

# Technical Data for Alicat MC and MCR Mass Flow Controllers 0 to 0.5SCCM Full Scale through 0 to 3000SLPM Full Scale

## Standard Operating Specifications (Contact Alicat for available options)

| Specification                                   | MC & MCR Series Mass Flow Controller   | Description   |
|---|--|---|
| Accuracy  | ± (0.8% of Reading + 0.2% of Full Scale)   | At calibration conditions after tare                    |
| High Accuracy Option <sup>1</sup>               | ± (0.4% of Reading + 0.2% of Full Scale)   | At calibration conditions after tare                    |
| Repeatability                                   | ± 0.2%   | Full Scale  |
| Operating Range                                 | 1/2% to 100% Full Scale  | Measure and Control                                     |
| Turndown Ratio                                  | 200 : 1  |   |
| Typical Response Time                           | 100  | Milliseconds (Adjustable)                               |
| Standard Conditions (STP)                       | 25°C & 14.696PSIA  | Mass Reference Conditions                               |
| Operating Temperature                           | -10 to +50   | °Celsius  |
| Zero Shift                                      | 0.02%  | Full Scale / °Celsius / Atm                             |
| Span Shift                                      | 0.02%  | Full Scale / °Celsius / Atm                             |
| Humidity Range                                  | 0 to 100%  | Non-Condensing  |
| Controllable Flow Rate                          | 102.4%   | Full Scale  |
| Maximum Pressure                                | 145  | PSIG  |
| Input /Output Signal Digital                    | Mass Flow, Volumetric Flow, Pressure & Temperature   | RS-232 Serial or RS-485 Serial or PROFIBUS <sup>2</sup> |
| Input / Output Signal Analog                    | Mass Flow  | 0-5Vdc  |
| Optional Input / Output Signal Secondary Analog | Mass Flow, Volumetric Flow, Pressure or Temperature  | 0-5Vdc or 0-10Vdc or 4-20mA                             |
| Electrical Connections                          | 8 Pin Mini-DIN, DB9 or DB15  |   |
| Supply Voltage                                  | <b>MC:</b> 12 to 30 Vdc (15-30Vdc for 4-20mA outputs)<br><b>MCR:</b> 24 to 30 Vdc  |   |
| Supply Current                                  | <b>MC:</b> 0.250Amp<br><b>MCR:</b> 0.750Amp  |   |
| Mounting Attitude Sensitivity                   | <b>MC:</b> None<br><b>MCR:</b> Mount with valve cylinder vertical & upright  |   |
| Warm-up Time                                    | < 1  | Second  |
| Wetted Materials <sup>3</sup>                   | <b>MC:</b> 303 & 302 Stainless Steel, Viton®, Silicone RTV (Rubber), Glass Reinforced Nylon, Aluminum, Brass, 430FR Stainless Steel, Silicon, Glass.<br><b>MCR:</b> 303 & 302 Stainless Steel, Viton®, Silicone RTV (Rubber), Glass Reinforced Nylon, Aluminum, 416 Stainless Steel, Nickel, Silicon, Glass. |   |

- High Accuracy option not available for units ranged over 500SLPM.
- If selecting PROFIBUS no analog signal is available. PROFIBUS units do not have the display. See PROFIBUS specifications for PROFIBUS supply voltages and currents.
- If your application demands a different material, please contact info@alicat.com or 888-290-6060 for available options.

