

DATASHEET M54

CORI-FLOW™ M54

Low Flow Coriolis Mass Flow Meter / Controller

CORI-FLOW model M54 phased out in 2023. Please select CORI-FLOW model M55 or mini CORI-FLOW model M15



Low Flow Coriolis Mass Flow Meters / Controllers for Liquid and Gases

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 M54 Mass Flow Meter (MFM) is suited for highly accurate measurement of gas or liquid flow in the range of 0...100 kg/h (which corresponds with 0...1333 l_n/min when used on nitrogen) at operating pressures up to 200 bar. 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 rates | Liquid: 0... 100 kg/h (nominal flow rate: 50 kg/h); Gas: 0...1333 l _n /min (N ₂); Full Scale (FS) value is user-configurable |
| Mass flow accuracy | Liquid: ±0,2% Rd; Gas: ±0,5% Rd |
| Repeatability | ± 0,1 % RD |
| Turndown ratio | up to 1:100 |
| Zero stability (ZS) | < ± 0,05 kg/h (Guaranteed at constant temperature and for unchanging process and environmental conditions.) |
| Operating temperature | standard: 0...70°C; max. 50°C for ATEX Cat.3, Zone 2; max. 120°C for special version with remote electronics (130°C ≤ 1 hour allowed for CIP) |
| Mounting | Any position, attitude sensitivity negligible; External shocks or vibrations should be avoided. |
| Leak integrity, outboard | tested < 2 x 10 ⁻⁹ mbar l/s He |
| Warm-up time | > 30 min for optimum accuracy |

Mechanical parts

| | |
|-------------------------|--|
| Material (wetted parts) | stainless steel 316L or comparable; optional: Hastelloy-C22 |
| Pressure rating (PN) | 200 bar abs |
| Process connections | compression type or face seal (VCR/VCO) couplings, or Tri-Clamp flanges (welded) |

Mechanical parts

| | |
|--------------------|---------------------|
| Seals | metal |
| Ingress protection | IP65 (weatherproof) |

Electrical properties

| | |
|------------------------|---|
| Power supply | +15...24 Vdc +/- 10% Max. ripple recommended: 50 mV tt |
| Max. power consumption | Meter: approx. 80 mA at 15 Vdc |
| Analog output | 0...5 (10) Vdc, min. load impedance > 2 k Ω ; 0 (4)...20 mA (sourcing), max. load impedance < 375 Ω |
| Analog setpoint | (for MFM + pump or control valve) 0...5 (10) Vdc, min. load impedance > 424 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

| | |
|--|------------------------------|
| M54+C0I: Gas flow control valve | Kv-max= $6,6 \times 10^{-2}$ |
| M54+C2I: Liquid flow control valve | Kv-max= $2,3 \times 10^{-3}$ |
| M54+C5I: Gas/Liquid flow control valve | Kv-max= $6,6 \times 10^{-2}$ |
| M54+F-004AI: Gas/Liquid flow control | Kv-max= $3,0 \times 10^{-1}$ |
| M54+F-004BI: Gas/Liquid flow control | Kv-max= 1,0 |

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

Related products



MINI CORI-FLOW™ M14

Flow range 0...30 kg/h
Pressure rating 200 bar
Independent of fluid properties
High accuracy, fast response



MINI CORI-FLOW™ M15

Flow range 0...300 kg/h
Pressure rating 100 bar
Independent of fluid properties
High accuracy, fast response



CORI-FLOW™ M55

Flow range 0...600 kg/h
Pressure rating 100 bar
Independent of fluid properties
High accuracy, fast response