

# F-143MI

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## IN-FLOW F-143MI

High-Pressure Mass Flow Meter for Gases, Industrial Style

- High accuracy, excellent repeatability
- Pressure rating 700 bar
- Virtually pressure and temperature independent
- Compact design
- Rugged, weatherproof housing (IP65, dust and waterproof)



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### Gas Mass Flow Meters for higher flow rates

Bronkhorst® model F-143MI Mass Flow Meters (MFM) are suited for precise measurement of flow ranges between 5...250 l<sub>n</sub>/min and 25...1250 l<sub>n</sub>/min at operating pressures up to 700 bar. The MFM consists of a thermal mass flow sensor and a microprocessor based pc-board with signal and fieldbus conversion and a PID controller for optional mass flow control by means of a separately mounted control valve. The IN-FLOW 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.

IN-FLOW series are equipped with a digital pc-board, offering high accuracy, excellent temperature stability and fast response. The main digital pc-board contains all of the general functions needed for measurement and control. 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™, PROFIBUS DP, PROFINET, Modbus RTU/ASCII or FLOW-BUS protocols.

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### Technical specifications

Measurement / control system

Flow range (intermediate ranges available)	min. 5...250 I <sub>n</sub> /min max. 25...1250 I <sub>n</sub> /min (based on N <sub>2</sub> )
Accuracy (incl. linearity) (based on actual calibration)	±0,5% Rd plus ±0,1% FS
Repeatability	< 0,2 % RD
Turndown ratio	1:50
Multi fluid capability	storage of max. 8 calibration curves
Response time (sensor)	typical: 0,5 sec.
Operating temperature	-10 ... +70 °C for ATEX cat. 3 and FM Class 1 Div 2 : 0...50°C
Temperature sensitivity	zero: < 0,05% FS/°C; span: < 0,05% Rd/°C
Pressure sensitivity	0,1% Rd/bar typical N <sub>2</sub> ; 0,01% Rd/bar typical H <sub>2</sub>
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 (PN)	700 bar abs
Process connections	none, female thread; special high-pressure adapters on request
Seals	standard: Viton®; options: EPDM, Kalrez® (FFKM)
Ingress protection	IP65

Electrical properties

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

Electrical connection

Analog/RS232	8 DIN (male);
PROFIBUS DP	bus: 5-pin M12 (female); power: 8 DIN (male);
CANopen® / DeviceNet™	5-pin M12 (male);
FLOW-BUS/Modbus-RTU/ASCII	5-pin M12 (male)
PROFINET	bus: 2 x 5-pin M12 (female) (in/out); 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)

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

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## Related products



### IN-FLOW F-142MI

Min. flow 2 ... 100 l/min

Max. flow 5 ... 250 l/min

Pressure rating 700 bar

Compact IP65 design

High accuracy



#### BRONKHORST USA INC.

57 South Commerce Way

Suite 120

USA - Bethlehem, PA 18017

Tel. [+1-610-866-6750](tel:+1-610-866-6750)

[sales@bronkhorstusa.com](mailto:sales@bronkhorstusa.com)