0.99 Ω 3.8 Ω 32 Ω 79 Ω | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |



Electrical – DC/Low Frequency

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|-----------------------------------|--|---|---|
| Resistance - Source ¹ | (3.3 to 11) MΩ (11 to 33) MΩ (33 to 110) MΩ (110 to 330) MΩ (330 to 1 100) MΩ | 0.39 kΩ 3.5 kΩ 13 kΩ 0.29 MΩ 3.7 MΩ | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |
| Resistance - Measure ¹ | Up to 10 Ω (10 to 100) Ω (0.1 to 1) kΩ (1 to 10) kΩ (10 to 100) kΩ (0.1 to 1) MΩ (1 to 10) MΩ (10 to 100) MΩ (0.1 to 1) GΩ | 2 mΩ 3.6 mΩ 14 mΩ 0.14 Ω 1.4 Ω 14 Ω 3.3 kΩ 60 kΩ 1.4 MΩ | Fluke 8846A Multimeter OEM, GIDEP, Met/Cal Sourced Procedures |
| AC Voltage - Source ¹ | (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 (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 (0.33 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 | 4.7 μV 4.1 μV 4.2 μV 4.8 μV 10 μV 39 μV 15 μV 11 μV 14 μV 15 μV 39 μV 92 μV 0.12 mV 0.086 mV 0.09 mV 0.16 mV 0.28 mV 0.93 mV | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |

Electrical – DC/Low Frequency

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|-----------------------------------|------------------|---|---|
| AC Voltage - Source ¹ | (3.3 to 33) V | | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |
| | (10 to 45) Hz | 1.2 mV | |
| | 45 Hz to 10 kHz | 1.2 mV | |
| | (10 to 20) kHz | 1.7 mV | |
| | (20 to 50) kHz | 1.5 mV | |
| | (50 to 100) kHz | 3.1 mV | |
| | (33 to 330) V | | |
| | 45 Hz to 1 kHz | 8.7 mV | |
| | 1 kHz to 10 kHz | 9.1 mV | |
| | (10 to 20) kHz | 11 mV | |
| | (20 to 50) kHz | 12 mV | |
| | (50 to 100) kHz | 78 mV | |
| | (330 to 1 020) V | | |
| 45 Hz to 1 kHz | 73 mV | | |
| (1 to 5) kHz | 63 mV | | |
| (5 to 10) kHz | 73 mV | | |
| AC Voltage - Measure ¹ | Up to 100 mV | | Fluke 8846A Multimeter OEM, GIDEP, Met/Cal Sourced Procedures |
| | (3 to 5) Hz | 0.027 mV | |
| | (5 to 10) Hz | 0.027 mV | |
| | 10 Hz to 20 kHz | 0.027 mV | |
| | (20 to 50) kHz | 0.033 mV | |
| | (50 to 100) kHz | 0.053 mV | |
| | (100 to 300) kHz | 0.33 mV | |
| | 100 mV to 1 V | | |
| | (3 to 5) Hz | 0.87 mV | |
| | (5 to 10) Hz | 0.43 mV | |
| | 10 Hz to 20 kHz | 0.24 mV | |
| | (20 to 50) kHz | 0.41 mV | |
| | (50 to 100) kHz | 0.93 mV | |
| | (100 to 300) kHz | 6 mV | |
| | (1 to 10) V | | |
| | (3 to 5) Hz | 8.7 mV | |
| | (5 to 10) Hz | 4.3 mV | |
| | 10 Hz to 20 kHz | 2.4 mV | |
| (20 to 50) kHz | 4.1 mV | | |
| (50 to 100) kHz | 9.3 mV | | |
| (100 to 300) kHz | 60 mV | | |



Electrical – DC/Low Frequency

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|-----------------------------------|---------------------|---|---|
| AC Voltage - Measure ¹ | (10 to 100) V | | Fluke 8846A Multimeter OEM, GIDEP, Met/Cal Sourced Procedures |
| | (3 to 5) Hz | 87 mV | |
| | (5 to 10) Hz | 43 mV | |
| | 10 Hz to 20 kHz | 24 mV | |
| | (20 to 50) kHz | 41 mV | |
| | (50 to 100) kHz | 93 mV | |
| | (100 to 300) kHz | 0.6 V | |
| | (100 to 1 000) V | | |
| | (3 to 5) Hz | 0.82 V | |
| | (5 to 10) Hz | 0.38 V | |
| | 10 Hz to 20 kHz | 0.19 V | |
| | (20 to 50) kHz | 0.33 V | |
| | (50 to 100) kHz | 0.8 V | |
| | (100 to 300) kHz | 5.2 V | |
| AC Current - Source ¹ | (29 to 330) μ A | | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |
| | (10 to 20) Hz | 0.11 μ A | |
| | (20 to 45) Hz | 0.1 μ A | |
| | 45 Hz to 1 kHz | 0.096 μ A | |
| | (1 to 5) kHz | 0.16 μ A | |
| | (5 to 10) kHz | 0.29 μ A | |
| | (10 to 30) kHz | 0.58 μ A | |
| | (0.33 to 3.3) mA | | |
| | (10 to 20) Hz | 0.55 μ A | |
| | (20 to 45) Hz | 0.39 μ A | |
| | 45 Hz to 1 kHz | 0.4 μ A | |
| | (1 to 5) kHz | 0.61 μ A | |
| | (5 to 10) kHz | 1.4 μ A | |
| | (10 to 30) kHz | 2.6 μ A | |
| | (3.3 to 33) mA | | |
| | (10 to 20) Hz | 5.3 μ A | |
| | (20 to 45) Hz | 3.3 μ A | |
| | 45 Hz to 1 kHz | 3.2 μ A | |
| | (1 to 5) kHz | 3.7 μ A | |
| | (5 to 10) kHz | 7 μ A | |
| (10 to 30) kHz | 12 μ A | | |



Electrical – DC/Low Frequency

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|--|------------------|---|---|
| AC Current - Source ¹ | (33 to 330) mA | | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |
| | (10 to 20) Hz | 0.055 mA | |
| | (20 to 45) Hz | 0.037 mA | |
| | 45 Hz to 1 kHz | 0.03 mA | |
| | (1 to 5) kHz | 0.056 mA | |
| | (5 to 10) kHz | 0.11 mA | |
| | (10 to 30) kHz | 0.22 mA | |
| | (0.33 to 1.1) A | | |
| | (10 to 45) Hz | 0.47 mA | |
| | 45 Hz to 1kHz | 0.18 mA | |
| | (1 to 5) kHz | 2 mA | |
| | (5 to 10) kHz | 8.8 mA | |
| | (1.1 to 3) A | | |
| | (10 to 45) Hz | 1.4 mA | |
| | 45 Hz to 1kHz | 0.6 mA | |
| | (1 to 5) kHz | 8 mA | |
| (5 to 10) kHz | 22 mA | | |
| (3 to 11) A | | | |
| (45 to 100) Hz | 2.7 mA | | |
| 100 Hz to 1 kHz | 3.4 mA | | |
| (1 to 5) kHz | 61 mA | | |
| (11 to 20.5) A | | | |
| (45 to 100) Hz | 17 mA | | |
| 100 Hz to 440 Hz | 18 mA | | |
| AC Current - Source for Clamp on Current Meters ¹ | (20 to 200) A | | Fluke 5520A Multiproduct Calibrator w/ 50 turn coil OEM, GIDEP, Met/Cal Sourced Procedures |
| | (45 to 440) Hz | 0.44 A | |
| | (200 to 500) A | | |
| | (45 to 200) Hz | 1.2 A | |
| AC Current – Measure ¹ | (500 to 1 000) A | | Fluke 8846A Multimeter OEM, GIDEP, Met/Cal Sourced Procedures |
| | (45 to 200) Hz | 2.5 A | |
| | Up to 100 μA | | |
| | (3 to 5) Hz | 0.29 μA | |
| | (5 to 10) Hz | 0.14 μA | |
| | 10 Hz to 5 kHz | 0.041 μA | |
| | (5 to 10) kHz | 0.47 μA | |
| | 100 μA to 1 mA | | |
| (3 to 5) Hz | 6 μA | | |
| (5 to 10) Hz | 0.74 μA | | |
| 10 Hz to 5 kHz | 0.34 μA | | |
| (5 to 10) kHz | 1.8 μA | | |



