ACCREDITED
Calibration Laboratory
CERT#2230.01

# ILLIANA INSTRUMENTATION

1831 Govert Drive Schererville, IN 46375 Phone (219)227-8788 Fax (219)515-6161

# CERTIFICATE OF CALIBRATION

| CUSTOMER: | MISCELLANEOUS DETAILS: |
|---|---|
| Illiana Instrumentation Service<br>1831 Govert Drive<br>Schererville, IN 46375 | Date Received 12/7/21<br>Certification Date: 12/7/21<br>Recalibration Date: 3/7/22<br>Cal. Number: 1336-120721<br>P.O. Number:<br>Location of Calibration: Lab<br>Detailed Results Attached: YES<br>Procedure Used: Fluke Procedure |

## EQUIPMENT CALIBRATED

| | |
|---|---|
| MANUFACTURER: | Fluke |
| MODEL: | 725 |
| SERIAL NUMBER: | 9531036 |
| ITEM NUMBER: | 1336 |
| DESCRIPTION: | Calibrator |
| CONDITION AS FOUND: | In tolerance |

## STANDARDS USED

Item 1546 Fluke 525B; Item 1205 HP34401A

## TEST CONDITIONS

| | |
|---|---|
| TEMPERATURE | 73 Deg F. |
| HUMIDITY | 38% rH |

CERTIFIED BY:_____ TITLE: Service Technician DATE 12/7/21

APPROVED BY: Laura Grosso TITLE: Asst. Quality Mgr. DATE 12/7/21

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 date this report is signed constitutes the issue date. Pass/Fail criteria does not take into account measurement uncertainty.

| **Item** | 1336 Fluke 725 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Accuracy:** | Varies By Range | | | | | | | | |
| **Date:** | 12/7/2021 | | | | | | | | |
| **Intentional Offset as Found** | None | | | | | | | | |
| **Intentional Offset as Left** | None | | | | | | | | |
| **Limitations** | None | | | | | | | | |
| | | | | | | | | | |
| **Input range** | **Eng. Units** | **Cal Pt** | **Upper** | **lower** | **Initial** | **Final** | **Sensitivity Check** | **STD** | **Unc.** |
| | | | | | | | | | |
| Meas VDC Upper Display | VDC | 0 | 0.002 | -0.002 | 0 | 0 | OK | 1546 | 0.000005 |
| | | 15 | 15.005 | 14.995 | 14.999 | 14.999 | OK | 1546 | 0.000005 |
| | | 30 | 30.008 | 29.992 | 29.999 | 29.999 | OK | 1546 | 0.000005 |
| | | | | | | | | | |
| Meas mVDC on lower display | mDVC | 0 | 0.02 | -0.02 | 0 | 0 | OK | 1546 | 0.0032 |
| | | 45 | 45.03 | 44.97 | 45 | 45 | OK | 1546 | 0.0032 |
| | | 90 | 90.04 | 89.96 | 90 | 90 | OK | 1546 | 0.0032 |
| | | | | | | | | | |
| Lower diplay voltage measure | VDC | 0 | 0.002 | -0.002 | 0 | 0 | OK | 1546 | 0.000005 |
| | | 10 | 10.004 | 9.996 | 9.998 | 9.998 | OK | 1546 | 0.000005 |
| | | 20 | 20.006 | 19.994 | 19.997 | 19.997 | OK | 1546 | 0.000005 |
| | | | | | | | | | |
| Meas mADC 30 mADC upper display | mADC | 4 | 4.003 | 3.997 | 4 | 4 | OK | 1546 | 0.0016 |
| | | 12 | 12.005 | 11.995 | 12 | 12 | OK | 1546 | 0.0016 |
| | | 24 | 24.007 | 23.993 | 24 | 24 | OK | 1546 | 0.0057 |
| | | | | | | | | | |
