# DATASHEET XM12

## mini CORI-FLOW Ex d XM12

Ex-Proof Coriolis Mass Flow Meter/Controller for low flow rates



### Ex-proof Coriolis Mass Flow Meters/Controllers for low flow rates

mini CORI-FLOW Ex d Mass Flow Meters are precise and compact instruments for low flow rates, based on the Coriolis measuring principle, built in an explosion proof housing for use in IECEx and ATEX Zone 1 hazardous areas, ATEX approval II 2 G Ex d e IIB T6 Gb. Bronkhorst® model XM12 Mass Flow Meter (MFM) is suited for highly accurate measurement of gas or liquid flow in the range of 0…200 g/h (which corresponds with 0…2,66 $l_n$/min when used on nitrogen) at operating pressures up to 138 bar (a).

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 rates | Liquid: 0…200 g/h (nominal flow rate: 100 g/h);<br>Gas: 0…2,66 $l_n$/min ($N_2$);<br>Full Scale (FS) value is user-configurable |
| Mass flow accuracy | Liquid: ±0,2% Rd;<br>Gas: ±0,5% Rd |
| Repeatability | ±0,05% of rate ± ½(ZS* x 100/actual flow)% |
| Turndown ratio | Meter: up to 1:100;<br>Controller: ≥ 1:50 |
| Zero stability (ZS) | < ± 0,02 g/h<br>(Guaranteed at constant temperature and for unchanging process and environmental conditions.) |
| Response time (sensor) | ≤ 200 msec |
| Settling time (in control, typical) | 1 sec. (typical) |
| Temperature range | Ambient temperature range: 0…55°C;<br>Process temperature range: 0…70°C |
| Temperature effect | on zero: < 0,01 g/h/°C;<br>on span: < 0,001% Rd/°C;<br>self heating (at zero flow): < 15°C<br>(Depends on flow rate, heat capacity fluid, T amb., T fluid and cooling capacity.) |
| Mounting | Any position, attitude sensitivity negligible.<br>External shocks or vibrations should be avoided. |
| Temperature accuracy | ± 0,5°C |
| Density accuracy | < ± 5 kg/m³ |
| Leak integrity, outboard | tested < 2 x $10^{-9}$ mbar l/s He |
| Warm-up time | > 30 min. for optimum accuracy |

**Mechanical parts**

| | |
|---|---|
| Sensor | single tube, DN 0,25 |
| Valve seat | Kalrez®-6375, other on request<br>(for controllers) |
| Material (wetted parts) | stainless steel 316L or comparable |
| Pressure rating (PN) | 138 bar a |
| Process connections | 1/8" OD compression type (welded);<br>other on request |
| Seals | metal |
| Ingress protection | IP66 |

**Electrical properties**

| | |
|---|---|
| Power supply | +15…24 Vdc +/- 10%<br>Max. ripple recommended: 50 mV tt |
| Max. power consumption | Meter: max. 3 W;<br>Controller: max. 7 W |
| Analog output | 0…5 (10) Vdc, min. load impedance > 2 kΩ;<br>0 (4)…20 mA (sourcing), max. load impedance < 375 Ω;<br>on request: Ex i output 4…20 mA |
| Analog setpoint | (for MFM + pump or control valve)<br>0…5 (10) Vdc, min. load impedance > 100 kΩ;<br>0 (4)…20 mA (sourcing), max. load impedance ~ 250 Ω |
| Digital communication | standard: RS232<br>options: PROFIBUS DP, DeviceNet™, Modbus RTU or FLOW-BUS |
| Electrical connection | All instrument connections are wired to screw terminals |

**Electrical connection**

**Control valve options**

**External actuator options to be connected to the controller**

| | |
|---|---|
| Electromagnetic control valve (Bronkhorst®) | C2I valve with XC coil or XB coil through barrier |
| Pneumatic actuated control valve (Badger Meter) | RC200 valve with Ex d TEIP11 I/P converter |
| Mass Flow Meter controlled pump | Pump with ATEX zone 1 U/f converter |

**Ex-proof specifications**

| | |
|---|---|
| Approvals (MFM) | ATEX: II 2 G Ex d e IIB T6 Gb \| DEKRA 12ATEX0144X \|<br>IECx: Ex d e IIB T6 Gb \| IECEx DEK 12.00400 \|<br>TIIS Zone 1 / JP Ex IIB T6 Gb \| DEK 19.0041 \| |

**Approvals / certificates**

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 SERIES**

**Digital Readout / Control Systems**

- Bright, wide angle, 1.8" display (TFT technology)
- User friendly operation, menu driven with 4 push buttons

## Related products



**MINI CORI-FLOW EX D XM13**

- Flow range 0…2000 g/h
- Pressure rating 138 bar
- IECEx and ATEX Zone 1 approved
- Independent of fluid properties




**MINI CORI-FLOW™ M12**

- Flow range 0…200 g/h
- Pressure rating 200 bar
- Independent of fluid properties
- High accuracy, fast response

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