

Technical Data for MB-Series Mass Flow Meters

0.5 sccm full scale through 5 sccm full scale

Standard specifications. Consult Alicat for available options.



+1 (888) 290-6060
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| SENSOR PERFORMANCE | |
|---|--|
| Mass Flow Accuracy at calibration conditions ¹ | ±0.8% of reading and ±0.2% of full scale |
| High Accuracy Option ¹ | ±0.4% of reading and ±0.2% of full scale Available for ≥5 SCCM models |
| Bidirectional Option ¹ | ±0.2% of full scale in addition to base accuracy (above) |
| Repeatability (2σ) | ±(0.2% of reading + 0.02% of full scale) |
| Flow Measurement Range | 0.01–100% of full scale |
| Temperature Sensitivity | Mass flow zero shift and span shift: 0.02% of full scale per °C from 25°C |
| Pressure Sensitivity | Mass flow zero shift and span shift: ±(0.08% of reading + 0.02% of full scale) per atmosphere from calibration conditions |
| Operating Temperature Range | –10–60°C (expanded range available) |
| Temperature Accuracy | ±0.75°C |
| Operating Pressure Full Scale | 160 PSIA (additional options available) |
| Pressure Accuracy above 1 atm | ±0.5% of reading |
| Pressure Accuracy below 1 atm | ±0.07 PSIA |
| Totalizer Volume Uncertainty | ±0.5% of reading additional uncertainty |
| Sensor Response Time | <1 ms |
| Typical Indication Response Time ² | 100–1000 ms (flow rate dependent) |

¹ Stated accuracy is after tare under equilibrium conditions.

Extreme gas behavior (especially near state boundaries) can introduce additional flow uncertainties.

² Indication response time includes user adjustable averaging up to 255 ms.

| MECHANICAL | |
|----------------------------|--|
| Minimum Operating Pressure | 11.5 PSIA common mode pressure (lower operating pressures available) Differential pressure must exceed 1 PSID |
| Maximum Operating Pressure | Damage possible above 175 PSIA common mode pressure Damage possible above 75 PSID differential pressure |
| Ingress Protection | IP40 (consult Alicat for weatherproofing options) |
| Humidity Range | 0–95%, non-condensing |
| Wetted Materials | 302 / 303 stainless steel, Viton®, polyamide, alumina, glass, gold, silicon, heat-cured epoxy, heat-cured silicone rubber |

| COMMUNICATIONS | |
|-----------------------------------|---|
| Digital I/O Options | Serial over Micro-USB B |
| Digital Data Update Rate | 40 Hz at 19200 baud |
| Display Update Rate | 10 Hz |
| Battery Life (contrast dependent) | Monochrome screen: 18 hours, 14 hours backlit Color TFT: 8 hours |

| FEATURES | |
|--|--|
| STP Reference Conditions | 25°C and 1 atm (default), user configurable |
| NTP Reference Conditions | 0°C and 1 atm (default), user configurable |
| Monochrome LCD or Color TFT Display with integrated touchpad | Simultaneously displays mass flow, volumetric flow, temperature, and pressure |
| 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% precision. |

Technical Data for MB-Series Mass Flow Meters

0.5 sccm full scale through 5 sccm full scale

Standard specifications. Consult Alicat for available options.



