# DATASHEET F-107XD

## LOW-ΔP-FLOW F-107xD

Mass Flow Meter for low pressure drop or corrosive gas service, industrial style


### Thermal Mass Flow Meters for low pressure drop or corrosive gas applications, industrial style

Bronkhorst® model F-107xD* Mass Flow Meters (MFMs) are suited for precise measurement of flow ranges between 0,2...10 $m^3_n$/h and 20...1000 $m^3_n$/h ($N_2$-equivalent). The instruments are particularly suited for corrosive gases or applications with very low differential pressure (ΔP). Compared to conventional instruments, LOW-ΔP-FLOW meters have larger flow channels to minimize the risk of clogging, facilitate cleaning and purging, and cause lower pressure drop (the sensor only requires 0,5 to 5 mbar). This model is of rugged design (IP65) for use in industrial environments or even Zone 2 hazardous areas, with optional ATEX Cat. 3 or FM Class I, Div. 2 approval.

The integrated digital pc-board provides signal and fieldbus conversion as well as PID controller functionality for optional mass flow control by means of a (separately mounted) control valve. In addition to the standard RS232 output the instruments also offer analog I/O. As an option, an on-board interface can be mounted to provide CANopen®, DeviceNet™, EtherCAT®, PROFIBUS DP, PROFINET, Modbus RTU, ASCII or TCP/IP, EtherNet/IP, POWERLINK or FLOW-BUS protocols.

** Series F-107xD consists of the models F-107AD (DIN DN 40 / ANSI 1½"), F-107BD (DIN DN 50 / ANSI 2"), F-107CD (DIN DN 80 / ANSI 3") and F-107DD (DIN DN 100 / ANSI 4")*

### Technical specifications

**Measurement / control system**

| | |
|---|---|
| Flow rates | min. 0,2…10 $m^3_n$/h<br>max. 20…1000 $m^3_n$/h<br>(based on $N_2$) |
| Accuracy (incl. linearity) (based on actual calibration) | ± 1 % FS |
| Repeatability | < 0,2 % RD |
| Turndown ratio | 1:50 (2…100%) |
| Max. operating pressure | 10 bar g |
| Multi fluid capability | Storage of max. 8 calibration curves |
| Response time (sensor) | 1 ... 2 sec. |
| Operating temperature | -10 … +70 °C<br>for ATEX cat. 3 and FM Class 1 Div 2 : 0…50°C |
| Mounting | horizontal |
| Temperature sensitivity | < 0,1% FS/°C |
| Pressure sensitivity | 0,1% Rd/bar typical $N_2$ |
| Leak integrity, outboard | tested < 2 x $10^{-9}$ mbar l/s He |

**Measurement / control system**

| | |
|---|---|
| Warm-up time | 30 min. for optimum accuracy<br>2 min for accuracy ± 2% FS |

**Mechanical parts**

| | |
|---|---|
| Material (wetted parts) | stainless steel 316L or comparable;<br>other on request |
| Process connections | Flanged type |
| Seals | standard: FKM/Viton®;<br>options: EPDM, FFKM/Kalrez® |
| Ingress protection | IP65 |

**Electrical properties**

| | | | | |
|---|---|---|---|---|
| Power supply | +15 … 24 Vdc | | | |
| Max. power consumption meter | Supply<br>15 V<br>24 V | at voltage I/O<br>95 mA<br>65 mA | at current I/O<br>125 mA<br>85 mA | extra for fieldbus<br><75 mA<br><50 mA |
| Max. Power consumption controller | Supply<br>15 V<br>24 V | at voltage I/O<br>290 mA<br>200 mA | at current I/O<br>320 mA<br>215 mA | extra for fieldbus<br><75 mA<br><50 mA |
| Analog output | 0…5 (10) Vdc or 0 (4)…20 mA (sourcing output) | | | |
| Digital communication | standard: RS232;<br>options: CANopen®, DeviceNet™, EtherCAT®, PROFIBUS DP, PROFINET, Modbus RTU, ASCII or TCP/IP, EtherNet/IP, POWERLINK or FLOW-BUS | | | |

**Electrical connection**

| | |
|---|---|
| Analog/RS232 | 8 DIN (male); |
| PROFIBUS DP | bus: 5-pin M12 (female);<br>power: 8 DIN (male); |
| CANopen® / DeviceNet™ | 5-pin M12 (male); |
| FLOW-BUS/Modbus-RTU/ASCII | 5-pin M12 (male) |
| Modbus TCP / EtherNet/IP / POWERLINK | bus: 2 x 5-pin M12 (female) (in/out);<br>power: 8 DIN (male); |
| EtherCAT®/ PROFINET | bus: 2 x 5-pin M12 (female) (in/out);<br>power: 8 DIN (male) |
| IEC 61010-1 | IEC-61010-1:2010 including national deviations for UL (61010-1:2012) and CSA (C22.2 No. 61010-1-12) |

**Control valve options**

**External actuator options to be connected to the controller**

**Certification for hazardous areas**

**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


**BRIGHT SERIES**

**Compact Local R/C Module**

- Bright, wide angle, 1.8" display
- User friendly operation
- Indication/operation/configuration

**PIPS SERIES**

**Plug-in Power Supply**

- For lab-style or industrial devices
- Interchangeable plugs (Euro, UK, USA, Australian, IEC) for mains connection

## Related products


**LOW-ΔP-FLOW F-106XD**

- Min. flow 0,2…10 m3n/h Max. flow 20…1000 m3n/h
- Pressure rating up to 10 bar
- Low ΔP, easy to purge
- IP65, wafer type design


**LOW-ΔP-FLOW F-103EI**

- Min. flow 0,9…45 ln/min Max. flow 4…200 ln/min
- Pressure rating up to 10 bar
- Low ΔP, easy to purge
- Compact IP65 design

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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®!