

DATASHEET FG-111BP

EL-FLOW Prestige FG-111BP (P-Insensitive)

ガス用高性能マスフローメータ



Gas Mass Flow Meters for low flow rates

Bronkhorst® model FG-111BP High Performance Mass Flow Meters (MFM) are suited for precise measurement of flow ranges between 0,14...7 ml_n/min and 0,4...20 l_n/min at operating pressures between vacuum and 100 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.

EL-FLOW® Prestige 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™, EtherCAT®, PROFIBUS DP, PROFINET, Modbus RTU, ASCII or TCP/IP, EtherNet/IP, POWERLINK or FLOW-BUS protocols. The EL-FLOW® Prestige design features standard Multi Gas / Multi Range functionality, providing (OEM-) customers with optimal flexibility and process efficiency.

Technical specifications

Measurement / control system

Flow range (intermediate ranges available)	min. 0,14...7 ml _n /min max. 0,4...20 l _n /min (based on N ₂)
Accuracy (incl. linearity) (based on actual calibration)	± 0,5 % RD plus ±0,1%FS
Repeatability	< 0,2 % RD
Turndown ratio	1:150 (1:50 in analog mode)
Multi Gas/Multi Range	embedded gas data for <u>100 unique gases</u> , plus any mixture of maximum 5 of these gases. MG/MR functionality available up to 64 bar.
Operating temperature	-10 ... 70 °C
Temperature sensitivity	zero: < 0,02% FS/°C; span: < 0,025% Rd/°C
Pressure sensitivity	< 0,02% Rd/bar typical N ₂
Leak integrity, outboard	tested < 2 x 10 ⁻⁹ mbar l/s He
Attitude sensitivity	max. error at 90° off horizontal 0,07% FS at 1 bar, typical N ₂
Warm-up time	30 min. for optimum accuracy 2 min. for accuracy ± 1% FS

Mechanical parts

Material (wetted parts)	Stainless steel 316L or comparable, degreased for use on oxygen (O ₂)
Pressure rating (PN)	100 bar g
Pressure sensor	P-max: 130 bara; Burst pressure 350 bara
Process connections	compression type or face seal (VCR/VCO) couplings
Seals	standard: Viton® options: EPDM, Kalrez® (FFKM), FDA and USP Class VI approved compounds
Weight	0,7 kg
Ingress protection	IP40

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	69 mA	92 mA	<75 mA
	24 V	45 mA	63 mA	<50 mA
Max. Power consumption controller	Supply	at voltage I/O	at current I/O	extra for fieldbus
	15 V	202 mA	225 mA	<75 mA
	24 V	128 mA	146 mA	<50 mA
(based on normally closed valve, pin 5 not used)				
Analog output	0...5 (10) Vdc or 0 (4)...20 mA (sourcing output)			
Digital communication	standard: RS232; options: PROFIBUS DP, CANopen®, DeviceNet™, PROFINET, EtherCAT®, Modbus RTU, ASCII or TCP/IP, EtherNet/IP, POWERLINK, FLOW-BUS			
CE	EMC 2014/30/EU, RoHS 2011/65/EU,			

Electrical connection

Analog/RS232	9-pin D-connector (male);
PROFIBUS DP	bus: 9-pin D-connector (female); power: 9-pin D-connector (male);
CANopen® / DeviceNet™	5-pin M12-connector (male);
FLOW-BUS/Modbus-RTU/ASCII	RJ45 modular jack
Modbus TCP / EtherNet/IP / POWERLINK	2 x RJ45 modular jack (in/out);
EtherCAT®/ PROFINET	2 x RJ45 modular jack (in/out)
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

Ex-proof specifications

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

デジタル表示設定システム

明瞭、広角の1.8" TFTディスプレイ
4つのボタンによるユーザーフレンドリーな操作



BRIGHT SERIES

小型ローカル指示設定モジュール

明瞭、広角の1.8"ディスプレイ
ユーザーフレンドリーな操作
表示/運転/設定



PIPS SERIES

プラグイン電源 PIPS

ラボ用および一般工業用
交換可能な主電源用プラグ
(欧州、英国、米国(日本向け)、豪州、IEC)



IN-LINE FILTER
SERIE M-411 RS

入出口1/4"おねじ/めねじ
10 MPa
平均孔径 0.5...15 µm

Related products



EL-FLOW PRESTIGE FG-110CP
(P-INSENSITIVE)

最小流量レンジ0.014...0.7
mln/min
最大流量レンジ0.18...9
mln/min
定格圧力10 MPa
オンボード圧力補正
約100種のカスタムデータ



EL-FLOW PRESTIGE FG-201CVP
(P-INSENSITIVE)

最小流量レンジ0.14...7
mln/min
最大流量レンジ0.4...20
ln/min
定格圧力1 MPa
オンボード圧力補正
約100種のカスタムデータ



EL-FLOW PRESTIGE FG-211CVP
(P-INSENSITIVE)

最小流量レンジ0.14...7
mln/min
最大流量レンジ0.4...20
ln/min
定格圧力10 MPa
オンボード圧力補正
約100種のカスタムデータ



EL-FLOW PRESTIGE FG-111B

最小流量レンジ0.14...7
mln/min
最大流量レンジ0.4...20
ln/min
定格圧力10 MPa
約100種のカスタムデータ
カスタマイズ可能なI/O構成



ブロンコスト・ジャパン株式会社

〒135-0016

東京都江東区東陽5-27-5

TEL. 03-3645-1371

sales@bronkhorst.jp ◎を@に置き換えて下さい