| Meas mADC 30 mADC lower display | mADC | 4 | 4.003 | 3.997 | 4 | 4 | OK | 1546 | 0.0016 |
| | | 12 | 12.005 | 11.995 | 11.999 | 11.999 | OK | 1546 | 0.0016 |
| | | 24 | 24.007 | 23.993 | 23.999 | 23.999 | OK | 1546 | 0.0057 |
| | | | | | | | | | |
| Frequency source lower display | kHz | 10 | 10.025 | 9.975 | 9.999 | 9.999 | OK | **1205** | 0.0033 |
| | | | | | | | | | |
| Lower display 4 wire resistance measure | Ohms | 15 | 15.1 | 14.9 | 15.02 | 15.02 | OK | 1546 | 0.025 |
| | | 350 | 350.1 | 349.9 | 350.04 | 350.04 | OK | 1546 | 0.025 |
| | | 500 | 500.5 | 499.5 | 500.1 | 500.1 | OK | 1546 | 0.049 |
| Lower display 3 wire RTD measure | Ohms | 350 | 350.2 | 349.8 | 350.03 | 350.03 | OK | 1546 | 0.049 |
| | | | | | | | | | |
| Measure K | C | -180 | -179.4 | -180.6 | -180.3 | -180.3 | OK | 1546 | 0.17 |
| Measure K | C | 0 | 0.6 | -0.6 | -0.2 | -0.2 | OK | 1546 | 0.17 |
| Measure K | C | 400 | 400.6 | 399.4 | 399.7 | 399.7 | OK | 1546 | 0.17 |
| Measure K | C | 800 | 800.8 | 799.2 | 799.9 | 799.9 | OK | 1546 | 0.17 |
| Measure K | C | 1000 | 1001 | 999 | 999.8 | 999.8 | OK | 1546 | 0.17 |
| Measure K | C | 1300 | 1301.3 | 1298.7 | 1299.8 | 1299.8 | OK | 1546 | 0.17 |
| | | | | | | | | | |
| Simulate K | C | -180 | -179.4 | -180.6 | -179.72 | -179.72 | OK | 1546 | 0.16 |
| Simulate K | C | 0 | 0.6 | -0.6 | 0.06 | 0.06 | OK | 1546 | 0.16 |
| Simulate K | C | 400 | 400.6 | 399.4 | 400.05 | 400.05 | OK | 1546 | 0.16 |
| Simulate K | C | 800 | 800.8 | 799.2 | 799.97 | 799.97 | OK | 1546 | 0.16 |
| Simulate K | C | 1000 | 1001 | 999 | 999.93 | 999.93 | OK | 1546 | 0.16 |
| Simulate K | C | 1300 | 1301.3 | 1298.7 | 1299.91 | 1299.91 | OK | 1546 | 0.16 |
| | | | | | | | | | |
| Measure J | C | -200 | -199.4 | -200.6 | -200.5 | -200.5 | OK | 1546 | 0.15 |
| Measure J | C | 0 | 0.6 | -0.6 | -0.3 | -0.3 | OK | 1546 | 0.15 |
| Measure J | C | 300 | 300.6 | 299.4 | 299.7 | 299.7 | OK | 1546 | 0.15 |
| Measure J | C | 600 | 600.6 | 599.4 | 599.8 | 599.8 | OK | 1546 | 0.15 |
| Measure J | C | 900 | 900.9 | 899.1 | 899.7 | 899.7 | OK | 1546 | 0.15 |
| Measure J | C | 1200 | 1201.2 | 1198.8 | 1199.7 | 1199.7 | OK | 1546 | 0.15 |
| | | | | | | | | | |
| Simulate J | C | -200 | -199.4 | -200.6 | -199.46 | -199.46 | OK | 1546 | 0.13 |
| Simulate J | C | 0 | 0.6 | -0.6 | 0.23 | 0.23 | OK | 1546 | 0.13 |
| Simulate J | C | 300 | 300.6 | 299.4 | 300.16 | 300.16 | OK | 1546 | 0.13 |
| Simulate J | C | 600 | 600.6 | 599.4 | 600.11 | 600.11 | OK | 1546 | 0.13 |
| Simulate J | C | 900 | 900.9 | 899.1 | 900.07 | 900.07 | OK | 1546 | 0.13 |
| Simulate J | C | 1200 | 1201.2 | 1198.8 | 1200.07 | 1200.07 | OK | 1546 | 0.13 |
| | | | | | | | | | |

