

DATASHEET ML120V21

mini CORI-FLOW™ ML120V21

(Ultra) Low Flow Coriolis Mass Flow Controller



Low Flow Coriolis Mass Flow Controllers for Gases and 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 ML120V21 Mass Flow Controller (MFC) is suited for highly accurate measurement and control 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 5 bar.

The mass flow controller offers “multi-range” functionality: factory calibrated ranges can be rescaled by the user, maintaining the original accuracy specs. The instrument contains a microprocessor based pc-board with signal and fieldbus conversion and a PID controller for mass flow control by means of the integrated piezoelectric control valve.

Technical specifications

Measurement / control system

Flow rates	Liquid: 0...200 g/h (nominal flow rate: 100 g/h); Gas: 0...2.66 l _n /min (N ₂); Full Scale (FS) value is user-configurable; advised minimum flow depends on fluid properties
Mass flow accuracy	Liquid: ±0,2% Rd; Gas: ±0,5% Rd
Repeatability	± 0,05 % of rate ± ½(ZS* x 100/actual flow)%
Turndown ratio	1:100
Zero stability (ZS)	< ± 10 mg/h (Guaranteed at constant temperature and for unchanging process and environment conditions.)
Settling time (in control, typical)	1 sec.
Temperature effect	on zero: < 3 mg/h/°C; on span: < 0,005% Rd/°C; self heating (at zero flow): < 10°C (Depends on flow rate, heat capacity fluid, T amb., T fluid and cooling capacity.)
Operating temperature	0 ... 70 °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)
Leak integrity, outboard	< 2 x 10 ⁻⁸ mbar l/s He

Measurement / control system

Warm-up time	> 30 min for optimum accuracy
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Mechanical parts

Sensor	single tube, DN 0.25; frequency 170 Hz \pm 20 Hz
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Valve	piezoelectric valve (metal plunger)
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Material (wetted parts)	stainless steel 316L or comparable
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Pressure rating (PN)	5 bar g (higher on request); max. ΔP : 5 bar d
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Process connections	compression type or face seal (VCR/VCO) couplings
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Seals	Kalrez [®]
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Weight	0,9 kg
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Ingress protection	IP40
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Electrical properties

Power supply	+15...24 Vdc +/- 10% Max. ripple recommended: 50 mV tt
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Max. power consumption	max. 3 W
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Analog output	0...5 (10) Vdc, min. load impedance > 2 k Ω ; 0 (4)...20 mA (sourcing), max. load impedance < 375 Ω
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Analog setpoint	0...5 (10) Vdc, min. load impedance > 100 k Ω ; 0 (4)...20 mA (sourcing), max. load impedance ~ 250 Ω
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Digital communication	standard: RS232 options: PROFIBUS DP, CANopen [®] , DeviceNet [™] , PROFINET, EtherCAT [®] , Modbus RTU, ASCII or TCP/IP, EtherNet/IP, POWERLINK, FLOW-BUS
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Electrical connection

Analog/RS232	9-pin D-connector (male);
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PROFIBUS DP	bus: 9-pin D-connector (female); power: 9-pin D-connector (male);
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CANopen [®] / DeviceNet [™]	5-pin M12-connector (male);
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FLOW-BUS/Modbus-RTU/ASCII	RJ45 modular jack;
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Modbus TCP / EtherNet/IP / POWERLINK	2 x RJ45 modular jack (in/out);
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EtherCAT [®] / PROFINET	2 x RJ45 modular jack (in/out);
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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™
ML120V00**

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



**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™
CORIOLIS WITH PUMP**

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