



MDM-3000

Non-invasive inline Ultrasonic Dispense Meter

Features

- Directly reports dispensed volume from micro-liter to liter
- Analog output and two user-specified alarm limits
- Transducer, electronics, and software that easily integrates into existing dispense system

Applications

- Gas chromatographs
- Hazardous fluid systems
- Sewage systems
- Leak detection
- Sample lines

Description

The Malema MDM-3000 Dispense Verification Meter is the first high-purity instrument to provide real-time, direct volume measurement of critical process fluids with greater speed and accuracy than possible from traditional flow meter totalizers, weight scales or graduated cylinders.

Using a special software algorithm (Patent pending) and a proven non-invasive ultrasonic transducer that easily integrates into your existing dispense system, the MDM-3000 provides instant verification of each dispense and warns the user of out-of-tolerance dispenses caused by anomalies such as entrained bubbles, fluid contamination of faulty dispense hardware (filters, valves or pumps).

Using an MDM-3000, you can measure and validate every dispense increasing productivity and quality, and optimize your process to eliminate wasteful chemical use.

Operation

The operating principle is based on a free floating magnetic piston which responds only to the motion of fluids within the line, not to static or system pressures. In the presence of fluid flow, controlled movement of the piston actuates an external hermetically sealed reed switch thus producing the required signal. This signal can be used to actuate audible or visual alarms as well as relays, or other control. Piston travel is short which insures low hysteresis. Pressure drop across flow switch varies from 0.035 to 2 psi (at maximum flow rates for air and liquid). Universal mounted units are outfitted with a spring which resets the piston. The spring is held in place using a perforated disc.

Functional Specification

Power Supply	12 - 36 Vdc
Power Consumption	3 W continuous (1.5 A on start-up)
Ambient Temperature	32° - 115 °F (0 - 46 °C)
Fluid Temperature	50° - 122 °F (10 - 50 °C)
Maximum Operating Pressure	70 psig

CE Certification: Complies to EMC Directive 2014/30/EU

Sensor Specifications

Wetted Parts	High-purity PFA
Non-wetted Parts	FEP, PEEK, PTFE, PVDF, Viton A
Cable Material	PTFE jacketed cabling
Cable Length	2 meters (standard)
Sensor Diameter	1/8 and 1/4 inch diameter
Enclosure Classification	IP65

Converter Material Specifications

Enclosure Classification	IP20 (indoor use)
Weight	5.5 oz (156 g)
Materials	Anodized Aluminum, Plastic

Input and Output Specifications

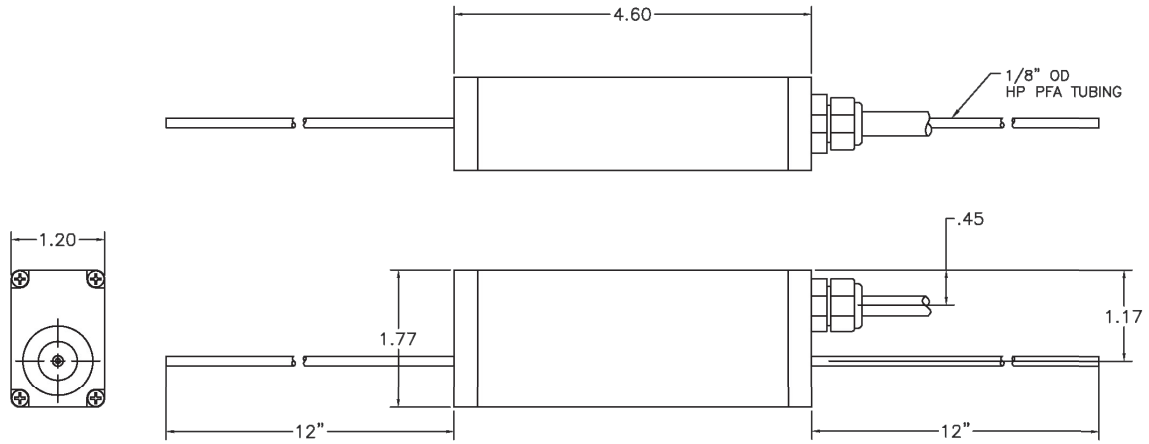
Input	Dispense Start: opto-isolated, 5 - 24 Vdc
Outputs	Alarms (X2): opto-isolated contacts (15 mA)
PC Communication	RS 232; 57000 Baud Rate

