

MINI CORI-FLOW™ M12

Low Flow Coriolis Mass Flow Meter

- High accuracy, excellent repeatability
- Fast response
- Independent of fluid properties
- Additional density and temperature output
- Compact, rugged (IP65) design
- Optional ATEX approval Cat.3, Zone 2



Low Flow Coriolis Mass Flow Meters for Liquid and Gases

mini CORI-FLOW™ Mass Flow Meters and Controllers are precise and compact instruments, based on the [Coriolis measuring principle](#), designed to cover the needs of the low flow market. Bronkhorst® model M12 Mass Flow Meter (MFM) is suited for highly accurate measurement of gas or liquid flow ranges between 0,1...5 g/h and 2...200 g/h (which corresponds with 1,33 ...66,6 ml_n/min up to 0,03...2,66 l_n/min when used on nitrogen) at operating pressures up to 200 bar (higher on request). The instruments are equipped with a robust IP65 weatherproof housing and are optionally available with ATEX approval for use in Zone 2 hazardous areas.

The instrument contains a microprocessor based pc-board with signal and fieldbus conversion and a PID controller for optional mass flow control by means of a separately mounted control valve or pump.

Technical specifications

Measurement / control system

Flow range (intermediate ranges available)	min. 0,1...5 g/h; max. 2...200 g/h
Mass flow accuracy	Liquid: $\pm 0,2\%$ of rate; Gas: $\pm 0,5\%$ of rate
Repeatability	$\pm 0,05\%$ of rate $\pm \frac{1}{2}(ZS^* \times 100/\text{actual flow})\%$
Turndown ratio	up to 1:100
Zero stability (ZS)	$< \pm 0,02$ g/h (Guaranteed at constant temperature and for unchanging process and environment conditions.)
Response time (sensor)	≤ 200 msec
Temperature effect	on zero: $< 0,01$ g/h/°C; on span: $< 0,001\%$ Rd/°C; self heating (at zero flow): $< 15^\circ\text{C}$ (Depends on flow rate, heat capacity fluid, T amb., T fluid and cooling capacity.)
Operating temperature	0 ... 70 °C ; for ATEX Cat.3, Zone 2 max. 50°C
Mounting	Any position, attitude sensitivity negligible. Instrument to be rigidly bolted to a stiff and heavy mass or construction for guaranteed zero stability. External shocks or vibrations should be avoided.
Temperature accuracy	$\pm 0,5$ °C
Density accuracy	$< \pm 5$ kg/m ³
Leak integrity, outboard	Outboard $< 2 \times 10^{-9}$ mbar l/s He
Warm-up time	> 30 min for optimum accuracy

Mechanical parts

Sensor	single tube, DN 0.25
Material (wetted parts)	stainless steel 316L or comparable; optional: Hastelloy-C22
Housing	stainless steel 430F
Pressure rating (PN)	200 bar abs , higher on request
Process connections	compression type or face seal (VCR/VCO) couplings (welded)
Seals	metal
Weight	1,1 kg
Ingress protection	IP65 (weatherproof)

Electrical properties

Power supply	+15...24 Vdc +/- 10% Max. ripple recommended: 50 mV tt
Max. power consumption	max. 3 W
Analog output	0...5 (10) Vdc, min. load impedance > 2 k Ω ; 0 (4)...20 mA (sourcing), max. load impedance < 375 Ω
Analog setpoint	0...5 (10) Vdc, min. load impedance > 100 k Ω ; 0 (4)...20 mA (sourcing), max. load impedance ~ 250 Ω
Digital communication	standard: RS232; options: PROFIBUS DP, DeviceNet™, Modbus RTU or FLOW-BUS

Electrical connection

Analog/RS232	8-pin DIN (male);
PROFIBUS DP	bus: 5-pin M12 (female); power: 8-pin DIN (male);
CANopen® / DeviceNet™	5-pin M12 (male);
FLOW-BUS/Modbus-RTU/ASCII	5-pin M12 (male);

Technical specifications subject to change without notice.

For dimensional drawings and hook-up diagrams please visit the [product page](#) on our [website](#)

Recommended accessories



E-8000 SERIE

Digital Readout / Control Systems

Bright, wide angle, 1.8" display (TFT technology)

User friendly operation, menu driven with 4 push buttons



BRIGHT SERIE

Compact Local R/C Module

Bright, wide angle, 1.8" display

User friendly operation

Indication/operation/configuration



PIPS SERIE

Plug-in Power Supply

For lab-style or industrial devices

Interchangeable plugs (Euro, UK, USA, Australian, IEC) for mains connection



MOUNTING PARTS

Mass blocks and vibration dampeners

To guarantee zero stability of low flow Coriolis instruments

Related products



MINI CORI-FLOW™ M12V14I

Min. flow 0,1...5 g/h
Max. flow 2...200 g/h
Pressure rating 100 bar
Independent of fluid properties
High accuracy, fast control



MINI CORI-FLOW™ M12V14I

Min. flow 0,1...5 g/h
Max. flow 2...200 g/h
Pressure rating 100 bar
Independent of fluid properties
High accuracy, fast control



MINI CORI-FLOW EX D XM12

Min. flow 0,1...5 g/h
Max. flow 2...200 g/h
Pressure rating 138 bar
IECEX and ATEX Zone 1 approved
Independent of fluid properties



MINI CORI-FLOW™ M13

Min. flow 1...50 g/h
Max. flow 20...2000 g/h
Pressure rating 200 bar
Independent of fluid properties
High accuracy, fast response



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