

Product Specifications

Apex Low Pressure Drop Mass Flow Controllers 0.5 SCCM to 5SCCM Full Scale

SENSOR AND CONTROL PERFORMANCE					
Mass Flow Accuracy at calibration conditions ¹	±0.8% of reading and ±0.2% of full scale				
High Accuracy Option ¹	±0.4% of reading and ±0.2% of full scale Available for ≥5 SCCM models				
Repeatability (2σ)	±(0.2% of reading + 0.02% of full scale)				
Steady State Control Range ²	0.5–100% of full scale				
Typical Control Response Time	30 ms to 63% of step change (T63), user adjustable				
Valve Function	Normally Closed				
Temperature Sensitivity	Mass flow zero shift and span shift: 0.03% of full scale per °C from 25°C				
Pressure Sensitivity	Mass flow zero shift and span shift: $\pm (0.08\% \text{ of reading} \pm 0.02\% \text{ of full scale})$ per atmosphere from calibration conditions				
Operating Temperature Range	-10-60°C (expanded range available)				
Temperature Accuracy	±0.75°C				
Operating Pressure Full Scale	60 PSIA				
Pressure Accuracy above 1 ATM	±0.75% of reading				
Pressure Accuracy below 1 ATM	±0.1 PSIA				
Totalizer Volume Uncertainty	±0.5% of reading additional uncertainty				
Sensor Response Time	<1 ms				
Typical Indication Response Time ³	127 ms (user adjustable)				
Typical Warm-Up Time	<1s				

¹ Stated accuracy is after tare under equilibrium conditions.

Extreme gas behavior (especially near state boundaries) can introduce additional flow uncertainties.

³ Indication response time includes user-adjustable averaging up to 255 ms.

MECHANICAL				
Minimum Operating Pressure 11.5 PSIA common mode pressure (lower operating pressures available) Differential pressure must exceed model pressure drop, see below for details				
Maximum Operating Pressure	Damage possible above 80 PSIA common mode pressure Damage possible above 15 PSID differential pressure			
Ingress Protection	IP40 (consult Alicat for weatherproofing options)			
Humidity Range	0–95%, non-condensing			
Wetted Materials	302 / 303 / 304 / 430FR stainless steel, Viton®, heat-cured silicone rubber, glass-reinforced polyphenylene sulfide, heat-cured epoxy, alumina, gold, brass, silicon, glass			

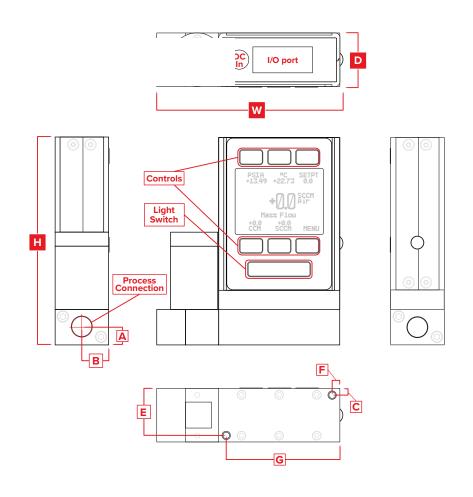
COMMUNICATIONS					
Analog I/O Options	4–20 mA, 0–5 VDC, 1–5 VDC, 0–10 VDC				
Digital I/O Options	RS-232 Serial by default RS-485 Serial, Modbus RTU (over RS-232 or RS-485), Modbus TCP/IP, DeviceNet, EtherCAT, EtherNet/IP, Profibus				
Electrical Connection Options	6 pin locking, 8 pin mini-DIN, 8 pin M12, DB-9, DB-15				
Power Requirements⁴	12–24 VDC, 250 mA (290 mA if equipped with 4–20 mA output)				
Digital Data Update Rate⁴	40 Hz at 19200 baud				
Analog Data Update Rate	1 kHz				
Display Update Rate	10 Hz				
Analog Signal Accuracy	±0.1% of full scale additional uncertainty				

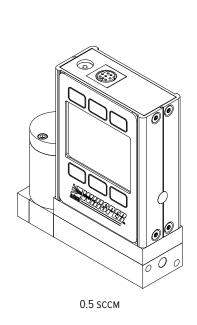
⁴ Consult the individual operating bulletins for specific industrial protocol power requirements and data transmission specifications.

² Achievable steady state control may be limited by user-configurable PID tuning and process conditions. Dynamic control performance is also limited by control response time, which may vary with the flow rate.

FEATURES				
STP Reference Conditions	25°C and 1 atm (default), user configurable			
NTP Reference Conditions	0°C and 1 atm (default), user configurable			
Monochrome LCD or Color TFT Display with integrated touchpad	Simultaneously displays mass flow, volumetric flow, temperature, and pressure			
Gas Select™	98 user selectable gases stored internally. Each gas optimized to match NIST's REFPROP 10 gas property calculations across the operating temperature and pressure ranges for highest accuracy.			
COMPOSER™	20 user definable gas mixes. Each mix may have up to 5 gases with 0.01% precision.			

RANGE SPECIFIC SPECIFICATIONS					
Full scale flow Pressure drop at full scale flow venting to atmosphere⁵		Process connections ⁶	Mount tap size		
0.5 sccм-5 sccм	0.07 psid	M5 female thread (10-32 compatible) ⁷	2× 8-32 UNC 0.175 in [4.45 mm]		





Representative Example

DIMENSIONS										
Full scale flow	Weight	Height	Width	Depth	A	В	С	Е	F	G
0.5 sccм-	≈ 1.1 lb	3.897 in	3.338 in	1.050 in	0.336 in	0.525 in	0.125 in	0.925 in	0.150 in	2.225 in
5 ѕссм	≈ 0.5 kg	98.98 mm	84.79 mm	26.67 mm	8.53 mm	13.34 mm	3.18 mm	23.50 mm	3.81 mm	56.52 mm