

F-200CI

IN-FLOW F-200CI

Industrial Style Thermal Mass Flow Controller for Gases

- Lowest gas flow rates
- Compact design, small internal volume
- High accuracy and repeatability
- Virtually pressure and temperature independent
- Rugged, weatherproof housing (IP65, dust and waterproof)



Industrial Style Gas Mass Flow Controllers for lowest flow rates

Bronkhorst® model F-200CI Mass Flow Controllers (MFCs) are suited for precise measurement of flow ranges between 0,014...0,7 ml_n/min and 0,6...9 ml_n/min with pressure rating between vacuum and 64 bar. The MFC consists of a thermal mass flow sensor, a precise control valve and a microprocessor based pc-board with signal and fieldbus conversion. As a function of a setpoint value, the flow controller swiftly adjusts the desired flow rate. The IN-FLOW model is of rugged design (IP65) for use in industrial environments or even Zone 2 hazardous areas, with optional ATEX Cat. 3 or FM Class I, Div. 2 approval.

IN-FLOW series are equipped with a digital pc-board, offering high accuracy, excellent temperature stability and fast response. The main digital pc-board contains all of the general functions needed for measurement and control. In addition to the standard RS232 output the instruments also offer analog I/O. As an option, an on-board interface can be mounted to provide CANopen®, DeviceNet™, EtherCAT®, PROFIBUS DP, PROFINET, Modbus RTU, ASCII or TCP/IP, EtherNet/IP, POWERLINK or FLOW-BUS protocols.

Technical specifications

Measurement / control system

Flow range (intermediate ranges available) min. 0,014...0,7 ml_n/min
max. 0,6...9 ml_n/min
(based on N₂)

Accuracy (incl. linearity) (based on actual calibration) ±0,8% Rd plus ±0,2% FS for F-200CI-005;
±2% FS for F-200CI-002

Repeatability < 0,2 % RD

Turndown ratio up to 1:187,5 (1:50 in analog mode)

Multi fluid capability Storage of max. 8 calibration curves

Settling time (in control, typical) 2 ... 4 sec.

Control stability < ± 0,1 % FS

Operating temperature -10 ... +70 °C
for ATEX cat. 3 and FM Class 1 Div 2 : 0...50°C

Temperature sensitivity zero: < 0,05% FS/°C; span: < 0,05% Rd/°C

Pressure sensitivity 0,1% Rd/bar typical N₂; 0,01% Rd/bar typical H₂

Max. Kv-value $6,6 \times 10^{-2}$

Leak integrity, outboard tested < 2×10^{-9} mbar l/s He

Attitude sensitivity max. error at 90° off horizontal 0,2% at 1 bar, typical N₂

Warm-up time 30 min. for optimum accuracy
2 min for accuracy ± 2% FS

Mechanical parts

Material (wetted parts) stainless steel 316L or comparable

Pressure rating (PN) 64 bar abs

Process connections compression type or face seal couplings

Seals standard: Viton®;
options: EPDM, Kalrez® (FFKM), FDA and USP Class VI approved compounds

Weight 1,3 kg

Ingress protection IP65

Electrical properties

Power supply +15 ... 24 Vdc

Max. power consumption	Supply	at voltage I/O	at current I/O	extra for fieldbus
	15 V	290 mA	320 mA	<75 mA
24 V	200 mA	215 mA	<50 mA	

Analog output 0...5 (10) Vdc or 0 (4)...20 mA (sourcing output)

Digital communication standard: RS232;
options: CANopen®, DeviceNet™, EtherCAT®, PROFIBUS DP, PROFINET, Modbus RTU, ASCII or TCP/IP, EtherNet/IP, POWERLINK or FLOW-BUS

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



IN-LINE FILTER SERIE M-410 RS

1/8" female in / male out

100 bar

Average porosity 0.5...15 μm

Related products



IN-FLOW F-210CI

Min. flow 0,014...0,7 mln/min
Max. flow 0,06...9 mln/min
Pressure rating 100 bar
Compact IP65 design
High accuracy and repeatability



IN-FLOW F-201CI

Min. flow 0,16...8 mln/min
Max. flow 0,5...25 ln/min
Pressure rating 64 bar
Compact IP65 design
High accuracy and repeatability



IN-FLOW F-110CI

Min. flow 0,014...0,7 mln/min
Max. flow 0,06...9 mln/min
Pressure rating 100 bar
Compact IP65 design
High accuracy



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