



# Certificate of Calibration

1000219692

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## Customer Information

Accurate Calibration & Repair  
1924 Pinnacle Drive  
Aurora, IL 60504

PO #: 2020002  
Reference #: 2049207Rg17025  
Account #: 00317  
SO #: 49207

## Instrument Identification

Instrument Id: **R051089 / 02.41.002791**

Location: **R051089**

Noun: Handheld Calibrator

Model: Memocal 2000

Mfr: ERO Electronic

Serial #: 02.41.002791

Accuracy: See manufacturer's specifications

## Certification Information

Reason For Service: Calibration with Data

Technician: Appealle Bullock

Type Of Calibration: Accredited 17025

Cal Date: 20 OCT 20

As Found Condition: In Tolerance

Cal Due: 20 JAN 21

As Left Condition: In Tolerance, Adjusted

Temperature: 23.0 °C

Procedure: MFR Manual :

Humidity: 39.0 %

Technician Remarks: Datasheet reflects customer specified calibration points. Calibrated per AMS 2750 F.

- No sampling plan or other procedure was used for this calibration. Measurements and information on this certificate are valid at time of calibration only and any number of factors may cause calibration to drift out of tolerance prior to calibration due date.
- The calibration results published in this certificate were obtained using equipment capable of producing results that are traceable through NIST to the International System of Units (SI).
- The expanded uncertainty of the measurement process has not exceeded 25% of the tolerance allowed for the individual characteristics measured, unless otherwise stated. The uncertainties are based on a 95% confidence level, K=2.
- (!) Designates that the expanded uncertainty of measurement does not meet the 95% confidence level.
- J.H. Metrology Co., Inc's Calibration Control System complies with applicable requirements of ANSI Z540-1-1994, ISO 9001, and ISO/IEC 17025-2005.
- The results contained herein relate only to the item calibrated. This certificate shall not be reproduced except in full, without the written approval of J.H. Metrology Co., Inc.

Approved By:

President

Date: Oct 21, 2020

## Calibration Data

✓ In Tolerance    ✗ Out of Tolerance

| Range          | Nominal | As Found | As Left | Min      | Max | Uncertainty |        |            |
|----------------|---------|----------|---------|----------|-----|-------------|--------|------------|
| mV Output      |         |          |         |          |     |             |        |            |
| -4 mV to 20 mV | -4.000  | -3.99987 | ✓       | -4.00046 | ✓   | -4.004      | -3.996 | 0.00060 mV |
|                | 0.000   | -0.00036 | ✓       | -0.00043 | ✓   | -0.004      | 0.004  | 0.00059 mV |