| Input range | Eng. Units | Cal Pt | Upper | lower | Initial | Final | Sensitivity Check | STD | Unc. |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| Measure S | C | 1000 | 1001 | 999 | 999 | 999 | OK | 1546 | 0.67 |
| Measure S | C | 1150 | 1151.5 | 1148.5 | 1149 | 1149 | OK | 1546 | 0.58 |
| Measure S | C | 1300 | 1301.3 | 1298.7 | 1299 | 1299 | OK | 1546 | 0.58 |
| Measure S | C | 1450 | 1451.5 | 1448.5 | 1449 | 1449 | OK | 1546 | 0.58 |
| Measure S | C | 1600 | 1601.6 | 1598.4 | 1599 | 1599 | OK | 1546 | 0.58 |
| Measure S | C | 1750 | 1751.75 | 1748.25 | 1749 | 1749 | OK | 1546 | 0.58 |
| | | | | | | | | | |
| | | | | | | | | | |
| Simulate S | C | 1000 | 1001 | 999 | 1000.07 | 1000.07 | OK | 1546 | 0.67 |
| Simulate S | C | 1150 | 1151.5 | 1148.5 | 1149.89 | 1149.89 | OK | 1546 | 0.58 |
| Simulate S | C | 1300 | 1301.3 | 1298.7 | 1299.89 | 1299.89 | OK | 1546 | 0.58 |
| Simulate S | C | 1450 | 1451.5 | 1448.5 | 1449.85 | 1449.85 | OK | 1546 | 0.58 |
| Simulate S | C | 1600 | 1601.6 | 1598.4 | 1599.87 | 1599.87 | OK | 1546 | 0.58 |
| Simulate S | C | 1750 | 1751.75 | 1748.25 | 1749.79 | 1749.79 | OK | 1546 | 0.58 |
| | | | | | | | | | |
| Measure N | C | 0 | 0.6 | -0.6 | -0.4 | -0.4 | OK | 1546 | 0.2 |
| Measure N | C | 200 | 200.6 | 199.4 | 199.7 | 199.7 | OK | 1546 | 0.2 |
| Measure N | C | 500 | 500.6 | 499.4 | 499.7 | 499.7 | OK | 1546 | 0.2 |
| Measure N | C | 800 | 800.8 | 799.2 | 799.7 | 799.7 | OK | 1546 | 0.2 |
| Measure N | C | 1100 | 1101.1 | 1098.9 | 1099.7 | 1099.7 | OK | 1546 | 0.2 |
| Measure N | C | 1300 | 1301.3 | 1298.7 | 1299.6 | 1299.6 | OK | 1546 | 0.2 |
| | | | | | | | | | |
| Source N | C | 0 | 0.6 | -0.6 | 0.3 | 0.3 | OK | 1546 | 0.18 |
| Source N | C | 200 | 200.6 | 199.4 | 200.18 | 200.18 | OK | 1546 | 0.18 |
| Source N | C | 500 | 500.6 | 499.4 | 500.17 | 500.17 | OK | 1546 | 0.18 |
| Source N | C | 800 | 800.8 | 799.2 | 800.13 | 800.13 | OK | 1546 | 0.18 |
| Source N | C | 1100 | 1101.1 | 1098.9 | 1100.03 | 1100.03 | OK | 1546 | 0.18 |
| Source N | C | 1300 | 1301.3 | 1298.7 | 1300.08 | 1300.08 | OK | 1546 | 0.18 |
| | | | | | | | | | |
| Measure T | C | -200 | -199.4 | -200.6 | -199.9 | -199.9 | OK | 1546 | 0.74 |
| Measure T | C | 0 | 0.6 | -0.6 | 0.1 | 0.1 | OK | 1546 | 0.35 |
| Measure T | C | 100 | 100.6 | 99.4 | 100 | 100 | OK | 1546 | 0.35 |
| Measure T | C | 200 | 200.6 | 199.4 | 200 | 200 | OK | 1546 | 0.35 |
| Measure T | C | 300 | 300.6 | 299.4 | 300 | 300 | OK | 1546 | 0.35 |
| Measure T | C | 400 | 400.6 | 399.6 | 399.9 | 399.9 | OK | 1546 | 0.35 |
| | | | | | | | | | |
| Source T | C | -200 | -199.4 | -200.6 | -200.17 | -200.17 | OK | 1546 | 0.73 |
| Source T | C | 0 | 0.6 | -0.6 | -0.07 | -0.07 | OK | 1546 | 0.33 |
| Source T | C | 100 | 100.6 | 99.4 | 99.94 | 99.94 | OK | 1546 | 0.33 |
| Source T | C | 200 | 200.6 | 199.4 | 199.95 | 199.95 | OK | 1546 | 0.33 |
| Source T | C | 300 | 300.6 | 299.4 | 299.92 | 299.92 | OK | 1546 | 0.33 |
| Source T | C | 400 | 400.6 | 399.6 | 399.91 | 399.91 | OK | 1546 | 0.33 |
| | | | | | | | | | |
| Source mADC lower display | mADC | 4 | 4.0028 | 3.9972 | 4.0005 | 4.0005 | OK | **1205** | 0.01 |
| | | 12 | 12.0044 | 11.9956 | 12.000 | 12.000 | OK | **1205** | 0.01 |
| | | 24 | 24.0068 | 23.9932 | 24.001 | 24.001 | OK | **1205** | 0.012 |
| | | | | | | | | | |
| Source mVDC lower display | mVDC | 0 | 0.02 | -0.02 | -0.002 | -0.002 | OK | **1205** | 0.0045 |
| | | 45 | 45.03 | 44.97 | 44.989 | 44.989 | OK | **1205** | 0.01 |
| | | 100 | 100.04 | 99.96 | 99.982 | 99.982 | OK | **1205** | 0.01 |
| | | | | | | | | | |
| Source VDC lower display | VDC | 0 | 0.002 | -0.002 | 0.00000 | 0.00000 | OK | **1205** | 0.0000045 |
| | | 5 | 5.003 | 4.997 | 4.9998 | 4.9998 | OK | **1205** | 0.00053 |
| | | 10 | 10.004 | 9.996 | 9.9997 | 9.9997 | OK | **1205** | 0.0058 |
| | | | | | | | | | |
| Lower display ohm source | Ohms | 15 | 15.1 | 14.9 | 15.007 | 15.007 | OK | **1205** | 0.0018 |
| | | 360 | 360.1 | 359.9 | 359.96 | 359.96 | OK | **1205** | 0.016 |
| | | 500 | 500.5 | 499.5 | 500 | 500 | OK | **1205** | 0.016 |
| | | 1500 | 1500.5 | 1499.5 | 1500.4 | 1500.4 | OK | **1205** | 0.016 |
| | | 3200 | 3201 | 3199 | 3200.2 | 3200.2 | OK | **1205** | 0.016 |