EL-FLOW Select

F-201CM

Metal Sealed Mass Flow Controller for high purity gas supply

Bronkhorst®

Technical specifications

Measurement & control

Type of media	Gases
Flow range	min. $0.12...6$ ml$_n$/min max. $1...50$ l$_n$/min
Accuracy	±0.5% Rd plus ±0.1%FS
Repeatability	<±0.2% Rd (or <±0.04% FS whichever is greater)
Turndown ratio	1:150 (1:50 in analog mode)
Multi fluid capability	storage of max. 8 calibration curves
Settling time (in control, typical)	1 second typical above 5% FS; option: down to 600 msec
Control stability	$\leq \pm 0.1$ % FS (typical for 1 l$_n$/min N2)
Operating temperature	$-10...+70°C$
Temperature sensitivity	zero: < 0.05% FS/°C; span: < 0.05% Rd/°C
Leak integrity, outboard	tested $< 2 \times 10^{-9}$ mbar l/s He
Pressure sensitivity	0.1% Rd/bar typical N2; 0.01% Rd/bar typical H2
Pressure range sensor	0 to 64 bar
Leak-by through closed valve	$< 10^{-5}$ Pa.m^3/s He
Mounting	max. error at 90° off horizontal 0.2% at 1 bar, typical N2
Warm-up time	30 minutes
Storage/transport conditions	$0...+50°C$, max. 95% RH (non-condensing)

Approvals

Marking	CE, RoHS, WEEE, REACH

Mechanical specs

Pressure rating (PN) - in barg	64
Ingress protection	IP40
Material wetted parts	stainless steel 316L or comparable
Sealing material	Outer seals: metal-to-metal (no rings); Inner seal / valve seat: FFKM/Kalrez®
Plunger material	FFKM/Kalrez®; option FKM/Viton®
Process connections	1/4" face seal male
Weight	0.7 kg

Electrical properties

Power supply	+15...24 Vdc
Power consumption	3.5 W typical at 24 V for fieldbus: add + 0.9 W
Analog output	0...5 (10) Vdc or 0 (4)...20 mA (sourcing)
Analog setpoint	0...5 (10) Vdc or 0 (4)...20 mA (sinking)
Digital communication	standard: RS232; options: PROFIBUS DP, CANopen®, DeviceNet™, PROFINET, EtherCAT®, Modbus RTU, ASCII or TCP/IP, EtherNet/IP, POWERLINK, FLOW-BUS

Electrical interfaces

Power (main connector)	9-pin D-sub (male)
Function (instrument connector)	Analog, RS232, RS485
PROFIBUS DP	9-pin D-sub (female)
CANopen / DeviceNet	5-pin M12A (male)
Modbus RTU/ASCII/FLOW-BUS	RJ45
Modbus TCP / EtherNet/IP / EtherCAT®/ PROFINET / POWERLINK	2x RJ45