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## Calibration Data

| Range                 | Nominal | As Found  | As Left | Min       | Max | Uncertainty |
|-----------------------|---------|-----------|---------|-----------|-----|-------------|
| <b>mV Output</b>      |         |           |         |           |     |             |
|                       | 5.000   | 5.00004   | ✓       | 4.99956   | ✓   | 0.00060 mV  |
|                       | 10.000  | 9.99981   | ✓       | 9.99964   | ✓   | 0.00061 mV  |
|                       | 15.000  | 14.99984  | ✓       | 14.99939  | ✓   | 0.00062 mV  |
|                       | 20.000  | 19.99973  | ✓       | 19.99961  | ✓   | 0.00063 mV  |
| -40 mV to 200 mV      | -40.00  | -39.99942 | ✓       | -39.99995 | ✓   | 0.0058 mV   |
|                       | 0.00    | -0.00252  | ✓       | -0.00269  | ✓   | 0.0058 mV   |
|                       | 50.00   | 49.99406  | ✓       | 49.99919  | ✓   | 0.0058 mV   |
|                       | 100.00  | 99.99551  | ✓       | 99.99926  | ✓   | 0.0059 mV   |
|                       | 150.00  | 149.99487 | ✓       | 149.99993 | ✓   | 0.0059 mV   |
|                       | 200.00  | 199.9950  | ✓       | 200.0001  | ✓   | 0.0060 mV   |
| -400 mV to 2000 mV    | -400.0  | -399.9993 | ✓       | -399.9999 | ✓   | 0.058 mV    |
|                       | 0.0     | -0.01967  | ✓       | -0.01941  | ✓   | 0.058 mV    |
|                       | 500.0   | 499.9707  | ✓       | 499.9720  | ✓   | 0.058 mV    |
|                       | 1000.0  | 999.9749  | ✓       | 999.9751  | ✓   | 0.058 mV    |
|                       | 1500.0  | 1499.9456 | ✓       | 1499.9889 | ✓   | 0.059 mV    |
|                       | 2000.0  | 1999.967  | ✓       | 1999.998  | ✓   | 0.060 mV    |
| -4000 mV to 20000 mV  | -4000   | -3999.909 | ✓       | -3999.903 | ✓   | 0.58 mV     |
|                       | 0       | -0.40202  | ✓       | 0.04859   | ✓   | 0.58 mV     |
|                       | 5000    | 4999.781  | ✓       | 5000.242  | ✓   | 0.58 mV     |
|                       | 10000   | 9999.441  | ✓       | 9999.899  | ✓   | 0.58 mV     |
|                       | 15000   | 14999.485 | ✓       | 14999.882 | ✓   | 0.59 mV     |
|                       | 20000   | 19999.72  | ✓       | 20000.16  | ✓   | 0.61 mV     |
| <b>mV Measurement</b> |         |           |         |           |     |             |
| -20 mV to 20 mV       | -20.000 | -19.999   | ✓       | -19.999   | ✓   | 0.00090 mV  |
|                       | 0.000   | -0.002    | ✓       | 0.000     | ✓   | 0.00077 mV  |
|                       | 5.000   | 5.000     | ✓       | 5.000     | ✓   | 0.00080 mV  |
|                       | 10.000  | 10.000    | ✓       | 9.999     | ✓   | 0.00083 mV  |
|                       | 15.000  | 15.000    | ✓       | 15.000    | ✓   | 0.00086 mV  |
|                       | 20.000  | 20.000    | ✓       | 20.000    | ✓   | 0.00090 mV  |
| -200 mV to 200 mV     | -200.00 | -199.99   | ✓       | -199.98   | ✓   | 0.0063 mV   |
|                       | 0.00    | -0.01     | ✓       | 0.00      | ✓   | 0.0058 mV   |
|                       | 50.00   | 50.00     | ✓       | 50.00     | ✓   | 0.0059 mV   |
|                       | 100.00  | 100.00    | ✓       | 100.00    | ✓   | 0.0060 mV   |
|                       | 150.00  | 150.00    | ✓       | 150.00    | ✓   | 0.0061 mV   |



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✓ In Tolerance    ✗ Out of Tolerance