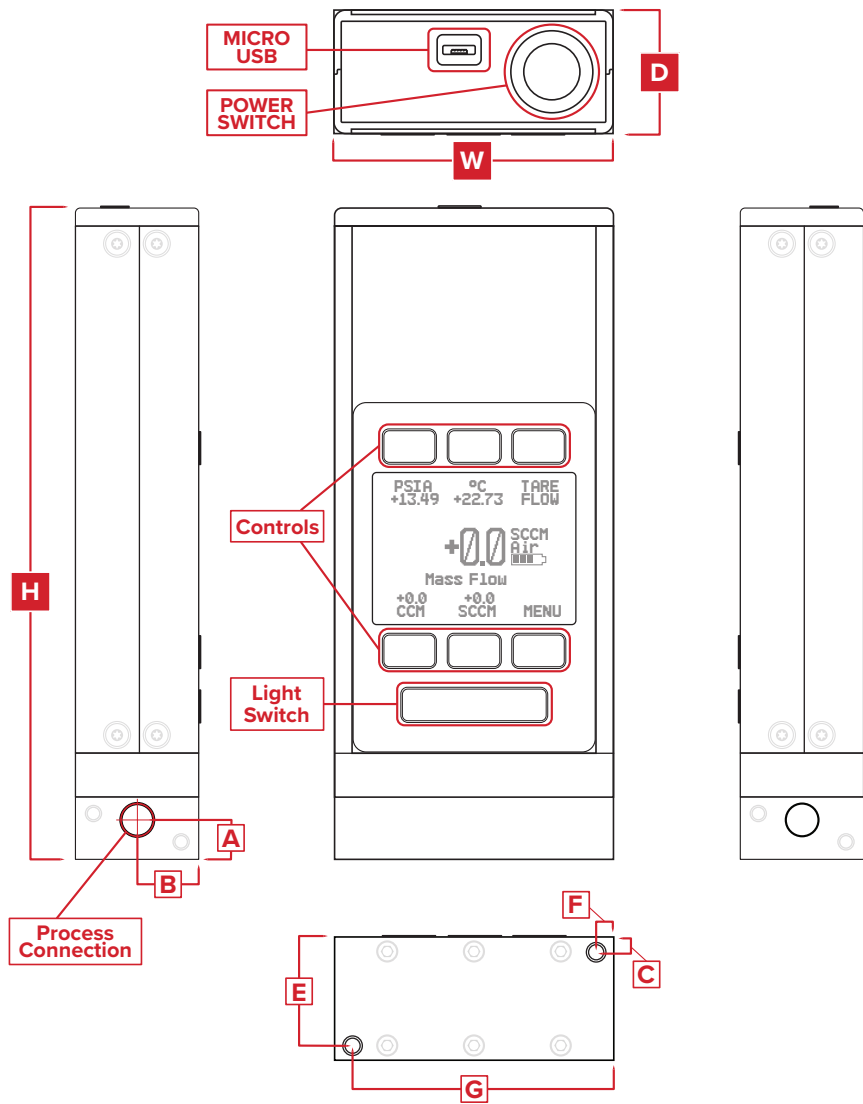
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| RANGE-SPECIFIC TECHNICAL DATA | | | |
|-------------------------------|---|--|--------------------------------|
| Full scale flow | Pressure drop at full scale flow ³ | Process connections ⁴ | Mount tap size |
| 0.5–5 sccm | 1.0 PSID | M5 female thread (10-32 compatible) ⁵ | 2× 8-32 UNC 0.175 in [4.45 mm] |

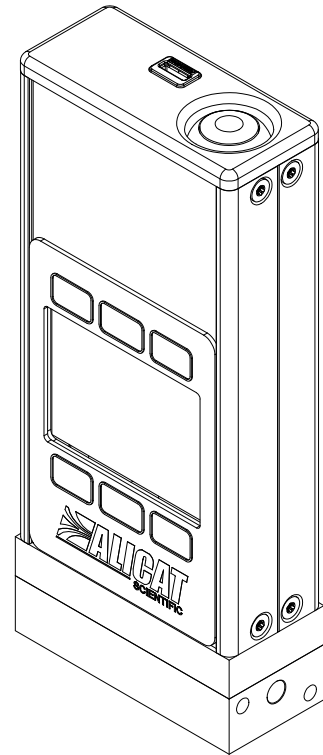
³ Lower pressure drops available, please see our WHISPER-Series mass flow meters at www.alicat.com/mwb.

⁴ Consult Alicat for available process connection options, such as: compression, face seal, push-to-connect, BSPP, SAE, or Swagelok (including tube, VCO, and VCR).

⁵ Shipped with Buna-N O-Ring face seal to 1/8" female NPT fittings.



Representative Example



0.5 sccm

| DIMENSIONS | | | | | | | | | | |
|-----------------|----------|-----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Full scale flow | Weight | Height | Width | Depth | A | B | C | E | F | G |
| 0.5–5 sccm | ≈ 1.2 lb | 5.543 in | 2.375 in | 1.050 in | 0.336 in | 0.525 in | 0.125 in | 0.925 in | 0.150 in | 2.225 in |
| | ≈ 0.5 kg | 140.79 mm | 60.33 mm | 26.67 mm | 8.53 mm | 13.34 mm | 3.18 mm | 23.50 mm | 3.81 mm | 56.52 mm |

Technical Data for **MB-Series** Mass Flow Meters

10 sccm full scale through **20 SLPM** full scale

Standard specifications. Consult Alicat for available options.



