

Technical Data for IS-Max ISMCS-Series Mass Flow Controllers

0.5 sccm full scale through 250 SLPM full scale

Standard specifications. Consult Alicat for available options.



+1 (888) 290-6060
alicat.com/ismc

CERTIFICATIONS	MARKING	CERTIFICATE
ATEX	II 1G Ex ia IIC T4 Ga T _{amb} -20° C to +70° C	DEKRA 22ATEX0075X
IECEX	Ex ia IIC T4 Ga T _{amb} -20° C to +70° C	IECEX DEK 22.0078X

SENSOR AND CONTROL PERFORMANCE ¹	
Mass flow accuracy ^{2,3}	Standard accuracy: ± 0.8% of reading and ± 0.2% of full scale High accuracy: ± 0.4% of reading and ± 0.2% of full scale
Flow repeatability (2σ)	± 0.2% of full scale
Pressure accuracy ²	± 0.5% of full scale
Steady state control range	1 – 100% of full scale (100:1 turndown ratio)
Operating pressure	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
Relative humidity accuracy ⁴	± 1.8% RH at +23 °C (0% RH to 90% RH)
Relative humidity temperature sensitivity ⁴	0.05% RH/°C (0 °C to +60 °C)
Operating temperature range ⁵	-20 – 70 °C (ambient and gas)
Valve function	Normally closed
Totalizer volume uncertainty	± 0.1% of reading in additional uncertainty
Sensor response time	< 1 ms
Typical control response time	Flow rate dependent and user-adjustable. As fast as (T63): 0.5 – 5 sccm: 100 – 4000 ms 10 sccm – 20 SLPM: 30 – 4000 ms 50 – 250 SLPM: 30 – 150 ms
Typical indication response time	0.5 – 5 sccm: 100 – 4000 ms 10 sccm – 20 SLPM: < 10 ms 50 – 250 SLPM: 65 – 255 ms
Typical warm-up time	< 1 s

¹ Flow rate and pressure drop vary depending on process gas.

² Stated accuracy is after tare (for mass flow), under equilibrium conditions, includes repeatability and linearity.

³ High accuracy mass flow readings only available on devices with a full scale range ≥5 SCCM and ≤500 SLPM.

⁴ Relative humidity sensor is an optional feature.

⁵ FFKM in ISMCS units is rated for greater than -10 °C, for low-temp FFKM options contact the factory.

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MECHANICAL	
Wetted materials	316L, 303, 430FR stainless steel, FFKM standard, FKM or EPDM as needed for some gases
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	IP66 rating Dust-tight and protected against strong jets of water
Mounting orientation sensitivity	None
Mounting holes	4× 6-32 UNC threaded ⌀ 0.276" [7.01 mm]
Process connections ⁶	0.5 – 50 sccm: M5 x 0.8 mm female 100 sccm – 30 SLPM: 1/8" NPT female 50 – 100 SLPM: 1/4" NPT female 250 SLPM: 1/2" NPT female

⁶ Consult Alicat for available connection options, such as: compression, face seal, push-to-connect, BSPP, SAE, or Swagelok®-compatible (VCO® and VCR®).

POWER AND COMMUNICATIONS	
Digital input and output options	RS-232 Serial and Modbus RTU, RS-485 Serial and Modbus RTU
Digital data update rate	40 Hz at 19200 baud
Analog input and output options	4 – 20 mA
Analog data update rate	1 kHz
Analog signal accuracy	± 0.1% of full scale additional uncertainty
Interactive display	Monochrome LCD with integrated touchpad and backlight; simultaneously displays mass flow, volumetric flow, temperature, setpoint, valve drive %, gauge pressure, and absolute pressure
Display update rate	10 Hz
Electrical connection options	DB-15
Power requirements	See DOC-IS-CONTROLDWG

FEATURES	
STP reference conditions	25 °C and 1 atm (default), user-configurable
NTP reference conditions	0 °C and 1 atm (default), user-configurable
Gas Select™	128 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.
Multivariate process measurements	Volumetric flow, mass flow, absolute pressure, gauge pressure, barometric pressure, temperature, totalizer Optional: relative humidity
Autotune	Automatically improve the control performance of the valve and tune the control parameters of the device for your application
Totalizer and batch dispensing	Measure the total accumulated mass of a particular gas (or gas mixture) that has flowed in a process. The totalizer function in controllers can also be used to dispense batches of set amounts of gas.