Electrical – DC/Low Frequency

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|-----------------------------------|-------------------|---|---|
| AC Current – Measure ¹ | (1 to 10) mA | | Fluke 8846A Multimeter OEM, GIDEP, Met/Cal Sourced Procedures |
| | (3 to 5) Hz | 0.12 mA | |
| | (5 to 10) Hz | 0.012 mA | |
| | 10 Hz to 5 kHz | 0.005 mA | |
| | (5 to 10) kHz | 0.049 mA | |
| | (10 to 100) mA | | |
| | (3 to 5) Hz | 0.81 mA | |
| | (5 to 10) Hz | 0.13 mA | |
| | 10 Hz to 5 kHz | 0.23 mA | |
| | (5 to 10) kHz | 0.18 mA | |
| | (100 to 400) mA | | |
| | (3 to 5) Hz | 0.93 mA | |
| | (5 to 10) Hz | 0.49 mA | |
| | 10 Hz to 1 kHz | 0.33 mA | |
| | (1 to 10) kHz | 2 mA | |
| | 400 mA to 1 A | | |
| | (3 to 5) Hz | 5.3 mA | |
| | (5 to 10) Hz | 1.7 mA | |
| | 10 Hz to 5 kHz | 0.53 mA | |
| | (5 to 10) kHz | 5.6 mA | |
| (1 to 3) A | | | |
| (3 to 5) Hz | 8.5 mA | | |
| (5 to 10) Hz | 3.5 mA | | |
| 10 Hz to 5 kHz | 2.3 mA | | |
| (5 to 10) kHz | 16 mA | | |
| (3 to 10) A | | | |
| (3 to 5) Hz | 26 mA | | |
| (5 to 10) Hz | 11 mA | | |
| 10 Hz to 5 kHz | 7.3 mA | | |
| (5 to 10) kHz | 54 mA | | |
| Capacitance – Source ¹ | | | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |
| 10 Hz to 10 kHz | (0.19 to 0.40) nF | 0.007 3 nF | |
| 10 Hz to 10 kHz | (0.40 to 1.1) nF | 0.009 9 nF | |
| 10 Hz to 3 kHz | (1.1 to 3.3) nF | 0.012 nF | |
| 10 Hz to 1 kHz | (3.3 to 11) nF | 0.06 nF | |
| 10 Hz to 1 kHz | (11 to 33) nF | 0.12 nF | |
| 10 Hz to 1 kHz | (33 to 110) nF | 0.6 nF | |
| 10 Hz to 1 kHz | (110 to 330) nF | 0.69 nF | |
| (10 to 600) Hz | (0.33 to 1.1) μF | 0.006 1 μF | |



Electrical – DC/Low Frequency

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|--|---|--|---|
| Capacitance – Source ¹ (10 to 300) Hz (10 to 150) Hz (10 to 120) Hz (10 to 80) Hz Up to 50 Hz Up to 20 Hz Up to 6 Hz Up to 2 Hz Up to 0.6 Hz Up to 0.2 Hz | (1.1 to 3.3) μ F (3.3 to 11) μ F (11 to 33) μ F (33 to 110) μ F (110 to 330) μ F (0.33 to 1.1) mF (1.1 to 3.3) mF (3.3 to 11) mF (11 to 33) mF (33 to 110) mF | 0.006 9 μ F 0.059 μ F 0.076 μ F 0.60 μ F 0.78 μ F 0.006 mF 0.012 mF 0.061 mF 0.14 mF 0.38 mF | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |
| Capacitance – Measure ¹ | Up to 1 nF (1 to 10) nF (10 to 100) nF (0.1 to 1) μ F (1 to 10) μ F (10 to 100) μ F (0.1 to 1) mF (1 to 10) mF (10 to 100) mF | 0.017 nF 0.041 nF 0.4 nF 0.004 μ F 0.04 μ F 0.4 μ F 0.004 1 mF 0.04 mF 1.6 mF | Fluke 8846A Multimeter OEM, GIDEP, Met/Cal Sourced Procedures |
| DC Power to Source ¹ | (33 mv to 1 020 V) (0.33 to 330) mA (0.33 to 3) A (3 to 20.5) A | 0.052 % of output in Watts 0.45 % of output in Watts 9.8 % of output in Watts | Fluke 5520A Multiproduct Calibrator |
| Electrical Simulation of Thermocouple Devices ¹ | Type B (600 to 800) $^{\circ}$ C (800 to 1 000) $^{\circ}$ C (1 000 to 1 550) $^{\circ}$ C (1 550 to 1 820) $^{\circ}$ C Type C (0 to 150) $^{\circ}$ C (150 to 650) $^{\circ}$ C (650 to 1 000) $^{\circ}$ C (1 000 to 1 800) $^{\circ}$ C (1 800 to 2 316) $^{\circ}$ C | 0.62 $^{\circ}$ C 0.34 $^{\circ}$ C 0.31 $^{\circ}$ C 0.37 $^{\circ}$ C 0.42 $^{\circ}$ C 0.38 $^{\circ}$ C 0.31 $^{\circ}$ C 0.5 $^{\circ}$ C 0.84 $^{\circ}$ C | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |



Electrical – DC/Low Frequency

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|--|---------------------|---|---|
| Electrical Simulation of Thermocouple Devices ¹ | Type E | | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |
| | (-250 to -100) °C | 0.51 °C | |
| | (-100 to -25) °C | 0.16 °C | |
| | (-25 to 350) °C | 0.15 °C | |
| | (350 to 650) °C | 0.17 °C | |
| | (650 to 1 000) °C | 0.21 °C | |
| | Type J | | |
| | (-210 to -100) °C | 0.27 °C | |
| | (-100 to -30) °C | 0.17 °C | |
| | (-30 to 150) °C | 0.14 °C | |
| | (150 to 760) °C | 0.17 °C | |
| | (760 to 1 200) °C | 0.23 °C | |
| | Type K | | |
| | (-200 to -100) °C | 0.34 °C | |
| | (-100 to -25) °C | 0.18 °C | |
| | (-25 to 120) °C | 0.16 °C | |
| | (120 to 1 000) °C | 0.26 °C | |
| | (1 000 to 1 372) °C | 0.4 °C | |
| | Type L | | |
| | (-200 to -100) °C | 0.38 °C | |
| | (-100 to 800) °C | 0.26 °C | |
| | (800 to 900) °C | 0.17 °C | |
| | Type N | | |
| | (-200 to -100) °C | 0.64 °C | |
| (-100 to -25) °C | 0.54 °C | | |
| (-25 to 120) °C | 0.19 °C | | |
| (120 to 410) °C | 0.19 °C | | |
| (410 to 1 300) °C | 0.28 °C | | |
| Type R | | | |
| (0 to 250) °C | 0.48 °C | | |
| (250 to 400) °C | 0.37 °C | | |
| (400 to 1 000) °C | 0.37 °C | | |
| (1 000 to 1 767) °C | 0.46 °C | | |
| Type S | | | |
| (0 to 250) °C | 0.49 °C | | |
| (250 to 1000) °C | 0.37 °C | | |
| (1 000 to 1 400) °C | 0.37 °C | | |
| (1 400 to 1 767) °C | 0.46 °C | | |