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| SENSOR PERFORMANCE | |
|---|--|
| Mass Flow Accuracy at calibration conditions ¹ | ±0.6% of reading or ±0.1% of full scale, whichever is greater |
| High Accuracy Option ¹ | ±0.5% of reading or ±0.1% of full scale, whichever is greater |
| Bidirectional Option ¹ | No additional uncertainties |
| Repeatability (2σ) | ±(0.1% of reading + 0.02% of full scale) |
| Flow Measurement Range | 0.01–100% of full scale |
| Temperature Sensitivity | 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 |
| 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 |
| Operating Temperature Range | –10–60°C (expanded range available) |
| Temperature Accuracy | ±0.75°C |
| Operating Pressure Full Scale | 160 PSIA (additional options available) |
| Pressure Accuracy above 1 atm | ±0.5% of reading |
| Pressure Accuracy below 1 atm | ±0.07 PSIA |
| Totalizer Volume Uncertainty | ±0.5% of reading additional uncertainty |
| Sensor Response Time | <1 ms |
| Typical Indication Response Time ² | <10 ms (flow rate dependent) |
| Typical Warm-Up Time | <1 s |

1 Stated accuracy is after tare under equilibrium conditions.
Extreme gas behavior (especially near state boundaries) can introduce additional flow uncertainties.

2 Indication response time includes user adjustable averaging up to 255 ms.

| MECHANICAL | |
|----------------------------|--|
| Minimum Operating Pressure | 11.5 PSIA common mode pressure (lower operating pressures available) Differential pressure must exceed 1 PSID |
| Maximum Operating Pressure | Damage possible above 175 PSIA common mode pressure Damage possible above 75 PSID differential pressure |
| Ingress Protection | IP40 (consult Alicat for weatherproofing options) |
| Humidity Range | 0–95%, non-condensing |
| Wetted Materials | 302 / 303 stainless steel, Viton®, polyamide, alumina, glass, gold, silicon, heat-cured epoxy, heat-cured silicone rubber |

| COMMUNICATIONS | |
|-----------------------------------|---|
| Digital I/O Options | Serial over Micro-USB B |
| Digital Data Update Rate | 40 Hz at 19200 baud |
| Display Update Rate | 10 Hz |
| Battery Life (contrast dependent) | Monochrome screen: 18 hours, 14 hours backlit Color TFT: 8 hours |

| FEATURES | |
|--|--|
| STP Reference Conditions | 25°C and 1 atm (default), user configurable |
| NTP Reference Conditions | 0°C and 1 atm (default), user configurable |
| Monochrome LCD or Color TFT Display with integrated touchpad | Simultaneously displays mass flow, volumetric flow, temperature, and pressure |
| 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% precision. |

Technical Data for MB-Series Mass Flow Meters

10 sccm full scale through 20 SLPM full scale

Standard specifications. Consult Alicat for available options.



