



Certificate of Calibration

Illiana Instrumentation Service LLC

1831 Govert Drive
Scherverville, IN 46375



Calibration Laboratory
CERT#2230.01

Cert #: 22048 Rev. 1

Item # 1228

Certificate Date: 1/23/2025

CUSTOMER

ILLIANA INSTRUMENTATION SERVICE LLC
1831 GOVERT DRIVE
SCHERERVILLE, IN 46375

EQUIPMENT INFORMATION

Item # 1228
Manufacturer FLUKE
Model Number 744
Serial Number 7607012
Equip. Location MOBILE
Description PROCESS CALIBRATOR

CALIBRATION INFORMATION

Date received: 1/23/2025
Technician: PAUL GROLLA

Cal Date: 1/23/2025
Temperature: 72 F

Cal. Interval 3 MONTHS
Humidity 40
Tag

Cal. Due Date: 4/23/2025
Cal location LAB

Department: LAB

Notes:

Problems: None

Adjustments None

Equipment Notes

Sensitivity OKAY

Initial modification offset 0

Final modification offset 0

Note: If the modification offset is not zero, readings reflect zero.

Limitations NONE

Accuracy VARIES BY POINT



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Quality and traceability statements

This certifies that the above equipment was calibrated using appropriate Illiana Instrumentation technical procedures. At planned intervals, Illiana Instrumentation standards are calibrated by comparison to or measurement against standards which are traceable to the SI units through the NIST or other recognized national measurement institutes or international standard bodies. The results in this report relate only to the item(s) calibrated. If so indicated above, detailed calibration results are attached to this certificate. These results are part of this certificate and this certificate shall not be reproduced except in full, without the written approval of Illiana Instrumentation. Any number of factors not under the control of the calibration laboratory may cause the calibration of the above item(s) to drift before the recommended recalibration date. Supporting documentation relative to traceability and technical procedures used is on file and is available for examination upon request and approval of our quality assurance manager. The above uncertainties represent an expanded uncertainty expressed at approximately 95% confidence level using a coverage factor of k=2. The certificate date on this report constitutes the issue date. No statement of conformity with specifications is made or implied on this certificate. However, measurement results are reviewed, where applicable, to establish where any measurement result exceeded the tolerance listed on this certificate. Measurement results exceeding the tolerance are indicated by an "F" in the Out Of Tolerance column. Add correction factor to as left to get corrected reading. Values are uncorrected for test instrument error.

Calibrated By:

Paul Grolla

Approved By:

Laura Grolla

Customer Approval

Calibration Data

Values found OOT and adjusted are indicated by "A" and items left OOT are indicated by "F"

| Group | Description | Nominal | Lower Tol. | Upper Tol. | As Found | As Left | Units | Uncert. | OOT | Corr. Factor |
|----------|-------------|---------|------------|------------|----------|---------|-------|---------|-----|--------------|
| MEASURE | TYPE K | -180.0 | -180.6 | -179.4 | -179.9 | -179.9 | °C | 0.19 | | -0.1 |
| MEASURE | TYPE K | 0.0 | -0.6 | 0.6 | -0.1 | -0.1 | °C | 0.19 | | 0.1 |
| MEASURE | TYPE K | 400.0 | 399.4 | 400.6 | 399.9 | 399.9 | °C | 0.19 | | 0.1 |
| MEASURE | TYPE K | 800.0 | 799.2 | 800.8 | 799.8 | 799.8 | °C | 0.19 | | 0.2 |
| MEASURE | TYPE K | 1000.0 | 999.0 | 1001.0 | 999.9 | 999.9 | °C | 0.19 | | 0.1 |
| MEASURE | TYPE K | 1300.0 | 1298.7 | 1301.3 | 1299.9 | 1299.9 | °C | 0.19 | | 0.1 |
| | | | | | | | | | | 0 |
| SIMULATE | TYPE K | -180.00 | -180.60 | -179.40 | -180.03 | -180.03 | °C | 0.16 | | 0.03 |
| SIMULATE | TYPE K | 0.00 | -0.60 | 0.60 | -0.05 | -0.05 | °C | 0.16 | | 0.05 |
| SIMULATE | TYPE K | 400.00 | 399.40 | 400.60 | 400.02 | 400.02 | °C | 0.16 | | -0.02 |
| SIMULATE | TYPE K | 800.00 | 799.20 | 800.80 | 800.02 | 800.02 | °C | 0.16 | | -0.02 |
| SIMULATE | TYPE K | 1000.00 | 999.00 | 1001.00 | 1000.01 | 1000.01 | °C | 0.16 | | -0.01 |
| SIMULATE | TYPE K | 1300.00 | 1298.70 | 1301.30 | 1300.05 | 1300.05 | °C | 0.16 | | -0.05 |



