Technical Data for Pascal-Series Mass Flow Controllers

0.5 SCCM full scale through **5 SCCM** full scale. Designed for diamond manufacturing.

Standard specifications. Consult Alicat for available options.

SENSOR AND CONTROL PERFORMANCE

Mass flow accuracy[1]	**Standard accuracy:** ±(0.8% of reading + 0.2% of full scale) **High-accuracy option (≥5 SCCM models):** ±(0.4% of reading + 0.2% of full scale)
Flow repeatability (2σ)	±(0.2% of reading + 0.02% of full scale)
Pressure accuracy[2]	**Above 1 atm:** ±0.5% of reading **Below 1 atm:** ±0.07 PSIA
Steady state control range	0.01–100% of full scale (10,000:1 turndown ratio)
Operating pressure full scale	11.5–160 PSIA
Pressure sensitivity	**Mass flow zero and span shift:** ±(0.08% of reading + 0.02% of full scale) per atm from calibration conditions
Temperature sensitivity	**Mass flow zero and span shift:** 0.02% of full scale per °C from 25°C
Temperature accuracy	±0.75°C
Temperature range	−10–60°C (ambient and gas)
Valve function	Normally closed
Sensor response time	<1 ms
Typical control response time	As fast as 100 ms (T63), flow rate dependent, user-adjustable
Typical indication response time	<10 ms, flow rate dependent
Typical warm-up time	<1 s

1 After tare and under equilibrium conditions. Includes repeatability and linearity.
2 Under equilibrium conditions. Includes repeatability and linearity.

MECHANICAL

Process connections	1/4″ VCR® male
Wetted materials	302, 303, 304, 316L, and 430FR stainless steel; FKM, alumina ceramic, brass, glass, gold, heat-cured epoxy, heat-cured silicone rubber, polyamide, and silicon
Maximum pressure	Damage possible above 200 PSIA common mode pressure. Damage possible by rapid pressure change above 75 PSI differential pressure.
Relative humidity range	0–95%, non-condensing
Ingress protection	IP40
Leak integrity, external	<1×10^{-9} atm-cc/sec of helium
Leak integrity, through closed valve	<1×10^{-5} atm-cc/sec of helium
Mounting orientation sensitivity	None
Mounting holes	2× 8-32 UNC threaded, ↧ 0.328″ [8.33 mm]

POWER AND COMMUNICATIONS

Digital input and output options	RS-232 Serial and Modbus RTU (default), RS-485 Serial and Modbus RTU, Modbus TCP/IP, DeviceNet, EtherCAT, EtherNet/IP, PROFINET, PROFIBUS
Digital data update rate[3]	40 Hz at 19200 baud
Analog input and output options	4–20 mA, 0–5 Vdc, 1–5 Vdc, 0–10 Vdc
Analog data update rate[3]	1 kHz
Analog signal accuracy	±0.1% of full scale additional uncertainty
Interactive display	Monochrome LCD or color TFT display with integrated touchpad; simultaneously displays mass flow, volumetric flow, temperature, setpoint, and pressure
Display update rate	10 Hz
Electrical connection options	DB-9, DB-15, 8-pin M12, 6-pin locking, 8-pin mini-DIN
Power requirements[3]	12–24 Vdc, 250 mA (290 mA if equipped with 4–20 mA output)

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

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FEATURES	
STP reference conditions	25°C and 1 atm, user-configurable
NTP reference conditions	0°C and 1 atm, user-configurable
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% composition resolution.