## Calibration Data

| Range                 | Nominal | As Found    | As Left | Min         | Max | Uncertainty |
|-----------------------|---------|-------------|---------|-------------|-----|-------------|
| <b>mV Measurement</b> |         |             |         |             |     |             |
|                       | 200.00  | 200.01      | ✓       | 200.00      | ✓   | 0.0063 mV   |
| -2000 mV to 2000 mV   | -2000.0 | -1999.8     | ✓       | -1999.8     | ✓   | 0.060 mV    |
|                       | 0.0     | 0.0         | ✓       | 0.0         | ✓   | 0.058 mV    |
|                       | 500.0   | 500.0       | ✓       | 500.0       | ✓   | 0.058 mV    |
|                       | 1000.0  | 1000.0      | ✓       | 1000.0      | ✓   | 0.059 mV    |
|                       | 1500.0  | 1500.0      | ✓       | 1500.0      | ✓   | 0.059 mV    |
|                       | 2000.0  | 2000.1      | ✓       | 2000.0      | ✓   | 0.060 mV    |
| -20000 mV to 20000 mV | -20000  | -19997      | ✓       | -19998      | ✓   | 0.59 mV     |
|                       | 0       | 0           | ✓       | 0           | ✓   | 0.58 mV     |
|                       | 5000    | 5000        | ✓       | 5000        | ✓   | 0.58 mV     |
|                       | 10000   | 10000       | ✓       | 10000       | ✓   | 0.58 mV     |
|                       | 15000   | 15000       | ✓       | 15000       | ✓   | 0.59 mV     |
|                       | 20000   | 20000       | ✓       | 20000       | ✓   | 0.59 mV     |
| <b>mA Output</b>      |         |             |         |             |     |             |
| 0 mA to 21 mA         | 0.000   | -0.00006502 | ✓       | -0.00005835 | ✓   | 0.00058 mA  |
|                       | 1.000   | 0.9999583   | ✓       | 0.9999526   | ✓   | 0.00058 mA  |
|                       | 5.000   | 4.999628    | ✓       | 4.999676    | ✓   | 0.00060 mA  |
|                       | 10.000  | 9.999726    | ✓       | 10.000113   | ✓   | 0.00062 mA  |
|                       | 15.000  | 14.999408   | ✓       | 14.999842   | ✓   | 0.00066 mA  |
|                       | 21.000  | 20.99911    | ✓       | 20.99987    | ✓   | 0.00072 mA  |
| <b>mA Measurement</b> |         |             |         |             |     |             |
| -20 mA to 20 mA       | -20.000 | -19.999     | ✓       | -19.999     | ✓   | 0.0011 mA   |
|                       | 0.000   | -0.001      | ✓       | 0.000       | ✓   | 0.00058 mA  |
|                       | 5.000   | 4.999       | ✓       | 5.000       | ✓   | 0.00063 mA  |
|                       | 10.000  | 9.999       | ✓       | 9.999       | ✓   | 0.00074 mA  |
|                       | 15.000  | 15.000      | ✓       | 15.000      | ✓   | 0.00087 mA  |
|                       | 20.000  | 20.000      | ✓       | 20.000      | ✓   | 0.0011 mA   |
| -130 mA to 130 mA     | -130.00 | -130.01     | ✓       | -130.00     | ✓   | 0.0094 mA   |
|                       | 0.00    | -0.00       | ✓       | 0.00        | ✓   | 0.0058 mA   |
|                       | 10.00   | 10.00       | ✓       | 10.00       | ✓   | 0.0058 mA   |
|                       | 50.00   | 50.00       | ✓       | 50.00       | ✓   | 0.0067 mA   |
|                       | 100.00  | 100.01      | ✓       | 100.00      | ✓   | 0.0082 mA   |
|                       | 130.00  | 130.01      | ✓       | 130.00      | ✓   | 0.0094 mA   |