## Mechanical Specifications

| Full Scale Flow Mass Controller | Mechanical Dimensions   | Process Connections <sup>1</sup>  | Pressure Drop <sup>2</sup> (PSID) |
|---------------------------------|-------------------------|-----------------------------------|-----------------------------------|
| <b>MC 0.5SCCM to 50SCCM</b>     | 3.9"H x 3.4"W x 1.1"D   | <b>M-5 (10-32) Female Thread*</b> | 1.0                               |
| <b>MC 100SCCM to 500SCCM</b>    | 4.1"H x 3.6"W x 1.1"D   | 1/8" NPT Female                   | 1.0                               |
| <b>MC 1SLPM</b>                 |                         |                                   | 1.5                               |
| <b>MC 2SLPM</b>                 |                         |                                   | 3.0                               |
| <b>MC 5SLPM</b>                 |                         |                                   | 2.0                               |
| <b>MC 10SLPM</b>                |                         |                                   | 5.5                               |
| <b>MC 20SLPM</b>                |                         |                                   | 20.0                              |
| <b>MC 50SLPM</b>                | 4.4"H x 6.4"W x 2.3"D   | 1/4" NPT Female                   | 9.0                               |
| <b>MC 100SLPM</b>               |                         |                                   | 11.7                              |
| <b>MCR 100SLPM</b>              | 5.5"H x 7.7"W x 2.3"D   | 1/4" NPT Female                   | 3.2                               |
| <b>MCR 250SLPM</b>              | 5.5"H x 7.7"W x 2.3"D   | 1/2" NPT Female                   | 2.4                               |
| <b>MCR 500SLPM</b>              | 5.5"H x 7.4"W x 2.3"D   | 3/4" NPT Female                   | 6.5                               |
| <b>MCR 1000SLPM</b>             |                         |                                   | 14.0                              |
| <b>MCR 1500SLPM</b>             |                         |                                   | 17.0                              |
| <b>MCR 2000SLPM</b>             |                         |                                   | 28.6                              |
| <b>MCR 3000SLPM</b>             | 5.5"H x 8.9" W x 2.9" D | 1-1/4" NPT Female                 | 16.8                              |