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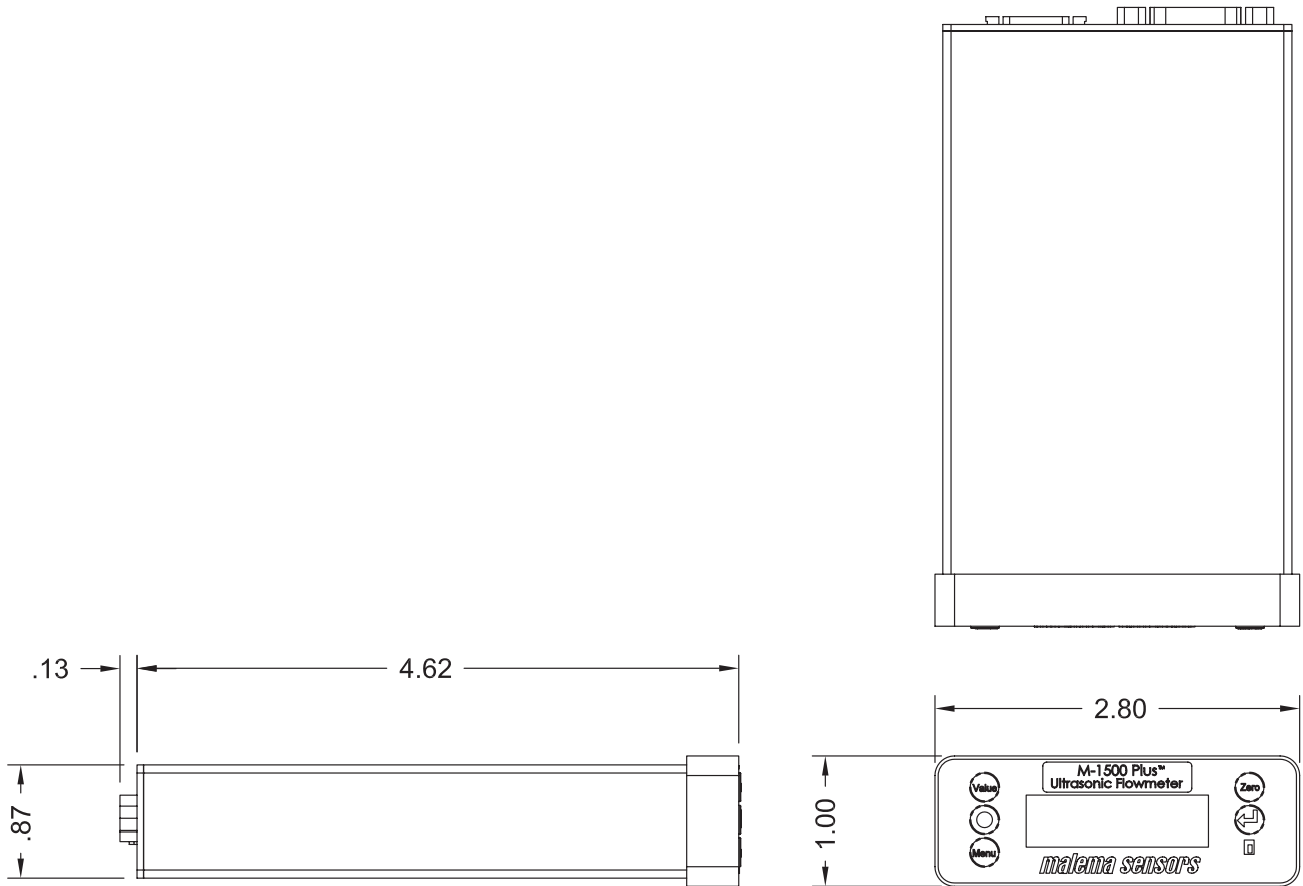
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Sensor Dimensions



