



U.S. PATENT 8404076  
U.S. PATENT 8887578  
JAPANESE PATENT 5602884  
OTHER PATENTS PENDING

# SUMOflo™

SINGLE-USE CORIOLIS MASS FLOW METER

## Description

The Malema Sensors® SumoFlo™ CPFM-8100 series Single-Use Coriolis Mass Flow Meters are specifically designed for measuring liquids in bio-pharmaceutical and other applications that require all gamma-sterilizable wetted surfaces. The fluid contacting surfaces are made of unreinforced polyether ether ketone (PEEK) that meet USP Class VI, USP 661, and USP 788 standards.

The CE compliant SumoFlo™ series Coriolis Mass Flow Meters include the single-use sensor assembly, supporting electronics, sensor mounting enclosure, and a graphical user interface (GUI). Optional temperature sensors provide feedback to the electronics that allow temperature compensation to ensure the mass flow accuracy regardless of temperature changes to the application fluid.

## Key Features

- Accuracy: +/- 1% of flow; unaffected by flow regime or variations to the velocity profile
- Fluid measurement performance is independent of fluid properties
- USP Class VI wetted parts
- Gamma sterilizable PEEK sensor

## Measurement Principle

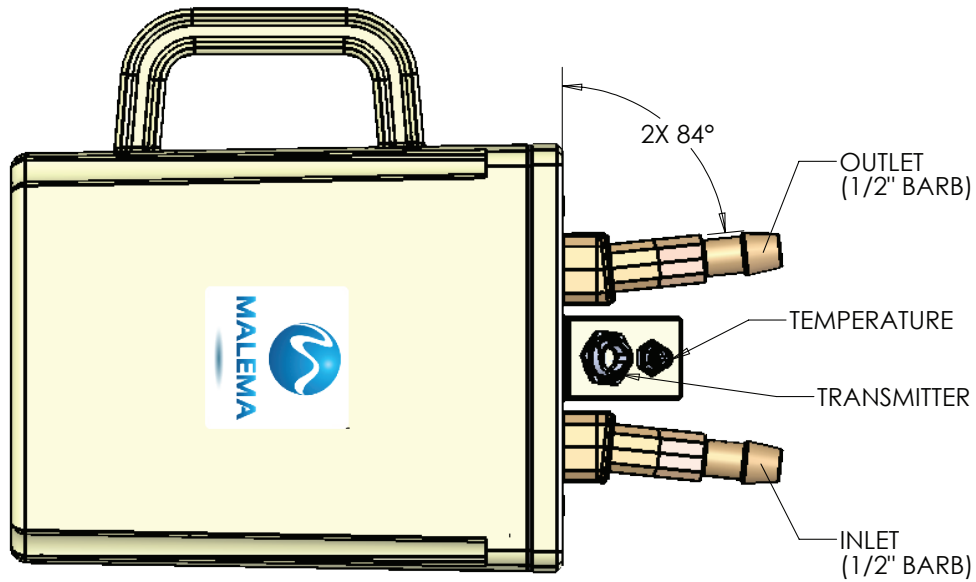
Fluid flows into the sensor consisting of two flow sensitive elements which are vibrated relative to one another – similar to the tines of a tuning fork. Fluid interacts with the sensor dynamically in such a way that the sensor's response is immune to the fluid's chemical and physical properties, flow regime, or variations in flow velocity profile. Fluid mass flow rate is determined by measuring the relative motion of the vibrating flow sensitive elements.

## Applications

- Pure water or ultra high purity chemicals
- Chromatography
- Fluids with varying density or viscosity
- Depth Filtration
- Tangential Flow Filtration

