

# F-133MX

---

## EX-FLOW F-133MX

High-Pressure Mass Flow Meter for Gases, Ex-proof Style

- ATEX approval Cat.2, Zone 1
- Also IECEx, TIIS and KCs certified
- High accuracy, excellent repeatability
- Virtually pressure and temperature independent
- Pressure rating 400 bar



---

### Intrinsically Safe Gas Mass Flow Meters for higher 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-133MX covers flow ranges from 4...200 l<sub>n</sub>/min up to 25...1250 l<sub>n</sub>/min (N<sub>2</sub>-equivalent) at operating pressures up to 400 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) and TIIS (検・第TC21584号).

---

## Technical specifications

### Measurement system

Flow range, based on N <sub>2</sub> (intermediate ranges available)	min. 4...200 I <sub>N</sub> /min max. 25...1250 I <sub>N</sub> /min
Accuracy (incl. linearity) (based on actual calibration)	±1% FS
Turndown	1:50 (2...100%)
Repeatability	< 0,2% Rd
Time constant	5 seconds
Operating temperature	-10...+70°C
Temperature sensitivity	zero: < 0,05% FS/°C; span: < 0,05% Rd/°C
Leak integrity, outboard	tested < 2 x 10 <sup>-9</sup> 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	400 bar abs
Process connections	compression type or face seal couplings
Seals	standard: Viton <sup>®</sup> ; options: EPDM, Kalrez <sup>®</sup> (FFKM)
Ingress protection (housing)	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: U <sub>i</sub> = 28 V, I <sub>i</sub> = 98 mA, P <sub>i</sub> = 686 mW The effective internal capacitance between: Terminals 1 and 3: C <sub>i</sub> = 1 nF; Effective internal inductance: L <sub>i</sub> = 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 <sup>®</sup> , FLOW-BUS

### Electrical connection

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

Technical specifications and dimensions subject to change without notice.

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

---

## Recommended accessories



### E-8000 - DIGITAL READOUT / CONTROL SYSTEMS

Bright, wide angle, 1.8" display (TFT technology)

User friendly operation, menu driven with 4 push buttons

---

## Related products



**EX-FLOW F-132MX**

Flow ranges from 0,3...15 l/min up to 5...250 l/min

Pressure rating 400 bar

ATEX approval Cat.2, Zone 1

Rugged IP65 construction



**EX-FLOW F-136AX**

Flow ranges from 0,4...20 m<sup>3</sup>/h up to 4...200 m<sup>3</sup>/h

Pressure rating 400 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

[info@bronkhorst.com](mailto:info@bronkhorst.com)