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## Calibration Data

| Range   | Nominal | As Found | As Left | Min      | Max | Uncertainty                  |
|---|---------|----------|---------|----------|-----|------------------------------|
| <b>RTD Pt. 100 Ohm Measurement (-200° to 850°C)</b> |         |          |         |          |     |                              |
| 20.68 Ohms  | -195.0  | -195.0   | ✓       | -195.0   | ✓   | -195.6    -194.4    0.058 °C |
| 60.26 Ohms  | -100.0  | -100.0   | ✓       | -100.0   | ✓   | -100.6    -99.4    0.058 °C  |
| 100.00 Ohms   | 0.0     | 0.0      | ✓       | 0.0      | ✓   | -0.6    0.6    0.058 °C      |
| 138.51 Ohms   | 100.0   | 100.0    | ✓       | 100.0    | ✓   | 99.4    100.6    0.058 °C    |
| 280.98 Ohms   | 500.0   | 500.1    | ✓       | 500.0    | ✓   | 499.4    500.6    0.059 °C   |
| 389.02 Ohms   | 845.0   | 845.1    | ✓       | 845.1    | ✓   | 844.1    845.9    0.060 °C   |
| <b>Ohms Measurement</b>                             |         |          |         |          |     |                              |
| 0 to 800 Ohms                                       | 0.0     | 0.0      | ✓       | 0.0      | ✓   | -0.2    0.2    0.058 Ohms    |
|   | 10.0    | 10.0     | ✓       | 10.0     | ✓   | 9.8    10.2    0.058 Ohms    |
|   | 100.0   | 100.0    | ✓       | 100.0    | ✓   | 99.8    100.2    0.058 Ohms  |
|   | 300.0   | 300.0    | ✓       | 300.0    | ✓   | 299.8    300.2    0.058 Ohms |
|   | 500.0   | 500.1    | ✓       | 500.0    | ✓   | 499.8    500.2    0.058 Ohms |
|   | 790.0   | 790.1    | ✓       | 790.0    | ✓   | 789.8    790.2    0.059 Ohms |
| <b>Thermocouple Measurement</b>                     |         |          |         |          |     |                              |
| Type E -328° to 1832°F                              | -328.0  | -328.0   | ✓       | As Found |     | -329.0    -327.0    0.061 °F |
|   | -200.0  | -200.0   | ✓       | As Found |     | -201.0    -199.0    0.058 °F |
|   | 0.0     | 0.0      | ✓       | As Found |     | -1.0    1.0    0.058 °F      |
|   | 32.0    | 32.0     | ✓       | As Found |     | 31.0    33.0    0.058 °F     |
|   | 200.0   | 199.9    | ✓       | As Found |     | 199.0    201.0    0.058 °F   |
|   | 400.0   | 399.9    | ✓       | As Found |     | 399.0    401.0    0.058 °F   |
|   | 600.0   | 599.9    | ✓       | As Found |     | 599.0    601.0    0.058 °F   |
|   | 800.0   | 799.9    | ✓       | As Found |     | 799.0    801.0    0.058 °F   |
|   | 1000.0  | 1000.0   | ✓       | As Found |     | 999.0    1001.0    0.058 °F  |
|   | 1200.0  | 1200.0   | ✓       | As Found |     | 1198.8    1201.2    0.058 °F |
|   | 1400.0  | 1400.0   | ✓       | As Found |     | 1398.6    1401.4    0.059 °F |
|   | 1600.0  | 1600.0   | ✓       | As Found |     | 1598.4    1601.6    0.059 °F |
|   | 1832.0  | 1832.2   | ✓       | As Found |     | 1830.2    1833.8    0.059 °F |
| Type J -328° to 2192°F                              | -328.0  | -328.0   | ✓       | As Found |     | -329.0    -327.0    0.058 °F |
|   | -200.0  | -200.0   | ✓       | As Found |     | -201.0    -199.0    0.058 °F |
|   | 0.0     | 0.0      | ✓       | As Found |     | -1.0    1.0    0.058 °F      |
|   | 32.0    | 32.0     | ✓       | As Found |     | 31.0    33.0    0.058 °F     |
|   | 200.0   | 199.9    | ✓       | As Found |     | 199.0    201.0    0.058 °F   |
|   | 400.0   | 399.9    | ✓       | As Found |     | 399.0    401.0    0.058 °F   |
|   | 600.0   | 599.9    | ✓       | As Found |     | 599.0    601.0    0.058 °F   |