Electrical – DC/Low Frequency

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|--|-------------------|---|---|
| Electrical Simulation of Thermocouple Devices ¹ | Type T | | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |
| | (-250 to -150) °C | 0.83 °C | |
| | (-150 to 0) °C | 0.59 °C | |
| | (0 to 120) °C | 0.34 °C | |
| | (120 to 400) °C | 0.33 °C | |
| | Type U | | |
| (-200 to 0) °C | 0.57 °C | | |
| (0 to 600) °C | 0.3 °C | | |
| Electrical Simulation of RTD Devices ¹ | Pt 385, 100 Ω | | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |
| | (-200 to -80) °C | 0.034 °C | |
| | (-80 to 0) °C | 0.034 °C | |
| | (0 to 100) °C | 0.047 °C | |
| | (100 to 300) °C | 0.06 °C | |
| | (300 to 400) °C | 0.068 °C | |
| | (400 to 630) °C | 0.08 °C | |
| | (630 to 800) °C | 0.15 °C | |
| | Pt 3926, 100 Ω | | |
| | (-200 to -80) °C | 0.033 °C | |
| | (-80 to 0) °C | 0.036 °C | |
| | (0 to 100) °C | 0.047 °C | |
| | (100 to 300) °C | 0.06 °C | |
| | (300 to 400) °C | 0.067 °C | |
| | (400 to 630) °C | 0.08 °C | |
| | Pt 3916, 100 Ω | | |
| | (-200 to -190) °C | 0.17 °C | |
| | (-190 to -80) °C | 0.027 °C | |
| | (-80 to 0) °C | 0.03 °C | |
| | (0 to 100) °C | 0.04 °C | |
| | (100 to 260) °C | 0.05 °C | |
| (260 to 300) °C | 0.05 °C | | |
| (300 to 400) °C | 0.06 °C | | |
| (400 to 600) °C | 0.07 °C | | |
| (600 to 630) °C | 0.2 °C | | |



Electrical – DC/Low Frequency

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment | |
|---|------------------|---|---|--|
| Electrical Simulation of RTD Devices ¹ | Pt 385, 200 Ω | | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures | |
| | (-200 to -80) °C | 0.027 °C | | |
| | (-80 to 0) °C | 0.027 °C | | |
| | (0 to 100) °C | 0.027 °C | | |
| | (100 to 260) °C | 0.034 °C | | |
| | (260 to 300) °C | 0.08 °C | | |
| | (300 to 400) °C | 0.088 °C | | |
| | (400 to 600) °C | 0.094 °C | | |
| | (600 to 630) °C | 0.11 °C | | |
| | Pt 385, 500 Ω | | | |
| | (-200 to -80) °C | 0.027 °C | | |
| | (-80 to 0) °C | 0.034 °C | | |
| | (0 to 100) °C | 0.034 °C | | |
| | (100 to 260) °C | 0.041 °C | | |
| | (260 to 300) °C | 0.054 °C | | |
| | (300 to 400) °C | 0.053 °C | | |
| | (400 to 600) °C | 0.064 °C | | |
| | (600 to 630) °C | 0.073 °C | | |
| | Pt 385, 1000 Ω | | | |
| | (-200 to -80) °C | 0.02 °C | | |
| | (-80 to 0) °C | 0.02 °C | | |
| | (0 to 100) °C | 0.027 °C | | |
| | (100 to 260) °C | 0.033 °C | | |
| | (260 to 300) °C | 0.04 °C | | |
| | (300 to 400) °C | 0.047 °C | | |
| | (400 to 600) °C | 0.047 °C | | |
| | (600 to 630) °C | 0.15 °C | | |
| PtNi 385, 120 Ω | | | | |
| (-80 to 0) °C | 0.053 °C | | | |
| (0 to 100) °C | 0.053 °C | | | |
| (100 to 260) °C | 0.093 °C | | | |
| Cu 427, 10 Ω | | | | |
| (-100 to 260) °C | 0.2 °C | | | |



Electrical – DC/Low Frequency

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|---|--|---|--|
| AC Power – Source ¹ @ (45 to 65) Hz, PF = 1 | (33 to 330) mV (3.3 to 9) mA (9 to 33) mA (33 to 90) mA (90 to 330) mA (0.33 to 0.9) A (0.9 to 2.2) A (2.2 to 4.5) A (4.5 to 20.5) A 33 mV to 1 020 V (3.3 to 9) mA (9 to 33) mA (33 to 90) mA (90 to 330) mA (0.33 to 0.9) A (0.9 to 2.2) A (2.2 to 4.5) A (4.5 to 20.5) A | 0.002 8 % of output in Watts 0.007 3 % of output in Watts 0.028 % of output in Watts 0.073 % of output in Watts 0.26 % of output in Watts 0.53 % of output in Watts 0.001 3 % of output in Watts 0.005 % of output in Watts 0.007 3 % of output in Watts 0.018 % of output in Watts 0.073 % of output in Watts 0.18 % of output in Watts 0.67 % of output in Watts 1.4 % of output in Watts 3.7 % of output in Watts 14 % of output in Watts | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |
| Oscilloscopes ¹ | | | |
| Amplitude DC Signal | 1 mV to 100 V | 0.5 mV ± 40 mV | Fluke 5520-SC600 Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures NAVAIR17-20AW-506 August 2015 |
| DC Voltage (1 MΩ) | 5 mV to 5.5 V | 8 mV ± 0.33 mV | |
| Leveled Sine Wave 50 kHz to 600 mHz | 10 ns to 5 s | 0.000 12 s ± 0.005 s | |
| Time Markers | 100 ns to 20 ms | 12 ms | |
| 20 % Duty Cycle | 1.8 mV to 55 V | 0.031 V ± 1.65 mV | |
| Wave Generator (1 MΩ) | 10 Hz to 10 kHz | 0.56 mHz ± 50 mHz | |

Length – Dimensional metrology

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|-------------------------|--------------------|---|--|
| Gage Balls ² | (0.039 37 to 2) in | (13 + 0.4L) μin | ULM GIDEP Sourced Procedures |



Length – Dimensional metrology

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|---|----------------------------|---|--|
| Gage Blocks ² | Up to 4 in | $(2.9 + 1.2L) \mu\text{in}$ | Dual Head Comparator Grade 00 Gage Blocks ASTM Procedure |
| Plain Ring Gages ² | (0.4 to 4) in | $(10 + 4.3L) \mu\text{in}$ | ULM XXX Master Rings OEM, GIDEP Sourced Procedures |
| Micrometers, ID, OD & Depth ^{1,2} | Up to 6 in (6 to 60) in | $(21 + 9.8L) \mu\text{in}$ $(34 + 6L) \mu\text{in}$ | Gage Blocks Federal Grade 2 / ASME Grade 0 OEM, GIDEP Sourced Procedures |
| Calipers, ID, OD & Depth ^{1,2} | Up to 6 in (6 to 84) in | $(57 + 0.96L) \mu\text{in}$ $(30 + 3.1L) \mu\text{in}$ | Gage Blocks Federal Grade 2 / ASME Grade 0 OEM, GIDEP Sourced Procedures |
| Indicators ^{1,2} | Up to 2 in | $(27 + 1.2L) \mu\text{in}$ | ULM OEM, GIDEP Sourced Procedures |
| Pin Gages ² | Up to 1 in | $(11 + 1.5L) \mu\text{in}$ | ULM OEM, ASME Standards, GIDEP Sourced Procedures |
| Plain Plug Gages ² | Up to 2 in (2 to 4) in | $(11 + 1.5L) \mu\text{in}$ $(3.5 + 6.5L) \mu\text{in}$ | ULM ULM, Gage Blocks OEM, ASME Standards, GIDEP Sourced Procedures |
| Rulers ¹ | Up to 24 in | 0.009 6 in | Master Steel Ruler OEM, GIDEP Sourced Procedures |
| Height Gauges ^{1,2} | Up to 24 in | $(44 + 2.1L) \mu\text{in}$ | Gage Blocks Federal Grade 2 / ASME Grade 0 OEM, GIDEP Sourced Procedures |
| Optical Comparators ¹ Linearity X-Y Squareness | 0 to 10 in | 0.000 12 in | OEM, GIDEP Sourced Procedures |



Length – Dimensional metrology

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|---|---------------------------------------|---|---|
| Optical Comparator ¹ Magnification | (10, 20, 31.25, 50, 61.25, and 100) x | 25 μin ± 0.06 μin | Glass Master, OEM, GIDEP Sourced Procedures |
| Profilometers ¹ | (2 to 250) μin RA | 4.8 nm | Roughness Specimen, GIDEP Sourced Procedures |
| Surface Plates ¹ Repeat Readings Overall Flatness | 0.002 in | 0.000 1 in 0.000 22 in | Repeat -O-Meter Electronic Levels GGG-463 C |
| Thread Plug Gages Major Diameter Pitch Diameter | Up to 4 in | (3.5 ± 6.5L) μin (26 ± 13L) μ in | ULM, Thread Wires |
| Extrusion Plastometers ¹ Bore Diameter Piston Diameter | (0 to 0.25) in (0 to 1) in | 0.003 in 0.001 in | Caliper, Pin Gages, Gage Block |

