

DATASHEET FF-M0X

FLEXI-FLOW Compact FF-M0x

Built-to-Order Mass Flow and Pressure Meter



Mass Flow/Pressure Meters for Low Gas Flows

FLEXI-FLOW Compact models FF-M00 and FF-M01 Mass Flow / Pressure Meters are suited for accurate measurement of flow ranges between 0...5 ml_n/min and 0...200 ml_n/min at operating pressures between 0,8 and 17 bar(a). The instrument combines a swift and stable thermal mass flow sensor based on capillary MEMS technology with a precise and proven by-pass construction. Due to the unique, internationally patented **TCS Technology (Through Chip Sensor)**, accurate mass flow measurement, virtual independent of variations in temperature and line pressure is established. In combination with integrated temperature and up- and downstream pressure sensors, the embedded database for 22 gases allows accurate, on-board conversion.

The **multi-parameter** instruments are Built-to-Order (BtO) and provide the user with useful process information:

- Model FF-M00: flow + temperature
- Model FF-M01: flow + temperature + up- and downstream pressure

Spécifications techniques

Système de mesure / régulation

Gamme de débit (gammes intermédiaires disponibles)	min. 0...5 ml _n /min max. 0...200 ml _n /min (basée sur N ₂)
Gammes de pression	FF-M00: pas disponible / FF-M01: 0...17 bar(a)
Précision (Linéarité incl.) (basée sur étalonnage réel)	Up to ±0,5% Rd plus ±0,1% FS (N ₂ /Air/O ₂); for other gases add conversion uncertainty; see multi gas table ;
Répetabilité	Flow sensor: < ±0,2% Rd; Pressure sensors: < ±0,2% FS
Rangeabilité	up to 1:1000; ≤ 20 ml _n /min: up to 1:500
Pression max. de fonctionnement	16 bar g
Multi-gaz/Multi-gammes	embedded gas data for <u>22 unique gases</u> plus any mixture of these gases
Temps de réponse (capteur)	< 30 ms (T ₆₃)
Stabilité à long terme	< 0,5% FS over period of 3 years; then < 0,2% FS per year
Température de fonctionnement	0 ... 50 °C
Conditions de stockage / transport	-20 ... +80 °C, max. 95% RH (non-condensing)
Montage	any position, attitude sensitivity negligible

Système de mesure / régulation

Sensibilité à la température	Flow sensor: zero 0,015% FS/°C; span 0,05% Rd/°C; Pressure sensors: zero 0,16 mbar/°C; span 0,05% Rd/°C
Précision de la température	± 0,2 °C (instrument body temperature)
Précision des capteurs de pression	±0,5% FS
Sensibilité à la pression	standard: < 0,15% Rd/bar typical N ₂ ; with pressure correction: typical factor 5 improved
Étanchéité, vers l'extérieur	tested < 2 x 10 ⁻⁹ mbar l/s He

Parties mécaniques

Corps de l'instrument	Aluminium or Stainless steel (selectable)
Matériau (pièces en contact avec le fluide)	aluminium, stainless steel, silicon nitride, epoxy, aluminium oxide, glass
Qualité état de surface	< 1,6 µ Ra (<0,8 µ Ra for stainless steel body)
Pression (PN)	16 bar(g) / 250 psig
Raccords de process	1/8" BSPP female thread; couplings to be ordered separately
Joints	default: FKM 51415; for other materials contact factory
Poids	250 g with Aluminium body, 350 g with SS 316 body; add 50 g for Ethernet interface
Protection IP	IP40

Propriétés électriques

Alimentation électrique	24 Vdc ± 10%
Consommation d'électricité max.	0,5 Watt; add 0,9 Watt for EtherNet communication
Communication numérique	Modbus RTU or FLOW-BUS (selectable) Optional: PROFINET, EtherCAT, Modbus-TCP, Ethernet/IP or POWERLINK
Interface de support	USB-C port for easy setup; Optional Bluetooth connection for monitoring
Raccordement électrique	9-pin D-sub (male)
Certification	CE / UKCA / KC

Raccordement électrique

Options vanne de régulation

Options actionneur externe à connecter au régulateur

Certification pour les zones à risque d'explosion

Certifications / certificats

Les spécifications techniques peuvent être modifiées sans préavis.

Pour les schémas d'encombrements et les schémas de câblage, visitez le/la [page produits](#) sur notre [Site internet](#)

Related products



FLEXI-FLOW COMPACT FF-M1X

Débit 0...500 mln/min
jusqu'à 0...20 ln/min

Précision $\pm 0,5\%$ lect. +
 $\pm 0,1\%$ PE

Multi-paramètres (opt.
sortie P+T)

Réponse rapide
(technologie TCS)



FLEXI-FLOW COMPACT FF-COX

Flow 0...5 mln/min
up to 0...200 mln/min

Accuracy $\pm 0,5\%$ Rd +
 $\pm 0,1\%$ FS

Multi-parameter (P+T
output options)

Fast response (TCS
technology)



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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[®]!