Converter Dimensions



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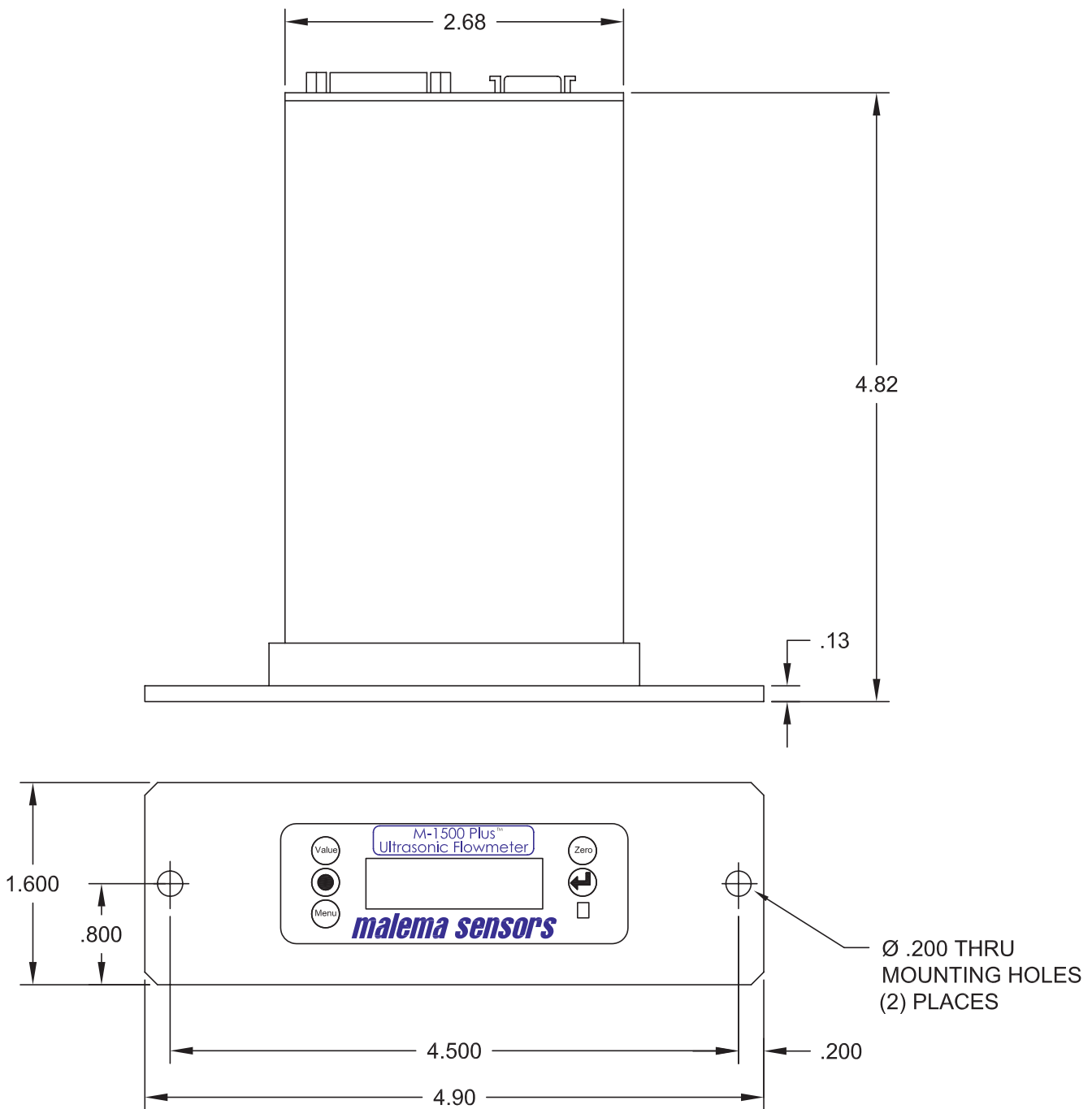
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Mounting Bracket Dimensions