Mass and Mass Related

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|---|-----------------------|---|--|
| Class I & Unclassified Balances ¹ (resolution) | Up to 100 g (0.01 mg) | 0.034 mg | ASTM Class 1 Weights NIST Handbook 44 and WI-09 |
| | Up to 100 g (0.02 mg) | 0.036 mg | |
| | Up to 100 g (0.05 mg) | 0.045 mg | |
| | Up to 200 g (0.1 mg) | 0.089 mg | |
| | Up to 200 g (0.2 mg) | 0.13 mg | |
| | Up to 200 g (0.5 mg) | 0.3 mg | |
| Class II & Unclassified Balances ¹ (resolution) | Up to 100 g (0.001 g) | 0.58 mg | ASTM Class 1 or 2 Weights NIST Handbook 44 and WI-09 |
| | Up to 200 g (0.002 g) | 1.2 mg | |
| | Up to 500 g (0.005 g) | 2.9 mg | |
| | Up to 1 kg (0.01 g) | 5.8 mg | |
| | Up to 2 kg (0.02 g) | 12 mg | |
| | Up to 5 kg (0.05 g) | 29 mg | |
| | Up to 10 kg (0.1 g) | 58 mg | |
| | Up to 20 kg (0.2 g) | 0.12 g | |
| | Up to 50 kg (0.5 g) | 0.29 g | |
| | Up to 50 kg (1 g) | 0.58 g | |
| | Up to 50 kg (2 g) | 1.2 g | |
| | Up to 50 kg (5 g) | 2.9 g | |



Mass and Mass Related

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|---|--------------------------|---|--|
| Class III & Unclassified Light Capacity Scales ¹ (resolution) | Up to 1 lb (0.0001 lb) | 0.026 g | NIST Class F Weights NIST Handbook 44 and WI-09 |
| | Up to 2 lb (0.0002 lb) | 0.054 g | |
| | Up to 5 lb (0.0005 lb) | 0.13 g | |
| | Up to 10 lb (0.001 lb) | 0.26 g | |
| | Up to 20 lb (0.002 lb) | 0.54 g | |
| | Up to 50 lb (0.005 lb) | 1.3 g | |
| | Up to 100 lb (0.01 lb) | 2.6 g | |
| Class III & Unclassified Medium Capacity Scales ¹ (resolution) | Up to 500 lb (0.05 lb) | 0.029 lb | NIST Class F Weights NIST Handbook 44 and WI-09 |
| | Up to 1 000 lb (0.1 lb) | 0.058 lb | |
| | Up to 2 000 lb (0.2 lb) | 0.12 lb | |
| | Up to 5 000 lb (0.5 lb) | 0.29 lb | |
| | Up to 10 000 lb (1 lb) | 0.58 lb | |
| | Up to 20 000 lb (2 lb) | 1.2 lb | |
| Class III & Unclassified Heavy Capacity Scales ¹ (resolution) | Up to 50 000 lb (10 lb) | 5.8 lb | NIST Class F Weights NIST Handbook 44 and WI-09 |
| | Up to 200 000 lb (20 lb) | 12 lb | |
| | Up to 400 000 lb (50 lb) | 29 lb | |
| Class IV & Unclassified Scales ¹ (resolution) | Up to 12 000 lb (10 lb) | 5.8 lb | NIST Class F Weight NIST Handbook 44 and WI-09s |
| | Up to 24 000 lb (20 lb) | 12 lb | |
| | Up to 60 000 lb (50 lb) | 29 lb | |
| Mass - Avoirdupois lb | 25 lb | 0.1 g | NIST Class F Weights NISTIR 6969 SOP 4, SOP 7 or SOP 8 |
| | 50 lb | 0.13 g | |
| | 250 lb | 0.54 g | |
| | 500 lb | 6.4 g | |
| | 1 000 lb | 7.2 g | |
| | 2 500 lb | 50 g | |
| | 3 000 lb | 50 g | |
| 5 000 lb | 54 g | | |
| Mass - Avoirdupois lb | 1 lb | 0.16 mg | ASTM Class 4 Weights NISTIR 6969 SOP 4, SOP 7 or SOP 8 |
| | 2 lb | 0.23 mg | |
| | 3 lb | 0.64 mg | |
| | 5 lb | 1 mg | |
| | 10 lb | 1.5 mg | |
| | 20 lb | 8.6 mg | |
| | 30 lb | 31 mg | |



Mass and Mass Related

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|---------------------|---------|---|--|
| Mass - oz | 1/32 oz | 3.7 μ g | ASTM Class 4 Weights NISTIR 6969 SOP 4, SOP 7 or SOP 8 |
| | 1/16 oz | 5.1 μ g | |
| | 1/8 oz | 5.1 μ g | |
| | 1/4 oz | 13 μ g | |
| | 1/2 oz | 24 μ g | |
| | 1 oz | 0.04 mg | |
| | 2 oz | 0.034 mg | |
| | 4 oz | 0.22 mg | |
| Mass - Metric | 20 kg | 0.18 g | NIST Class F Weights NISTIR 6969 SOP 4, SOP 7 or SOP 8 |
| | 25 kg | 0.17 g | |
| | 200 kg | 5.1 g | |
| Mass - Metric | 100 g | 0.034 mg | ASTM Class 0 Weights NISTIR 6969 SOP 4, SOP 7 or SOP 8 |
| | 200 g | 0.1 mg | |
| | 300 g | 0.10 mg | |
| | 500 g | 0.076 mg | |
| | 1 kg | 0.19 mg | |
| | 2 kg | 0.41 mg | |
| | 3 kg | 0.79 mg | |
| | 4 kg | 0.68 mg | |
| | 5 kg | 0.84 mg | |
| 10 kg | 38 mg | | |
| Mass - Metric | 1 mg | 1.1 μ g | ASTM Class 0 Weights NISTIR 6969 SOP 4, SOP 7 or SOP 8 |
| | 2 mg | 1.1 μ g | |
| | 3 mg | 1.1 μ g | |
| | 5 mg | 1.1 μ g | |
| | 10 mg | 1.1 μ g | |
| | 20 mg | 1.1 μ g | |
| | 30 mg | 1.1 μ g | |
| | 50 mg | 1.1 μ g | |
| | 100 mg | 1.1 μ g | |
| | 200 mg | 1.1 μ g | |
| | 300 mg | 1.1 μ g | |
| | 500 mg | 1.1 μ g | |



Mass and Mass Related

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|---|---|---|--|
| Mass - Metric | 1 g 2 g 3 g 5 g 10 g 20 g 30 g 50 g | 3.8 µg 2.3 µg 3.3 µg 3.6 µg 7.4 µg 7.6 µg 11 µg 17 µg | ASTM Class 0 Weights NISTIR 6969 SOP 4, SOP 7 or SOP 8 |
| Force ¹ | (2 to 200 lbf) (200 to 10 000) lbf (10 000 to 100 000) lbf | 0.03 % of reading 0.039 % of reading 0.039 % of reading | Dead Weights Load Cells |
| Pressure Gauges ¹ | Up to 3 000 psi Up to 10 000 psi | 0.93 psi 0.91 psi | Pressure Calibrator Fluke 754 with Pressure Module |
| Vacuum ¹ | (-15 to 100) psi | 0.074 psi | Pressure Calibrator Fluke 754 with pressure Module |
| Torque Tools ¹ | (Up to 50) lbf·in (50 to 250) lbf·in (250 to 400) lbf·in (400 to 1000) lbf·in (1000 to 2500) lbf·in (Up to 100) lbf·ft (100 to 250) lbf·ft (250 to 600) lbf·ft | 0.07 lbf·in 0.44 lbf·in 1.2 lbf·in 2.9 lbf·in 7.2 lbf·in 0.22 lbf·ft 1.7 lbf·ft 4.1 lbf·ft | Torque Transducers |
| Torque Transducers ¹ | 2 to 2 000 lbf·ft | 0.012 % of Reading | Radius Arms w/Class F Weights |
| Indirect Verification of Rockwell and Superficial Hardness Testers ¹ | HRA 82.9 HRA 84.3 HRB 91.3 HRB 92.9 HRC 25.1 HRC 45.4 HRC 47.3 HRC 64.2 | 0.97 HRA 0.54 HRA 0.54 HRB 1.5 HRB 1.5 HRC 0.60 HRC 1.4 HRC 0.43 HRC | Hardness Test Blocks ASTM E-18 |