**Mounting Orientation**

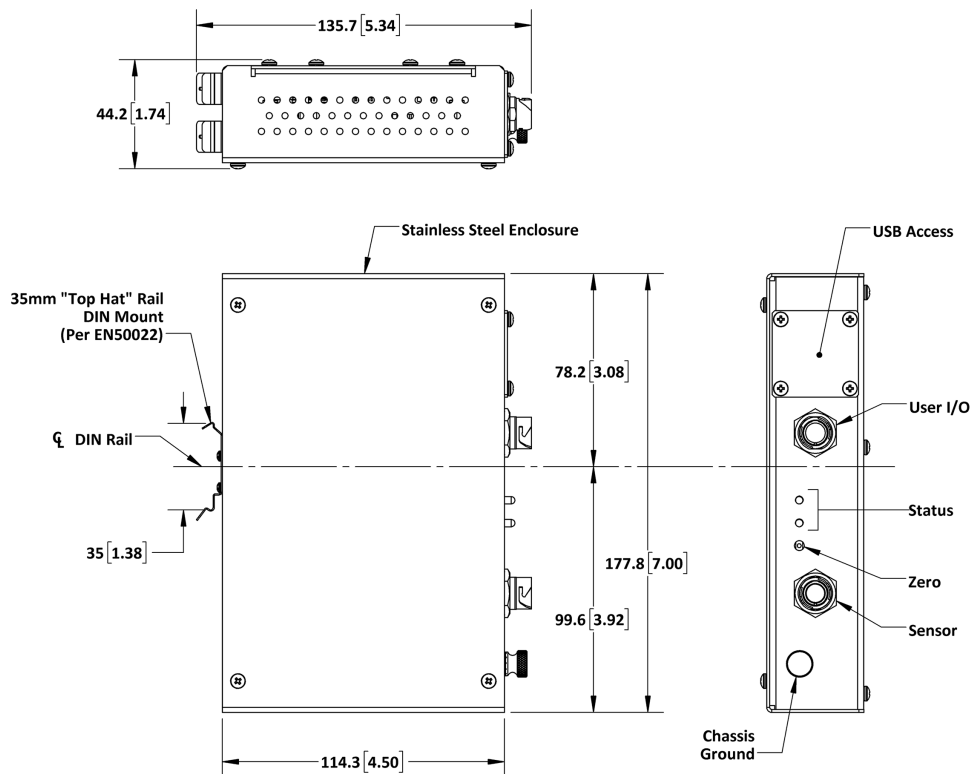
The Malema Sensors® SumoFlo™ series Coriolis mass flow meters can be mounted in any orientation. When mounted horizontally – as shown below – the angled fluid inlet and outlet ports allow for self draining in one direction.



**Dimensional Drawings**

For reference only

**Electronics**

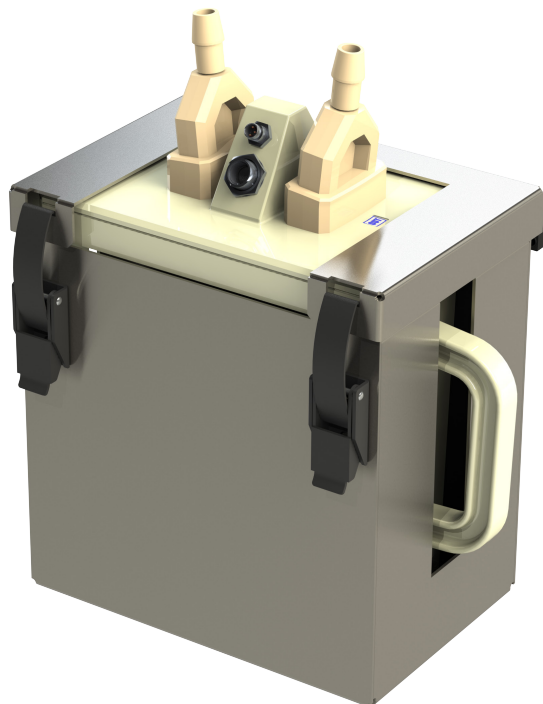
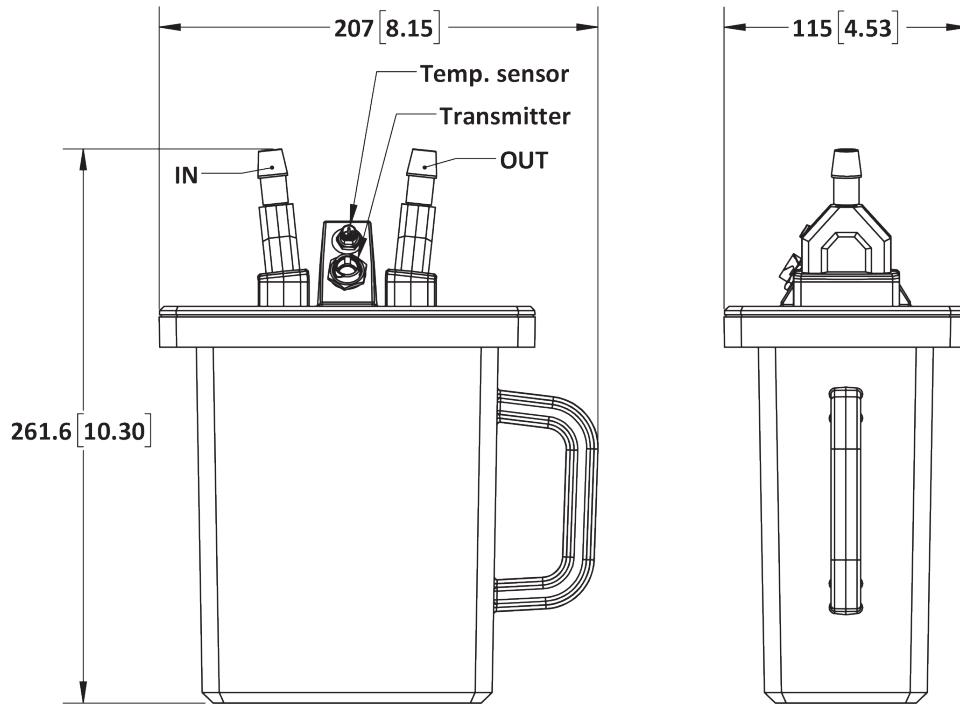