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|----------|-------------|---------|------------|------------|----------|---------|-------|---------|-----|--------------|
| | | | | | | | | | | 0 |
| MEASURE | TYPE J | -210.0 | -210.6 | -209.4 | -209.9 | -209.9 | °C | 0.17 | | -0.1 |
| MEASURE | TYPE J | 0.0 | -0.6 | 0.6 | 0.0 | 0.0 | °C | 0.17 | | 0.0 |
| MEASURE | TYPE J | 300.0 | 299.4 | 300.6 | 299.9 | 299.9 | °C | 0.17 | | 0.1 |
| MEASURE | TYPE J | 600.0 | 599.4 | 600.6 | 599.9 | 599.9 | °C | 0.17 | | 0.1 |
| MEASURE | TYPE J | 900.0 | 899.1 | 900.9 | 899.9 | 899.9 | °C | 0.17 | | 0.1 |
| MEASURE | TYPE J | 1200.0 | 1198.8 | 1201.2 | 1200.0 | 1200.0 | °C | 0.17 | | 0.0 |
| | | | | | | | | | | 0 |
| SIMULATE | TYPE J | -210.00 | -210.60 | -209.40 | -210.10 | -210.10 | °C | 0.13 | | 0.10 |
| SIMULATE | TYPE J | 0.00 | -0.60 | 0.60 | 0.00 | 0.00 | °C | 0.13 | | 0.00 |
| SIMULATE | TYPE J | 300.00 | 299.40 | 300.60 | 300.00 | 300.00 | °C | 0.13 | | 0.00 |
| SIMULATE | TYPE J | 600.00 | 599.40 | 600.60 | 600.00 | 600.00 | °C | 0.13 | | 0.00 |
| SIMULATE | TYPE J | 900.00 | 899.10 | 900.90 | 900.00 | 900.00 | °C | 0.13 | | 0.00 |
| SIMULATE | TYPE J | 1200.00 | 1198.80 | 1201.20 | 1200.10 | 1200.10 | °C | 0.13 | | -0.10 |
| | | | | | | | | | | 0 |
| MEASURE | TYPE S | 0.0 | -0.6 | 0.6 | 0.4 | 0.4 | °C | 0.67 | | -0.4 |
| MEASURE | TYPE S | 400.0 | 399.4 | 400.6 | 399.9 | 399.9 | °C | 0.58 | | 0.1 |
| MEASURE | TYPE S | 800.0 | 799.2 | 800.8 | 800.0 | 800.0 | °C | 0.58 | | 0.0 |
| MEASURE | TYPE S | 1200.0 | 1198.8 | 1201.2 | 1200.0 | 1200.0 | °C | 0.58 | | 0.0 |
| MEASURE | TYPE S | 1600.0 | 1598.4 | 1601.6 | 1600.0 | 1600.0 | °C | 0.58 | | 0.0 |
| MEASURE | TYPE S | 1767.0 | 1765.2 | 1768.8 | 1766.8 | 1766.8 | °C | 0.58 | | 0.2 |
| | | | | | | | | | | 0.0 |
| SIMULATE | TYPE S | 0.00 | -0.60 | 0.60 | -0.10 | -0.10 | °C | 0.66 | | 0.10 |
| SIMULATE | TYPE S | 400.00 | 399.40 | 400.60 | 399.90 | 399.90 | °C | 0.55 | | 0.10 |