Thermodynamic

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|--|--------------------------------------|---|---|
| Relative Humidity Sensors ¹ | (5 to 95) %RH | 1.9 %RH | Humidity Chamber w/ Reference Probe Thermohygrometer OEM, GIDEP Sourced Procedures |
| Temperature -Infrared Non-Contact Measuring Equipment ¹ | (35 to 500) °C | 1.2 °C | Blackbody Source OEM, GIDEP, Met/Cal, Sourced Procedures $\epsilon = 0.95, \lambda = (8 \text{ to } 14) \mu\text{m}$ |
| Temperature - Measure ¹ | (-40 to 660) °C (660 to 1 450) °C | 0.008 9 °C 3.8 °C | Hart 1529 Indicator w/ 5628 PRT Hart 1529 Indicator w/ 5650 Type S Thermocouple Thermohygrometer OEM, GIDEP, Met/Cal, Sourced Procedures |
| Temperature - Source ¹ | (-40 to 660) °C (660 to 1 200) °C | 0.028 °C 4.8 °C | Dry Well and Hart 1529 Indicator w/ 5628 PRT Dry Well and Hart 1529 Indicator w/ 5650 Type S Thermocouple OEM, GIDEP, Met/Cal, Sourced Procedures |
| Extrusion Plastometers Temperature ¹ | (100 to 400) °C | 0.24 °C | Hart 1529 Indicator w/ 5628 PRT |

Time and Frequency

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|---------------------------------|----------------|---|---|
| Stopwatches/Timers ¹ | Up to 86 400 s | 3.5 s / 24 hours | US National Time Stopwatch NIST SP 960-12 |



Time and Frequency

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|--|---|--|---|
| Frequency – Source ¹ | (0.01 to 120) Hz (120 to 1200) Hz (1.2 to 12) kHz (12 to 120) kHz (120 to 1200) kHz (1.2 to 2) MHz | 0.18 mHz 0.2 mHz 0.059 Hz 0.12 Hz 0.66 Hz 0.058 kHz | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |
| Frequency – Measure ¹ | (3 to 5) Hz (5 to 10) Hz (10 to 40) Hz (40 to 1000) Hz (1 to 300) kHz 300 kHz to 1 MHz | 3.6 mHz 6.9 mHz 16 mHz 19 mHz 0.16 kHz 0.16 kHz | Fluke 8846A Multimeter OEM, GIDEP, Met/Cal Sourced Procedures |
| Tachometer ¹ Non - Contact | 500 to 40 000 rpm | .08 % of reading | Monarch PLT 2000 |

Services performed at satellite location

7133 Global Drive
Louisville, KY 40258

Electrical – DC/Low Frequency

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|-----------------------------------|---|---|---|
| DC Voltage – Source ¹ | Up to 330 mV 330 mV to 3.3 V (3.3 to 33) V (33 to 330) V (100 to 1 000) V | 1.6 μV 16 μV 0.13 mV 1.3 mV 3.1 mV | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |
| DC Voltage - Measure ¹ | Up to 100 mV 100 mV to 1 V (1 to 10) V (10 to 100) V (100 to 1 000) V | 2.4 μV 6.4 μV 0.052 mV 0.67 mV 9.6 mV | Fluke 8846A Multimeter OEM, GIDEP, Met/Cal Sourced Procedures |



Electrical – DC/Low Frequency

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|--|--|--|--|
| DC Current - Source ¹ | Up to 330 μ A 330 μ A to 3.3 mA (3.3 to 33) mA (33 to 330) mA 330 mA to 1.1 A (1.1 to 3) A (3 to 11) A (11 to 20.5) A | 0.014 μ A 0.19 μ A 0.48 μ A 4.4 μ A 77 μ A 0.31 mA 1.5 mA 23 mA | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |
| DC Current - Source for Clamp on Current Meters ¹ | (20 to 200) A (200 to 500) A (500 to 1 000) A | 0.41 A 1.1 A 2.1 A | Fluke 5520A Multiproduct Calibrator w/ 50 turn coil. OEM, GIDEP, Met/Cal Sourced Procedures |
| DC Current - Measure ¹ | Up to 100 μ A 100 μ A to 1 mA (1 to 10) mA (10 to 100) mA (100 to 400) mA 400 mA to 1 A (1 to 3) A (3 to 10) A | 0.018 μ A 0.67 μ A 1.7 μ A 6.7 μ A 20 μ A 0.27 mA 1.1 mA 3.5 mA | Fluke 8846A Multimeter OEM, GIDEP, Met/Cal Sourced Procedures |
| Resistance - Source ¹ | Up to 11 Ω (11 to 33) Ω (33 to 110) Ω (110 to 330) Ω (0.33 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 (0.33 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 (110 to 330) M Ω (330 to 1 100) M Ω | 0.67 m Ω 1.4 m Ω 1.7 m Ω 3.4 m Ω 9.6 m Ω 38 m Ω 96 m Ω 0.39 Ω 0.99 Ω 3.8 Ω 32 Ω 79 Ω 0.39 k Ω 3.5 k Ω 13 k Ω 0.29 M Ω 3.7 M Ω | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |



Electrical – DC/Low Frequency

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|-----------------------------------|-------------------------------------|---|---|
| Resistance - Measure ¹ | Up to 10 Ω | 2 mΩ | Fluke 8846A Multimeter OEM, GIDEP, Met/Cal Sourced Procedures |
| | (10 to 100) Ω | 3.6 mΩ | |
| | (0.1 to 1) kΩ | 14 mΩ | |
| | (1 to 10) kΩ | 0.14 Ω | |
| | (10 to 100) kΩ | 1.4 Ω | |
| | (0.1 to 1) MΩ | 14 Ω | |
| | (1 to 10) MΩ | 3.3 kΩ | |
| | (10 to 100) MΩ (0.1 to 1) GΩ | 60 kΩ 1.4 MΩ | |
| AC Voltage - Source ¹ | (1 to 33) mV | | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |
| | (10 to 45) Hz | 4.7 μV | |
| | 45 Hz to 10 kHz | 4.1 μV | |
| | (10 to 20) kHz | 4.2 μV | |
| | (20 to 50) kHz | 4.8 μV | |
| | (50 to 100) kHz (100 to 500) kHz | 10 μV 39 μV | |
| AC Voltage - Source ¹ | (33 to 330) mV | | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |
| | (10 to 45) Hz | 15 μV | |
| | 45 Hz to 10 kHz | 11 μV | |
| | (10 to 20) kHz | 14 μV | |
| | (20 to 50) kHz | 15 μV | |
| | (50 to 100) kHz | 39 μV | |
| | (100 to 500) kHz | 92 μV | |
| | (0.33 to 3.3) V | | |
| | (10 to 45) Hz | 0.12 mV | |
| | 45 Hz to 10 kHz | 0.086 mV | |
| | (10 to 20) kHz | 0.09 mV | |
| | (20 to 50) kHz | 0.16 mV | |
| | (50 to 100) kHz | 0.28 mV | |
| | (100 to 500) kHz | 0.93 mV | |
| | (3.3 to 33) V | | |
| | (10 to 45) Hz | 1.2 mV | |
| | 45 Hz to 10 kHz | 1.2 mV | |
| | (10 to 20) kHz | 1.7 mV | |
| (20 to 50) kHz | 1.5 mV | | |
| (50 to 100) kHz | 3.1 mV | | |



