



Mass Flow Meter / Controller

for gas OEM projects

Tiny • Durable • Dosing-Ready



Specifications

Mass Flow Accuracy

Compatible gases	Air, N ₂ , O ₂ , CH ₄	He, H ₂	Ar	CO ₂ , N ₂ O
Mass flow accuracy	± 1.5% reading or ± 0.2% full scale	± 1.8% full scale	± 1.5% reading or ± 0.5% full scale	100 SCCM – 2 SLPM: ± 1.5% reading or ± 0.5% full scale 5 SLPM – 20 SLPM: ± 2.0% reading or ± 1.0% full scale 50SLPM – 100 SLPM: ± 3.0% reading or ± 2.0% full scale

Sensor and Control Performance

Repeatability (2σ)	± 0.25% reading or ± 0.05% of full scale
Control and measurement range	0.1% – 100% of full scale (1,000:1 turndown ratio)
Temperature sensitivity	Mass flow zero and span shift: 0.05% of reading per °C from calibration conditions
Operating temperature	0 – 50 °C
Temperature accuracy	±1.5 °C
Typical control response time	As fast as 100ms
Typical warm up time	1 minute

Max Ranges

Dimensions

Weight

	Depth	Width	Height	
100 SCCM – 2 SLPM	0.88"	2.70"	1.55"	≈ 4.0 oz
	22.23 mm	68.6 mm	39.4 mm	≈ 116 g
5 SLPM – 20 SLPM	1.00"	3.31"	1.83"	≈ 6.0 oz
	25.4 mm	84.0 mm	46.5 mm	≈ 171 g
50 SLPM – 100 SLPM	1.38"	4.52"	2.06"	≈ 12.5 oz
	35 mm	114.8 mm	52.3 mm	≈ 355 g

Common industrial process port options

Dosing and batches with a built-in totalizer

Calibrated to flow any of 9 gases, including hydrogen



Automate your manual process. Eliminate guesswork and manual adjustments

Run sophisticated flow-control scripts using fast, robust MODBUS, ASCII, or use analog control

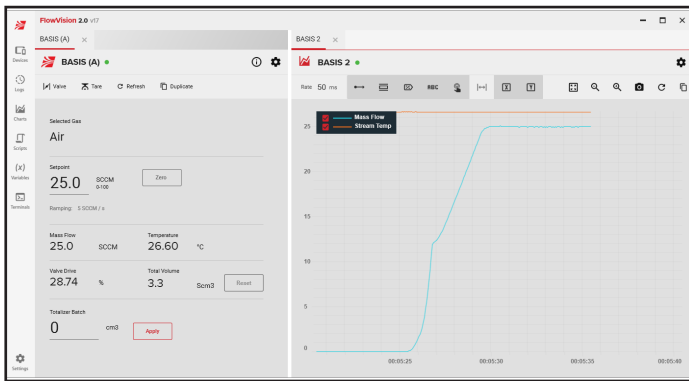
LED indicator shows power, active communications, and error states

Compact and durable metal flow body

MFCs with embedded valve

Applications

Sophisticated features



Communicates with our free FlowVision 2.0 software

- ▶ Powerful companion Flowvision 2.0 software for programming scripts, collecting data, and connecting multiple instruments in a process. Or use the built-in MODBUS or ASCII protocols.
- ▶ Built-in flow temperature measurement—get better, more relevant process data.
- ▶ Programmable setpoint ramping—let the instrument do the heavy lifting.
- ▶ Valve overrides—protect and control your process.
- ▶ Programmable communication watchdog—automated valve close when communication is lost.
- ▶ Advanced statistics reporting such as min, max, average, std deviation—more data, better insights.

Customize configurations

Talk to our engineers about configuring to suit your project

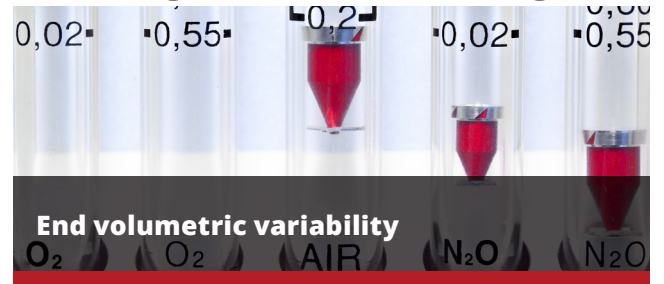


Rapid prototype of compact manifolds and gas mixing designs



Custom down ports or machined fittings

Custom gas or aerosol mixing



End volumetric variability
BASIS MFCs batch function ensures proportional rates to make gas mixtures. Get the right molar mix regardless of changes in upstream/downstream pressure, or environmental conditions. For atomizing and carrier gases, ensure a consistent flow.

