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

10 SCCM full scale through **2 SLPM** full scale

Standard specifications. Consult Alicat for available options.

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

CERTIFICATIONS	MARKING	CERTIFICATE
ATEX	Ⓔx 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 AND CONTROL PERFORMANCE	
Mass flow accuracy[1]	± 0.6% of reading or ± 0.1% of full scale, whichever is greater
Flow repeatability (2σ)	± 0.1% of full scale
Pressure accuracy	**Above 1 atm:** ± 0.5% of reading **Below 1 atm:** ± 0.07 PSIA
Steady state control range	**0.5 – 100% of full scale (200:**1 turndown ratio)
Operating pressure	11.5 – 320 PSIA
Pressure sensitivity	**Mass flow zero shift:** ± 0.01% of full scale per atm from tare pressure **Mass flow span shift:** ± 0.1% of reading per atmosphere from calibration conditions
Temperature sensitivity	**Mass flow zero shift:** ± 0.01% of full scale per °C from tare temperature, per atm **Mass flow span shift:** ± 0.01% of reading per °C from 25°C, per atm
Temperature accuracy	± 0.75°C
Operating temperature range[2]	-20 – 70 °C (ambient and gas)
Valve function	Normally closed
Totalizer volume uncertainty	± 0.1% of reading additional uncertainty
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 Stated accuracy is after tare (for mass flow), under equilibrium conditions, includes repeatability and linearity.

2 Low-temp FFKM required below -10 °C

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MECHANICAL	
Wetted materials[3]	316L / 303 / 430FR stainless steel, FKM, alumina ceramic, brass, glass,gold, heat-cured epoxy, heat-cured silicone rubber, polyamide, silicon
Maximum pressure	Damage possible above 400 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]

3 Alternative elastomer materials available, consult Alicat.

POWER AND COMMUNICATIONS	
Digital input and 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 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-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
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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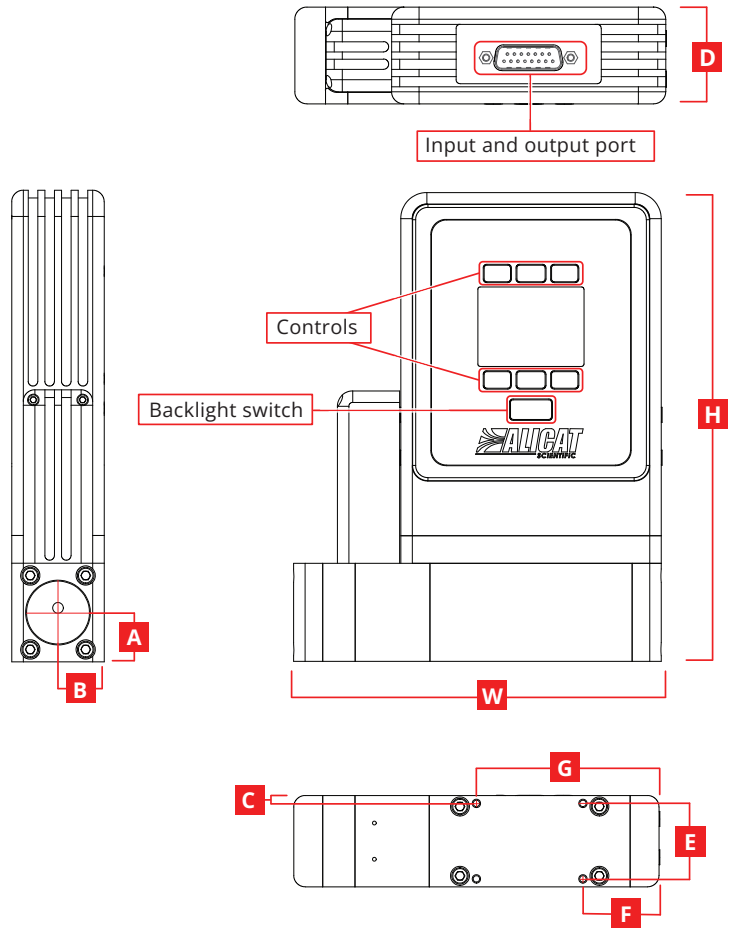
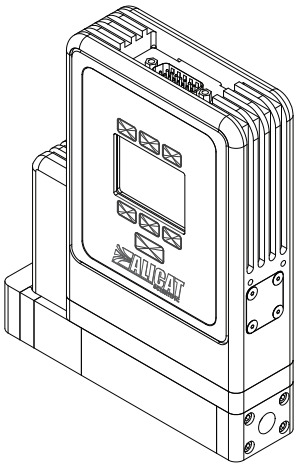
RANGE-SPECIFIC TECHNICAL DATA			
Full scale flow	Part number	Pressure drop at full scale[4]	Recommended process connections[5]
10 SCCM	ISMCQ-GA	1.5 PSID	M5 x 0.8mm female
20 SCCM	ISMCQ-IA	2.0 PSID	M5 x 0.8mm female
50 SCCM	ISMCQ-LA	6.0 PSID	M5 x 0.8mm female
100 SCCM	ISMCQ-NA	20.0 PSID	⅛" NPT female
200 SCCM	ISMCQ-OA	1.5 PSID	⅛" NPT female
500 SCCM	ISMCQ-QA	4.2 PSID	⅛" NPT female
1 SLPM	ISMCQ-BB	14.3 PSID	⅛" NPT female
2 SLPM	ISMCQ-EB	44.6 PSID	⅛" NPT female

4 When venting air to atmosphere and valve circuit powered by the Eaton 9493-PS-C11 at an ambient temperature of ~ 30°C

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



Representative Example



100 SCCM

DIMENSIONS										WEIGHT
Full scale flow	Width	Depth	Height	A	B	C	E	F	G	
10 SCCM – 2 SLPM	5.75"	1.50"	7.05"	0.50"	0.75"	0.15"	1.35"	1.25"	3.00"	≈ 5.0 lb
	146.1 mm	38.1 mm	179.1 mm	12.7 mm	19.1 mm	3.9 mm	34.2 mm	31.8 mm	76.2 mm	≈ 2.3 kg