Electrical – DC/Low Frequency

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|-----------------------------------|------------------|---|---|
| AC Voltage - Source ¹ | (33 to 330) V | | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |
| | 45 Hz to 1 kHz | 8.7 mV | |
| | 1 kHz to 10 kHz | 9.1 mV | |
| | (10 to 20) kHz | 11 mV | |
| | (20 to 50) kHz | 12 mV | |
| | (50 to 100) kHz | 78 mV | |
| | (330 to 1 020) V | | |
| | 45 Hz to 1 kHz | 73 mV | |
| | (1 to 5) kHz | 63 mV | |
| | (5 to 10) kHz | 73 mV | |
| AC Voltage - Measure ¹ | Up to 100 mV | | Fluke 8846A Multimeter OEM, GIDEP, Met/Cal Sourced Procedures |
| | (3 to 5) Hz | 0.027 mV | |
| | (5 to 10) Hz | 0.027 mV | |
| | 10 Hz to 20 kHz | 0.027 mV | |
| | (20 to 50) kHz | 0.033 mV | |
| | (50 to 100) kHz | 0.053 mV | |
| | (100 to 300) kHz | 0.33 mV | |
| | 100 mV to 1 V | | |
| | (3 to 5) Hz | 0.87 mV | |
| | (5 to 10) Hz | 0.43 mV | |
| | 10 Hz to 20 kHz | 0.24 mV | |
| | (20 to 50) kHz | 0.41 mV | |
| | (50 to 100) kHz | 0.93 mV | |
| | (100 to 300) kHz | 6 mV | |
| | (1 to 10) V | | |
| | (3 to 5) Hz | 8.7 mV | |
| | (5 to 10) Hz | 4.3 mV | |
| | 10 Hz to 20 kHz | 2.4 mV | |
| | (20 to 50) kHz | 4.1 mV | |
| | (50 to 100) kHz | 9.3 mV | |
| | (100 to 300) kHz | 60 mV | |
| | (10 to 100) V | | |
| | (3 to 5) Hz | 87 mV | |
| | (5 to 10) Hz | 43 mV | |
| 10 Hz to 20 kHz | 24 mV | | |
| (20 to 50) kHz | 41 mV | | |
| (50 to 100) kHz | 93 mV | | |
| (100 to 300) kHz | 0.6 V | | |



Electrical – DC/Low Frequency

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|-----------------------------------|---------------------|---|---|
| AC Voltage - Measure ¹ | (100 to 1 000) V | | Fluke 8846A Multimeter OEM, GIDEP, Met/Cal Sourced Procedures |
| | (3 to 5) Hz | 0.82 V | |
| | (5 to 10) Hz | 0.38 V | |
| | 10 Hz to 20 kHz | 0.19 V | |
| | (20 to 50) kHz | 0.33 V | |
| | (50 to 100) kHz | 0.8 V | |
| | (100 to 300) kHz | 5.2 V | |
| AC Current - Source ¹ | (29 to 330) μ A | | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |
| | (10 to 20) Hz | 0.11 μ A | |
| | (20 to 45) Hz | 0.1 μ A | |
| | 45 Hz to 1 kHz | 0.096 μ A | |
| | (1 to 5) kHz | 0.16 μ A | |
| | (5 to 10) kHz | 0.29 μ A | |
| | (10 to 30) kHz | 0.58 μ A | |
| | (0.33 to 3.3) mA | | |
| | (10 to 20) Hz | 0.55 μ A | |
| | (20 to 45) Hz | 0.39 μ A | |
| | 45 Hz to 1 kHz | 0.4 μ A | |
| | (1 to 5) kHz | 0.61 μ A | |
| | (5 to 10) kHz | 1.4 μ A | |
| | (10 to 30) kHz | 2.6 μ A | |
| | (3.3 to 33) mA | | |
| | (10 to 20) Hz | 5.3 μ A | |
| | (20 to 45) Hz | 3.3 μ A | |
| | 45 Hz to 1 kHz | 3.2 μ A | |
| | (1 to 5) kHz | 3.7 μ A | |
| | (5 to 10) kHz | 7 μ A | |
| | (10 to 30) kHz | 12 μ A | |
| | (33 to 330) mA | | |
| | (10 to 20) Hz | 0.055 mA | |
| | (20 to 45) Hz | 0.037 mA | |
| 45 Hz to 1 kHz | 0.03 mA | | |
| (1 to 5) kHz | 0.056 mA | | |
| (5 to 10) kHz | 0.11 mA | | |
| (10 to 30) kHz | 0.22 mA | | |

Electrical – DC/Low Frequency

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|--|------------------|--|---|
| AC Current - Source ¹ | (0.33 to 1.1) A | | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |
| | (10 to 45) Hz | 0.47 mA | |
| | 45 Hz to 1kHz | 0.18 mA | |
| | (1 to 5) kHz | 2 mA | |
| | (5 to 10) kHz | 8.8 mA | |
| | (1.1 to 3) A | | |
| | (10 to 45) Hz | 1.4 mA | |
| | 45 Hz to 1kHz | 0.6 mA | |
| | (1 to 5) kHz | 8 mA | |
| | (5 to 10) kHz | 22 mA | |
| | (3 to 11) A | | |
| | (45 to 100) Hz | 2.7 mA | |
| | 100 Hz to 1 kHz | 3.4 mA | |
| | (1 to 5) kHz | 61 mA | |
| (11 to 20.5) A | | | |
| (45 to 100) Hz | 17 mA | | |
| 100 Hz to 440 Hz | 18 mA | | |
| AC Current - Source for Clamp on Current Meters ¹ | (20 to 200) A | | Fluke 5520A Multiproduct Calibrator w/ 50 turn coil OEM, GIDEP, Met/Cal Sourced Procedures |
| | (45 to 440) Hz | 0.44 A | |
| | (200 to 500) A | | |
| | (45 to 200) Hz | 1.2 A | |
| | (500 to 1 000) A | | |
| | (45 to 200) Hz | 2.5 A | |
| AC Current – Measure ¹ | Up to 100 μA | | Fluke 8846A Multimeter OEM, GIDEP, Met/Cal Sourced Procedures |
| | (3 to 5) Hz | 0.29 μA | |
| | (5 to 10) Hz | 0.14 μA | |
| | 10 Hz to 5 kHz | 0.041 μA | |
| | (5 to 10) kHz | 0.47 μA | |
| | 100 μA to 1 mA | | |
| | (3 to 5) Hz | 6 μA | |
| | (5 to 10) Hz | 0.74 μA | |
| | 10 Hz to 5 kHz | 0.34 μA | |
| | (5 to 10) kHz | 1.8 μA | |
| | (1 to 10) mA | | |
| | (3 to 5) Hz | 0.12 mA | |
| | (5 to 10) Hz | 0.012 mA | |
| | 10 Hz to 5 kHz | 0.005 mA | |
| (5 to 10) kHz | 0.049 mA | | |



Electrical – DC/Low Frequency

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|-----------------------------------|-------------------|---|---|
| AC Current – Measure ¹ | (10 to 100) mA | | Fluke 8846A Multimeter OEM, GIDEP, Met/Cal Sourced Procedures |
| | (3 to 5) Hz | 0.81 mA | |
| | (5 to 10) Hz | 0.13 mA | |
| | 10 Hz to 5 kHz | 0.23 mA | |
| | (5 to 10) kHz | 0.18 mA | |
| | (100 to 400) mA | | |
| | (3 to 5) Hz | 0.93 mA | |
| | (5 to 10) Hz | 0.49 mA | |
| | 10 Hz to 1 kHz | 0.33 mA | |
| | (1 to 10) kHz | 2 mA | |
| | 400 mA to 1 A | | |
| | (3 to 5) Hz | 5.3 mA | |
| | (5 to 10) Hz | 1.7 mA | |
| | 10 Hz to 5 kHz | 0.53 mA | |
| | (5 to 10) kHz | 5.6 mA | |
| | (1 to 3) A | | |
| | (3 to 5) Hz | 8.5 mA | |
| | (5 to 10) Hz | 3.5 mA | |
| 10 Hz to 5 kHz | 2.3 mA | | |
| (5 to 10) kHz | 16 mA | | |
| (3 to 10) A | | | |
| (3 to 5) Hz | 26 mA | | |
| (5 to 10) Hz | 11 mA | | |
| 10 Hz to 5 kHz | 7.3 mA | | |
| (5 to 10) kHz | 54 mA | | |
| Capacitance – Source ¹ | | | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |
| 10 Hz to 10 kHz | (0.19 to 0.40) nF | 0.007 3 nF | |
| 10 Hz to 10 kHz | (0.40 to 1.1) nF | 0.009 9 nF | |
| 10 Hz to 3 kHz | (1.1 to 3.3) nF | 0.012 nF | |
| 10 Hz to 1 kHz | (3.3 to 11) nF | 0.06 nF | |
| 10 Hz to 1 kHz | (11 to 33) nF | 0.12 nF | |
| 10 Hz to 1 kHz | (33 to 110) nF | 0.6 nF | |
| 10 Hz to 1 kHz | (110 to 330) nF | 0.69 nF | |
| (10 to 600) Hz | (0.33 to 1.1) μF | 0.006 1 μF | |
| (10 to 300) Hz | (1.1 to 3.3) μF | 0.006 9 μF | |
| (10 to 150) Hz | (3.3 to 11) μF | 0.059 μF | |
| (10 to 120) Hz | (11 to 33) μF | 0.076 μF | |
| (10 to 80) Hz | (33 to 110) μF | 0.60 μF | |
| Up to 50 Hz | (110 to 330) μF | 0.78 μF | |