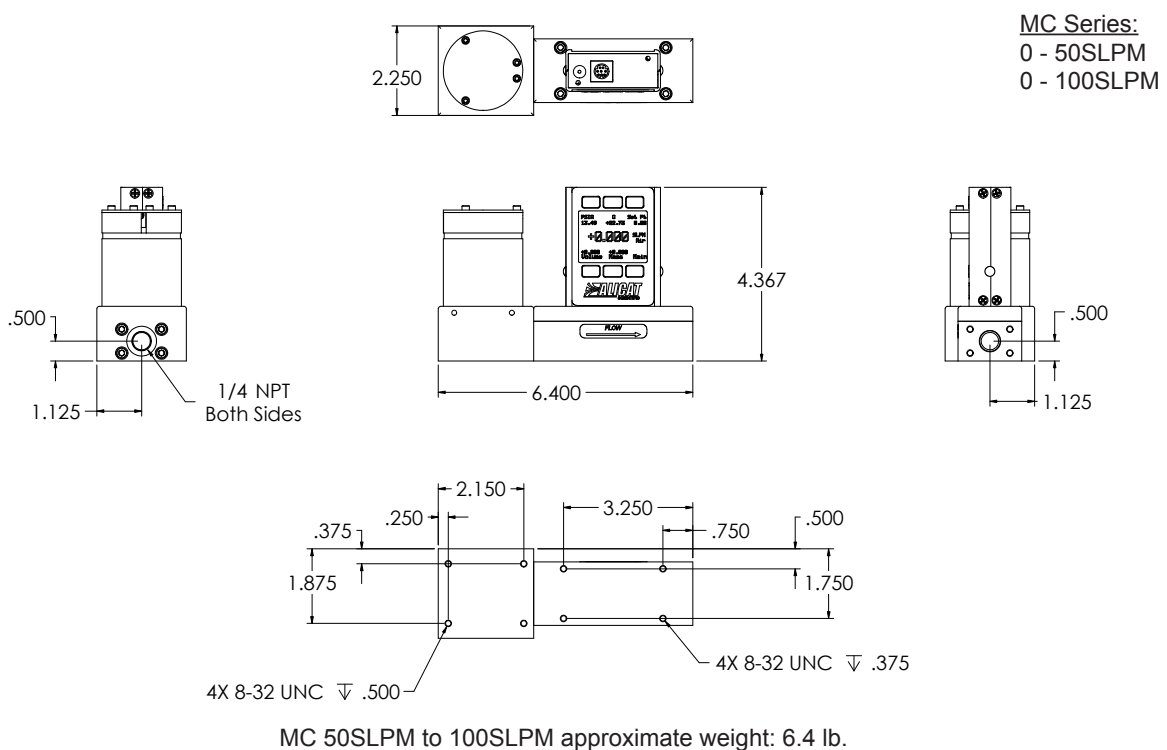
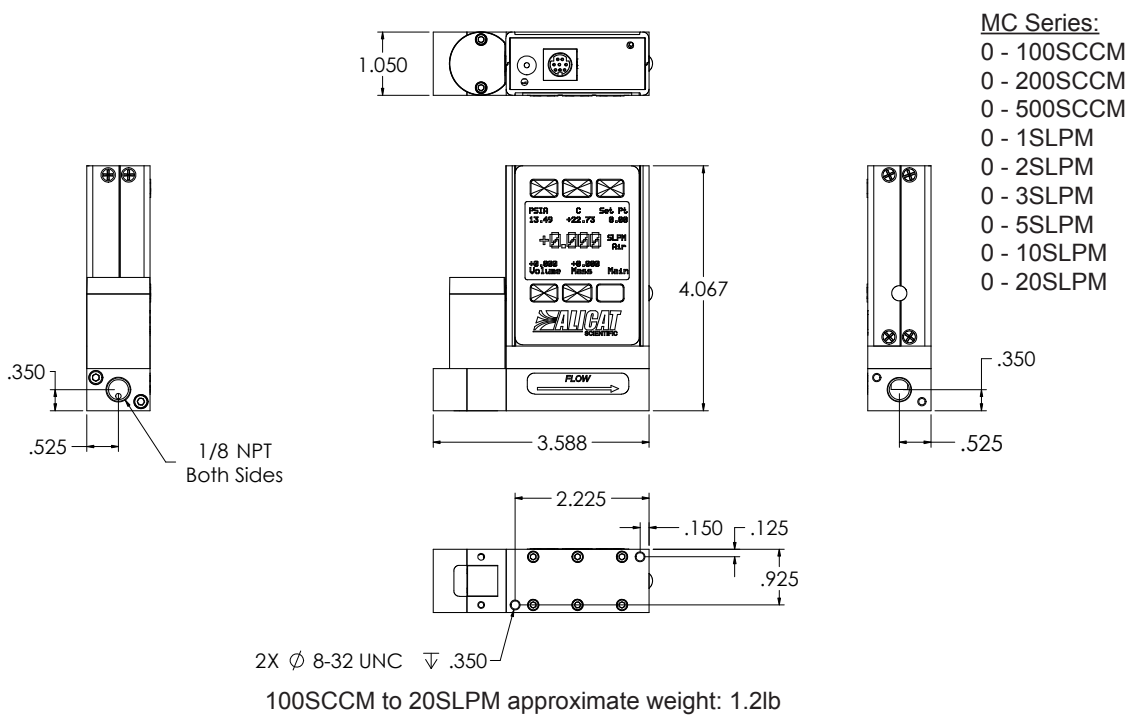
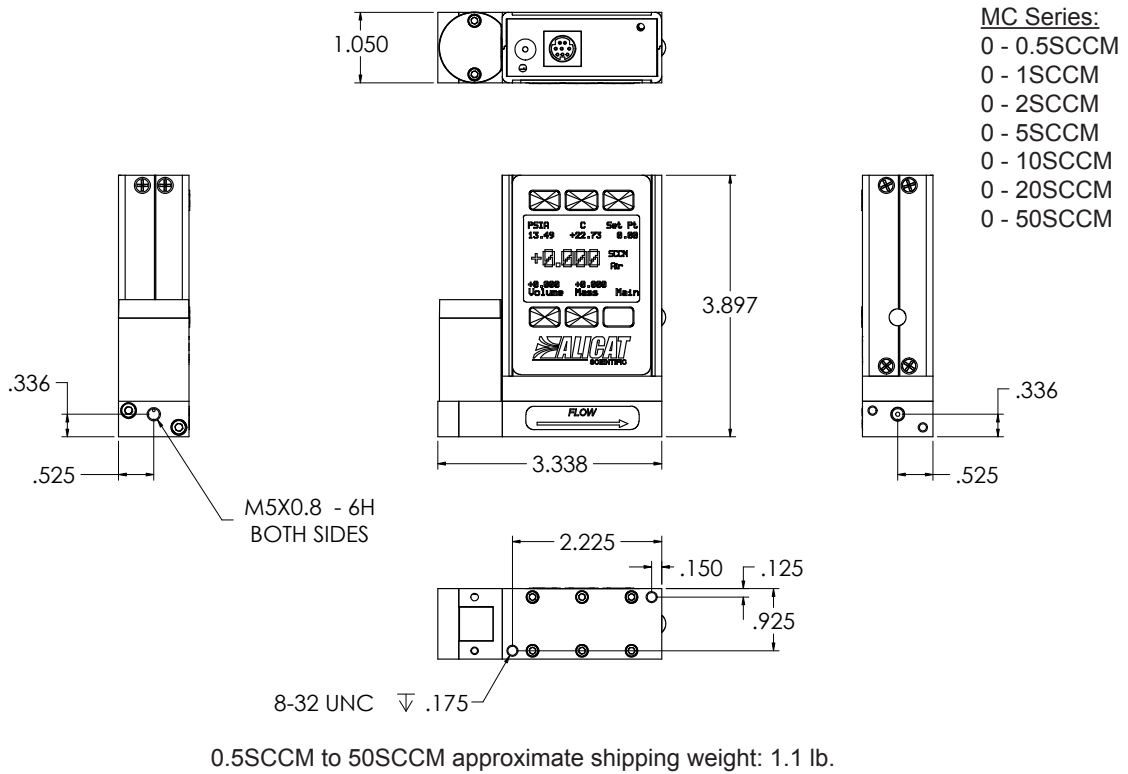
\* Units ≤50SCCM F.S. are shipped with M-5 (10-32) Male Buna-N O-ring face seal to 1/8" Female NPT fittings.

