

FG-211CVP

Pressure Insensitive Mass Flow Controller for Gases



Technical specifications

Measurement & control

Type of media	Gases
Flow range	min. 0.14...7 ml _N /min max. 0.4...20 l _N /min
Accuracy	±0.5% Rd plus ±0.1% FS (according SEMI E56)
Repeatability	<±0.2% Rd (or <±0.04% FS whichever is greater)
Turndown ratio	1:150 (1:50 in analog mode)
Multi fluid capability	embedded gas data for 100 unique gases plus any mixture of maximum 5 of these gases.
Settling time (in control, typical)	fast: < 500 msec standard: < 1 sec slow: < 2 sec
Control stability	± 0.1 % FS (typical for 1 l _N /min N ₂)
Operating temperature	-10...+70°C
Temperature sensitivity	zero: < 0.02% FS/°C; span: < 0.025% Rd/°C
Leak integrity, outboard	tested < 2 x 10 ⁻⁹ mbar l/s He
Pressure sensitivity	standard: < 0.15% Rd/bar typical N ₂ ; with pressure correction: < 0.02% Rd typical N ₂
Max. Kv-value	6.6 x 10 ⁻²
Mounting	max. error at 90° off horizontal 0.07% FS at 1 bar, typical N ₂
Warm-up time	30 minutes
Storage/transport conditions	0...+50°C, max. 95% RH (non-condensing)

Approvals

Electrical safety	IEC 61010-1
Marking	CE, RoHS, WEEE, REACH

Mechanical specs

Pressure rating (PN) - in barg	100
Ingress protection	IP40
Material wetted parts	stainless steel 316L or comparable, degreased for use on oxygen (O ₂)
Sealing material	standard: FKM/Viton® options: EPDM, FFKM/Kalrez®, FDA and USP Class VI approved compounds
Plunger material	standard: FFKM with PI (polyimide) foil; options: EPDM with PI foil, FDA and USP Class VI approved EPDM, FDA and USP Class VI approved FFKM/Kalrez®
Process connections	compression type or face seal (VCR/VCO) couplings
Weight	0.8 kg

Electrical properties

Power supply	+15...24 Vdc
Power consumption	3 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: DeviceNet™, CANopen®, PROFIBUS DP, Modbus RTU/ASCII, FLOW-BUS, EtherCAT®, PROFINET, Modbus/TCP, EtherNet/IP, POWERLINK

Electrical interfaces

Power (main connector)	9-pin D-sub (male)
Function (instrument connector)	RS232, Analog, 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