

EL-FLOW® *Base*

Mass Flow Controllers for Gases



> Introduction

Bronkhorst High-Tech B.V., the European market leader in thermal Mass Flow Meters/Controllers and Electronic Pressure Controllers, has many years of experience in designing and manufacturing precise and reliable measurement and control devices. With a wide range of instruments, Bronkhorst High-Tech offers innovative solutions for many different applications in a variety of different markets.

> EL-FLOW® *Base* fast response Mass Flow Controllers for OEM applications

The Mass Flow Controllers of the EL-FLOW® *Base* series are standard and straightforward instruments. They provide accurate measurement, fast response and stable control in common gas flow applications. EL-FLOW® *Base* is an economical solution for installation in (OEM) systems e.g. in coating or welding applications. The instruments operate on the principle of thermal mass flow measurement in ranges starting from 0,2...10 ml_n/min up to 4...200 l_n/min air-equivalent. They offer analog I/O-signals as well as digital RS232 communication and/or Modbus-RTU as a standard feature. EL-FLOW® *Base* is a member of Bronkhorst's most popular and field proven EL-FLOW® series.

> Fields of applications

- ◆ Process gas measurement and control in food, pharmaceutical and (petro-) chemical industries and fermentation installations
- ◆ Burner control (welding)
- ◆ Surface treatment (CVD, coating, hardening)
- ◆ Solar cell fabrication
- ◆ Analytical instrumentation

> Models and flow ranges

Model	min. flow	max. flow
F-201CB	0,2...10 ml _n /min	0,4...20 l _n /min
F-201AB	0,4...20 l _n /min	1,4...70 l _n /min
F-202BB	1,4...70 l _n /min	4...200 l _n /min

Ranges based on Air, intermediate ranges available.

> EL-FLOW® *Base* features

- ◆ Accurate mass flow measurement/control
- ◆ Fast response, excellent repeatability
- ◆ Virtually pressure and temperature independent
- ◆ Cost effective solution
- ◆ Analog I/O-signals: 0...5 (10) Vdc or 0(4)...20 mA
- ◆ RS232 communication
- ◆ Modbus-RTU
- ◆ Control characteristics digitally configurable by user



По вопросам продаж и поддержки обращайтесь:

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> Technical specifications

Performance

Accuracy (incl. linearity) (based on actual calibration)	: $\pm 1\%$ FS
Repeatability	: $< 0,2\%$ Rd
Settling time (controller)	: approx. 1 second
Control stability	: $< \pm 0,1\%$ FS (typical for 1 l _v /min N ₂)
Turndown	: 1 : 50 (2...100%)
Operating pressure	: 0...10 bar(g)
Operating temperature	: F-201CB/AB : 0...50°C; F-202BB : 10...50°C
Temperature sensitivity	: zero: $< 0,1\%$ FS/°C; span: $< 0,1\%$ Rd/°C
Warm-up time	: 30 min. for optimum accuracy
Leak integrity, outboard	: tested $< 2 \times 10^{-9}$ mbar l/s He
Control valve	: normally closed solenoid valve, F-201CB/F-201AB: Kv-max = $6,6 \times 10^{-2}$ F-202BB: Kv-max = $3,5 \times 10^{-1}$

Mechanical parts

Material (wetted parts)	: Stainless Steel 316 or equivalent
Seals	: standard: Viton®; option: Kalrez® (FFKM)
Process connections	: 1/4" BSP female thread; optional accessories: compression type or face seal couplings in various inch or metric sizes

Electrical properties

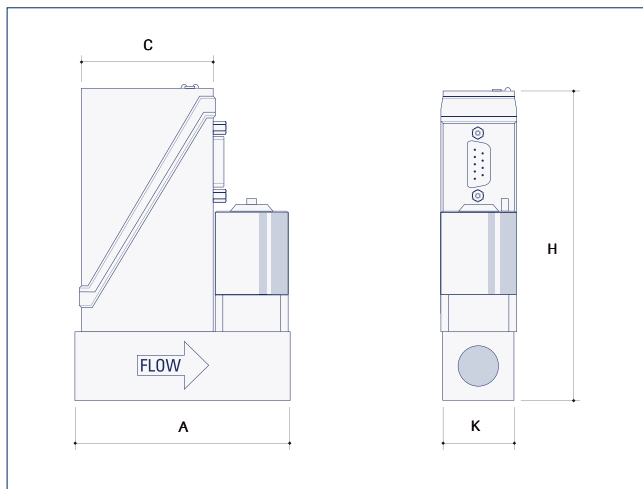
Power supply	: +15...24 Vdc
Power consumption	: max. 320 mA
Analog output/command	: 0...5 (10) Vdc or 0 (4)...20 mA (sourcing output)
Digital communication	: RS232 or Modbus-RTU (RS485)
Electrical connection	: 9-pin D-connector (male)
EMC	: CE declaration
Ingress protection (housing)	: IP40

Technical specifications subject to change without notice.



EL-FLOW® Base model F-201AB Mass Flow Controller

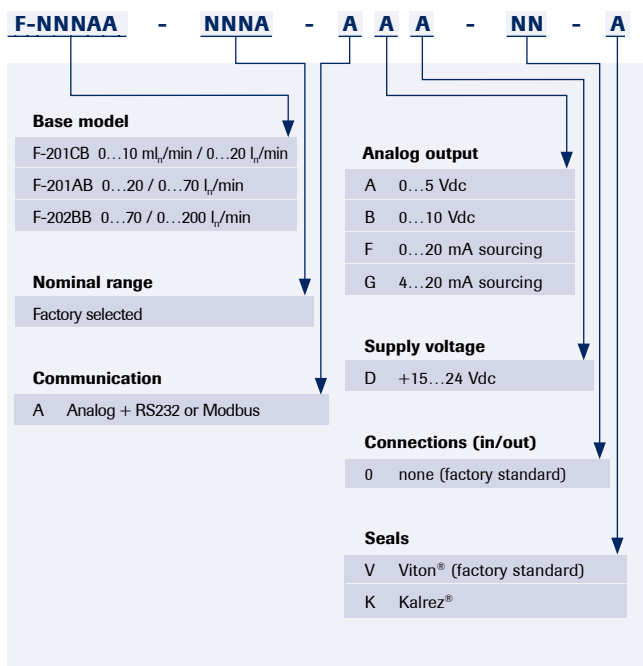
> Dimensions and weights



Model	A	C	K	H	Weight (kg)
F-201CB	77	47	25	111	0,5
F-201AB	78	47	26	123	0,6
F-202BB	112	47	59	160	2,3

Dimensions in mm

> Model number identification



> Warranty

All instruments and accessories are warranted for a period of 3 years from delivery date.

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