**Dimensional Drawings**

For reference only

Note: Mounting Cradle is required to comply to CE

**Model 8100-082 Sensor (2000 – 20000 g/min, 1/2" barb)**

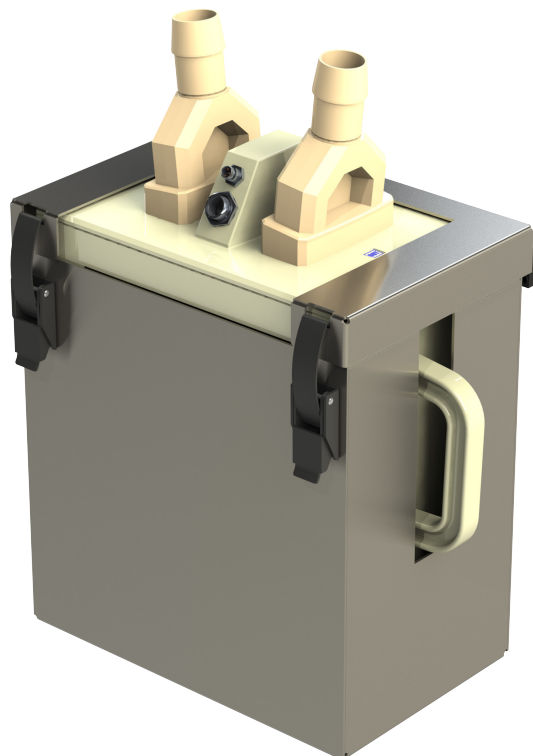
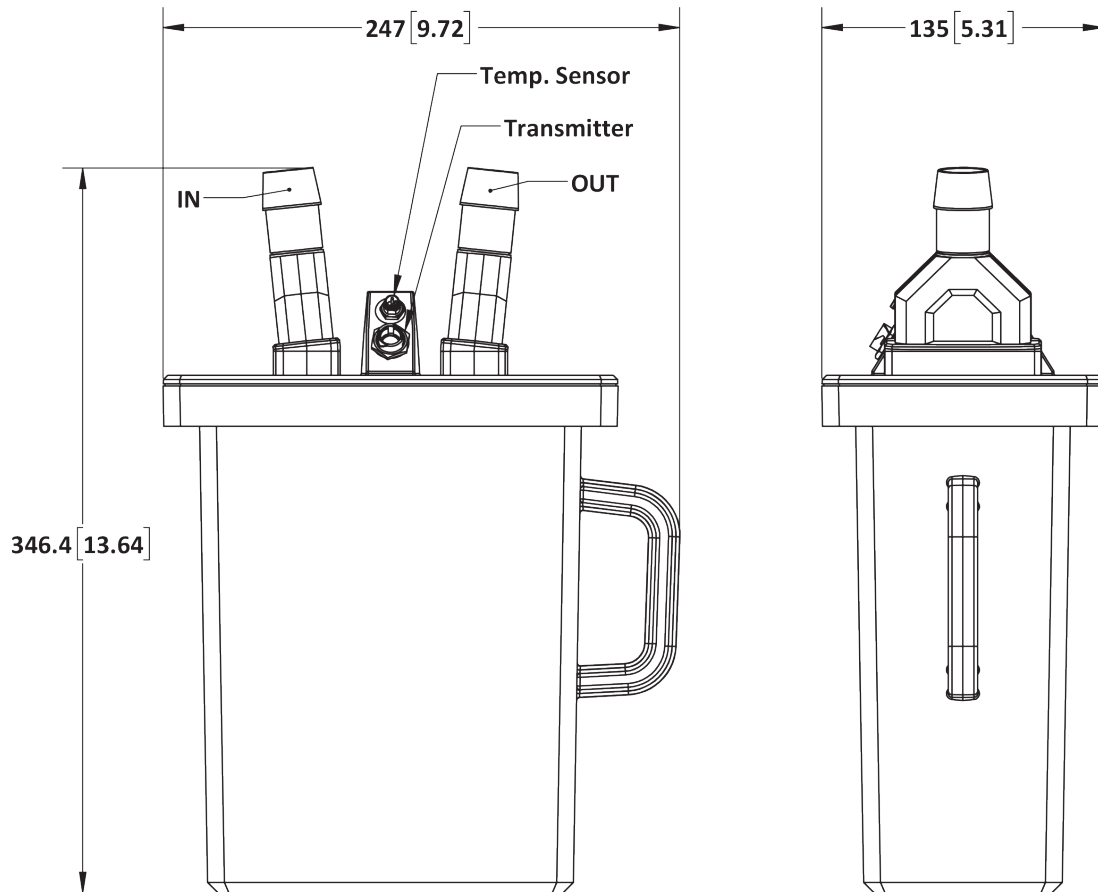