Chemical processes



Automate bioreactor and fermentation control systems
Repeatable and scalable flow control is crucial to achieving high titers from upstream bio processes. BASIS flow controllers easily integrate into data systems.

Analytical equipment



Verify and optimize carrier gases in gas chromatography
Enable full system stability and ensure accurate compound detection by tightly regulating carrier gas flow.

Industrial processes



Improve process controls in glass production
BASIS mass flow devices are used in burners to control gases that heat the glass, as well as with shielding gases, and controlling thin film deposition.

Technical Data for **BASIS 2** Mass Flow Meters and Controllers

100 sccm full scale through 100 SLPM full scale

ACCURACY READINGS				
Fluids	Air, N ₂ , O ₂ , CH ₄	He, H ₂	Ar	CO ₂ , N ₂ O
Mass flow accuracy ¹	± 1.5% reading or ± 0.2% full scale ²	± 1.8% full scale	± 1.5% reading or ± 0.5% full scale ²	100 SCCM – 2 SLPM: 1.5% reading or 0.5% full scale ² 5 – 20 SLPM: 2.0% reading or 1.0% full scale ² 50 – 100 SLPM: 3.0% reading or 2.0% full scale ²

¹ Stated accuracy is at calibration conditions, after tare, under equilibrium conditions, includes repeatability and linearity.

² Whichever is greater.

SENSOR AND CONTROL PERFORMANCE	
Flow repeatability (2σ)	± 0.25% reading or ± 0.05% of full scale
Control and measurement range	0.1% – 100% of full scale (1,000:1 turndown ratio)
Temperature sensitivity	Mass flow zero and span shift: ± 0.05% of reading per °C from calibration conditions
Temperature accuracy	± 1.5 °C
Operating temperature range	0 – 50°C (ambient and gas)
Operating pressure range ³	Meters: 0 – 145 PSIG Controllers: 100 SCCM – 5 SLPM: 0 – 145 PSIG 10 SLPM: 0 – 100 PSIG 20 SLPM: 0 – 60 PSIG 50 – 100 SLPM: 0 – 145 PSIG
Valve function ⁴	Normally closed
Totalizer volume uncertainty	± 0.6% of reading in additional uncertainty
Typical control response time ⁴	As fast as 100 ms (T63), flow rate dependent, user-adjustable
Typical indication response time	< 6 ms, flow rate dependent
Typical warm-up time	1 minute (5 minutes optimal)

³ Custom valve options are available to increase operating pressure range on 10 SLPM and 20 SLPM models.

⁴ Applies to controllers only.

MECHANICAL	
Wetted materials	300-series stainless steel, brass, hard-anodized aluminum, FKM, NBR, FR4, SiO ₂ /SiNx/Si, ABLEBOND®, 84-3J, PBT UL 94V-0, tin, copper
Maximum pressure	Damage possible above 175 PSIG
Relative humidity range	95%, non-condensing
Ingress protection	IP40
Mounting orientation sensitivity	Calibrated in horizontal mounting orientation
Mounting holes	2× M3×0.5 threaded, ⌀ 0.236" [6 mm]

POWER AND COMMUNICATION	
Digital input and output options	RS-232 or RS-485
Digital data update rate	As fast as 176 Hz, baud rate and system dependent
Analog input and output	0-5Vdc or 4-20mA
Analog update rate	400 Hz
Analog signal accuracy	± 0.125% of full scale additional uncertainty Hz
Electrical connection	6-pin JST GH
Power requirements ⁵	Controller: 12–24 Vdc, 210 mA Meter: 12–24 Vdc, 12 mA

⁵ Add 40 mA to power requirements if equipped with 4-20 mA analog output.