These adaptor fittings were selected for customer convenience in process connection. It should be noted that the 1/8" Female NPT introduces additional dead volume. To minimize dead volume, please see [Accessories](#) for the M-5 (10-32) Male to 1/8"OD compression fitting.

- Compatible with Beswick®, Swagelok® tube, Parker®, face seal, push connect and compression adapter fittings.
- Venting to atmosphere. Lower Pressure Drops Available, Please contact info@alicat.com or 888-290-6060.

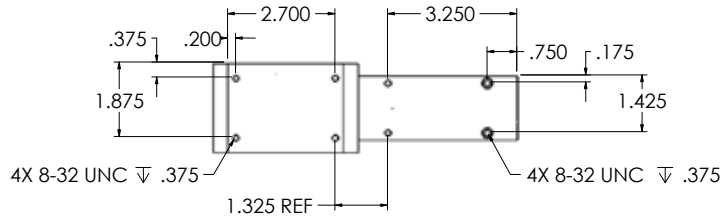
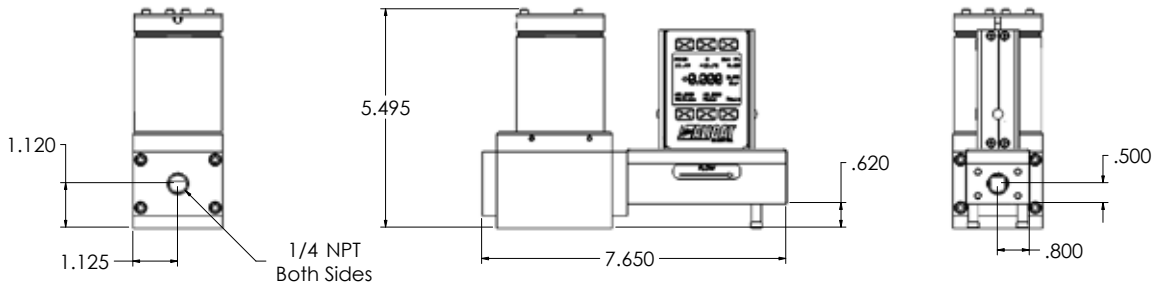
## Standard Compatible Gas List for MC and MCR Series Controllers

