



GFC-S | Gas Flow Controller

PRECISE CONTROL. UNPARALLELED PERFORMANCE.

Pivotal Systems' GFC paves the way for the future of gas flow control. The GFC combines Pivotal's patented, high accuracy GFM system with patented control valve technology. As such, it leapfrogs the current MFC technology by offering an order of magnitude improvement on key flow metrics, thereby enabling advanced wafer-manufacturing processes. At Pivotal Systems, we aim to significantly enhance fab productivity and capital efficiency by utilizing our innovative solutions.

Benefits of GFC-S

- Highly accurate NIST traceable measurements run-to-run
- Significantly reduces downtime
- Wide flow range from 0.5 to 100% of F.S.
- Industry's best flow accuracy for entire flow range
- Advanced flow monitoring/self-diagnosis

Key Features

- No calibration ever required
- Innovative control technology
- Unaffected by variations in the upstream or downstream pressure or temperature
- No fixed orifice

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GFC-S Specifications (GFC5™, GFC20™, GFC200™, GFC1000™, GFC2000™)

Performance	Flow Range (N2 Equivalent)	0.025– 2,000 sccm (5 part numbers to cover this range), 0.5–100% F.S.
	Flow Accuracy	±0.5% of setpoint for actual gas: 0.025 – 5 sccm (GFC5), 0.1 – 20 sccm (GFC20), 1 – 200 sccm (GFC200), 5 – 1,000 sccm (GFC1000), 10 – 2,000 sccm (GFC2000)
	Settling Time	10% – 100% Bin FS ≤ 100 ms, 0.5% – 10% Bin FS ≤ 300 ms*
	Leak Integrity	≤ 1E–9 atm · cc/sec (He)
	Leak By Rate	0.0025 sccm (GFC5), 0.01 sccm (GFC20), 0.1 sccm (GFC200), 0.5 sccm (GFC1000), 1.0 sccm (GFC2000)
	Repeatability	±0.2% of setpoint for 0.5%–100% F.S.
Operating Conditions	Supply Pressure	Standard: 100 – 300kPaG (14.5 – 43.5 psig) Low pressure gases: BCl ₃ , C ₂ H ₃ F ₃ , C ₃ F ₆ , C ₃ H ₁₀ Si (TMS), C ₃ H ₂ F ₆ , C ₃ H ₈ O, C ₄ F ₆ , C ₄ F ₆ -q, C ₄ F ₈ , C ₄ F ₈ -i, C ₄ H ₁₀ , C ₄ H ₁₀ -i, C ₄ H ₂ F ₆ , C ₄ H ₆ F, C ₅ F ₈ , CF ₃ I, ClF ₃ , SiCl ₄ , SiH ₂ Cl ₂ , and WF ₆ , the inlet pressure range can be as low as –81 kPaG (–11.7 psig)
	Downstream Pressure	Vacuum to 53 kPa (0 – 400 Torr), Vacuum for LP application
	Proof Pressure	2.07 MPaG (300 psig)
	Design Pressure (Burst Pressure)	2.65 MPaG (385 psig)
	Operating Temperature	Standard: 15–50°C, High Temperature Version: 15–70°C
Materials	Surface Finish	5 µin Ra, Semi F19 compliant
	Wetted Surface Material	SUS 316L UHP, Semi F20 compliant PCTFE or PFA valve seats
	Seals	Metal
Electrical	ECAT	24 VDC
	DeviceNet	11 – 24 VDC, 5 W
	Analog* and RS–485	±15 VDC, 150 mA
	In–Rush Current	<200 mA

* There is a setpoint hold-time of 60 milliseconds during Analog control. This time is in addition to the reported settling time of this device. When running using Analog control, the GFC has a minimum setpoint sensitivity of ±50mV. The flow accuracy is unaffected. The measured setpoint and corresponding flow feedback may be different from the commanded setpoint by up to that amount. Analog calibration is recommended to align device input to the controller output.