Dimensional Drawings

For reference only

Note: Mounting Cradle is required to comply to CE

Model 8100-152 Sensor (7500 – 75000 g/min, 3/4" or 1" barb)



**Measurement Specifications**

Model	8100-082	8100-152
Accuracy	±1% of rate for 10% to 100% of full scale rated flow rate ±(1% of rate + Z.O.S) for < 10% of full scale rated flow rate	
Temperature	Ambient: 0-50 °C Fluid: 4-40 °C	
Operating Pressure	80 psig (max.)	
Flow Range	2,000 - 20,000 g/min	7,500 - 75,000 g/min
Zero Offset Stability (Z.O.S.)	5 g/min	18.75 g/min

\* Pressure drop at max. flow range = 10 psi in water (1 cP)

**Material Specifications**

Model	8100-082	8100-152
Process Connections	1/2" barb connection *	3/4" or 1" barb connection *
Wetted Material	PEEK (Polyether ether ketone)	
Weight	Sensor: 0.84 kg; Transmitter: 0.82 kg	Sensor: 1.14 kg; Transmitter: 0.82 kg
Interconnecting Cable Length	Standard 3 m; Maximum up to 30 m	
Ingress Rating For Connectors	IP65	

\*Consult the factory for other types of process connection options.

**Electrical Specifications**

Supply Voltage	24 VDC ±10%
Power Consumption	Max 6 W
Programming	Operator Parameter configuration through configuration port with a PC
Analog Output Module	4–20 mA
Digital Input/Output Module	Configurable as Frequency or Digital I/O
Frequency Output	0 to 10 kHz proportional to flow rate

**Certifications/Compliances**

USP Class VI Material Certification	CE Compliance via the following testing: 1. EN61000-4-2: Electrostatic Discharge 2. EN61000-4-3: Radiated Immunity (and Radiated Emissions) 3. EN61000-4-4: Electrical Fast Transients 4. EN61000-4-5: Surge – Power Line 5. EN61000-4-6: Conducted Immunity
USP 661 for Containers/Plastics	
USP 788 for Containers/Plastics	
Directive 2011/65/EU (RoHS)	

Ordering Information for Electronics

Model Ordering Code													Description		
CELE-8100	-	*	-	*	*	*	*	*	X	X	X	-	***	PEEK Sensor	
		C											DIN Rail Mounting (Non Display Only; CE)		
		Z											Custom (Consult Factory)		
		-													
Temperature Compensation		N											Standard for Non-Temperature Comp Sensors		
		T											Use with Temperature Comp Sensors		
		Z											Custom (Consult Factory)		
Output		1											4-20mA, 1x D/O		
		2											4-20mA, 2x D/O		
		3											4-20mA, 1x D/O, MODBUS (RS485)		
		Z											Custom (Consult Factory)		
I/O Cable		0											Standard I/O Cable		
		Z											Custom (Consult Factory)		
I/O Cable Length		A											3 m		
		Z											Custom (Consult Factory)		
Interconnecting Cable Length		A											3 m		
		Z											Custom (Consult Factory)		
									X				Reserved for Factory		
										X			Reserved for Factory		
											X		Reserved for Factory		
												-			
													XXX	Unique PN Identifier	

# CPFM-8100

## Ordering Information for Sensors

# Coriolis Mass Flow Meter

Model Ordering Code											Description		
CSEN-8100	-	*	-	***	*	*	X	X	X	-	***	PEEK Sensor	
Sensor Type	C										CE Compliant Sensor		
		-											
Range Code		082										2,000 – 20,000 g/min	
		152										7,500 – 75,000 g/min	
Temperature Sensor		S										Without Temp. Comp.; Temp. Sensor Not Required	
		W										With Temp. Comp.; Temp. Sensor Required	
		Z										Custom (End User Specified)	
Sterilization		0										No Sterilization	
		1										Gamma	
		Z										Other Requests (Consult Factory)	
							X					Reserved for Factory	
								X					Reserved for Factory
									X				Reserved for Factory
										-			
											XXX	Unique PN Identifier	

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