

MassSense® Gas Density Meter

The MassSense® Gas Density Meter or GDM revolutionizes the measurement of gas density with its small integral packaging and sensitive measuring capabilities. The heart of the GDM is a patented* silicon sensing tube that vibrates at a very high frequency, above 20 kHz, which eliminates the impact of environmental vibrations on the gas density measurement. Silicon sensing tube technology is lighter and stronger than traditional metal sensing technology. The result is an instrument that can detect even the slightest changes in gas density with the industry leading performance specifications. An absolute pressure and temperature sensor is included on every GDM. Installation in a process is normally on a controlled flow bypass. An internal orifice in the GDM directs a small portion of the bypass gas flow through the vibrating detector.



Features

■ Approved for Hazardous Locations & IP67 Sealed

The GDM has ATEX, UL, and CUL approvals for hazardous process environments.

■ In-Line, Real Time

The small internal volume of the silicon sensor and high-speed digital processing results in very fast gas density detection. This is important in those applications where speed is important.

■ Low Power Consumption

The GDM's, 400 mW, power consumption makes the instrument ideal for portable and remote applications. The instrument can be powered using a small solar panel, external battery, or power adapter.

■ Advanced Measurement Capabilities

Using gas density, gas pressure and temperature, a GDM can be programmed to calculate gas properties such as specific gravity, average molecular weight, hydrocarbon gas heating value and binary gas concentration.

■ Unmatched Resolution and Sensitivity

A GDM resolves gas density to 0.000001 g/cc and has an accuracy of 0.0001 g/cc.

Applications

Gas Quality Measurement: Natural Gas Density measurement provides the composition and quality of gases. In a natural gas measurement this is valuable to understand the potential heating value of the flow.

Propane-Air Blending A back-up for natural gas is a requirement in many industrial processes. Propane (LPG) can be blended with air to make a synthetic gas that can be burned in natural gas burners. The specific gravity of this blend is an indication of the heating value. GDM is an ideal solution for monitoring and controlling this blend.

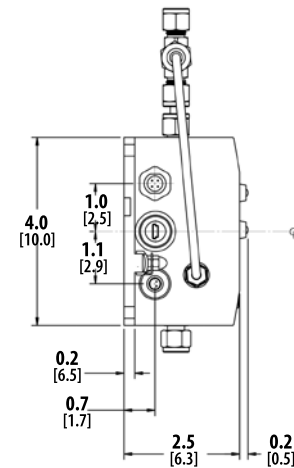
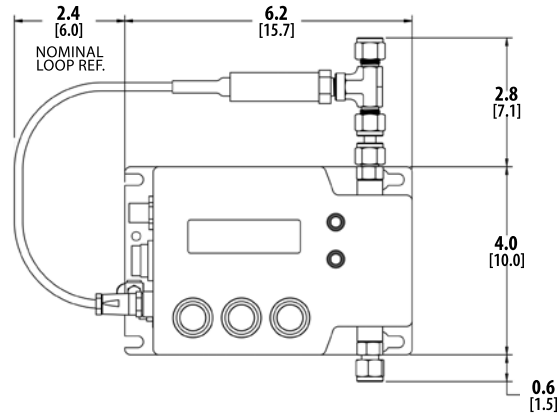
Binary Gas Concentration The concentration sensitivity to the binary gas blends is a function of the difference in molecular weight of the two species. GDM is used to measure the density of the gas to determine the hydrogen concentration as feedback to the blending control system.

Refinery Fuel Gas Measurement Gas specific gravity can be used to monitor the potential heating value of the hydrogen rich streams found in refinery and chemical process waste gases. Measurement speed is important, because a slug of hydrogen can destroy burners in seconds. The GDM response time of less than one second can detect a rapid change in gas density.

Specifications

GENERAL	
Gas Density Range	0 - 0.03 g/cc
Accuracy	Digital Density: 0.0001 g/cc Analog Density: +/- 0.1% of full scale Temperature: 0.6 F (0.3 C)
Repeatability	0.00003 max g/cc
Max Pressure	300 psig (21.7 bar) standard
Operating Temperature	-4 to 140 F (-20 to 60 C)
Sample Rate	100 mS
Fittings	5/16 straight thread, o-ring seal; standard fitting 1/4" Swagelok® compression
Bypass	0.05" (0.127 cm) standard, 0.076" (0.193 cm) optional
Mounting	(4) 1/4" 20 UNC (M6) bolts
Materials	Housing: painted aluminum Wetted parts: SS, Silicon, Epoxy, Glass
Dimensions	6.2" x 2.5" x 4" (15.7 cm x 6.3 cm x 10 cm)
Weight	2.5 lb (1135 g)
POWER	
Supply	5 VDC, 500 mW USB or 8 to 30 VDC
Consumption	400 mW
ELECTRICAL	
Outputs	(2) 4-20mA analog, optional
Communication	USB, standard RS-232, optional RS-485, optional
Display	2x16 standard character, adjustable LCD backlit, optional
Memory	2 Gb internal data logger
APPROVAL	
	EX IIC (Zone 0, T4), AEx, CUL, UL (Class 1 Div 1 Group ABCD)
OTHER OPTIONS	
	Display IP67 Sealed Modbus NIST

Dimensions Inches [cm]



*US Patents 6,477,901, 6,499,354, 6,637,257, 6,647,778, 6,923,625, 6,932,114, 6,935,010, 7,059,176, 7,228,735, 7,263,882, 7,351,603, 7,381,628, 7,437,912, 7,568,399, 7,581,429, 7,628,082, 7,789,949, 7,823,445, 7,921,737B2, 8,016,798, 8,021,961, Japanese Patent 4,568,763 and more patents pending

Order Information

The Gas Density Meter (GDM) includes: ISSYS Software, 5/16 straight thread, o-ring seal, 1/4" Swagelok® compression fittings. See the HOW TO ORDER guide for complete product selections.

Models

GDM Hazardous with or without a display
GDM Non-Hazardous with or without a display

Available Options

Bypass, Output (Digital or Analog), NIST, IP67 Sealed, Modbus