|    |                 |      |    |                     |         |   |  |        |
|----|-----------------|------|----|---------------------|---------|---|--|--------|
| 0  | Air             | Air  | 12 | Propane             | C3H8    | 24  | 75% CO2 / 25% Ar                               | C-75   |
| 1  | Argon           | Ar   | 13 | normal-Butane       | n-C4H10 | 25  | 75% Ar / 25% He                                | A-75   |
| 2  | Methane         | CH4  | 14 | Acetylene           | C2H2    | 26  | 75% He / 25% Ar                                | A-25   |
| 3  | Carbon Monoxide | CO   | 15 | Ethylene            | C2H4    | 27  | 90% He / 7.5% Ar / 2.5% CO2<br>Helistar® A1025 | A1025  |
| 4  | Carbon Dioxide  | CO2  | 16 | iso-Butane          | i-C4H10 | 28  | 90% Ar / 8% CO2 / 2% O2<br>Stargon® CS         | Star29 |
| 5  | Ethane          | C2H6 | 17 | Krypton             | Kr      | 29  | 95% Ar / 5% CH4                                | P-5    |
| 6  | Hydrogen        | H2   | 18 | Xenon               | Xe      | For aggressive gases see our MCS and MCRS Series controllers.<br>For other available gases and gas blends contact Alicat. |  |        |
| 7  | Helium          | He   | 19 | Sulfur Hexafluoride | SF6     |   |  |        |
| 8  | Nitrogen        | N2   | 20 | 75%Ar / 25% CO2     | C-25    |   |  |        |
| 9  | Nitrous Oxide   | N2O  | 21 | 90% Ar / 10% CO2    | C-10    |   |  |        |
| 10 | Neon            | Ne   | 22 | 92% Ar / 8% CO2     | C-8     |   |  |        |
| 11 | Oxygen          | O2   | 23 | 98% Ar / 2% CO2     | C-2     |   |  |        |

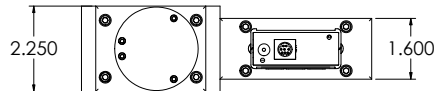




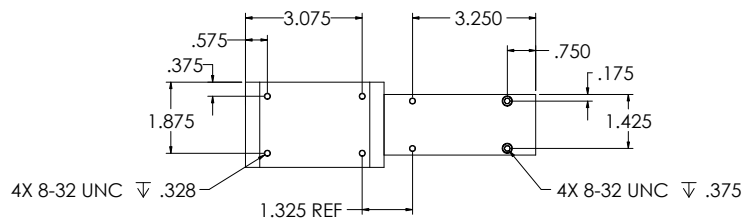
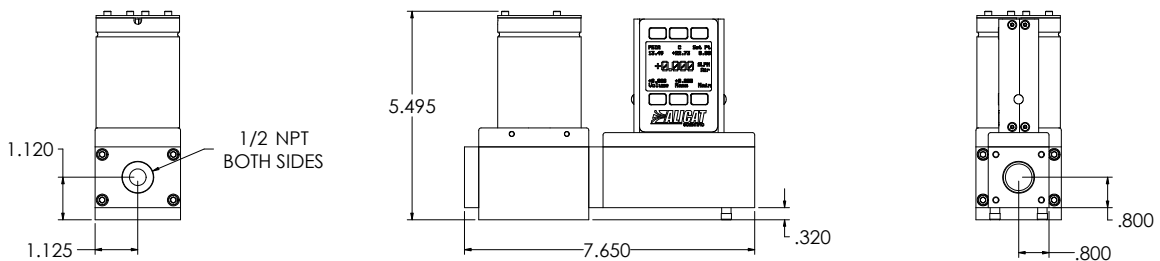
MCR Series:  
0 - 100SLPM



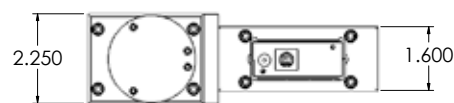
MCR 100SLPM approximate weight: 9.0 lb.