RANGE-SPECIFIC TECHNICAL DATA	
Full scale flow	Pressure drop at full scale when venting air to atmosphere
0.5 SCCM	1.0 PSID
1–5 SCCM	2.0 PSID
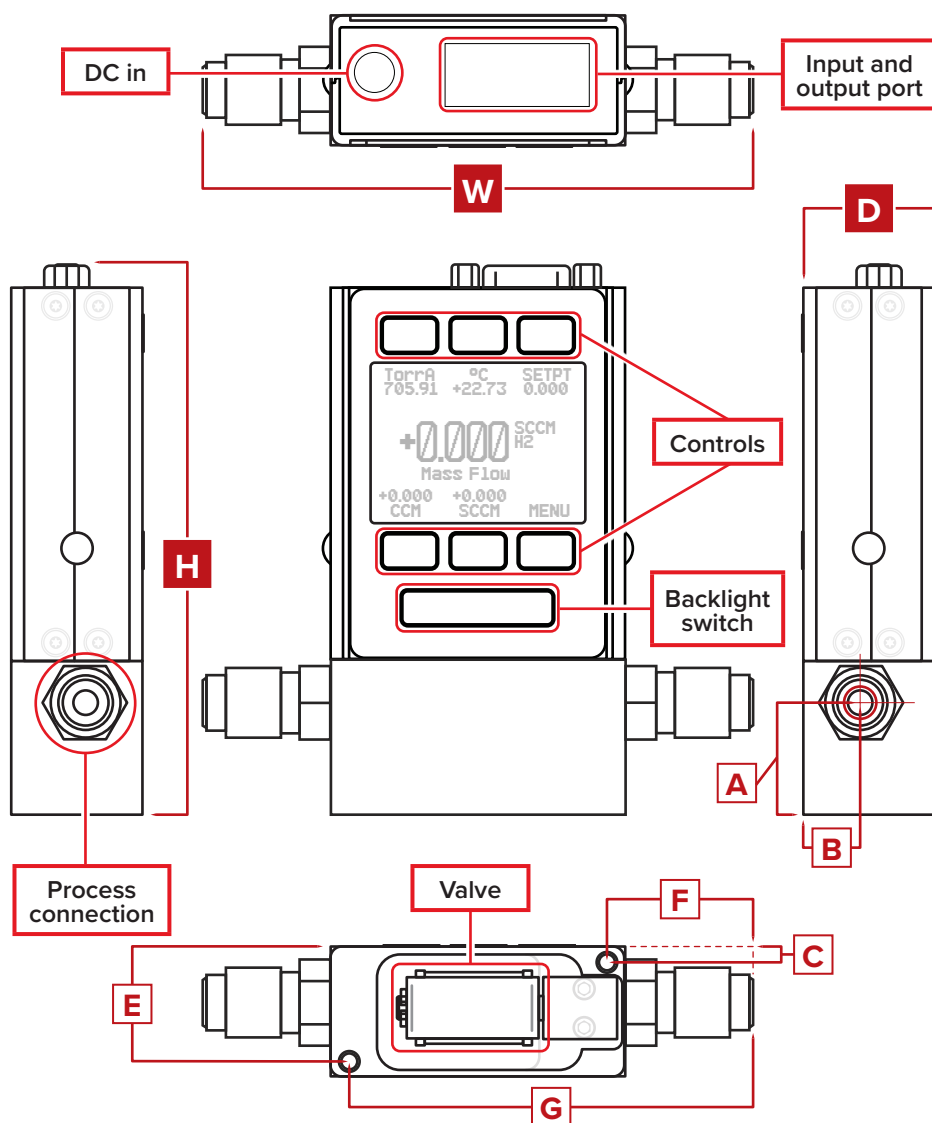
Representative Example
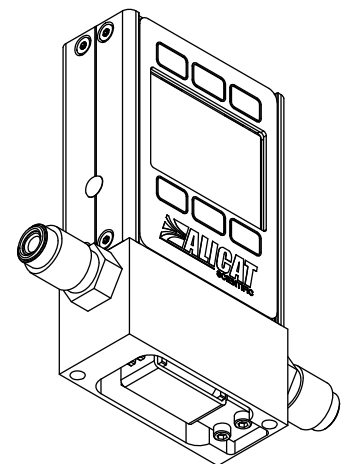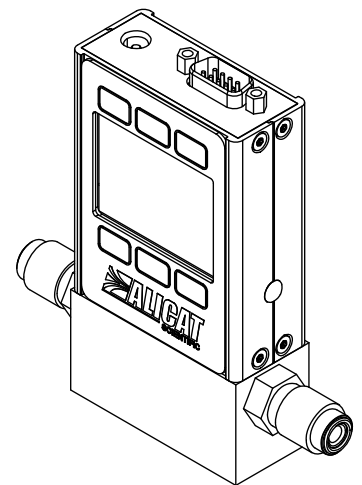
View under the device, showing the valve

DIMENSIONS									WEIGHT
Width	Depth	Height	A	B	C	E	F	G	
4.44″	1.05″	4.43″	0.90″	0.45″	0.13″	0.93″	1.18″	3.26″	≈ 1.3 lb
112.8 mm	26.7 mm	112.5 mm	22.9 mm	11.4 mm	3.2 mm	23.5 mm	30.1 mm	82.8 mm	≈ 0.6 kg