

Calibration Certificate



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| Calibration Conducted For: |
|--|
| Factory Inc 115 Woodbine Drive Markham, ON L3R 0Y2 |

| | |
|--------------------------------|-------------|
| Certificate No: | 1802-657 |
| Purchase Order No: | 4500123456 |
| Certificate Issue Date: | 15/May/2019 |
| Calibration Date: | 15/May/2019 |
| Due Date: | 15/May/2020 |
| Procedure: | SWI-005 |

Device Identification

| Sensor/Meter: | |
|---------------|--------------|
| Model: | T150T |
| Manufacturer: | Micro Motion |
| Serial No.: | 450302 |
| Output Type: | mA |

| Transmitter/Display | | | | |
|---------------------|--------------|----------|---------------|-----|
| Model: | 2700I | | | |
| Manufacturer: | Micro Motion | | | |
| Serial No.: | 450302 | | | |
| K-Factor: | N/A | P /litre | Meter Factor: | N/A |

Statement of Compliance and Traceability

The Calibration Laboratory Assessment Service (CLAS) of the National Research Council of Canada (NRC) has assessed and certified the specific calibration capabilities of this laboratory to conform with the requirements of ISO/IEC 17025:2005 and traceability to the International System of Units (SI) or to standards acceptable to the CLAS program. This certificate of calibration is issued in accordance with the conditions of certification granted by CLAS and the conditions of accreditation granted by the Standards Council of Canada (SCC). Neither CLAS nor SCC guarantee the accuracy of individual calibrations by accredited laboratories.

Measurement Uncertainty

The flow calibrations were performed using reference standards with a calibration and measurement capability of 0.052%. This is an expanded uncertainty with a coverage factor of $k = 2$, yielding a confidence level of approximately 95%, assuming a normal distribution. The resulting Test Uncertainty Ratio (TUR) is 4:1.

Initial Condition of Device

The meter, and if applicable, any additional components were received in good condition. The meter was clean of all contaminants and the calibration was conducted as agreed upon with the customer.

Summary of Calibration

The results of this calibration certificate pertain only to the item identified under the "Device Identification" section of page 1 of this calibration certificate. The determination of whether the item is in tolerance or not is based on the original manufacturer's specifications or the customer's request and it takes into account the measurement uncertainty of Trillium's Laboratory. When a meter's error is within manufacturer's specification but can be adjusted to as close to "0" as possible, with customer permission an "As Left" certificate will be provided with details indicating what adjustment was made.

Calibration conducted by:

Reviewed and approved by:

Paul Pearson - Technician

Emmanuel Ankrah - Lab Manager

Calibration Certificate

Certificate No.

1802-657

As Found Calibration

Standards Used

| Standard I.D. | Serial No. | Trace No. | Due Date |
|-----------------|---------------|----------------|-------------|
| MM1 | 477392 | 8904-07261-1-1 | 03/Dec/2019 |
| MM2 | 14387980 | 8904-07261-1-1 | 03/Dec/2019 |
| TSM Temperature | 15-C11-144946 | 8904-07261-1-1 | 06/Mar/2020 |
| TSM Pressure | 022416D008 | 2018001082 | 22/Feb/2020 |
| Multimeter - 2 | 3685362 | 2019001138 | 22/Feb/2020 |

Calibration Conditions

| Operating Conditions | | Calibration Conditions | |
|----------------------------------|-------------|------------------------|--------------------------|
| Process Fluid: | Water | Calibration Fluid: | Water |
| Min Rate: | 55 (L/min) | Fluid Pressure: | 413 kPa |
| Max Rate: | 550 (L/min) | Fluid Temperature: | 21.5 °C |
| Fluid Temperature: | 21 °C | Fluid Density: | 0.9989 g/cm ³ |
| Fluid Pressure: | 413 kPa | Ambient Temperature: | 21.2 °C |
| Output Type: | mA Out | Pipe Size | N/A |
| Customer Reference No.: | N/A | Position: | Horizontal |
| Accuracy: ± 0.25 % of full scale | | | |

Results

The results of this 'as found' calibration pertain only to the item(s) indicated on page 1 of this certificate.

| Point | Test Standard (L/min) | Device Under Test | | Calculated Err. % of full scale | Mfg's Tolerance % of full scale |
|-------|--------------------------|-------------------|--------|------------------------------------|------------------------------------|
| | | (L/min) | mA | | |
| 1 | 55.31 | 55.93 | 5.627 | 0.113 | 0.25 |
| 2 | 81.76 | 83.25 | 6.422 | 0.271 | 0.25 |
| 3 | 105.18 | 105.82 | 7.078 | 0.116 | 0.25 |
| 4 | 140.57 | 141.16 | 8.106 | 0.107 | 0.25 |
| 5 | 297.89 | 298.75 | 12.691 | 0.156 | 0.25 |
| 6 | 548.12 | 548.95 | 19.969 | 0.151 | 0.25 |
| | | | | | |
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Interpretation & Recommendations

The results of this calibration were outside the manufacturer's tolerance of 0.25%. Adjustments were made per customer's request, the results of which are outlined on page 3 "As Left Calibration"

Calibration Certificate

Certificate No.