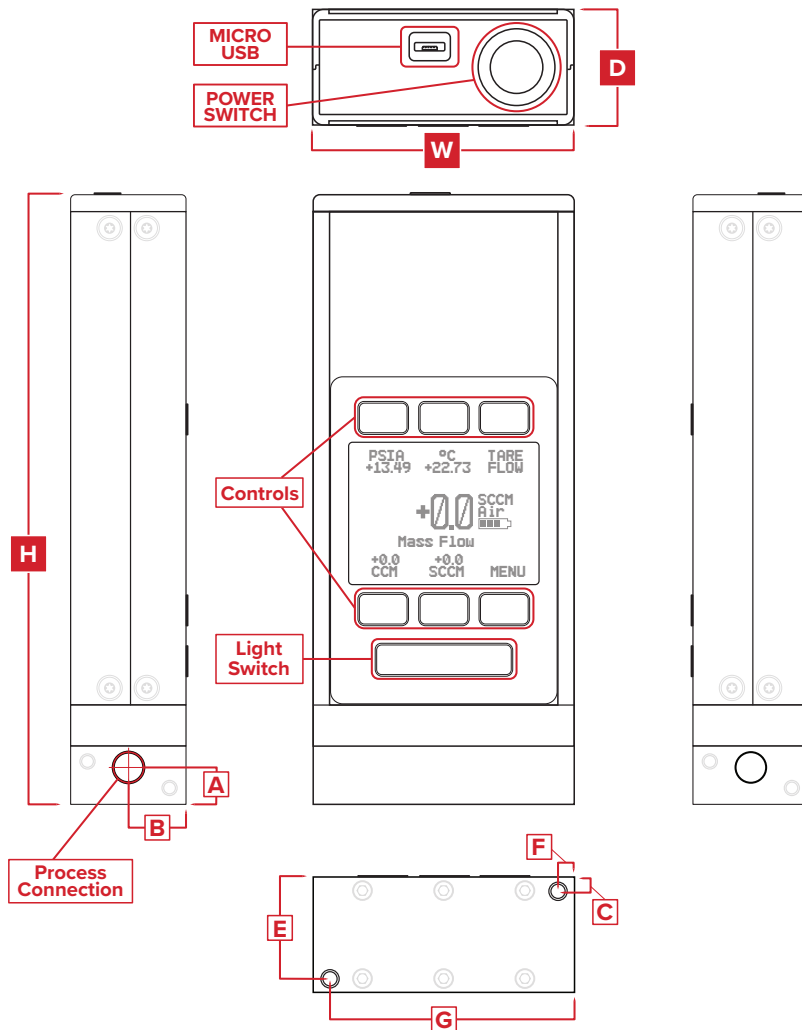
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| RANGE-SPECIFIC TECHNICAL DATA | | | |
|-------------------------------|---|--|--------------------------------|
| Full scale flow | Pressure drop at full scale flow ³ | Process connections ⁴ | Mount tap size |
| 10–50 sccm | 1.0 PSID | M5 female thread (10-32 compatible) ⁵ | 2× 8-32 UNC 0.175 in [4.45 mm] |
| 100 sccm–20 SLPM | 1.0 PSID | 1/8" NPT female | 2× 8-32 UNC 0.350 in [8.89 mm] |

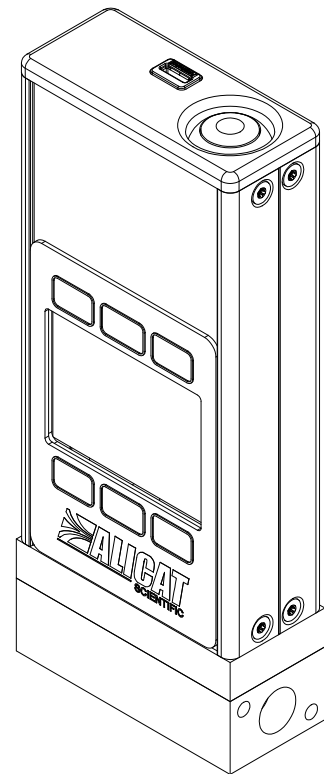
3 Lower pressure drops available, please see our WHISPER-Series mass flow meters at www.alicat.com/mwb.

4 Consult Alicat for available process connection options, such as: compression, face seal, push-to-connect, BSPP, SAE, or Swagelok (including tube, VCO, and VCR).

5 Shipped with Buna-N O-Ring face seal to 1/8" female NPT fittings.



Representative Example



20 SLPM

| DIMENSIONS | | | | | | | | | | |
|------------------|----------|-----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Full scale flow | Weight | Height | Width | Depth | A | B | C | E | F | G |
| 10–50 sccm | ≈ 1.1 lb | 5.713 in | 2.375 in | 1.050 in | 0.336 in | 0.525 in | 0.125 in | 0.925 in | 0.150 in | 2.225 in |
| | ≈ 0.5 kg | 145.11 mm | 60.33 mm | 26.67 mm | 8.53 mm | 13.34 mm | 3.18 mm | 23.50 mm | 3.81 mm | 56.52 mm |
| 100 sccm–20 SLPM | ≈ 1.1 lb | 5.713 in | 2.375 in | 1.050 in | 0.350 in | 0.525 in | 0.125 in | 0.925 in | 0.150 in | 2.225 in |
| | ≈ 0.5 kg | 145.11 mm | 60.33 mm | 26.67 mm | 8.89 mm | 13.34 mm | 3.18 mm | 23.50 mm | 3.81 mm | 56.52 mm |

Technical Data for **MB-Series** Mass Flow Meters

50 SLPM full scale through 5000 SLPM full scale

Standard specifications. Consult Alicat for available options.



