

# DATASHEET M13V14I

## mini CORI-FLOW™ M13V14I

Low Flow Coriolis Mass Flow Controller



### Low Flow Coriolis Mass Flow Controllers for Liquids

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 M13V14I Mass Flow Controller (MFC) is suited for highly accurate control of liquid flow in the range of 0...2000 g/h 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; advised minimum flow depends on fluid properties
Mass flow accuracy	± 0,2 % 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/m³ (at full scale flow)
Max. Kv-value	2,4 x 10 <sup>-3</sup>
Max. fluid viscosity	0,1 Pa*s

## Measurement / control system

Leak integrity, outboard	tested < 2 x 10 <sup>-9</sup> 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)
Purge connection	1/8" OD compression type or 1/8" VCR
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 kΩ; 0 (4)...20 mA (sourcing), max. load impedance < 375 Ω
Analog setpoint	0...5 (10) Vdc, min. load impedance > 100 kΩ; 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

## Certification for hazardous areas

## 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  
Pressure rating 200 bar  
Independent of fluid properties  
High accuracy, fast response



### MINI CORI-FLOW™ M12V14I

Flow range 0...200 g/h  
Pressure rating 100 bar  
Independent of fluid properties  
High accuracy, fast control



### MINI CORI-FLOW™ M14V14I

Flow range 0...7 kg/h  
Pressure rating 100 bar  
Independent of fluid properties  
High accuracy, fast control



### MINI CORI-FLOW™ CORIOLIS WITH PUMP

Min. flow 0,05...5 ml/h  
Max. flow 6...600 l/h  
Compact, integrated dosing solution  
Direct pump control

