

Technical Data for IS-Max ISMS-Series Mass Flow Meters

0.5 sccm full scale through 5000 SLPM full scale

Standard specifications. Consult Alicat for available options.



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CERTIFICATIONS	MARKING	CERTIFICATE
ATEX	Ex 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
North America	Class I, Div 1, Groups A-D T4, Ex ia Class I, Zone 0, AEx\Ex ia IIC T4 Ga T _{amb} -20° C to +70° C	DEKRA 23CAUS40-127215

SENSOR PERFORMANCE	
Mass flow accuracy ^{1,2}	Standard accuracy: $\pm 0.8\%$ of reading and $\pm 0.2\%$ of full scale High accuracy: $\pm 0.4\%$ of reading and $\pm 0.2\%$ of full scale (5 SCCM - 500 SLPM only)
Flow repeatability (2 σ)	$\pm 0.2\%$ of full scale
Pressure accuracy	$\pm 0.5\%$ of full scale
Flow measurement range	0.1 – 100% (1,000:1 turndown ratio)
Operating pressure	11.5 – 160 PSIA
Pressure sensitivity	Mass flow zero shift and span shift: $\pm (0.08\%$ of reading + 0.02% of full scale) per atm from tare pressure
Temperature sensitivity	Mass flow zero shift and span shift: 0.02% of full scale per °C from 25 °C
Temperature accuracy	± 0.75 °C
Relative humidity accuracy ³	$\pm 1.8\%$ RH at +23 °C (0% RH to 90% RH)
Relative humidity temperature sensitivity ³	0.05% RH/°C (0 °C to +60 °C)
Operating temperature range ⁴	-20 – 70 °C (ambient and gas)
Totalizer volume uncertainty	$\pm 0.1\%$ of reading in additional uncertainty
Sensor response time	< 1 ms
Typical indication response time	Flow rate dependent and user-adjustable. As fast as (T63): 0.5 – 5 SCCM: 100 – 4000 ms 10 SCCM – 20 SLPM: < 10 ms 50 – 5000 SLPM: 65 – 255 ms
Typical warm-up time	< 1 s

¹ Stated accuracy is after tare (for mass flow), under equilibrium conditions, includes repeatability and linearity.

² High accuracy mass flow readings only available on devices with a full scale range ≥ 5 SCCM and ≤ 500 SLPM.

³ Relative humidity sensor is an optional feature; accuracy statement valid from 0-50° C, $\leq 90\%$ RH. ⁴ Low-temp FFKM required below -10 °C

⁴ FFKM in ISMS units is rated for greater than -10 °C; for low-temp FFKM options contact the factory.

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MECHANICAL	
Wetted materials ⁵	316L stainless steel, FFKM
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 $\pm 0.276"$ [7.01 mm]

⁵ Alternative elastomer materials available, consult Alicat.

POWER AND COMMUNICATIONS	
Digital output options	RS-232 or RS-485 (both options work with the Alicat ASCII command and control language AND the Modbus RTU industrial protocol)
Digital data update rate	40 Hz at 19200 baud
Analog output	4 – 20 mA
Analog data update rate	1 kHz
Analog signal accuracy	$\pm 0.1\%$ of full scale additional uncertainty
Interactive display	Monochrome LCD with integrated touchpad and backlight; simultaneously displays mass flow, volumetric flow, temperature, gauge pressure, and absolute pressure
Display update rate	10 Hz
Electrical connection options	DB-15
Power requirements	See DOC-MANUAL-IS-SAFEINSTALLATION

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
Totalizer	Measure the total accumulated mass of a particular gas (or gas mixture) that has flowed in a process.

RANGE-SPECIFIC TECHNICAL DATA			
Full scale flow	Part numbers	Pressure drop at full scale when venting air to atmosphere	Recommended process connections ⁶
0.5 – 50 sccm	ISMS-AA, ISMS-BA, ISMS-EA, ISMS-FA, ISMS-GA, ISMS-IA, ISMS-LA	1.0 PSID	M5 x 0.8mm female
100 sccm – 20 SLPM	ISMS-NA, ISMS-OA, ISMS-QA, ISMS-BB, ISMS-EB, ISMS-FB, ISMS-GB, ISMS-IB	1.0 PSID	1/8" NPT female
50 SLPM	ISMS-LB	2.0 PSID	1/4" NPT female
100 SLPM	ISMS-NB	2.5 PSID	1/4" NPT female
250 SLPM	ISMS-PB	2.1 PSID	1/2" NPT female
500 SLPM	ISMS-QB	4.0 PSID	3/4" NPT female
1000 SLPM	ISMS-RB	6.0 PSID	3/4" NPT female
3000 SLPM	ISMS-YB	7.1 PSID	1 1/4" NPT female
5000 SLPM	ISMS-ZB	3.4 PSID	1 1/2" NPT female

