

# F-201CX

## EX-FLOW F-201CX

Ex-Protected Mass Flow Controller for Gases

- ATEX approval Cat.2, Zone 1
- High accuracy, excellent repeatability
- Virtually pressure and temperature independent
- Compact design



### Intrinsically Safe Gas Mass Flow Controllers for low flow rates

Bronkhorst® EX-FLOW Mass Flow Controllers (MFCs) are suited for precise gas flow control in ATEX Zone 1 hazardous areas. The flow meter part and the control valve of the MFC should be connected (via separate cables) to a power supply with galvanic isolation / preamplifier / readout system (located in the safe zone) which contains a controller board to complete the control loop. See Bronkhorst® [E-8000 Series](#).

EX-FLOW model F-201CX covers flow ranges from 0,3...15 ml<sub>n</sub>/min up to 0,4...20 l<sub>n</sub>/min (N<sub>2</sub>-equivalent) at operating pressures up to 64 bar.

The intrinsically safe measuring head of the flow meter is tested according to ATEX 114 Directive 2014/34/EU and approved under EC-Type Examination Number: KEMA 01ATEX1172, protection II 2 G Ex ib IIC T4 Gb.

The intrinsically safe valve coils are explosion proof certified and available in two options (ATEX certification only):

Coil XB: protection II 1 G Ex ia IIC T6 / protection II 1 D Ex ta IIIC T80°C

Coil XC: protection II 2 G Ex eb IIC T4 / protection II 2 D Ex tb IIIC T130°C

## Technical specifications

### Measurement / control system

Flow range (intermediate ranges available)	min. 0,3...15 ml <sub>n</sub> /min max. 0,4...20 l <sub>n</sub> /min (based on N <sub>2</sub> )
Accuracy (incl. linearity) (based on actual calibration)	± 1 % FS
Repeatability	< 0,2 % RD
Turndown ratio	1:50 (2...100%)
Time constant	5 sec.
Control stability	< ± 0,1 % FS typical
Operating temperature	-10 ... +65 °C
Temperature sensitivity	zero: < 0,05% FS/°C; span: < 0,05% Rd/°C
Max. Kv-value	Valve with XB-coil: $4,3 \times 10^{-3}$ / Valve with XC-coil: $6,6 \times 10^{-2}$
Leak integrity, outboard	tested < $2 \times 10^{-9}$ mbar l/s He
Attitude sensitivity	max. error at 90° off horizontal 0,2% FS at 1 bar, typical N <sub>2</sub>
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 (VCR/VCO) couplings
Seals	standard: Viton®; options: EPDM, Kalrez® (FFKM), FDA and USP Class VI approved compounds
Weight	1,7 kg
Ingress protection	IP65

### Electrical properties

Output signal	15 ... 20 mA (linear) Terminal connection, cable gland M16x1,5
I/O signals via PS/Readout (located in safe area)	analog: 0...5 Vdc, 0...10 Vdc, 0...20 mA, 4...20 mA; digital: RS232, PROFIBUS DP, DeviceNet™, Modbus RTU or ASCII, PROFINET, EtherCAT®, FLOW- BUS
XB-coil	Coil voltage max. 28 V/110 mA; 295 Ohm at 20°C
XC-coil	Coil voltage max. 24 V; 65 Ohm at 20°C, Pmax = 9 W at 20°C

### Electrical connection

Ex-proof measuring head	Terminal connection, cable gland M16x1,5
Control valve coil	cable gland M20x1,5

Technical specifications subject to change without notice.

For dimensional drawings and hook-up diagrams please visit the [product page](#) on our [website](#)

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## 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



### IN-LINE FILTER SERIE M-411 RS

1/4" female in / male out

100 bar

Average porosity 0.5...15 µm

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## Related products



**EX-FLOW F-200CX**

Min. flow 0,18...9,5 mln/min  
Max. flow 0,18...9,5 lln/min  
Pressure rating 64 bar  
ATEX approval Cat.2, Zone 1  
Rugged IP65 construction



**EX-FLOW F-111BX**

Flow ranges from 0,3...15 mln/min up to  
0,4...20 lln/min  
Pressure rating 100 bar  
ATEX approval Cat.2, Zone 1  
Rugged IP65 construction



**EX-FLOW F-211AX**

Flow ranges from 0,1...5 lln/min up to 2...  
100 lln/min  
Pressure rating 100 bar  
ATEX approval Cat.2, Zone 1  
Rugged IP65 construction



**BRONKHORST HIGH-TECH B.V.**

Nijverheidsstraat 1A  
NL-7261 AK Ruurlo (NL)  
Tel. [+31 573 45 88 00](tel:+31573458800)  
[info@bronkhorst.com](mailto:info@bronkhorst.com)