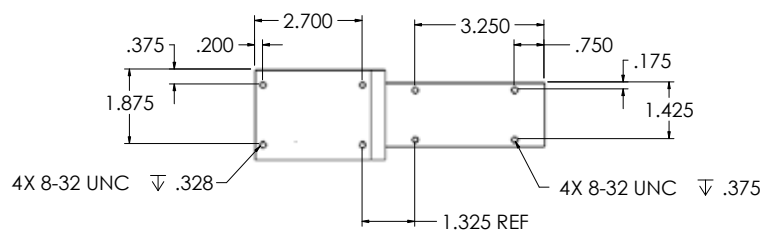
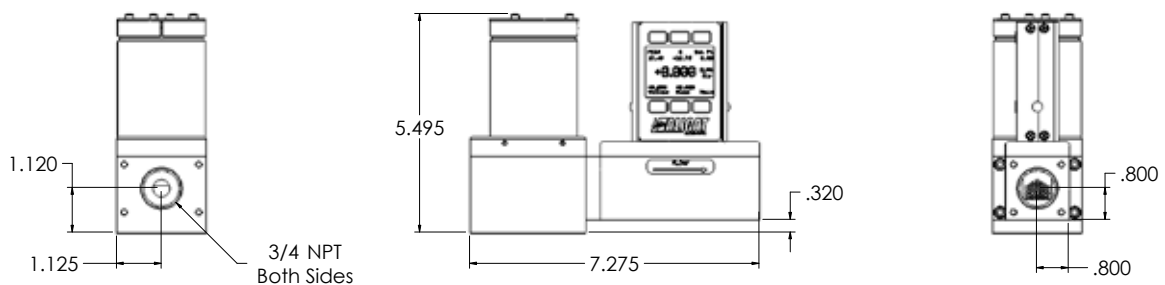
MCR Series:  
0 - 250SLPM



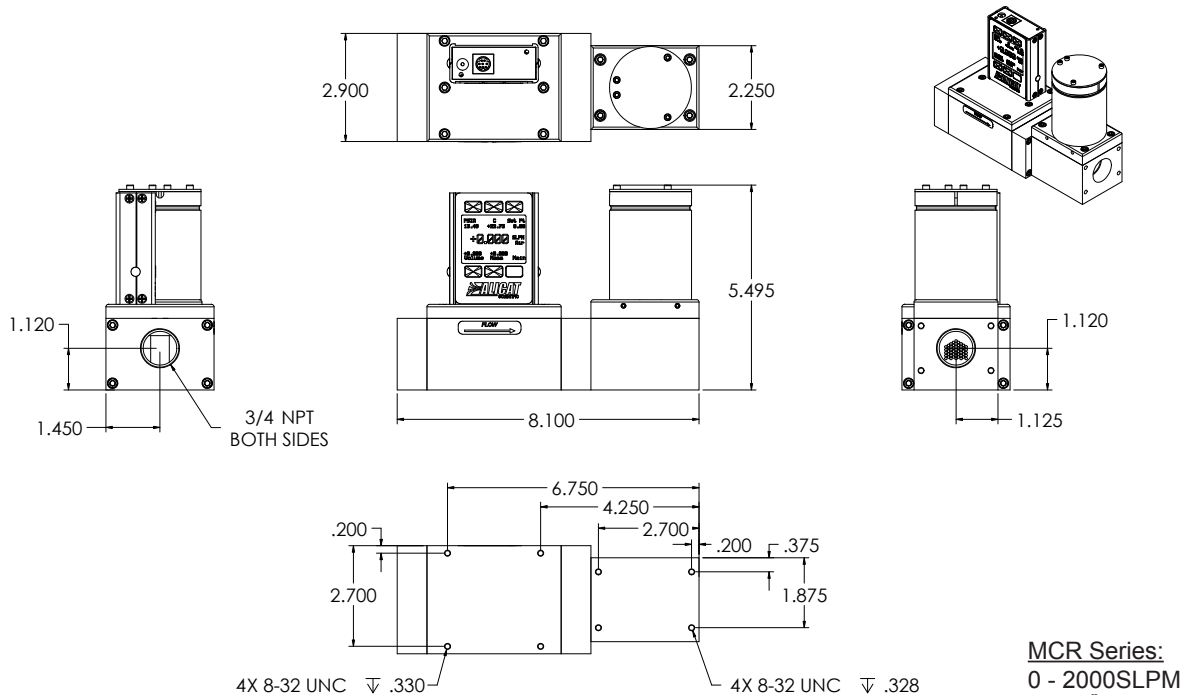
MCR 250SLPM approximate weight: 9.0 lb.