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| SENSOR PERFORMANCE | |
|---|--|
| Mass Flow Accuracy at calibration conditions ¹ | ±0.8% of reading and ±0.2% of full scale |
| High Accuracy Option ¹ | ±0.4% of reading and ±0.2% of full scale Available for ≤500 SLPM models |
| Bidirectional Option ¹ | ±0.2% of full scale in addition to base accuracy (above) |
| Repeatability (2σ) | ±(0.2% of reading + 0.02% of full scale) |
| Flow Measurement Range | 0.01–100% of full scale |
| Temperature Sensitivity | Mass flow zero shift and span shift: 0.02% of full scale per °C from 25°C |
| Pressure Sensitivity | Mass flow zero shift and span shift: ±(0.08% of reading + 0.02% of full scale) per atmosphere from calibration conditions |
| Operating Temperature Range | –10–60°C (expanded range available) |
| Temperature Accuracy | ±0.75°C |
| Operating Pressure Full Scale | 160 PSIA (additional options available) |
| Pressure Accuracy above 1 atm | ±0.5% of reading |
| Pressure Accuracy below 1 atm | ±0.07 PSIA |
| Totalizer Volume Uncertainty | ±0.5% of reading additional uncertainty |
| Sensor Response Time | <1 ms |
| Typical Indication Response Time ² | 65–255 ms (flow rate dependent) |
| Typical Warm-Up Time | <1 s |

1 Stated accuracy is after tare under equilibrium conditions.
Extreme gas behavior (especially near state boundaries) can introduce additional flow uncertainties.

2 Indication response time includes user adjustable averaging up to 255 ms.

| MECHANICAL | |
|----------------------------|--|
| Minimum Operating Pressure | 11.5 PSIA common mode pressure (lower operating pressures available) Differential pressure must exceed model pressure drop, see below for details |
| Maximum Operating Pressure | Damage possible above 175 PSIA common mode pressure Damage possible above 75 PSID differential pressure |
| Ingress Protection | IP40 (consult Alicat for weatherproofing options) |
| Humidity Range | 0–95%, non-condensing |
| Wetted Materials | 302 / 303 stainless steel, Viton®, polyamide, alumina, glass, gold, silicon, heat-cured epoxy, heat-cured silicone rubber |

| COMMUNICATIONS | |
|-----------------------------------|---|
| Digital I/O Options | Serial over Micro-USB B |
| Digital Data Update Rate | 40 Hz at 19200 baud |
| Display Update Rate | 10 Hz |
| Battery Life (contrast dependent) | Monochrome screen: 18 hours, 14 hours backlit Color TFT: 8 hours |

Technical Data for **MB-Series** Mass Flow Meters

50 SLPM full scale through **5000 SLPM** full scale

Standard specifications. Consult Alicat for available options.



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| FEATURES | |
|--|--|
| STP Reference Conditions | 25°C and 1 atm (default), user configurable |
| NTP Reference Conditions | 0°C and 1 atm (default), user configurable |
| Monochrome LCD or Color TFT Display with integrated touchpad | Simultaneously displays mass flow, volumetric flow, temperature, and pressure |
| 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% precision. |