Electrical – DC/Low Frequency

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|--|---|---|--|
| Capacitance – Source ¹ Up to 20 Hz Up to 6 Hz Up to 2 Hz Up to 0.6 Hz Up to 0.2 Hz | (0.33 to 1.1) mF (1.1 to 3.3) mF (3.3 to 11) mF (11 to 33) mF (33 to 110) mF | 0.006 mF 0.012 mF 0.061 mF 0.14 mF 0.38 mF | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |
| Capacitance – Measure ¹ | Up to 1 nF (1 to 10) nF (10 to 100) nF (0.1 to 1) μF (1 to 10) μF (10 to 100) μF (0.1 to 1) mF (1 to 10) mF (10 to 100) mF | 0.017 nF 0.041 nF 0.4 nF 0.004 μF 0.04 μF 0.4 μF 0.004 mF 0.04 mF 1.6 mF | Fluke 8846A Multimeter OEM, GIDEP, Met/Cal Sourced Procedures |
| Oscilloscopes ¹ Amplitude DC Signal DC Voltage (1 MΩ) Leveled Sine Wave 50 kHz to 600 mHz Time Markers 20 % Duty Cycle Wave Generator (1 MΩ) | 1 mV to 100 V 5 mV to 5.5 V 10 ns to 5 s 100 ns to 20 ms 1.8 mV to 55 V 10 Hz to 10 kHz | 0.5 mV ± 40 mV 8 mV ± 0.33 mV 0.000 12 s ± 0.005 s 12 ms 0.031 V ± 1.65 mV 0.56 mHz ± 50 mHz | Fluke 5520-SC600 Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures NAVAIR17-20AW-506 August 2015 |
| Electrical Simulation of Thermocouple Devices ¹ | Type B (600 to 800) °C (800 to 1 000) °C (1 000 to 1 550) °C (1 550 to 1 820) °C Type C (0 to 150) °C (150 to 650) °C (650 to 1 000) °C (1 000 to 1 800) °C (1 800 to 2 316) °C | 0.62 °C 0.34 °C 0.31 °C 0.37 °C 0.42 °C 0.38 °C 0.31 °C 0.5 °C 0.84 °C | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |



Electrical – DC/Low Frequency

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|--|---------------------|---|---|
| Electrical Simulation of Thermocouple Devices ¹ | Type E | | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |
| | (-250 to -100) °C | 0.51 °C | |
| | (-100 to -25) °C | 0.16 °C | |
| | (-25 to 350) °C | 0.15 °C | |
| | (350 to 650) °C | 0.17 °C | |
| | (650 to 1 000) °C | 0.21 °C | |
| | Type J | | |
| | (-210 to -100) °C | 0.27 °C | |
| | (-100 to -30) °C | 0.17 °C | |
| | (-30 to 150) °C | 0.14 °C | |
| | (150 to 760) °C | 0.17 °C | |
| | (760 to 1 200) °C | 0.23 °C | |
| | Type K | | |
| | (-200 to -100) °C | 0.34 °C | |
| | (-100 to -25) °C | 0.18 °C | |
| | (-25 to 120) °C | 0.16 °C | |
| | (120 to 1 000) °C | 0.26 °C | |
| | (1 000 to 1 372) °C | 0.4 °C | |
| | Type L | | |
| | (-200 to -100) °C | 0.38 °C | |
| | (-100 to 800) °C | 0.26 °C | |
| | (800 to 900) °C | 0.17 °C | |
| | Type N | | |
| | (-200 to -100) °C | 0.64 °C | |
| (-100 to -25) °C | 0.54 °C | | |
| (-25 to 120) °C | 0.19 °C | | |
| (120 to 410) °C | 0.19 °C | | |
| (410 to 1 300) °C | 0.28 °C | | |
| Type R | | | |
| (0 to 250) °C | 0.48 °C | | |
| (250 to 400) °C | 0.37 °C | | |
| (400 to 1 000) °C | 0.37 °C | | |
| (1 000 to 1 767) °C | 0.46 °C | | |
| Type S | | | |
| (0 to 250) °C | 0.49 °C | | |
| (250 to 1000) °C | 0.37 °C | | |
| (1 000 to 1 400) °C | 0.37 °C | | |
| (1 400 to 1 767) °C | 0.46 °C | | |



Electrical – DC/Low Frequency

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|--|-------------------|---|---|
| Electrical Simulation of Thermocouple Devices ¹ | Type T | | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |
| | (-250 to -150) °C | 0.83 °C | |
| | (-150 to 0) °C | 0.59 °C | |
| | (0 to 120) °C | 0.34 °C | |
| | (120 to 400) °C | 0.33 °C | |
| | Type U | | |
| (-200 to 0) °C | 0.57 °C | | |
| (0 to 600) °C | 0.3 °C | | |
| Electrical Simulation of RTD Devices ¹ | Pt 385, 100 Ω | | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |
| | (-200 to -80) °C | 0.034 °C | |
| | (-80 to 0) °C | 0.034 °C | |
| | (0 to 100) °C | 0.047 °C | |
| | (100 to 300) °C | 0.06 °C | |
| | (300 to 400) °C | 0.068 °C | |
| | (400 to 630) °C | 0.08 °C | |
| | (630 to 800) °C | 0.15 °C | |
| | Pt 3926, 100 Ω | | |
| | (-200 to -80) °C | 0.033 °C | |
| | (-80 to 0) °C | 0.036 °C | |
| | (0 to 100) °C | 0.047 °C | |
| | (100 to 300) °C | 0.06 °C | |
| | (300 to 400) °C | 0.067 °C | |
| | (400 to 630) °C | 0.08 °C | |
| | Pt 3916, 100 Ω | | |
| | (-200 to -190) °C | 0.17 °C | |
| | (-190 to -80) °C | 0.027 °C | |
| | (-80 to 0) °C | 0.03 °C | |
| | (0 to 100) °C | 0.04 °C | |
| | (100 to 260) °C | 0.05 °C | |
| (260 to 300) °C | 0.05 °C | | |
| (300 to 400) °C | 0.06 °C | | |
| (400 to 600) °C | 0.07 °C | | |
| (600 to 630) °C | 0.2 °C | | |



Electrical – DC/Low Frequency

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|---|------------------|---|---|
| Electrical Simulation of RTD Devices ¹ | Pt 385, 200 Ω | | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |
| | (-200 to -80) °C | 0.027 °C | |
| | (-80 to 0) °C | 0.027 °C | |
| | (0 to 100) °C | 0.027 °C | |
| | (100 to 260) °C | 0.034 °C | |
| | (260 to 300) °C | 0.08 °C | |
| | (300 to 400) °C | 0.088 °C | |
| | (400 to 600) °C | 0.094 °C | |
| | (600 to 630) °C | 0.11 °C | |
| | Pt 385, 500 Ω | | |
| | (-200 to -80) °C | 0.027 °C | |
| | (-80 to 0) °C | 0.034 °C | |
| | (0 to 100) °C | 0.034 °C | |
| | (100 to 260) °C | 0.041 °C | |
| | (260 to 300) °C | 0.054 °C | |
| | (300 to 400) °C | 0.053 °C | |
| | (400 to 600) °C | 0.064 °C | |
| | (600 to 630) °C | 0.073 °C | |
| | Pt 385, 1000 Ω | | |
| | (-200 to -80) °C | 0.02 °C | |
| | (-80 to 0) °C | 0.02 °C | |
| | (0 to 100) °C | 0.027 °C | |
| | (100 to 260) °C | 0.033 °C | |
| | (260 to 300) °C | 0.04 °C | |
| | (300 to 400) °C | 0.047 °C | |
| | (400 to 600) °C | 0.047 °C | |
| | (600 to 630) °C | 0.15 °C | |
| PtNi 385, 120 Ω | | | |
| (-80 to 0) °C | 0.053 °C | | |
| (0 to 100) °C | 0.053 °C | | |
| (100 to 260) °C | 0.093 °C | | |
| Cu 427, 10 Ω | | | |
| (-100 to 260) °C | 0.2 °C | | |



