

Ex-Flow

Termisk massflödesmätare för gaser från Bronkhorst High-Tech

Mäter och reglerar från 0,15 ml/min till 11000 m³/h

Enkel

- Mäter alltid rätt flöde oavsett tryck och temperatur
- Inga krav på raksträckor för flöden upp till 500 m³/h
- Okänslig för vibrationer
- Klarar temperaturer från -10 till +70 °C
- Analogt bör- och ärvärde
- Industriell version, IP65

Ekonomisk

- Enkelt montage med Swagelok-kopplingar, wafer, eller flänsanslutning, därmed låg installationskostnad
- Medieberörda delar i 316L
- Klarar tryck upp till 400 bar
- EEx ib IIC T4, ATEX zon 1

Noggrann

- +/- 1 % av mätområdet



> Technical specifications

Measurement / control system

Accuracy (incl. linearity)	: standard: $\pm 1\%$ FS; (based on actual calibration) other on request (for flow > 1000 m ³ /h contact factory)
Turndown	: 1 : 50 (2 ... 100%)
Repeatability	: < 0,2% Rd
Time constant	: 5 seconds
Operating temperature	: EX-FLOW sensor: -10...+70°C; XB-coil: -40...+ 65°C XC-coil: -40...+ 65°C
Temperature sensitivity	: zero: < 0,05% FS/°C; span: < 0,05% Rd/°C
Leak integrity	: tested < 2 x 10 ⁻⁹ mbar V/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 $\pm 2\%$ FS

Mechanical parts

Material (wetted parts)	: stainless steel 316L or comparable
Surface quality (wetted parts)	: Ra — 0,8 μ m typical
Process connections	: compression type or face seal couplings; wafer type on series F-106; DIN or ANSI flanges on series F-107
Seals	: standard: Viton options: EPDM, FFKM (Kalrez)
Ingress protection (housing)	: IP65

Electrical properties

Signal circuit	: in type of explosion protection intrinsic safety EEx ib IIC, only for connection to a certified intrinsically safe circuit with the following maximum values: U _i — 28 V, I _i — 98 mA, P _i — 686 mW The effective internal capacitance between: Terminals 1 and 3: C _i — 1 nF; Terminals 2 and housing: C _i — 120 nF; Effective internal inductance: L _i — 0,1 mH
Output signal	: 15...20 mA (linear) Terminal connection, cable gland M12x1,5
XB-coil (II 1 G/D EEx ia IIC T6)	: Coil voltage max. 28 V/110mA; 295 Ohm at 20°C, cable gland PG9
XC-coil (II 2 G/D IP6X T 130°C EEx me II T4)	: Coil voltage max. 24 V; 65 Ohm at 20°C, cable gland M16x1,5; P _{max} — 9W at 20°C

Technical specifications subject to change without notice.

Related drawing 9.27.002C. No modifications permitted without approval of authorised person.

> Models and flow ranges

Mass Flow Meters (MFM); PN100 (pressure rating 100 bar)

Model	min. flow	max. flow
F-110CX	0,16...8 ml _v /min	0,2...10 ml _v /min
F-111BX	0,2...10 ml _v /min	0,4...20 l _v /min
F-111AX	0,1...5 l _v /min	2...100 l _v /min
F-112AX	0,2...10 l _v /min	5...250 l _v /min
F-113AX	2...100 l _v /min	25...1250 l _v /min
F-116AX	0,4...20 m ³ /h	4...200 m ³ /h
F-116BX	1...50 m ³ /h	10...500 m ³ /h

For ranges of 200, 400 or 700 bar rated MFMs please contact factory

High-Flow MFMs; PN10 / PN16 / PN25 / PN40 / PN100

Model	min. flow	max. flow
F-106AX/F-107AX/F-117AX	0,4...20 m ³ /h	4...200 m ³ /h
F-106BX/F-107BX/F-117BX	1...50 m ³ /h	10...500 m ³ /h
F-106CX/F-107CX/F-117CX	2...100 m ³ /h	20...1000 m ³ /h
F-106DX/F-107DX/F-117DX	3,6...180 m ³ /h	36...1800 m ³ /h
F-106EX	8...400 m ³ /h	80...4000 m ³ /h
F-106FX	14...700 m ³ /h	140...7000 m ³ /h
F-106GX	22...1100 m ³ /h	220...11000 m ³ /h

Mass Flow Controllers (MFC); PN64 / PN100

Model	min. flow	max. flow
F-200CX/F-210CX	0,2...10 ml _v /min	0,2...10 ml _v /min
F-201CX/F-211CX	0,22...11 ml _v /min	0,4...20 l _v /min
F-201AX/F-211AX	0,1...5 l _v /min	2...100 l _v /min
F-202AX/F-212AX	0,2...10 l _v /min	5...250 l _v /min
F-203AX/F-213AX	2...100 l _v /min	25...1250 l _v /min
F-206AX/F-216AX	0,4...20 m ³ /h	4...200 m ³ /h
F-206BX/F-216BX	1...50 m ³ /h	10...500 m ³ /h

Contact factory for max. Kv-values (depending of coil type)

MFCs for high-pressure / high- Δ P applications; PN400

Model	min. flow	max. flow
F-230MX	0,2...10 ml _v /min	10...500 ml _v /min
F-231MX	10...500 ml _v /min	0,2...10 l _v /min
F-232MX	0,2...10 l _v /min	2...100 l _v /min

For ranges of 700 bar rated MFCs please contact factory



F-106AX Ex-proof Mass Flow Meter for high flow ranges