

DATASHEET M13V10I

mini CORI-FLOW™ M13V10I

Low Flow Coriolis Mass Flow Controller for Gases



Low Flow Coriolis Mass Flow Controllers for 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 M13V10I Mass Flow Controller (MFC) is suited for highly accurate control of gas flow in the range of 0...2000 g/h (which corresponds with 0...26,6 l_n/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 mass flow control by means of an integrated control valve (normally closed).

Technical specifications

Measurement / control system

| | |
|-------------------------------------|--|
| Flow rates | 0...2000 g/h (nominal flow rate: 1000 g/h); Full Scale (FS) value is user-configurable |
| Mass flow accuracy | ± 0,5 % Rd |
| Repeatability | ±0,05% of rate ± ½(ZS* x 100/actual flow)% |
| Turndown ratio | 1:50 |
| Zero stability (ZS) | ≤ ± 0,2 g/h (Guaranteed at constant temperature and for unchanging process and environment conditions.) |
| Settling time (in control, typical) | 1 sec. (typical) |
| Temperature effect | on zero: < 0,02 g/h/°C; on span: < 0,001% Rd/°C; self heating (at zero flow): < 15°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 | ± 0,5 °C |
| Density accuracy | ≤ ± 5 kg/m ³ (at full scale flow) |
| Max. Kv-value | 2,4 x 10 ⁻³ |
| Leak integrity, outboard | < 2 x 10 ⁻⁹ mbar l/s He |
| Warm-up time | > 30 min. for optimum accuracy |

Mechanical parts

| | |
|-------------------------|--|
| Sensor | single tube, DN 0,5 |
| Valve seat | Kalrez®-6375, other on request |
| Material (wetted parts) | stainless steel 316L or comparable |
| Housing | stainless steel 430F |
| Pressure rating (PN) | 100 bar abs |
| Process connections | compression type or face seal (VCR/VCO) couplings, or Tri-Clamp flanges (welded) |
| Seals | metal |
| Weight | 1,5 kg |
| Ingress protection | IP65 (weatherproof) |

Electrical properties

| | |
|------------------------|--|
| Power supply | +15...24 Vdc +/- 10%; Max. ripple recommended: 50 mV tt |
| Max. power consumption | max. 7 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); |

Control valve options

External actuator options to be connected to the controller

Ex-proof specifications

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



BRIGHT SERIES

Compact Local R/C Module

Bright, wide angle, 1.8" display
User friendly operation
Indication/operation/configuration



PIPS SERIES

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™ M13

Flow range 0...2000 g/h (0...26,6 l/min N₂)
Pressure rating 200 bar
Independent of fluid properties
High accuracy, fast response



MINI CORI-FLOW™ M13V11I

Flow range 0...2000 g/h (0...26,6 l/min N₂)
Pressure rating 100 bar
Independent of fluid properties
High accuracy, fast control (N/O)



MINI CORI-FLOW™ M12V10I

Flow range 0...200 g/h (0...2666 ml/min N₂)
Pressure rating 100 bar
Independent of fluid properties
High accuracy, fast control (N/C)



MINI CORI-FLOW™ M14V10I

Flow range 0...30 kg/h (0...400 l/min N₂)
Pressure rating 100 bar
Independent of fluid properties
High accuracy, fast control (N/C)