Length – Dimensional metrology

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|--|----------------------------|---|--|
| Micrometers, ID, OD & Depth ^{1,2} | Up to 6 in (6 to 60) in | (21 + 9.8L) μin (34 + 6L) μin | Gage Blocks Federal Grade 2 / ASME Grade 0 OEM, GIDEP Sourced Procedures |
| Calipers, ID, OD & Depth ^{1,2} | Up to 6 in (6 to 84) in | (57 + 0.96L) μin (30 + 3.1L) μin | Gage Blocks Federal Grade 2 / ASME Grade 0 OEM, GIDEP Sourced Procedures |
| Surface Plates ¹ Repeat Readings Overall Flatness | 0.002 in | 0.000 1 in 0.000 22 in | Repeat -O-Meter Electronic Levels GGG-463 C |

Mass and Mass Related

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|---|-----------------------|---|--|
| Class I & Unclassified Balances ¹ | Up to 100 g (0.01 mg) | 0.034 mg | ASTM Class 1 Weights NIST Handbook 44 and WI-09 |
| | Up to 100 g (0.02 mg) | 0.036 mg | |
| | Up to 100 g (0.05 mg) | 0.045 mg | |
| | Up to 200 g (0.1 mg) | 0.089 mg | |
| | Up to 200 g (0.2 mg) | 0.13 mg | |
| | Up to 200 g (0.5 mg) | 0.3 mg | |
| Class II & Unclassified Balances ¹ | Up to 100 g (0.001 g) | 0.58 mg | ASTM Class 1 or 2 Weights NIST Handbook 44 and WI-093 |
| | Up to 200 g (0.002 g) | 1.2 mg | |
| | Up to 500 g (0.005 g) | 2.9 mg | |
| | Up to 1 kg (0.01 g) | 5.8 mg | |
| | Up to 2 kg (0.02 g) | 12 mg | |
| | Up to 5 kg (0.05 g) | 29 mg | |
| | Up to 10 kg (0.1 g) | 58 mg | |
| | Up to 20 kg (0.2 g) | 0.12 g | |
| | Up to 50 kg (0.5 g) | 0.29 g | |
| | Up to 50 kg (1 g) | 0.58 g | |
| | Up to 50 kg (2 g) | 1.2 g | |
| | Up to 50 kg (5 g) | 2.9 g | |



Mass and Mass Related

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|--|--------------------------|---|--|
| Class III & Unclassified Light Capacity Scales ¹ | Up to 1 lb (0.0001 lb) | 0.026 g | NIST Class F Weights NIST Handbook 44 and WI-09 |
| | Up to 2 lb (0.0002 lb) | 0.054 g | |
| | Up to 5 lb (0.0005 lb) | 0.13 g | |
| | Up to 10 lb (0.001 lb) | 0.26 g | |
| | Up to 20 lb (0.002 lb) | 0.54 g | |
| | Up to 50 lb (0.005 lb) | 1.3 g | |
| | Up to 100 lb (0.01 lb) | 2.6 g | |
| Class III & Unclassified Medium Capacity Scales ¹ | Up to 500 lb (0.05 lb) | 0.029 lb | NIST Class F Weights NIST Handbook 44 and WI-09 |
| | Up to 1 000 lb (0.1 lb) | 0.058 lb | |
| | Up to 2 000 lb (0.2 lb) | 0.12 lb | |
| | Up to 5 000 lb (0.5 lb) | 0.29 lb | |
| | Up to 10 000 lb (1 lb) | 0.58 lb | |
| | Up to 20 000 lb (2 lb) | 1.2 lb | |
| | Up to 50 000 lb (5 lb) | 2.9 lb | |
| Class III & Unclassified Heavy Capacity Scales ¹ | Up to 50 000 lb (10 lb) | 5.8 lb | NIST Class F Weights NIST Handbook 44 and WI-09 |
| | Up to 200 000 lb (20 lb) | 12 lb | |
| | Up to 400 000 lb (50 lb) | 29 lb | |
| Class IV & Unclassified Scales ¹ | Up to 12 000 lb (10 lb) | 5.8 lb | NIST Class F Weight NIST Handbook 44 and WI-09s |
| | Up to 24 000 lb (20 lb) | 12 lb | |
| | Up to 60 000 lb (50 lb) | 29 lb | |
| Force ¹ | 2 to 200 lbf | 0.03 % of reading | Dead Weights Load Cells |
| | (200 to 10 000) lbf | 0.039 % of reading | |
| | (10 000 to 100 000) lbf | 0.039 % of reading | |
| Pressure Gauges ¹ | Up to 3 000 psi | 0.93 psi | Pressure Calibrator Fluke 754 with Pressure Module |
| | Up to 10 000 psi | 0.91 psi | |
| Vacuum ¹ | (-15 to 100) psi | 0.074 psi | Pressure Calibrator Fluke 754 with pressure Module |
| Torque Tools ¹ | (Up to 50) lbf·in | 0.07 lbf·in | Torque Transducers |
| | (50 to 250) lbf·in | 0.44 lbf·in | |
| | (250 to 400) lbf·in | 1.2 lbf·in | |
| | (400 to 1 000) lbf·in | 2.9 lbf·in | |
| | (1 000 to 2 500) lbf·in | 7.2 lbf·in | |
| | (Up to 100) lbf·ft | 0.22 lbf·ft | |
| | (100 to 250) lbf·ft | 1.7 lbf·ft | |
| (250 to 600) lbf·ft | 4.1 lbf·ft | | |

Thermodynamic

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|--|--------------------------------------|---|---|
| Relative Humidity Sensors ¹ | (5 to 95) %RH | 1.9 %RH | Humidity Chamber w/ Reference Probe Thermohygrometer OEM, GIDEP Sourced Procedures |
| Temperature - Measure ¹ | (-40 to 660) °C (660 to 1 450) °C | 0.008 9 °C 3.8 °C | Hart 1529 Indicator w/ 5628 PRT Hart 1529 Indicator w/ 5650 Type S Thermocouple Thermohygrometer OEM, GIDEP, Met/Cal, Sourced Procedures |
| Temperature - Source ¹ | (-40 to 660) °C (660 to 1 200) °C | 0.028 °C 4.8 °C | Dry Well and Hart 1529 Indicator w/ 5628 PRT Dry Well and Hart 1529 Indicator w/ 5650 Type S Thermocouple OEM, GIDEP, Met/Cal, Sourced Procedures |

Time and Frequency

| Parameter/Equipment | Range | Expanded Uncertainty of Measurement (+/-) | Reference Standard, Method, and/or Equipment |
|----------------------------------|---|--|---|
| Frequency – Source ¹ | (0.01 to 120) Hz (120 to 1 200) Hz (1.2 to 12) kHz (12 to 120) kHz (120 to 1 200) kHz (1.2 to 2) MHz | 0.18 mHz 0.2 mHz 0.059 Hz 0.12 Hz 0.66 Hz 0.058 kHz | Fluke 5520A Multiproduct Calibrator OEM, GIDEP, Met/Cal Sourced Procedures |
| Frequency – Measure ¹ | (3 to 5) Hz (5 to 10) Hz (10 to 40) Hz (40 to 1 000) Hz (1 to 300) kHz 300 kHz to 1 MHz | 3.6 mHz 6.9 mHz 16 mHz 19 mHz 0.16 kHz 0.16 kHz | Fluke 8846A Multimeter OEM, GIDEP, Met/Cal Sourced Procedures |

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. L = length in inches.
3. This scope is formatted as part of a single document including Certificate of Accreditation No. AC-1222.



Vice President

