

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

0.5 sccm full scale through 5000 SLPM full scale

Standard specifications. Consult Alicat for high-pressure, media-isolated (caustic gas resistant), and low pressure drop versions.



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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
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			
RANGE	0.5 – 5 SCCM	10 SCCM – 20 SLPM	50 – 5000 SLPM
Mass flow accuracy ^{1,2}	Standard accuracy: ± 0.8% of reading and ± 0.2% of full scale High accuracy: ± 0.4% of reading and ± 0.2% of full scale (5 SCCM only)	Standard accuracy: ± 0.6% of reading or ± 0.1% of full scale, whichever is greater High accuracy: ± 0.5% of reading or ± 0.1% of full scale, whichever is greater	Standard accuracy: ± 0.8% of reading and ± 0.2% of full scale High accuracy: ± 0.4% of reading and ± 0.2% of full scale (≤ 500 SLPM only)
Flow repeatability (2σ)	± 0.2% of reading and ± 0.02% of full scale	± 0.1% of reading and ± 0.02% of full scale	± 0.2% of reading and ± 0.02% of full scale
Pressure accuracy	Above 1 atm: ± 0.5% of reading Below 1 atm: ± 0.07 PSIA		
Flow measurement range	0.01 – 100% of full scale (10,000:1 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	Mass flow zero shift: ± 0.01% of full scale per atm from tare pressure Mass flow span shift: ± 0.1% of reading per atm from calibration conditions	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	Mass flow zero shift: ± 0.01% of full scale per °C from tare temperature Mass flow span shift: ± 0.01% of reading per °C from 25 °C	Mass flow zero and span shift: ± 0.02% of full scale per °C from 25 °C
Temperature accuracy	± 0.75 °C		
Relative humidity accuracy ³	± 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	-20 – 70 °C (ambient and gas)		
Totalizer volume uncertainty	± 0.1% of reading in additional uncertainty		
Sensor response time	< 1 ms		
Typical indication response time	< 10 ms, flow rate dependent		
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, ≤90% RH.

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MECHANICAL	
Wetted materials ⁴	303 and 316L stainless steel, alumina ceramic, glass, gold, heat-cured epoxy, heat-cured silicone rubber, polyamide, silicon, FKM
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 $\pm 0.0276"$ [7.01 mm]

⁴ 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 options	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™	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.
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 ⁵
0.5 – 50 sccm	ISM-AA, ISM-BA, ISM-EA, ISM-FA, ISM-GA, ISM-IA, ISM-LA	1.0 PSID	M5 x 0.8mm female
100 sccm – 20 SLPM	ISM-NA, ISM-OA, ISM-QA, ISM-BB, ISM-EB, ISM-FB, ISM-GB, ISM-IB	1.0 PSID	1/8" NPT female
50 SLPM	ISM-LB	2.0 PSID	1/4" NPT female
100 SLPM	ISM-NB	2.5 PSID	1/4" NPT female
250 SLPM	ISM-PB	2.1 PSID	1/2" NPT female
500 SLPM	ISM-QB	4.0 PSID	3/4" NPT female
1000 SLPM	ISM-RB	6.0 PSID	3/4" NPT female
3000 SLPM	ISM-YB	7.1 PSID	1 1/4" NPT female
5000 SLPM	ISM-ZB	3.4 PSID	1 1/2" NPT female

⁵ Consult Alicat for available connection options, such as: compression, BSPP, SAE, or Swagelok®-compatible (VCO® and VCR®).