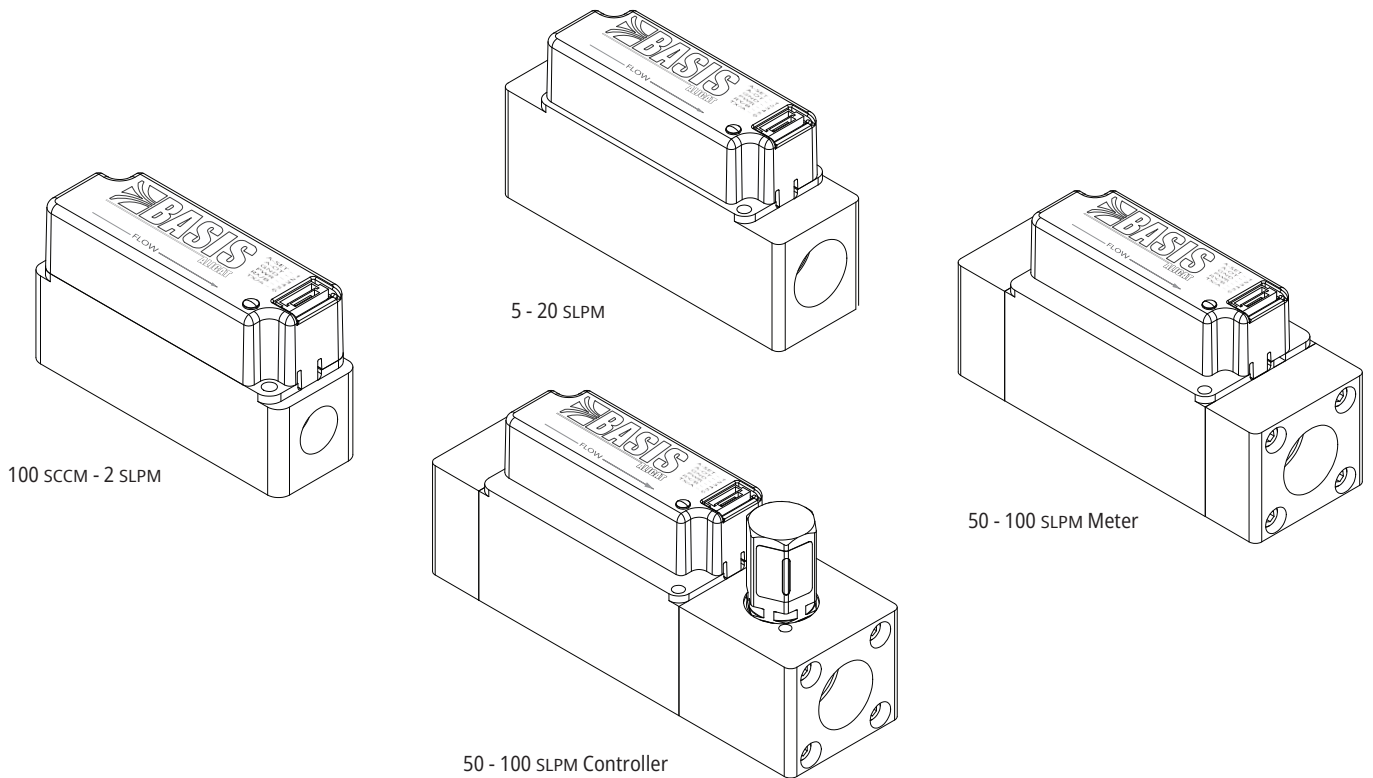
Technical Data for **BASIS 2** Mass Flow Meters and Controllers

100 sccm full scale through 100 SLPM full scale

FEATURES	
STP reference conditions	0°C, 20°C, 25°C, 70°F and 1 atm available, user-configurable
Gas selection	9 user-selectable gases stored internally. Compatibility: Air, N ₂ , O ₂ , CH ₄ , Ar, CO ₂ , N ₂ O, He, H ₂
Valve overrides	Hold, exhaust
Status LED	Power, serial activity, error