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✓ In Tolerance    ✗ Out of Tolerance

## Calibration Data

| Range                           | Nominal | As Found |   | As Left  | Min    | Max    | Uncertainty |
|---------------------------------|---------|----------|---|----------|--------|--------|-------------|
| <b>Thermocouple Measurement</b> |         |          |   |          |        |        |             |
|                                 | 800.0   | 799.9    | ✓ | As Found | 799.0  | 801.0  | 0.058 °F    |
|                                 | 1000.0  | 999.9    | ✓ | As Found | 999.0  | 1001.0 | 0.059 °F    |
|                                 | 1200.0  | 1200.0   | ✓ | As Found | 1198.8 | 1201.2 | 0.059 °F    |
|                                 | 1600.0  | 1600.0   | ✓ | As Found | 1598.4 | 1601.6 | 0.059 °F    |
|                                 | 1800.0  | 1800.0   | ✓ | As Found | 1798.2 | 1801.8 | 0.059 °F    |
|                                 | 2192.0  | 2191.8   | ✓ | As Found | 2189.8 | 2194.2 | 0.060 °F    |
| Type K -328° to 2498°F          | -328.0  | -328.0   | ✓ | As Found | -329.0 | -327.0 | 0.079 °F    |
|                                 | -200.0  | -200.0   | ✓ | As Found | -201.0 | -199.0 | 0.058 °F    |
|                                 | 0.0     | 0.0      | ✓ | As Found | -1.0   | 1.0    | 0.058 °F    |
|                                 | 32.0    | 32.0     | ✓ | As Found | 31.0   | 33.0   | 0.058 °F    |
|                                 | 200.0   | 199.9    | ✓ | As Found | 199.0  | 201.0  | 0.058 °F    |
|                                 | 400.0   | 399.7    | ✓ | As Found | 399.0  | 401.0  | 0.058 °F    |
|                                 | 600.0   | 599.9    | ✓ | As Found | 599.0  | 601.0  | 0.058 °F    |
|                                 | 800.0   | 799.9    | ✓ | As Found | 799.0  | 801.0  | 0.058 °F    |
|                                 | 1000.0  | 1000.0   | ✓ | As Found | 999.0  | 1001.0 | 0.059 °F    |
|                                 | 1200.0  | 1200.0   | ✓ | As Found | 1198.8 | 1201.2 | 0.059 °F    |
|                                 | 1400.0  | 1400.0   | ✓ | As Found | 1398.6 | 1401.4 | 0.059 °F    |
|                                 | 1600.0  | 1600.0   | ✓ | As Found | 1598.4 | 1601.6 | 0.059 °F    |
|                                 | 1800.0  | 1800.0   | ✓ | As Found | 1798.2 | 1801.8 | 0.059 °F    |
|                                 | 2000.0  | 1999.9   | ✓ | As Found | 1998.0 | 2002.0 | 0.059 °F    |
|                                 | 2200.0  | 2200.1   | ✓ | As Found | 2197.8 | 2202.2 | 0.062 °F    |
|                                 | 2498.0  | 2498.0   | ✓ | As Found | 2495.5 | 2500.5 | 0.062 °F    |
| Type T -328° to 752°F           | -328.0  | -328.0   | ✓ | As Found | -329.0 | -327.0 | 0.066 °F    |
|                                 | -200.0  | -200.0   | ✓ | As Found | -201.0 | -199.0 | 0.059 °F    |
|                                 | 0.0     | 0.0      | ✓ | As Found | -1.0   | 1.0    | 0.058 °F    |
|                                 | 32.0    | 32.0     | ✓ | As Found | 31.0   | 33.0   | 0.058 °F    |
|                                 | 200.0   | 199.9    | ✓ | As Found | 199.0  | 201.0  | 0.058 °F    |
|                                 | 400.0   | 399.9    | ✓ | As Found | 399.0  | 401.0  | 0.058 °F    |
|                                 | 600.0   | 599.9    | ✓ | As Found | 599.0  | 601.0  | 0.058 °F    |
|                                 | 752.0   | 752.0    | ✓ | As Found | 751.0  | 753.0  | 0.058 °F    |
| Type R -58° to 3214°F           | -50.0   | -50.6    | ✓ | As Found | -52.6  | -47.4  | 0.065 °F    |
|                                 | 0.0     | -0.8     | ✓ | As Found | -2.6   | 2.6    | 0.065 °F    |
|                                 | 32.0    | 31.8     | ✓ | As Found | 29.4   | 34.6   | 0.065 °F    |
|                                 | 200.0   | 199.8    | ✓ | As Found | 198.4  | 201.6  | 0.061 °F    |
|                                 | 400.0   | 399.7    | ✓ | As Found | 398.8  | 401.2  | 0.060 °F    |



