

# M15

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## MINI CORI-FLOW™ M15

Low Flow Coriolis Mass Flow Meter / Controller

- 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



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### Low Flow Coriolis Mass Flow Meters / Controllers 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 M15 Mass Flow Meter (MFM) is suited for highly accurate measurement of gas or liquid flow ranges between 0,2...5 kg/h and 3...300 kg/h (which corresponds with 2,67...66,6 l<sub>n</sub>/min up to 40...4000 l<sub>n</sub>/min when used on nitrogen) at operating pressures up to 100 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.

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### Technical specifications

## Measurement / control system

Flow range (intermediate ranges available)	min. 0,2...5 kg/h; max. 3...300 kg/h
Mass flow accuracy	Liquid: $\pm 0,2\%$ of rate; Gas: $\pm 0,5\%$ of rate
Repeatability	$\pm 0,5\%$ of rate $\pm \frac{1}{2}(ZS^* \times 100/\text{actual flow})\%$
Turndown ratio	up to 1:100
Zero stability (ZS)	$< \pm 50$ g/h (Guaranteed at constant temperature and for unchanging process and environment conditions.)
Response time (sensor)	$\leq 200$ msec
Temperature effect	on zero: $< 0,5$ g/h/ $^{\circ}\text{C}$ ; on span: $< 0,001\%$ Rd/ $^{\circ}\text{C}$ ; self heating (at zero flow): $< 10^{\circ}\text{C}$ (Depends on flow rate, heat capacity fluid, T amb., T fluid and cooling capacity.)
Operating temperature	0 ... 70 $^{\circ}\text{C}$ ; for ATEX Cat.3, Zone 2 max. 50 $^{\circ}\text{C}$
Mounting	Any position, attitude sensitivity negligible. External shocks or vibrations should be avoided.
Temperature accuracy	$\pm 0,5$ $^{\circ}\text{C}$
Density accuracy	$< \pm 5$ kg/m <sup>3</sup>
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 3.1
Material (wetted parts)	stainless steel 316L / 1.4404;
Housing	stainless steel 430F
Pressure rating (PN)	100 bar abs , higher on request
Process connections	compression type or face seal (VCR/VCO) couplings (welded)
Seals	metal
Weight	4,7 kg
Ingress protection	IP65 (weatherproof)

## Electrical properties

Power supply	+15...24 Vdc +/- 10% Max. ripple recommended: 50 mV tt
Max. power consumption	meter: max. 3 W; controller: max 7 W
Analog output	0...5 (10) Vdc, min. load impedance $> 2$ k $\Omega$ ; 0 (4)...20 mA (sourcing), max. load impedance $< 375$ $\Omega$
Analog setpoint	0...5 (10) Vdc, min. load impedance $> 100$ k $\Omega$ 0 (4)...20 mA (sourcing), max. load impedance $\sim 250$ $\Omega$
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

## Related products



**MINI CORI-FLOW™ M14**

Min. flow 0,03...1 kg/h  
Max. flow 0,3...30 kg/h  
Pressure rating 200 bar  
Independent of fluid properties  
High accuracy, fast response



**CORI-FLOW™ M54**

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



**CORI-FLOW™ M55**

Min. flow 0,5...20 kg/h  
Max. flow 12...600 kg/h  
Pressure rating 100 bar  
Independent of fluid properties  
High accuracy, fast response



**BRONKHORST USA INC.**

57 South Commerce Way

Suite 120

USA - Bethlehem, PA 18017

Tel. +1-610-866-6750

[sales@bronkhorstusa.com](mailto:sales@bronkhorstusa.com)