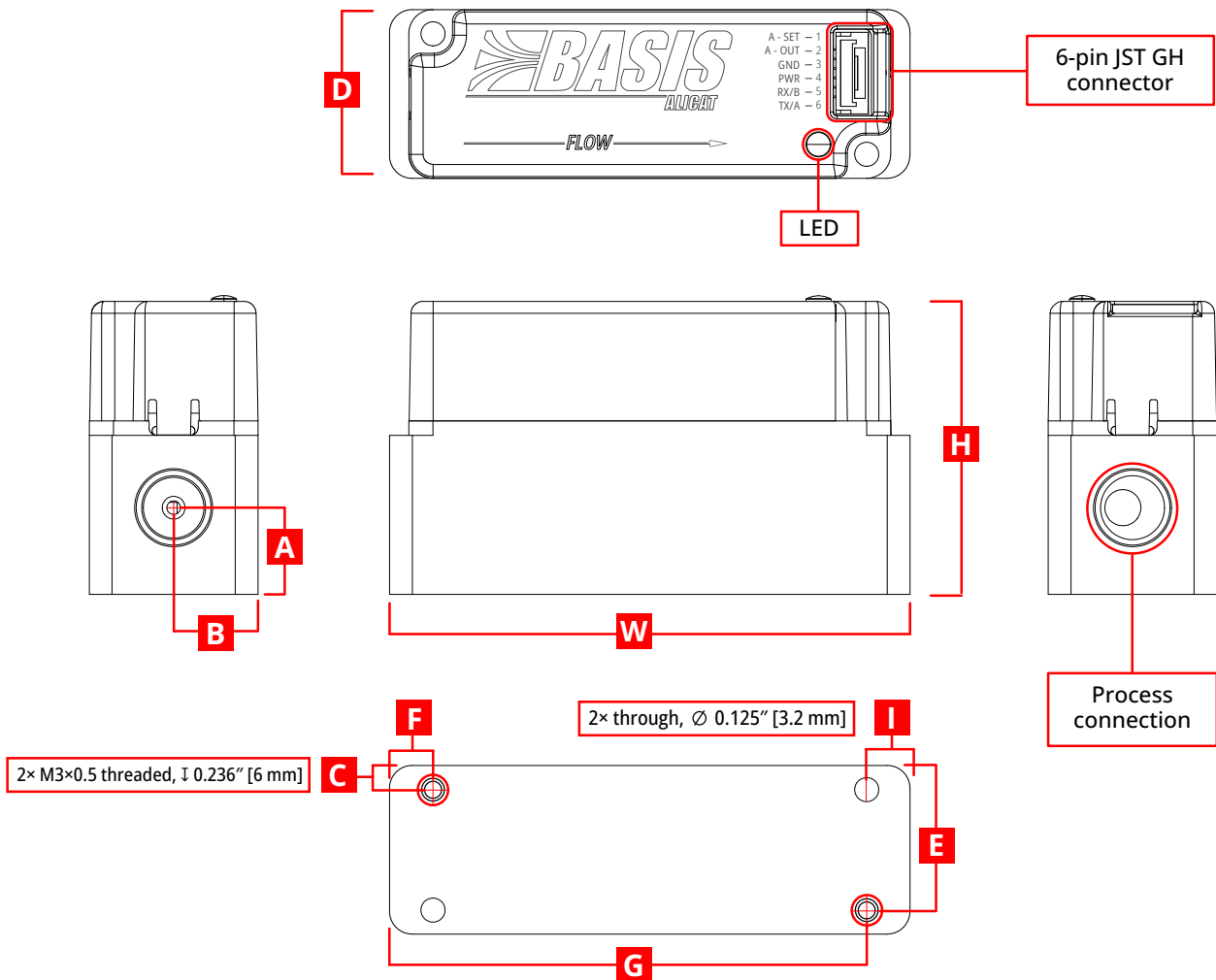
RANGE-SPECIFIC TECHNICAL DATA			
Full scale flow	Pressure drop at full scale when venting air to atmosphere		Process connections
	Controller	Meter	
100 SCCM	15.0 mbar	0.2 mbar	1/8" NPT female or SAE 4
200 SCCM	45.0 mbar	0.5 mbar	1/8" NPT female or SAE 4
500 SCCM	6.0 mbar	1.5 mbar	1/8" NPT female or SAE 4
1 SLPM	26.0 mbar	3.0 mbar	1/8" NPT female or SAE 4
2 SLPM	80.0 mbar	10.0 mbar	1/8" NPT female or SAE 4
5 SLPM	140.0 mbar	14.0 mbar	3/8" NPT female or SAE 6
10 SLPM	450.0 mbar	35.0 mbar	3/8" NPT female or SAE 6
20 SLPM	850.0 mbar	85.0 mbar	3/8" NPT female or SAE 6
50 SLPM	290.0 mbar	12.0 mbar	3/8" NPT female or SAE 6
100 SLPM	750.0 mbar	30.0 mbar	3/8" NPT female or SAE 6

Representative Examples



Technical Data for BASIS 2 Mass Flow Meters and Controllers

100 sccm full scale through 100 SLPM full scale



Full-scale flow	DIMENSIONS										WEIGHT
	Width	Depth	Height	A	B	C	E	F	G	I	
100 SCCM – 2 SLPM	2.70"	0.88"	1.55"	0.45"	0.44"	0.14"	0.73"	0.27"	2.43"	0.23"	≈ 4.0 oz
	68.6 mm	22.23mm	39.4 mm	11.4 mm	11.1 mm	3.61 mm	18.6 mm	6.86 mm	61.8 mm	5.7 mm	≈ 116 g
5 – 20 SLPM	3.31"	1.00"	1.83"	0.58"	0.50"	0.15"	0.85"	0.47"	2.83"	0.52"	≈ 6.0 oz
	84.0 mm	25.4 mm	46.5 mm	14.8 mm	12.7 mm	3.7 mm	21.7 mm	12.0 mm	72.0 mm	13.1 mm	≈ 171 g
50 – 100 SLPM Meter	3.75"	1.38"	1.91"	0.58"	1.5"	0.11"	1.27"	0.74"	3.01"	0.74"	≈ 9.5 oz
	95.25 mm	35.0 mm	48.4 mm	14.7 mm	38.1 mm	2.7 mm	32.3 mm	18.8 mm	76.5 mm	17.5 mm	≈ 270 g
50 – 100 SLPM Controller	4.52"	1.38"	2.06"	0.58"	0.69"	0.11"	1.27"	0.74"	3.01"	1.5"	≈ 12.3 oz
	114.8 mm	35.0 mm	52.3 mm	14.7 mm	17.5 mm	2.7 mm	32.3 mm	18.7 mm	76.5 mm	38.1 mm	≈ 350 g



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