DATASHEET F-111AX

EX-FLOW F-111AX

Ex-Protected Mass Flow Meter for Gases

Intrinsically Safe Gas Mass Flow Meters for low/medium flow rates

Bronkhorst® EX-FLOW Mass Flow Meters (MFMs) are suited for precise gas flow measurement in ATEX Zone 1 hazardous areas. The MFM should be connected to a power supply with galvanic isolation / preamplifier / readout system (located in the safe zone). See Bronkhorst® E-8000 Series.

EX-FLOW model F-111AX covers flow ranges from 0,1...5 l_n/min up to 2...100 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.
Other certifications: IECEx (IECEx DEK14.0060), TIIS (検・第TC21584号) and KCs = Ex ib IIC T4.

Technical specifications

Measurement / control system

Flow range (intermediate ranges available)	min. 0,1…5 l_n/min max. to 2…100 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.
Operating temperature	-10 … +70 °C
Temperature sensitivity	zero: < 0,05% FS/°C; span: < 0,05% Rd/°C
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: FKM/Viton®; options: EPDM, FFKM/Kalrez®, FDA and USP Class VI approved compounds
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

Electrical connection

Ex-proof measuring head	Terminal connection, cable gland M16x1,5

Control valve options

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

IN-LINE FILTER
LOW FLOW SERIE M-411

- 1/4" female in / male out
- 100 bar
- Average porosity 0.5...15 µm

Related products

EX-FLOW F-111BX

- Flow ranges from 0,3… 15 mln/min up to 0,4...20 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-201AX

- Flow ranges from 0,1…5 ln/min up to 2…100 ln/min
- Pressure rating 64 bar
- ATEX approval Cat.2, Zone 1
- Rugged IP65 construction

Bronkhorst®

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Bronkhorst High-Tech designs and manufactures innovative instruments and subsystems for low-flow measurement and control for use in laboratories, machinery and industry. Driven by a strong sense of sustainability and with many years of experience, we offer an extensive range of (mass) flow meters and controllers for gases and liquids, based on thermal, Coriolis and ultrasonic measuring principles. Our global sales and service network provides local support in more than 40 countries. Discover Bronkhorst®!