Cautions On Installation

- Installation Area for Flow Detector: Select the area of pipe where no air or gas bubbles exist in the flow.
- Mounting of flow detector: Recommend to install detector vertically with upward flow, in order to prevent deposit of slurry or bubbles in low flowrate conditions.
- Location of control valve: If a flow control valve is installed in the piping, it should be located on the downstream side of the flow detector to keep the fluid pressure high. The high fluid pressure will prevent the formation of bubbles in the flow.
- Noise Suppression: All electrical noise sources near the flowmeter, such as power relays or solenoid valves, should be fitted with a surge suppressor.
- Signal Cable Wiring: Keep signal cables away from high voltage or high current power cables to avoid induced electrical noise.

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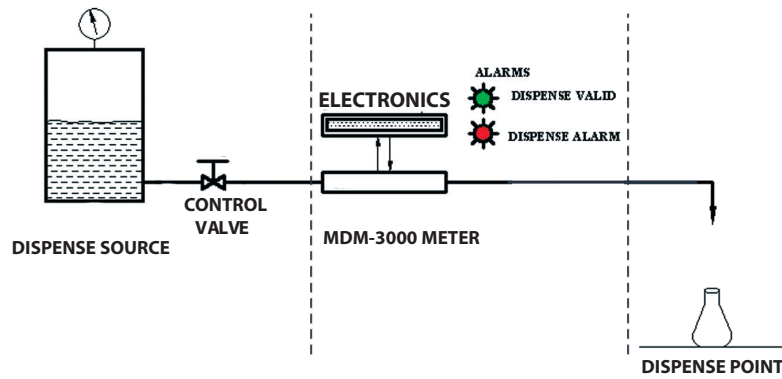
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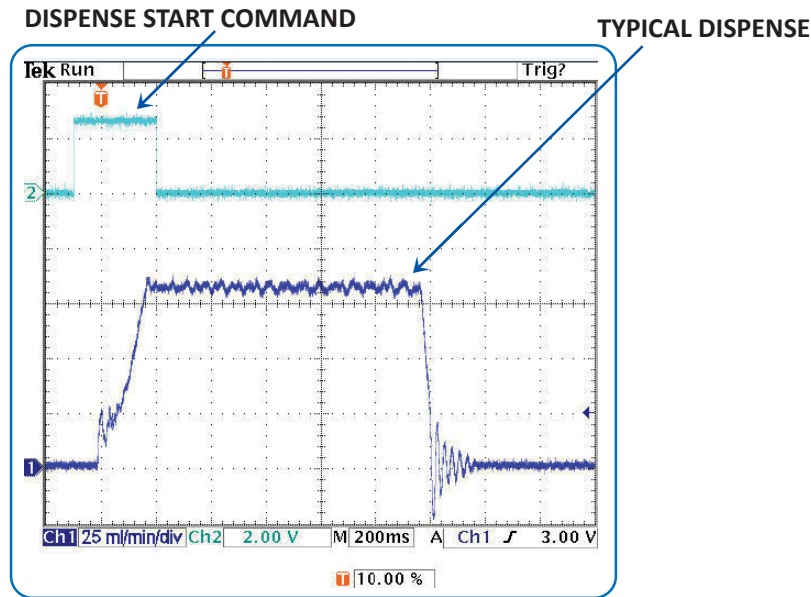
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Typical Chemical Dispense Application



Typical Dispense Cycle



Verification of a 460 micro-liter dispense from a typical positive displacement pump.

Ordering Information

Model Code			Option
MDM-3000			
-			
Tube Material	T		PFA
Tube O.D	1		1/8"
	2		1/4"
Connection Type	1		Tube ends
-			
			XXX

NOTE: Specifications are subject to change without notice.

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