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|----------|-------------|---------|------------|------------|----------|---------|-------|---------|-----|--------------|
| SIMULATE | TYPE S | 800.00 | 799.20 | 800.80 | 800.10 | 800.10 | °C | 0.55 | | -0.10 |
| SIMULATE | TYPE S | 1200.00 | 1198.80 | 1201.20 | 1200.00 | 1200.00 | °C | 0.55 | | 0.00 |
| SIMULATE | TYPE S | 1600.00 | 1598.40 | 1601.60 | 1600.10 | 1600.10 | °C | 0.55 | | -0.10 |
| SIMULATE | TYPE S | 1767.00 | 1765.20 | 1768.80 | 1766.90 | 1766.90 | °C | 0.55 | | 0.10 |
| | | | | | | | | | | 0 |
| MEASURE | TYPE N | -100.0 | -100.6 | -99.4 | -100.2 | -100.2 | °C | 0.2 | | 0.2 |
| MEASURE | TYPE N | 0.0 | -0.6 | 0.6 | -0.1 | -0.1 | °C | 0.2 | | 0.1 |
| MEASURE | TYPE N | 300.0 | 299.4 | 300.6 | 299.8 | 299.8 | °C | 0.2 | | 0.2 |
| MEASURE | TYPE N | 600.0 | 599.4 | 600.6 | 599.8 | 599.8 | °C | 0.2 | | 0.2 |
| MEASURE | TYPE N | 900.0 | 899.1 | 900.9 | 899.8 | 899.8 | °C | 0.2 | | 0.2 |
| MEASURE | TYPE N | 1300.0 | 1298.7 | 1301.3 | 1299.8 | 1299.8 | °C | 0.2 | | 0.2 |
| | | | | | | | | | | 0 |
| SIMULATE | TYPE N | -100.00 | -100.60 | -99.40 | -99.70 | -99.70 | °C | 0.18 | | -0.30 |
| SIMULATE | TYPE N | 0.00 | -0.60 | 0.60 | 0.30 | 0.30 | °C | 0.18 | | -0.30 |
| SIMULATE | TYPE N | 300.00 | 299.40 | 300.60 | 300.30 | 300.30 | °C | 0.18 | | -0.30 |
| SIMULATE | TYPE N | 600.00 | 599.40 | 600.60 | 600.20 | 600.20 | °C | 0.18 | | -0.20 |
| SIMULATE | TYPE N | 900.00 | 899.10 | 900.90 | 900.20 | 900.20 | °C | 0.18 | | -0.20 |
| SIMULATE | TYPE N | 1300.00 | 1298.70 | 1301.30 | 1300.20 | 1300.20 | °C | 0.18 | | -0.20 |
| | | | | | | | | | | 0.00 |
| MEASURE | TYPE T | -200.0 | -200.6 | -199.4 | -199.9 | -199.9 | °C | 0.74 | | -0.1 |
| MEASURE | TYPE T | 0.0 | -0.6 | 0.6 | 0.1 | 0.1 | °C | 0.73 | | -0.1 |
| MEASURE | TYPE T | 100.0 | 99.4 | 100.6 | 100.0 | 100.0 | °C | 0.73 | | 0.0 |
| MEASURE | TYPE T | 200.0 | 199.4 | 200.6 | 200 | 200 | °C | 0.73 | | 0 |
| MEASURE | TYPE T | 300.0 | 299.4 | 300.6 | 300.0 | 300.0 | °C | 0.73 | | 0.0 |