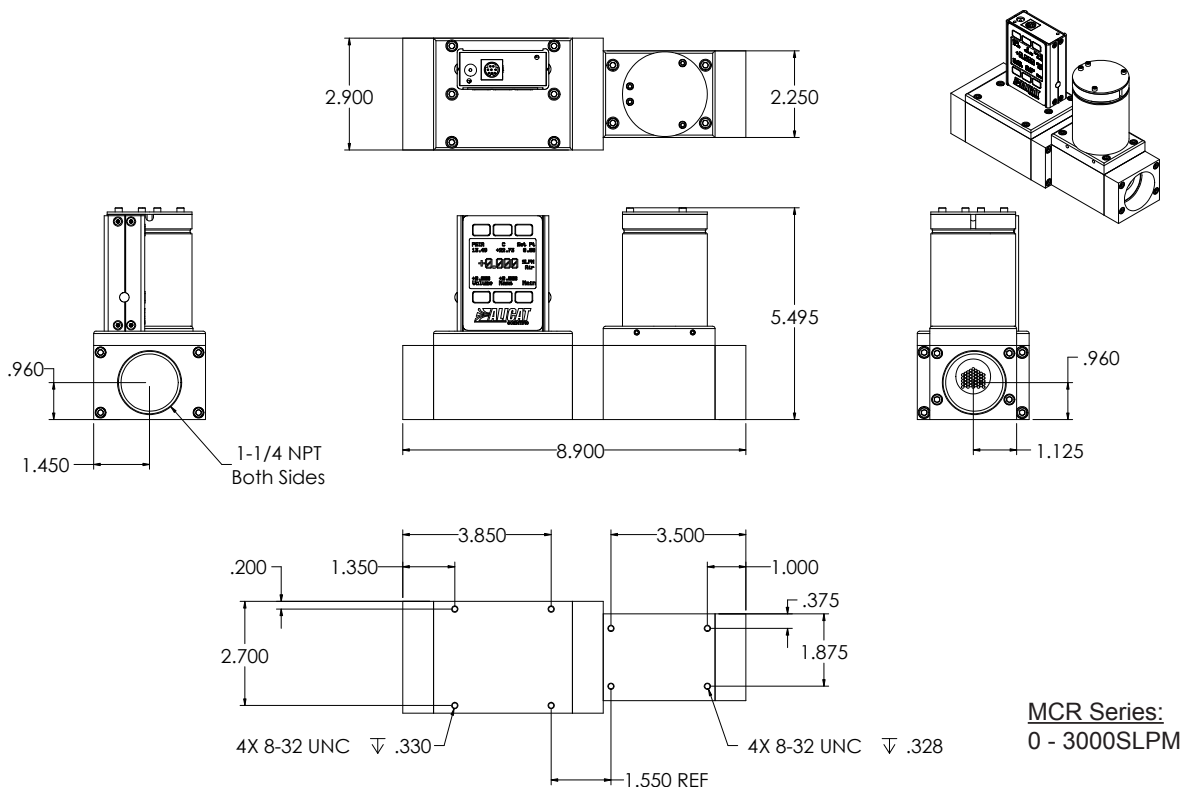
MCR Series:  
0 - 500SLPM  
0 - 1000SLPM  
0 - 1500SLPM



MCR 1500SLPM approximate weight: 9.0 lb.



MCR 2000SLPM approximate weight: 12.0 lb.



MCR 3000SLPM approximate weight: 12.0 lb.