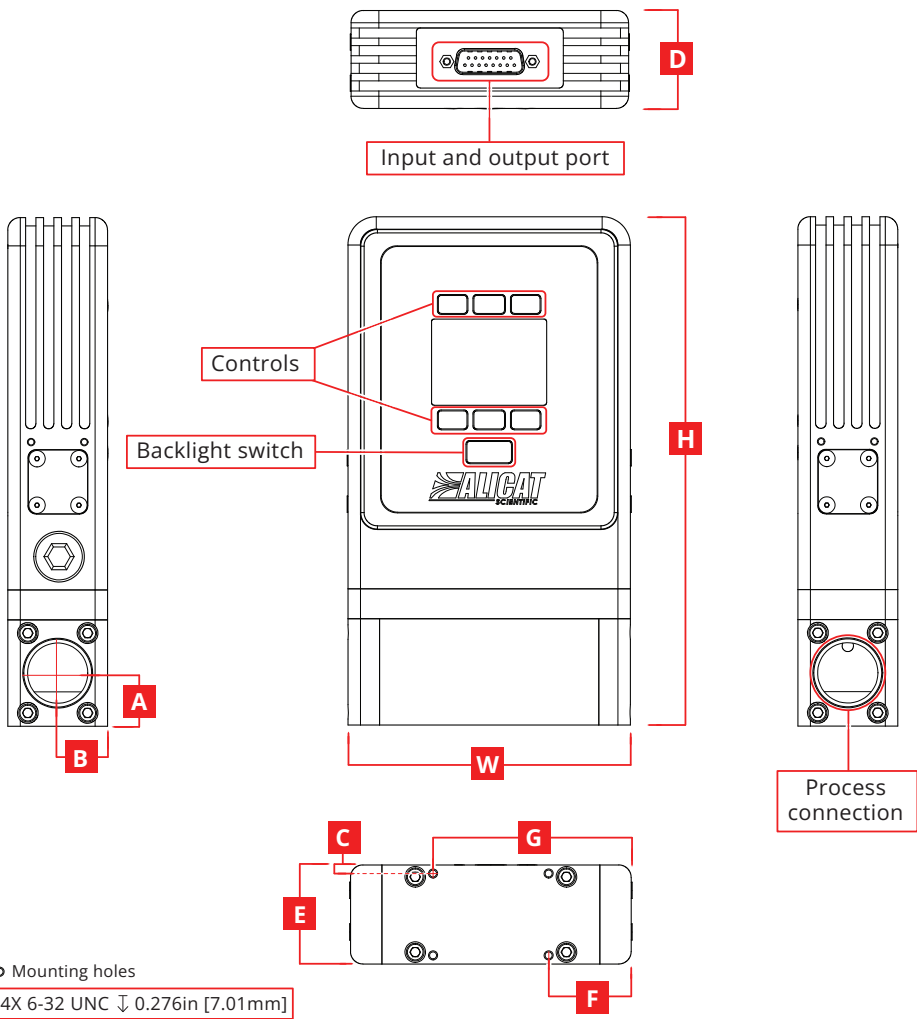
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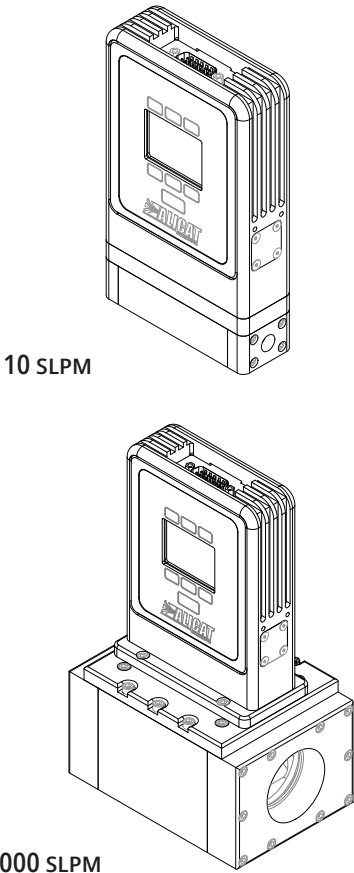
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Representative Examples



DIMENSIONS										WEIGHT
Full scale flow	Width	Depth	Height	A	B	C	E	F	G	
0.5 sccm – 20 SLPM	4.25"	1.50"	7.05"	0.50"	0.75"	0.13"	1.35"	1.25"	3.00"	≈ 5.0 lb
	108.0 mm	38.1 mm	179.1 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"	7.65"	0.80"	0.75"	0.13"	1.35"	1.25"	3.00"	≈ 6.0 lb
	108.0 mm	38.1 mm	194.3 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"	8.21"	1.12"	1.45"	0.20"	2.70"	1.35"	3.85"	≈ 9.2 lb
	132.1 mm	73.7 mm	208.4 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"	9.18"	1.45"	1.92"	0.30"	3.55"	1.55"	4.05"	≈ 16.2 lb
	142.2 mm	97.5 mm	233.0 mm	36.8 mm	48.8 mm	7.5 mm	90.0 mm	39.4 mm	102.9 mm	≈ 7.3 kg