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| MEASURE | TYPE T | 400.0 | 399.4 | 400.6 | 400.0 | 400.0 | °C | 0.73 | | 0.0 |
| | | | | | | | | | | 0 |
| SIMULATE | TYPE T | -200.00 | -200.60 | -199.40 | -200.20 | -200.20 | °C | 0.73 | | 0.20 |
| SIMULATE | TYPE T | 0.00 | -0.60 | 0.60 | -0.10 | -0.10 | °C | 0.33 | | 0.10 |
| SIMULATE | TYPE T | 100.00 | 99.40 | 100.60 | 99.90 | 99.90 | °C | 0.33 | | 0.10 |
| SIMULATE | TYPE T | 200.00 | 199.40 | 200.60 | 200.00 | 200.00 | °C | 0.33 | | 0.00 |
| SIMULATE | TYPE T | 300.00 | 299.40 | 300.60 | 300.00 | 300.00 | °C | 0.33 | | 0.00 |
| SIMULATE | TYPE T | 400.00 | 399.40 | 400.60 | 400.00 | 400.00 | °C | 0.33 | | 0.00 |
| | | | | | | | | | | 0 |
| MEASURE | mVDC 110 RANGE | 0.000 | -0.017 | 0.017 | -0.002 | -0.002 | mVDC | 0.0033 | | 0.002 |
| MEASURE | mVDC | 100.000 | 99.959 | 100.042 | 100.012 | 100.012 | mVDC | 0.0033 | | -0.012 |
| MEASURE | mVDC | -100.000 | -100.042 | -99.959 | -100.004 | -100.004 | mVDC | 0.0033 | | 0.004 |
| | | | | | | | | | | 0.0 |
| MEASURE | VDC 1.1 RANGE | 0.00000 | -0.00006 | 0.00006 | 0.00000 | 0.00000 | VDC | 0.000033 | | 0.00000 |
| MEASURE | VDC | 1.00000 | 0.99970 | 1.00081 | 1.00007 | 1.00007 | VDC | 0.00045 | | -0.00007 |
| | | | | | | | | | | 0 |
| MEASURE | VDC 11 RANGE | 0.0000 | -0.0006 | 0.0006 | 0.0000 | 0.0000 | VDC | 0.000033 | | 0.0000 |
| MEASURE | VDC | 10.0000 | 9.9970 | 10.0031 | 10.0007 | 10.0007 | VDC | 0.005 | | -0.0007 |
| | | | | | | | | | | 0 |
| MEASURE | mADC 30 mA RANGE | 4.0000 | 3.9963 | 4.0037 | 3.9990 | 3.9990 | maDC | 0.0016 | | 0.0010 |
| MEASURE | mADC | 20.0000 | 19.9947 | 20.0053 | 19.9970 | 19.9970 | maDC | 0.0016 | | 0.0030 |
| | | | | | | | | | | 0 |
| MEASURE | OHMS 11 RANGE | 0.000 | -0.050 | 0.050 | 0.010 | 0.010 | Ohm | 0.042 | | -0.010 |
| MEASURE | OHMS 11 RANGE | 10.000 | 9.945 | 10.055 | 10.010 | 10.010 | Ohm | 0.025 | | -0.010 |