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✓ In Tolerance    ✗ Out of Tolerance

## Calibration Data

| Range                           | Nominal | As Found |   | As Left  | Min    | Max    | Uncertainty |
|---------------------------------|---------|----------|---|----------|--------|--------|-------------|
| <b>Thermocouple Measurement</b> |         |          |   |          |        |        |             |
|                                 | 600.0   | 599.7    | ✓ | As Found | 599.0  | 601.0  | 0.060 °F    |
|                                 | 800.0   | 799.7    | ✓ | As Found | 799.0  | 801.0  | 0.060 °F    |
|                                 | 1000.0  | 999.9    | ✓ | As Found | 999.0  | 1001.0 | 0.060 °F    |
|                                 | 1200.0  | 1199.7   | ✓ | As Found | 1198.8 | 1201.2 | 0.060 °F    |
|                                 | 1400.0  | 1399.8   | ✓ | As Found | 1398.6 | 1401.4 | 0.060 °F    |
|                                 | 1600.0  | 1599.6   | ✓ | As Found | 1598.4 | 1601.6 | 0.060 °F    |
|                                 | 1800.0  | 1799.8   | ✓ | As Found | 1798.2 | 1801.8 | 0.060 °F    |
|                                 | 2000.0  | 1999.6   | ✓ | As Found | 1998.0 | 2002.0 | 0.060 °F    |
|                                 | 2200.0  | 2199.7   | ✓ | As Found | 2197.8 | 2202.2 | 0.060 °F    |
|                                 | 2800.0  | 2800.0   | ✓ | As Found | 2797.2 | 2802.8 | 0.063 °F    |
|                                 | 3200.0  | 3199.6   | ✓ | As Found | 3196.8 | 3203.2 | 0.063 °F    |
| Type S -58° to 3214°F           | -50.0   | -50.6    | ✓ | As Found | -52.0  | -48.0  | 0.065 °F    |
|                                 | 0.0     | -0.4     | ✓ | As Found | -2.0   | 2.0    | 0.065 °F    |
|                                 | 32.0    | 31.6     | ✓ | As Found | 30.0   | 34.0   | 0.065 °F    |
|                                 | 200.0   | 199.6    | ✓ | As Found | 198.8  | 201.2  | 0.061 °F    |
|                                 | 400.0   | 399.6    | ✓ | As Found | 398.8  | 401.2  | 0.060 °F    |
|                                 | 600.0   | 599.5    | ✓ | As Found | 599.0  | 601.0  | 0.060 °F    |
|                                 | 800.0   | 799.7    | ✓ | As Found | 799.0  | 801.0  | 0.060 °F    |
|                                 | 1000.0  | 999.9    | ✓ | As Found | 999.0  | 1001.0 | 0.061 °F    |
|                                 | 1200.0  | 1199.8   | ✓ | As Found | 1198.8 | 1201.2 | 0.061 °F    |
|                                 | 1400.0  | 1399.8   | ✓ | As Found | 1398.6 | 1401.4 | 0.061 °F    |
|                                 | 1600.0  | 1599.8   | ✓ | As Found | 1598.4 | 1601.6 | 0.061 °F    |
|                                 | 1800.0  | 1799.6   | ✓ | As Found | 1798.2 | 1801.8 | 0.061 °F    |
|                                 | 2000.0  | 1999.8   | ✓ | As Found | 1998.0 | 2002.0 | 0.061 °F    |
|                                 | 2200.0  | 2199.7   | ✓ | As Found | 2197.8 | 2202.2 | 0.061 °F    |
|                                 | 2800.0  | 2799.9   | ✓ | As Found | 2797.2 | 2802.8 | 0.064 °F    |
|                                 | 3200.0  | 3199.8   | ✓ | As Found | 3196.8 | 3203.2 | 0.064 °F    |
| Type N 32° to 2570°F            | 32.0    | 31.8     | ✓ | As Found | 31.0   | 33.0   | 0.058 °F    |
|                                 | 200.0   | 199.8    | ✓ | As Found | 199.0  | 201.0  | 0.058 °F    |
|                                 | 400.0   | 399.7    | ✓ | As Found | 399.0  | 401.0  | 0.058 °F    |
|                                 | 600.0   | 599.9    | ✓ | As Found | 599.0  | 601.0  | 0.058 °F    |
|                                 | 800.0   | 799.9    | ✓ | As Found | 799.0  | 801.0  | 0.058 °F    |
|                                 | 1000.0  | 999.9    | ✓ | As Found | 999.0  | 1001.0 | 0.059 °F    |
|                                 | 1200.0  | 1199.8   | ✓ | As Found | 1198.8 | 1201.2 | 0.059 °F    |
|                                 | 1400.0  | 1400.0   | ✓ | As Found | 1398.6 | 1401.4 | 0.059 °F    |



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✓ In Tolerance    ✗ Out of Tolerance