| RANGE-SPECIFIC TECHNICAL DATA | | | |
|-------------------------------|---|---|--------------------------------|
| Full scale flow | Pressure drop at full scale flow ³ | Process connections ⁴ | Mount tap size |
| 50 SLPM | 2.0 PSID | ¼" NPT female | 4× 8-32 UNC 0.375 in [9.53 mm] |
| 100 SLPM | 2.5 PSID | ¼" NPT female | 4× 8-32 UNC 0.375 in [9.53 mm] |
| 250 SLPM | 2.1 PSID | ½" NPT female | 4× 8-32 UNC 0.375 in [9.53 mm] |
| 500 SLPM | 4.0 PSID | ¾" NPT female | 4× 8-32 UNC 0.375 in [9.53 mm] |
| 1000 SLPM | 6.0 PSID | ¾" NPT female | 4× 8-32 UNC 0.375 in [9.53 mm] |
| 2000 SLPM | 5.0 PSID | ¾" NPT female (1¼" NPT connection available) | 4× 8-32 UNC 0.330 in [8.38 mm] |
| 3000 SLPM | 7.1 PSID | 1¼" NPT female | 4× 8-32 UNC 0.330 in [8.38 mm] |
| 5000 SLPM | 3.4 PSID | 2" NPT female | 4× 8-32 UNC 0.300 in [7.62 mm] |

³ Lower pressure drops available, please see our WHISPER-Series mass flow meters at www.alicat.com/mwb.

⁴ Consult Alicat for available process connection options, such as: compression, face seal, push-to-connect, BSPP, SAE, or Swagelok (including tube, VCO, and VCR).

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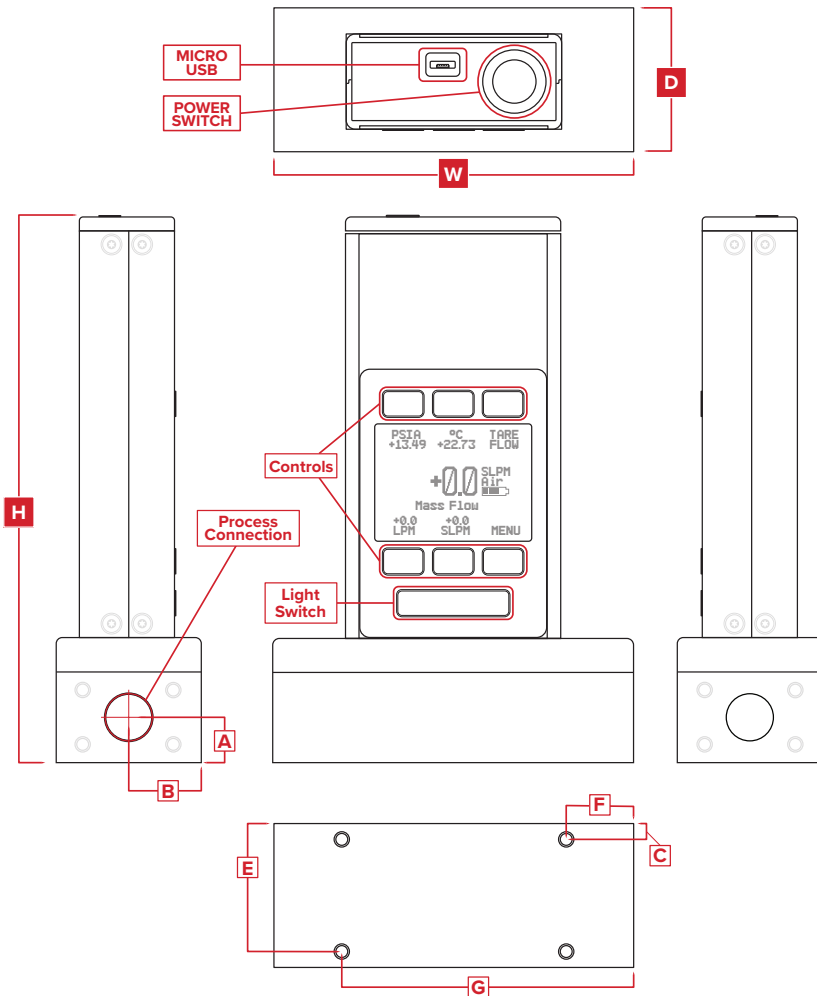
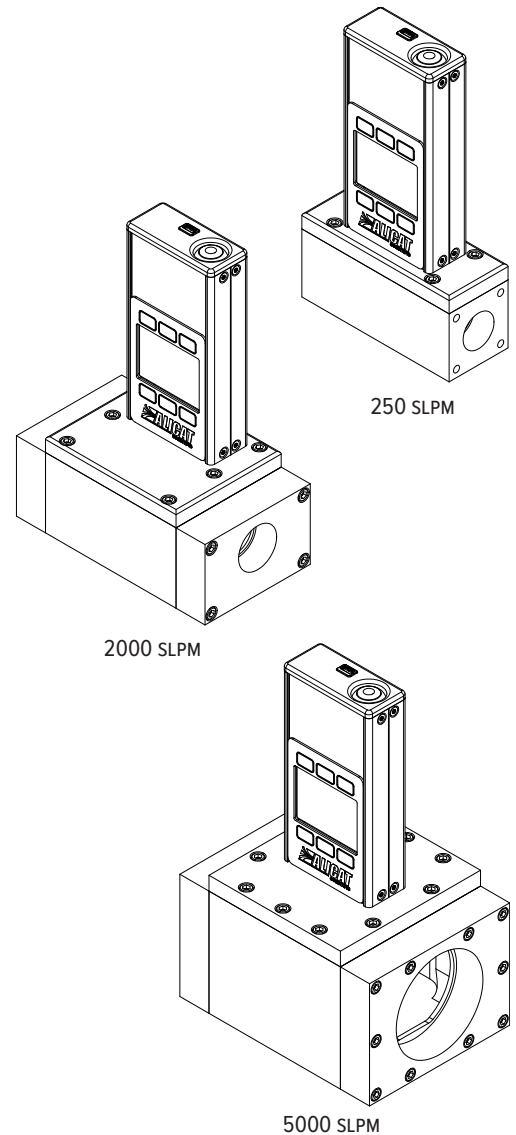
50 SLPM full scale through 5000 SLPM full scale

