

# Calibration Certificate



2800 John Street, Unit 12  
Markham Ontario L3R 0E2  
trillium@calflow.com

Tel: 905-305-7790  
Fax: 905-305-7791  
www.calflow.com



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 030

## Device Identification

Sensor/Meter:	
Model	CMF200M
Manufacturer	Micro Motion
Serial No.	450302
Output Type	N/A

Transmitter/Display				
Model	2700I			
Manufacturer	Micro Motion			
Serial No.	450302			
K-Factor	60	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 0.025%. 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 approval 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

## As Found Calibration

### Standards Used

Standard I.D.	Serial No.	Trace No.	Due Date
Compact Prover 40L Lab	8904-07261-1-1	1414545	06/Feb/2022
SVP Temperature	0021960	2019004238	24/Jun/2021
SVP Pressure	G4A22AAB4L4J2	2019004237	18/Jun/2021
TSM Temperature	15-C11-144946	2018001080	06/Mar/2020
TSM Pressure Gauge	022416D008	2018001082	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 <sup>3</sup>
Fluid Pressure: 413 kPa	Ambient Temperature: 21.2 °C
Output Type: N/A	
Customer Reference No.: N/A	
Accuracy: 0.1 % of reading	Position: Horizontal

### Results

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

Point	Flow Rate (L/min)	Test Standard (Litres)	Device Under Test		Calculated Err. % of Reading	Tolerance % of Reading
			(Litres)	N/A		
1	548	39.689	39.698		0.023	0.100
2	297	39.655	39.717		0.156	0.100
3	140	39.775	39.769		-0.015	0.100
4	105	39.702	39.717		0.038	0.100
5	81	39.768	39.783		0.038	0.100
6	55	39.755	39.769		0.035	0.100

### Interpretation & Recommendations

The results of this calibration were outside the manufacturer's tolerance of 0.10%. Adjustments were made as per the customer's request, the results of which are outlined on page 3 "As Left Calibration".

<b>TRILLIUM</b> MEASUREMENT AND CONTROL	2800 John Street, Unit 12 Tel: 905-305-7790 www.calflow.com	Form: #048
	Markham Ontario L3R 0E2 Fax: 905-305-7791 E-mail: trillium@calflow.com	Revision: 10-160719
<b>Calibration Certificate</b>		Certificate No. 1802-657

## As Left Calibration

### Standards Used

Standard I.D.	Serial No.	Trace No.	Due Date
Compact Prover 40L Lab	8904-07261-1-1	1414545	06/Feb/2022
SVP Temperature	0021960	2019004238	24/Jun/2021
SVP Pressure	G4A22AAB4L4J2	2019004237	18/Jun/2021
TSM Temperature	15-C11-144946	2018001080	06/Mar/2020
TSM Pressure Gauge	022416D008	2018001082	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 <sup>3</sup>
Fluid Pressure:	413 kPa	Ambient Temperature:	21.2 °C
Output Type:	N/A		
Customer Reference No.:	N/A	Position:	Horizontal
Accuracy: 0.10 % of reading			

### Results

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

Point	Flow Rate (L/min)	Test Standard (Litres)	Device Under Test		Calculated Err. % of Reading	Tolerance % of Reading
			(Litres)	N/A		
1	548	39.698	39.689		-0.023	0.100
2	297	39.645	39.635		-0.025	0.100
3	140	39.757	39.761		0.010	0.100
4	105	39.705	39.715		0.025	0.100
5	81	39.786	39.789		0.008	0.100
6	55	39.745	39.759		0.035	0.100

### Interpretation & Recommendations

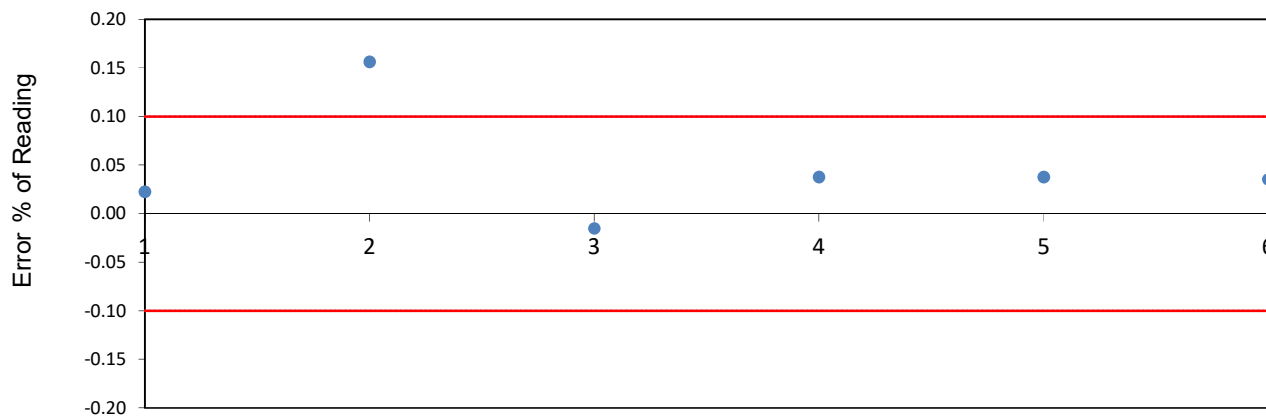
The results of this calibration were within the manufacturer's tolerance of 0.10%, therefore the unit was found to be in tolerance. Live zero reading after zero calibration equals -0.0002455.

**Calibration Certificate**

Certificate No.

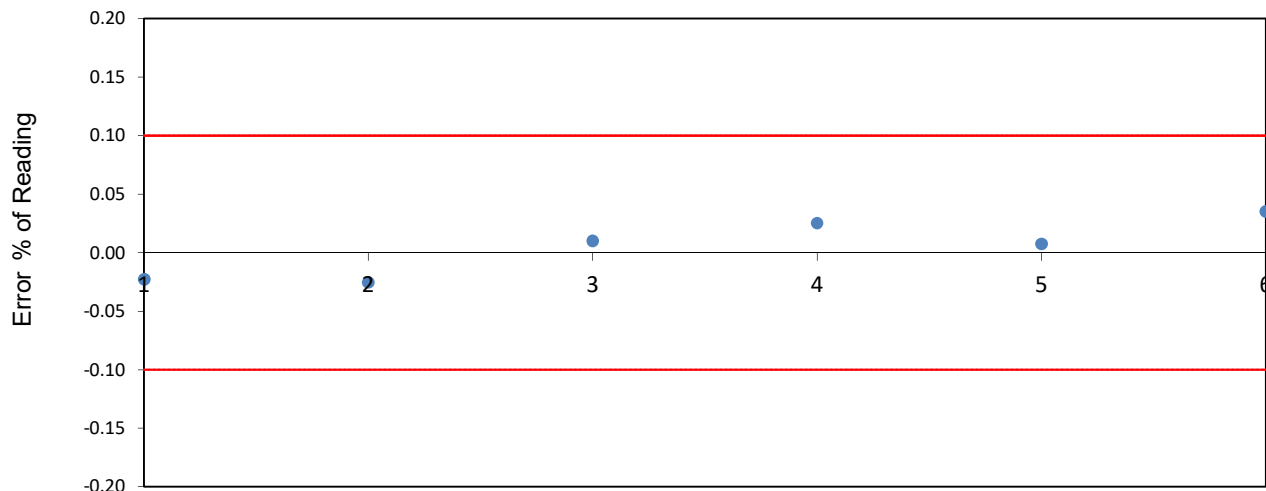
0

**As Found Results**



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

**As Left Results**



Flow Points