## Calibration Data

| Range                           | Nominal | As Found | As Left | Min      | Max    | Uncertainty |          |
|---------------------------------|---------|----------|---------|----------|--------|-------------|----------|
| <b>Thermocouple Measurement</b> |         |          |         |          |        |             |          |
|                                 | 1600.0  | 1600.0   | ✓       | As Found | 1598.4 | 1601.6      | 0.059 °F |
|                                 | 1800.0  | 1800.0   | ✓       | As Found | 1798.2 | 1801.8      | 0.059 °F |
|                                 | 2000.0  | 1999.9   | ✓       | As Found | 1998.0 | 2002.0      | 0.059 °F |
|                                 | 2200.0  | 2199.9   | ✓       | As Found | 2197.8 | 2202.2      | 0.060 °F |
|                                 | 2370.0  | 2370.0   | ✓       | As Found | 2367.6 | 2372.4      | 0.060 °F |
| Type B 122° to 3276°F           | 150.0   | 147.7    | ✓       | As Found | 126.3  | 173.7       | 0.15 °F  |
|                                 | 200.0   | 196.3    | ✓       | As Found | 176.3  | 223.7       | 0.15 °F  |
|                                 | 400.0   | 398.3    | ✓       | As Found | 396.2  | 403.8       | 0.074 °F |
|                                 | 600.0   | 599.0    | ✓       | As Found | 596.2  | 603.8       | 0.064 °F |
|                                 | 800.0   | 799.0    | ✓       | As Found | 798.0  | 802.0       | 0.064 °F |
|                                 | 1000.0  | 999.3    | ✓       | As Found | 998.0  | 1002.0      | 0.062 °F |
|                                 | 1200.0  | 1199.8   | ✓       | As Found | 1198.0 | 1202.0      | 0.062 °F |
|                                 | 1400.0  | 1399.5   | ✓       | As Found | 1398.6 | 1401.4      | 0.060 °F |
|                                 | 1600.0  | 1599.6   | ✓       | As Found | 1598.4 | 1601.6      | 0.060 °F |
|                                 | 1800.0  | 1799.6   | ✓       | As Found | 1798.2 | 1801.8      | 0.060 °F |
|                                 | 2000.0  | 1999.9   | ✓       | As Found | 1998.0 | 2002.0      | 0.060 °F |
|                                 | 2200.0  | 2199.7   | ✓       | As Found | 2197.8 | 2202.2      | 0.060 °F |
|                                 | 2600.0  | 2599.7   | ✓       | As Found | 2597.4 | 2602.6      | 0.060 °F |
|                                 | 3000.0  | 2999.8   | ✓       | As Found | 2997.0 | 3003.0      | 0.061 °F |
|                                 | 3272.0  | 3271.8   | ✓       | As Found | 3268.7 | 3275.3      | 0.061 °F |
| <b>Thermocouple Output</b>      |         |          |         |          |        |             |          |
| Type E -328° to 1832°F          | -328.0  | -327.98  | ✓       | As Found | -329.0 | -327.0      | 0.061 °F |
|                                 | -200.0  | -199.82  | ✓       | As Found | -201.0 | -199.0      | 0.058 °F |
|                                 | 32.0    | 32.00    | ✓       | As Found | 31.0   | 33.0        | 0.058 °F |
|                                 | 600.0   | 599.99   | ✓       | As Found | 599.0  | 601.0       | 0.058 °F |
|                                 | 1000.0  | 1000.00  | ✓       | As Found | 999.0  | 1001.0      | 0.058 °F |
|                                 | 1832.0  | 1831.77  | ✓       | As Found | 1830.2 | 1833.8      | 0.059 °F |
| Type J -328° to 2192°F          | -328.0  | -327.82  | ✓       | As Found | -329.0 | -327.0      | 0.058 °F |
|                                 | -200.0  | -199.98  | ✓       | As Found | -201.0 | -199.0      | 0.058 °F |
|                                 | 32.0    | 31.98    | ✓       | As Found | 31.0   | 33.0        | 0.058 °F |
|                                 | 800.0   | 799.95   | ✓       | As Found | 799.0  | 801.0       | 0.058 °F |
|                                 | 1600.0  | 1599.87  | ✓       | As Found | 1598.4 | 1601.6      | 0.059 °F |
|                                 | 2192.0  | 2191.98  | ✓       | As Found | 2189.8 | 2194.2      | 0.060 °F |
| Type K -328° to 2498°F          | -328.0  | -327.51  | ✓       | As Found | -329.0 | -327.0      | 0.079 °F |



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✓ In Tolerance    ✗ Out of Tolerance

