F-212AX

EX-FLOW F-212AX

Ex-Proof 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 medium 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-212AX covers flow ranges from 0,8...40 l_n/min up to 5...250 l_n/min (N_2-equivalent) at operating pressures up to 100 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. 0,8…40 l_n/min max. 5…250 l_n/min (based on N_2)
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	0,04 … 0,4
Leak integrity, outboard	tested < 2 x 10^{-9} mbar l/s He
Attitude sensitivity	max. error at 90° off horizontal 0,2% FS at 1 bar, typical N_2
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)	100 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
Ingress protection	IP65

Electrical properties

Signal circuit	type of explosion protection: intrinsic safety Ex ib IIC, only for connection to a certified intrinsically safe circuit with the following maximum values: Ui = 28 V, Ii = 98 mA, Pi = 686 mW The effective internal capacitance between: Terminals 1 and 3: Ci = 1 nF; Effective internal inductance: Li = 0,3 mH
Output signal	15 … 20 mA (linear)
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

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-422 RS

- 1/4" female in / male out
- 200 bar
- Average porosity 2...20 µm

Related products



EX-FLOW F-211AX

Flow ranges from 0,1…5 ln/min up to 2…100 ln/min

Pressure rating 100 bar

ATEX approval Cat.2, Zone 1

Rugged IP65 construction



EX-FLOW F-112AX

Flow ranges from 0,8…40 ln/min up to 5…250 ln/min

Pressure rating 100 bar

ATEX approval Cat.2, Zone 1

Rugged IP65 construction



EX-FLOW F-213AX

Flow ranges from 4…200 ln/min up to 25…1250 ln/min

Pressure rating 100 bar

ATEX approval Cat.2, Zone 1

Rugged IP65 construction

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Let's Chat