

MFM3100™

Real-time two phase mass flow

Correflow®



The Correflow Mass Flow Monitor (MFM) is a unique in-line, real-time system used to measure velocity, concentration, and mass flow of each component in various two-phase mixtures. The system measures gases, solids, or non-conducting liquids in nearly any combination of two materials (this includes solids in insulating liquids, solids in gas, gas in insulating liquids, and miscible liquids). In many process streams the MFM is the only way to accurately monitor actual feed rates.

The MFM provides direct measurement of stream concentration and mass flow, allowing closed-loop process control. Unlike other systems, the MFM can measure pulsed flows or continuous streams, with varying concentrations in real-time. Other instruments measure only the mass flow of the mixture, not the individual components.

Benefits

- Real-time mass-balances and catalyst feed rate measurements
- Detects feed line clogging instantaneously
- Monitors feed supply concentration changes instantaneously

Advantages

- Directly measures mass flow, velocity, volume fraction or mass fraction quantities
- Instantaneous and average mass flow outputs
- Continuous analysis with selectable time averaging
- No moving parts, unaffected by vibration
- No additional pressure drop
- Single or dual channel systems
- Selectable output scaling
- Approved for safe operation in hazardous areas
- Ruggedized for the factory environment
- Non-contact measurement



Specification

Concentrations	0.1 to 99.9%
Materials Measured	Insulating liquids, solids (particulates), gas (bubbles or as carrier)
Response Time	Concentration—updated at 2.5 millisecond intervals Velocity—typically updated once per second
Analyzer Housing Types	Explosion proof: (NEMA 4/7/9) Class 1, Division 1, Group B and C 20" x 20" x 11" (51 x 51 x 28 cm) European explosion proof (flame proof): ATEX approved, EEx d me IIC T4 Size: 21.5" x 19.9" x 14" (55 x 48 x 36 cm) Stainless steel option: (NEMA 4X) Size: 20" x 16" x 11" (51 x 41 x 28 cm) Stainless steel enclosures with purge available
Typical Sensor	Pipe sizes: 1/8" (.32 cm) ID or greater Pressure limits: 1000 psi (68 atm) typical for small sensors Higher pressure designs available No moving parts, no flow restrictions or additional pressure drop
Power Requirements	115 to 240 VAC, 50 to 60 Hz (100 Watts maximum)
Data Analysis	Instantaneous and averaged over user programmed time intervals Comprehensive software package allows easy access to full system capability, including remote monitoring, configuration, and optimization
Calibration Routines	Sensor self-tuning with optional dynamic auto-zeroing routines Adjustable gain on concentration and velocity measurement circuitry Adjustable signal filtering on concentration measurement circuitry Adjustable sampling rate for a wide range of process conditions
Outputs/Inputs	Modem for remote monitoring and diagnostics Each sensor has two independent 4 – 20mA outputs RS232 or RS422 serial communications
Available Measurements	Velocity, volume fraction, mass fraction, mass flow measurements Total mass for fixed time intervals Stream temperature
PC Software	Efficient environment to view and control system parameters Displays real-time data of user-selected parameters Stores historical data for trend information Visual high and low alarm indications Covered by one or more of the following patents: USA: #4,074,184, #4,774,453, #4,619,145, #5,396,961. Japan: #1,361,730. UK: #1,570,039. Canada: #1,101,070, #1,256,300. Australia: #573,408. Other patents pending.



Analyze with integrity.™

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