## Calibration Data

| Range                      | Nominal | As Found |   | As Left  | Min    | Max    | Uncertainty |
|----------------------------|---------|----------|---|----------|--------|--------|-------------|
| <b>Thermocouple Output</b> |         |          |   |          |        |        |             |
|                            | -200.0  | -199.91  | ✓ | As Found | -201.0 | -199.0 | 0.058 °F    |
|                            | 32.0    | 31.98    | ✓ | As Found | 31.0   | 33.0   | 0.058 °F    |
|                            | 600.0   | 600.08   | ✓ | As Found | 599.0  | 601.0  | 0.058 °F    |
|                            | 1600.0  | 1599.82  | ✓ | As Found | 1598.4 | 1601.6 | 0.059 °F    |
|                            | 2498.0  | 2497.77  | ✓ | As Found | 2495.5 | 2500.5 | 0.062 °F    |
| Type T -328° to 752°F      | -328.0  | -327.62  | ✓ | As Found | -329.0 | -327.0 | 0.066 °F    |
|                            | -200.0  | -199.95  | ✓ | As Found | -201.0 | -199.0 | 0.059 °F    |
|                            | 32.0    | 32.00    | ✓ | As Found | 31.0   | 33.0   | 0.058 °F    |
|                            | 200.0   | 199.90   | ✓ | As Found | 199.0  | 201.0  | 0.058 °F    |
|                            | 400.0   | 399.88   | ✓ | As Found | 399.0  | 401.0  | 0.058 °F    |
|                            | 752.0   | 751.86   | ✓ | As Found | 751.0  | 753.0  | 0.058 °F    |
| Type R -58° to 3214°F      | -50.0   | -49.56   | ✓ | As Found | -52.6  | -47.4  | 0.065 °F    |
|                            | 32.0    | 31.87    | ✓ | As Found | 29.4   | 34.6   | 0.065 °F    |
|                            | 600.0   | 599.99   | ✓ | As Found | 599.0  | 601.0  | 0.060 °F    |
|                            | 1600.0  | 1599.89  | ✓ | As Found | 1598.4 | 1601.6 | 0.060 °F    |
|                            | 2200.0  | 2199.87  | ✓ | As Found | 2197.8 | 2202.2 | 0.060 °F    |
|                            | 3200.0  | 3199.50  | ✓ | As Found | 3196.8 | 3203.2 | 0.063 °F    |
| Type S -58° to 3214°F      | -50.0   | -49.66   | ✓ | As Found | -52.0  | -48.0  | 0.065 °F    |
|                            | 32.0    | 31.89    | ✓ | As Found | 30.0   | 34.0   | 0.065 °F    |
|                            | 600.0   | 599.97   | ✓ | As Found | 599.0  | 601.0  | 0.060 °F    |
|                            | 1600.0  | 1599.82  | ✓ | As Found | 1598.4 | 1601.6 | 0.061 °F    |
|                            | 2200.0  | 2199.74  | ✓ | As Found | 2197.8 | 2202.2 | 0.061 °F    |
|                            | 3200.0  | 3199.71  | ✓ | As Found | 3196.8 | 3203.2 | 0.064 °F    |
| Type N 32° to 2570°F       | 32.0    | 32.00    | ✓ | As Found | 31.0   | 33.0   | 0.058 °F    |
|                            | 600.0   | 600.15   | ✓ | As Found | 599.0  | 601.0  | 0.058 °F    |
|                            | 1400.0  | 1399.86  | ✓ | As Found | 1398.6 | 1401.4 | 0.059 °F    |
|                            | 1600.0  | 1599.87  | ✓ | As Found | 1598.4 | 1601.6 | 0.059 °F    |
|                            | 2000.0  | 1999.72  | ✓ | As Found | 1998.0 | 2002.0 | 0.059 °F    |
|                            | 2370.0  | 2369.91  | ✓ | As Found | 2367.6 | 2372.4 | 0.060 °F    |
| Type B 122° to 3276°F      | 150.0   | 146.3    | ✓ | As Found | 126.3  | 173.7  | 0.15 °F     |
|                            | 1200.0  | 1199.77  | ✓ | As Found | 1198.0 | 1202.0 | 0.062 °F    |
|                            | 1600.0  | 1599.91  | ✓ | As Found | 1598.4 | 1601.6 | 0.060 °F    |
|                            | 2000.0  | 1999.96  | ✓ | As Found | 1998.0 | 2002.0 | 0.060 °F    |
|                            | 2600.0  | 2599.86  | ✓ | As Found | 2597.4 | 2602.6 | 0.060 °F    |





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✓ In Tolerance    ✗ Out of Tolerance

## Calibration Data

| Range                      | Nominal | As Found | As Left    | Min    | Max    | Uncertainty |
|----------------------------|---------|----------|------------|--------|--------|-------------|
| <b>Thermocouple Output</b> |         |          |            |        |        |             |
|                            | 3272.0  | 3271.75  | ✓ As Found | 3268.7 | 3275.3 | 0.061 °F    |

End of Datasheet

## Calibration Standards

| <u>NIST Traceable #</u> | <u>Instrument ID#</u> | <u>Description</u>                     | <u>Model</u> | <u>Calibration Date</u> | <u>Date Due</u> |
|-------------------------|-----------------------|--|--------------|-------------------------|-----------------|
| 1000213934              | 00888                 | Calibrator                             | 5720A        | 07 FEB 2020             | 28 FEB 2021     |
| 1000213948              | 00890                 | Multimeter, 8.5 Digit Reference        | 8508A-01     | 14 DEC 2019             | 31 DEC 2020     |
| 1000216217              | 00266                 | High Impedance Voltmeter-Null Detector | 845AR        | 20 MAY 2020             | 30 APR 2021     |
| 1000216226              | 00522                 | Resistance Standard                    | RS925A       | 20 APR 2020             | 30 APR 2021     |
| 1000217494              | 01196                 | RH/Temperature Data Logger             | EL-USB-2-LCD | 16 JUN 2020             | 30 APR 2021     |