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

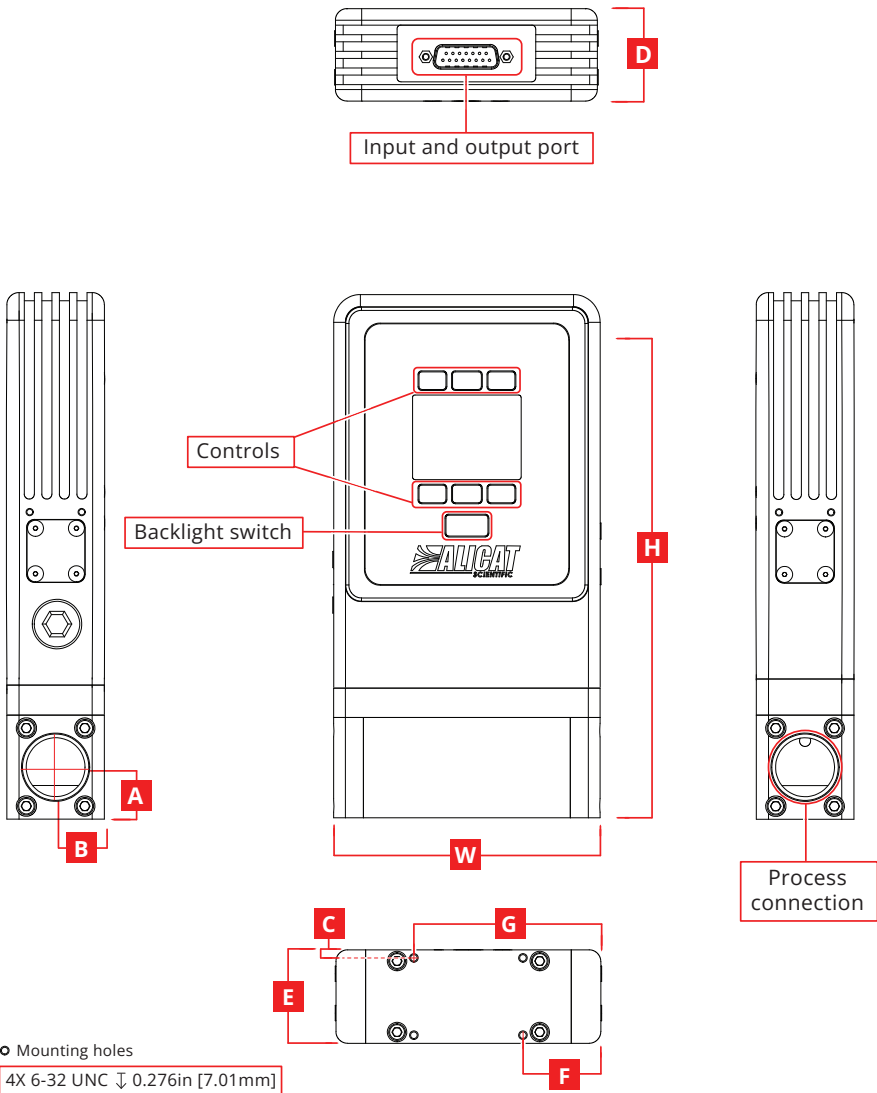
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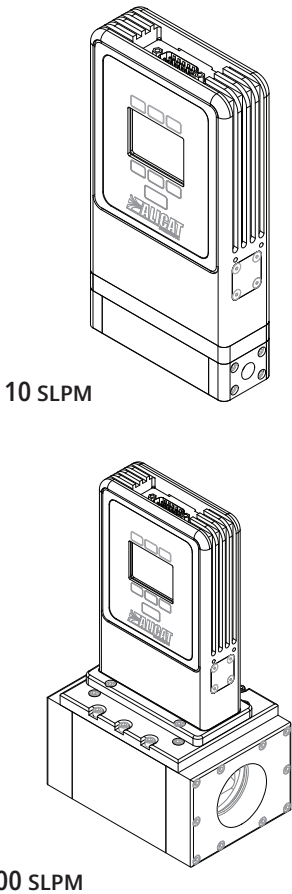
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Representative Examples



DIMENSIONS										WEIGHT
Full scale flow	Width	Depth	Height	A	B	C	E	F	G	
0.5 SCCM – 20 SLPM	4.25"	1.50"	8.00"	0.50"	0.75"	0.13"	1.35"	1.25"	3.00"	≈ 5.0 lb
	108.0 mm	38.1 mm	203.2 mm	12.7 mm	19.1 mm	3.3 mm	34.2 mm	31.8 mm	76.2 mm	≈ 2.3 kg
50 – 1000 SLPM	4.25"	1.50"	8.60"	0.80"	0.75"	0.13"	1.35"	1.25"	3.00"	≈ 6.0 lb
	108.0 mm	38.1 mm	218.4 mm	20.3 mm	19.1 mm	3.3 mm	34.2 mm	31.8 mm	76.2 mm	≈ 2.7 kg
2000 – 3000 SLPM	5.20"	2.90"	9.16"	1.12"	1.45"	0.20"	2.70"	1.35"	3.85"	≈ 9.2 lb
	132.1 mm	73.7 mm	232.7 mm	28.4 mm	36.8 mm	5.1 mm	68.6 mm	34.3 mm	97.8 mm	≈ 4.2 kg
5000 SLPM	5.60"	3.84"	10.13"	1.45"	1.92"	0.30"	3.55"	1.55"	4.05"	≈ 16.2 lb
	142.2 mm	97.5 mm	257.3 mm	36.8 mm	48.8 mm	7.5 mm	90.0 mm	39.4 mm	102.9 mm	≈ 7.3 kg