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Representative Examples



| DIMENSIONS | | | | | | | | | | |
|------------------------|-----------|-----------|-----------|----------|----------|----------|----------|----------|----------|----------|
| Full scale flow | Weight | Height | Width | Depth | A | B | C | E | F | G |
| 50 SLPM– 100 SLPM | ≈ 2.8 lb | 6.013 in | 4.000 in | 1.600 in | 0.500 in | 0.800 in | 0.175 in | 1.425 in | 0.750 in | 3.250 in |
| | ≈ 1.3 kg | 152.73 mm | 101.60 mm | 40.64 mm | 12.70 mm | 20.32 mm | 4.45 mm | 36.20 mm | 19.05 mm | 82.55 mm |
| 250 SLPM– 1000 SLPM | ≈ 3.6 lb | 6.613 in | 4.000 in | 1.600 in | 0.800 in | 0.800 in | 0.175 in | 1.425 in | 0.750 in | 3.250 in |
| | ≈ 1.6 kg | 167.97 mm | 101.60 mm | 40.64 mm | 20.32 mm | 20.32 mm | 4.45 mm | 36.20 mm | 19.05 mm | 82.55 mm |
| 2000 SLPM | ≈ 4.9 lb | 6.933 in | 5.200 in | 2.900 in | 1.120 in | 1.450 in | 0.200 in | 2.700 in | 1.350 in | 3.850 in |
| | ≈ 2.2 kg | 176.10 mm | 132.08 mm | 73.66 mm | 28.45 mm | 36.83 mm | 5.08 mm | 68.58 mm | 34.29 mm | 97.79 mm |
| 3000 SLPM | ≈ 4.9 lb | 6.933 in | 5.200 in | 2.900 in | 0.960 in | 1.450 in | 0.200 in | 2.700 in | 1.350 in | 3.850 in |
| | ≈ 2.2 kg | 176.10 mm | 132.08 mm | 73.66 mm | 24.38 mm | 36.83 mm | 5.08 mm | 68.58 mm | 34.29 mm | 97.79 mm |
| 5000 SLPM | ≈ 14.4 lb | 7.913 in | 5.200 in | 3.840 in | 1.450 in | 1.920 in | 0.295 in | 3.545 in | 1.350 in | 3.850 in |
| | ≈ 6.5 kg | 200.99 mm | 132.08 mm | 97.54 mm | 36.83 mm | 48.77 mm | 7.49 mm | 90.04 mm | 34.29 mm | 97.79 mm |