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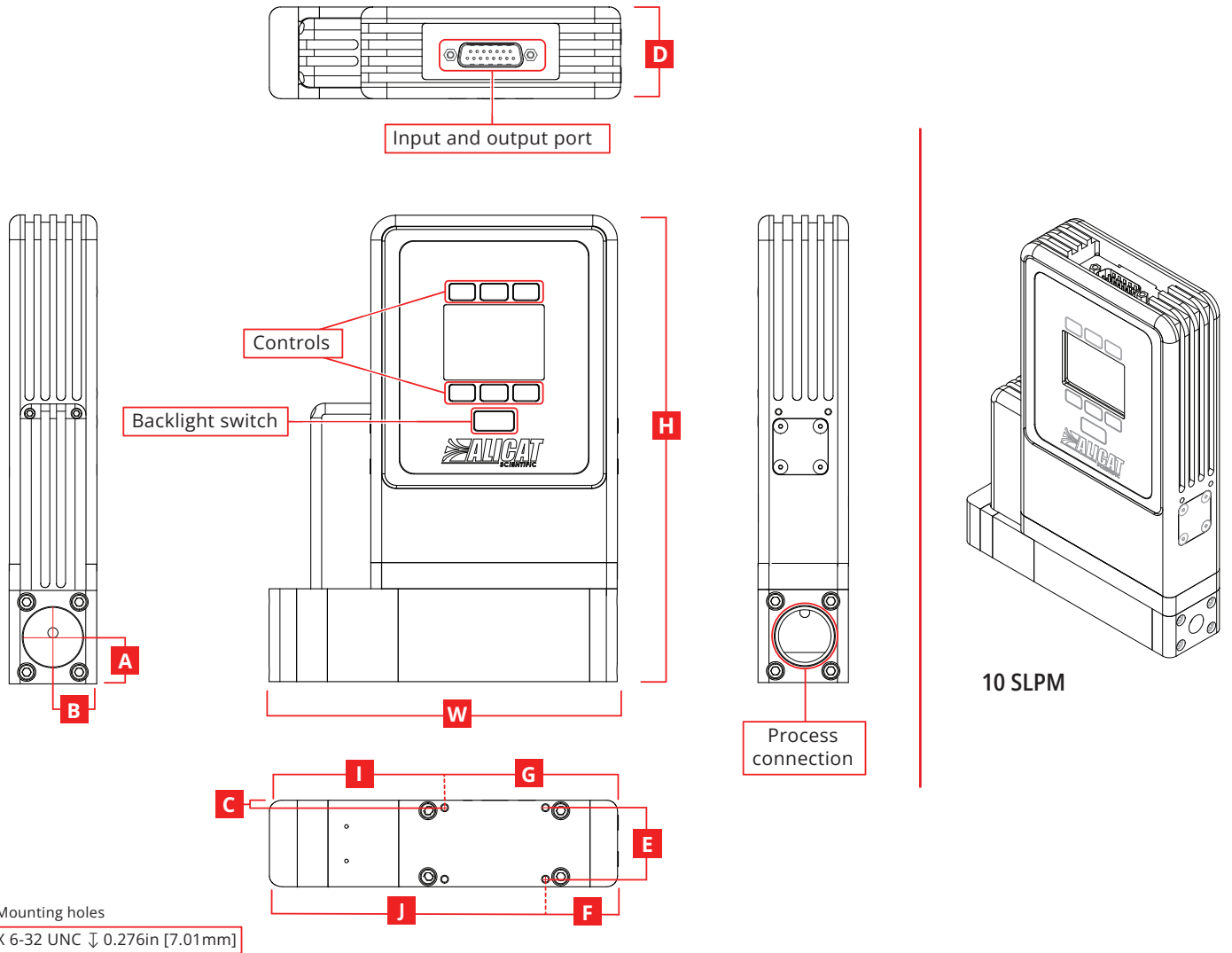
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Representative Example



DIMENSIONS									
Full scale flow	Width	Depth	Height	A	B	C	E	F	G
0.5 SCCM – 30 SLPM	5.75"	1.50"	8.00"	0.50"	0.75"	0.13"	1.37"	1.25"	3.00"
	146.1 mm	38.1 mm	203.2 mm	12.7 mm	19.1 mm	3.3 mm	34.8 mm	31.8 mm	76.2 mm
50 – 250 SLPM	6.00"	1.50"	8.60"	0.80"	0.75"	0.13"	1.37"	1.25"	3.00"
	152.4 mm	38.1 mm	218.44 mm	20.3 mm	19.1 mm	3.3 mm	34.8 mm	31.8 mm	76.2 mm