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As Left Calibration

Standards Used

| Standard I.D. | Serial No. | Trace No. | Due Date |
|-----------------|---------------|----------------|-------------|
| MM1 | 477392 | 8904-07261-1-1 | 03/Dec/2019 |
| MM2 | 14387980 | 8904-07261-1-1 | 03/Dec/2019 |
| TSM Temperature | 15-C11-144946 | 8904-07261-1-1 | 06/Mar/2020 |
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Calibration Conditions

| Operating Conditions | | Calibration Conditions | |
|----------------------------------|-------------|------------------------|--------------------------|
| Process Fluid: | Water | Calibration Fluid: | Water |
| Min Rate: | 55 (L/min) | Fluid Pressure: | 413 Kpa |
| Max Rate: | 550 (L/min) | Fluid Temperature: | 21.5 °C |
| Fluid Temperature: | 21 °C | Fluid Density: | 0.9978 g/cm ³ |
| Fluid Pressure: | 413 Kpa | Ambient Temperature: | 21.2 °C |
| Output Type: | mA Out | Pipe Size | N/A |
| Customer Reference No.: | N/A | Position: | Horizontal |
| Accuracy: ± 0.25 % of full scale | | | |

Results

The results of this 'as left' calibration pertain only to the item(s) indicated on page 1 of this certificate.

| Point | Test Standard (L/min) | Device Under Test | | Calculated Err. % of full scale | Mfg's Tolerance % of full scale |
|-------|--------------------------|-------------------|--------|------------------------------------|------------------------------------|
| | | (L/min) | mA | | |
| 1 | 55.11 | 55.69 | 5.620 | 0.105 | 0.25 |
| 2 | 81.66 | 82.33 | 6.395 | 0.122 | 0.25 |
| 3 | 104.28 | 105.05 | 7.056 | 0.140 | 0.25 |
| 4 | 140.17 | 140.62 | 8.091 | 0.082 | 0.25 |
| 5 | 297.29 | 297.88 | 12.666 | 0.107 | 0.25 |
| 6 | 548.02 | 548.64 | 19.960 | 0.113 | 0.25 |
| | | | | | |
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Interpretation & Recommendations

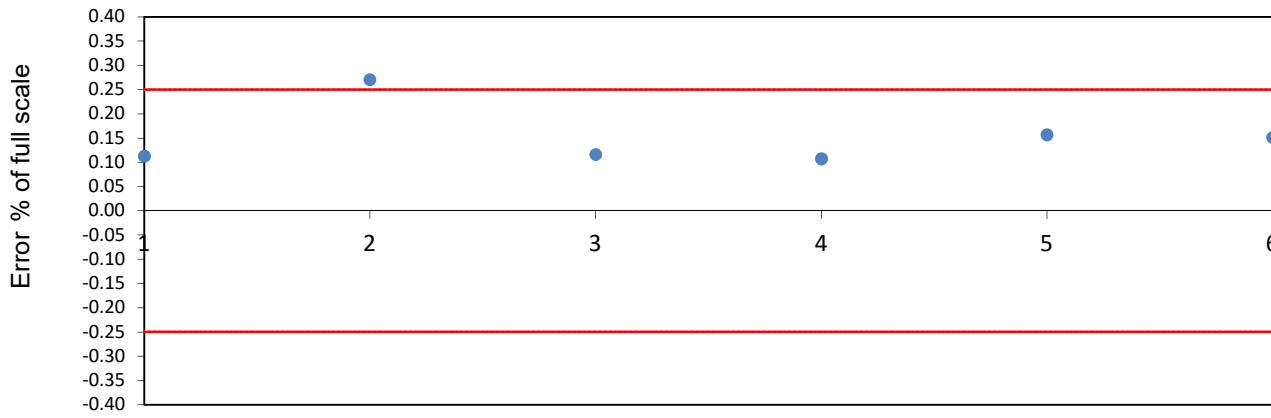
The results of this calibration were within the manufacturer's tolerance of 0.25%, therefore the unit was found to be in tolerance.

Calibration Certificate

Certificate No.

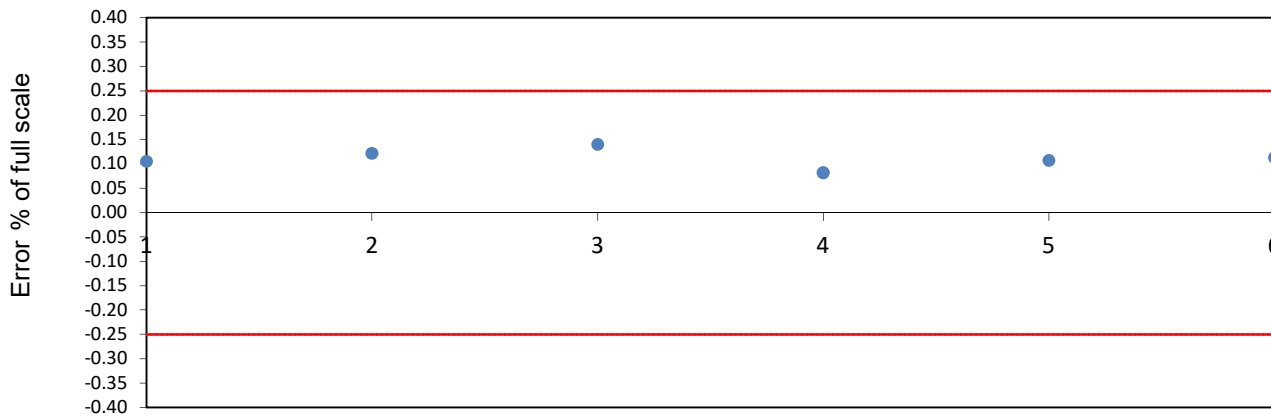
1802-657

As Found Results



— Manufacturer's Tolerance Limit
..... Guardbanded Tolerance (Manufacturer's Tolerance - Calibration and Measurement Capability)

As Left Results



Flow Points