



EL-FLOW[®] Base

Mass Flow Controllers for Gases



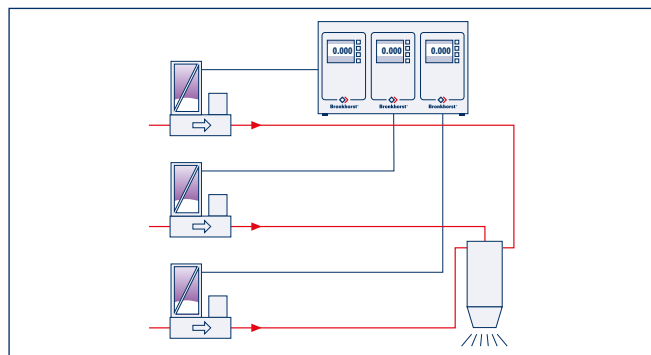
› EL-FLOW® Base fast response Mass Flow Controllers for OEM applications

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

› Burner control



Burner control using Mass Flow Controllers brings many advantages compared to conventional systems, where flow is adjusted through needle valves. When burner orifices get clogged or when gas supply pressure varies, an MFC will automatically adapt to the changed conditions.

› 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.

› 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 or -ASCII
- ◆ Control characteristics digitally configurable by user



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

Technical specifications

Performance

Accuracy flow sensor (based on actual calibration)	±1% FS
Repeatability	< 0,2% Rd
Turndown	1 : 50 (2...100%)
Operating pressure	0...10 bar(g)
Settling time (in control)	approx. 1 second
Control stability	< ±0,1% FS (typical for 1 l _v /min N ₂)
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
Control valve	normally closed solenoid valve, F-201CB/F-201AB: Kv-max = 6,6 x 10 ⁻² F-202BB: Kv-max = 4,0 x 10 ⁻¹
Leak integrity, outboard	tested < 2 x 10 ⁻⁹ mbar l/s He
Warm-up time	30 min. for optimum accuracy

Mechanical parts

Material (wetted parts)	Stainless Steel 316 or equivalent
Process connections	¼" BSPF female thread; optional accessories: compression type or face seal couplings in various inch or metric sizes
Seals	standard Viton®; option Kalrez® (FFKM)
Ingress protection (housing)	IP40

Electrical specifications

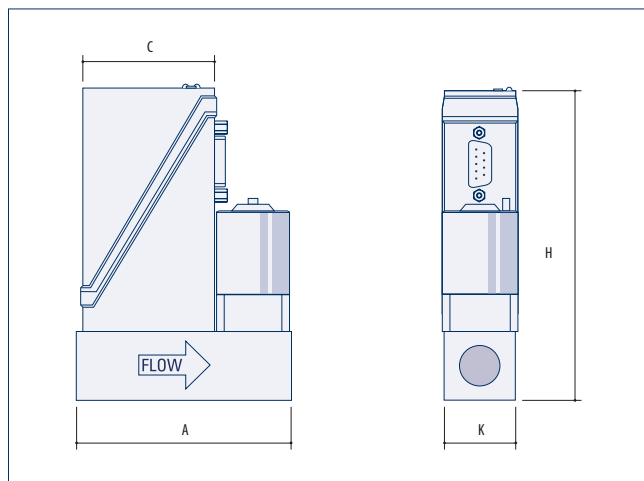
Power supply	+15...24 Vdc
Power consumption	max. 320 mA
Analog output/command	0...5 (10) Vdc or 0 (4)...20 mA (sourcing output)
Digital communication	RS232 or Modbus-RTU or -ASCII (RS485)
Electrical connection	9-pin D-connector (male)

Technical specifications subject to change without notice.



EL-FLOW® Base model F-202BB 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

F-NNNAA - NNNA - A A A - NN - A	
Base model	Analog output
F-201CB 0...10 ml _v /min / 0...20 l _v /min	A 0...5 Vdc
F-201AB 0...20 / 0...70 l _v /min	B 0...10 Vdc
F-202BB 0...70 / 0...200 l _v /min	F 0...20 mA sourcing
	G 4...20 mA sourcing
Nominal range	Power supply
Factory selected	D +15...24 Vdc
Communication	Connections
A Analog + RS232 or Modbus	0 none (factory standard)
	Sealing material
	V Viton® (factory standard)
	K Kalrez®

Warranty

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