

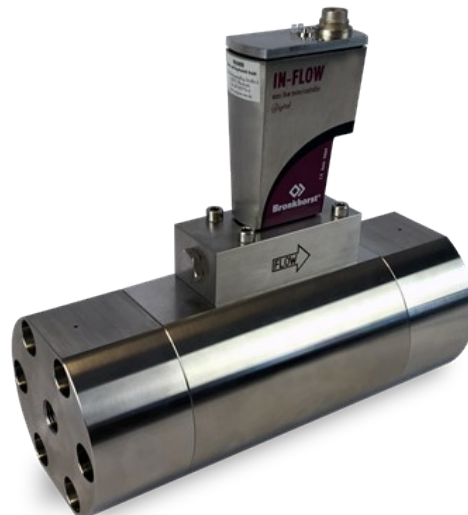
# F-136BI

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## IN-FLOW 'HIGH-FLOW' F-136BI

Industrial Style Mass Flow Meter for High Gas Flow

- High accuracy, excellent repeatability
- Pressure rating 400 bar
- Virtually pressure and temperature independent
- Compact design
- Rugged, weatherproof housing (IP65, dust and waterproof)



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### Industrial Style Gas Mass Flow Meters for high flow rates

Bronkhorst® model F-136BI Mass Flow Meters (MFMs) are suited for precise measurement of flow ranges between 1...50 m<sup>3</sup><sub>n</sub>/h and 7,5...375 m<sup>3</sup><sub>n</sub>/h at operating pressures up to 400 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 or FLOW-BUS protocols.

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### Technical specifications

## Measurement / control system

Flow range (intermediate ranges available)	min. 1...50 m <sup>3</sup> <sub>n</sub> /h max. 7,5...375 m <sup>3</sup> <sub>n</sub> /h
Accuracy (incl. linearity) (based on actual calibration)	± 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)	400 bar abs. <i>Note: Generally, Bronkhorst develops products for an infinite lifetime. For this model, for applications above 340 bar, the maximum allowable pressure cycles is limited to 680.000 cycles.</i>
Process connections	compression type or face seal couplings
Seals	standard: Viton®; options: EPDM, Kalrez® (FFKM)
Ingress protection	IP65

## Electrical properties

Power supply	+15 ... 24 Vdc
Max. power consumption	Bronkhorst.Products.GasFlow.InFlowIndustrial.MaxPowerConsumptionMeter
PROFIBUS DP	add 53 mA (15 V supply) or 30 mA (24 V supply)
CANopen® / DeviceNet™	add 48 mA (24 V supply)
Analog output	0...5 (10) Vdc or 0 (4)...20 mA (sourcing output)
Digital communication	standard: RS232; options: CANopen®, DeviceNet™, PROFIBUS DP, PROFINET, Modbus 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)

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 'HIGH-FLOW' F-136AI

Min. flow 0,3 ... 15 m<sup>3</sup>n/h  
Max. flow 4 ... 200 m<sup>3</sup>n/h  
Pressure rating 400 bar  
Compact IP65 design  
High accuracy



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