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| MEASURE | OHMS 110 RANGE | 0.00 | -0.05 | 0.05 | 0.000 | 0.000 | Ohm | 0.042 | | 0.000 |
| MEASURE | OHMS 110 RANGE | 100.00 | 99.90 | 100.10 | 100.000 | 100.000 | Ohm | 0.025 | | 0.000 |
| MEASURE | OHMS 1100 RANGE | 0.00 | -0.50 | 0.50 | 0.000 | 0.000 | Ohm | 0.042 | | 0.000 |
| MEASURE | OHMS 1100 RANGE | 1000 | 999 | 1001 | 1000 | 1000 | Ohm | 0.34 | | 0 |
| | | | | | | | | | | 0 |
| SOURCE | mVDC | -10.000 | -10.006 | -9.994 | -9.997 | -9.997 | mVDC | 0.01 | | -0.003 |
| SOURCE | mVDC | 100.000 | 99.985 | 100.015 | 100.003 | 100.003 | mVDC | 0.01 | | -0.003 |
| SOURCE | mVDC | 120.000 | 119.933 | 120.067 | 120.000 | 120.000 | mVDC | 0.062 | | 0.000 |
| SOURCE | mVDC | 1000.000 | 999.854 | 1000.155 | 1000.050 | 1000.050 | mVDC | 0.062 | | -0.050 |
| SOURCE | mVDC | 1200.00 | 1199.13 | 1200.87 | 1200.00 | 1200.00 | mVDC | 0.53 | | 0.00 |
| SOURCE | mVDC | 14000.0 | 13997.9 | 14002.1 | 14000.0 | 14000.0 | mVDC | 5.8 | | 0.0 |
| | | | | | | | | | | 0 |
| SOURCE | mADC | 2.0000 | 1.9965 | 2.0035 | 2.0004 | 2.0004 | maDC | 0.01 | | -0.0004 |
| SOURCE | mADC | 4.0000 | 3.9963 | 4.0037 | 4.0000 | 4.0000 | maDC | 0.01 | | 0.0000 |
| SOURCE | mADC | 22.0000 | 21.9945 | 22.0055 | 22.0010 | 22.0010 | maDC | 0.012 | | -0.0010 |
| | | | | | | | | | | 0 |
| SOURCE | OHMS 11 RANGE | 0.100 | 0.080 | 0.120 | 0.104 | 0.104 | Ohm | 0.02 | | -0.004 |
| SOURCE | OHMS 11 RANGE | 1.000 | 0.980 | 1.020 | 1.004 | 1.004 | Ohm | 0.02 | | -0.004 |
| SOURCE | OHMS 11 RANGE | 10.000 | 9.979 | 10.021 | 10.005 | 10.005 | Ohm | 0.02 | | -0.005 |
| SOURCE | OHMS 110 RANGE | 20.000 | 19.958 | 20.042 | 20.004 | 20.004 | Ohm | 0.02 | | -0.004 |
| SOURCE | OHMS 110 RANGE | 100.000 | 99.950 | 100.050 | 100.006 | 100.006 | Ohm | 0.02 | | -0.006 |
| SOURCE | OHMS 1100 RANGE | 200.000 | 199.460 | 200.540 | 199.980 | 199.980 | Ohm | 0.11 | | 0.020 |
| SOURCE | OHMS 1100 RANGE | 1000.00 | 999.30 | 1000.70 | 999.93 | 999.93 | Ohm | 0.11 | | 0.07 |
| SOURCE | K OHMS 11K RANGE | 2.0000 | 1.9944 | 2.0056 | 1.9999 | 1.9999 | kOhm | 0.0011 | | 0.0001 |



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| | | | | | | | | | | 0 |
| MEASURE | RTD PLT 100 OHM | -180.0 | -180.3 | -179.7 | -180.0 | -180.0 | DEG C. | 0.63 | | 0.0 |
| MEASURE | 385 CURVE | 100.0 | 99.5 | 100.5 | 100.0 | 100.0 | DEG C. | 0.049 | | 0.0 |
| | | | | | | | | | | 0 |
| SOURCE | RTD OHMS 385 | 0.0 | -0.5 | 0.5 | 0.000 | 0.000 | DEG C. | 0.049 | | 0.000 |
| SOURCE | RTD OHMS 385 | 100.0 | 99.5 | 100.5 | 100.000 | 100.000 | DEG C. | 0.049 | | 0.000 |
| SOURCE | RTD OHMS 385 | 200.0 | 199.5 | 200.5 | 200.000 | 200.000 | DEG C. | 0.049 | | 0.000 |
| SOURCE | RTD OHMS 385 | 300.0 | 299.5 | 300.5 | 300.020 | 300.020 | DEG C. | 0.049 | | -0.020 |
| SOURCE | RTD OHMS 385 | 400.0 | 399.5 | 400.5 | 400.020 | 400.020 | DEG C. | 0.049 | | -0.020 |
| SOURCE | RTD OHMS 385 | 500.0 | 499.5 | 500.5 | 500.010 | 500.010 | DEG C. | 0.049 | | -0.010 |

Standards Used

| I.D. | Model | Description | Manufacturer | Serial No. |
|------|--------|--------------------------|-------------------------|------------|
| 1546 | 525B | TEMP/PRESSURE CALIBRATOR | FLUKE | 2041092 |
| 1731 | 34401A | DIGITAL MULTIMETER | HEWLETT PACKARD/AGILENT | 3146A27542 |

Procedures Used

| Name | Description |
|--------|---------------------------------|
| WI-523 | CALIBRATION OF TEST CALIBRATORS |