Model FM-1050 Series
High Accuracy Flowmeter (150mm)

Description
Matheson’s FM-1050 Series Flowmeters provide the most accurate indication and precise control of fluids available for a wide range of applications. This versatile meter is functionally and dimensionally interchangeable with other current designs while incorporating many innovative features.

All FM-1050 Series glass metering tubes have integral float guides to ensure a guaranteed ±5% (±1% with optional calibration) of full scale accuracy. Both glass and stainless steel floats are included. The meters are available in a range of 150mm reference indicating scales. Be sure to request calibration data for the gas(es) you will be measuring.

Standard with this series is the uniquely designed Tube-Cube®. The “cube,” a unitized tube holder, aligns the tube quickly and easily for simple tube installation or replacement. The Tube-Cube® provides protection during handling, reducing chipped tube ends, broken tubes and misalignment. The 1.5 X scale magnification lens allows for a more accurate reading. End seals in the FM-1050 are direct acting and nonrotating for fast alignment and convenient service access.

Valve Options
• No valve for those who just want indication
• Utility (six-turn) valve for those who desire control as well as indication
• High accuracy (fifteen-turn) valve, for very precise control and repeatability

Design Features
• High resolution 150mm scale length
• Precision tapered, fluted metering tube
• Low pressure drop for increased available flow rates at low feed pressures
• Standard front panel mounting requires minimum hardware — easy installation, quick access

Specifications
Pressure Rating: 250 psig maximum
Temperature Rating: -20° to 250°F maximum
Accuracy: ±3% of full scale flow rate
Optional Accuracies: ±1% of full scale for reference scales only
Repeatability: 0.25% of scale reading
Range: 10 to 1, i.e., 100% to 10% of full scale mm or linear flow with conversion curves and/or factors
Scale Readings: Special direct reading scales available
Shipping Weight: 1 lb

Materials of Construction
Wetted End Blocks, Fittings and Internal Parts: Brass, 316 stainless steel – standard; Anodized aluminum, Kynar, Monel – optional
Seal Materials: Buna-N or Viton – standard; EPR, Kalrez or Teflon – optional
Side Plates: Painted or anodized aluminum
Metering Tube: Borosilicate glass enclosed in Tube-Cube® holder
Piping Connections: Brass, 316 stainless steel – standard; Aluminum, Monel – optional
Float Materials: Black glass and 316 stainless steel – standard; sapphire, Carboloy or Tantalum – optional
Scale: Ceramic ink on glass tube, length 150mm

Dimensions FM-1050 Flowmeter
See pages 369 for engineering drawing.

Don’t See It Here?
Matheson offers a complete line of variable area flowmeters. Our standard, more common configuration options are shown here. However, if you don’t see what you are looking for, contact us. We manufacture flowmeters for liquids as well as gases, and can use other end block materials, such as aluminum, Kynar and Monel, and other seal materials such as Teflon, EPR and Kalrez. In addition, we offer other connection fittings, including NPT, tube and hose, in a variety of sizes. Lastly, we have an enormous library of flow calibrations and correlation tables for dozens of other gases and a wide range of conditions.

So, if you don’t see it here, give us a call. We’ll build to suit your specific needs.
## Model FM-1050 Series
### High Accuracy Flowmeter (150mm) (continued)

**Flow Tube Capacities for FM-1050 Series Flowmeters, Reference Scales**

<table>
<thead>
<tr>
<th>Tube No.</th>
<th>Float Material</th>
<th>CO₂ (SCCM)</th>
<th>AR (SCCM)</th>
<th>O₂ (SCCM)</th>
<th>Air (SCCM)</th>
<th>N₂ (SCCM)</th>
<th>Natural Gas (SCCM)</th>
<th>He (SCCM)</th>
<th>H₂ (SCCM)</th>
<th>Valve Size</th>
<th>Valve Size</th>
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<tbody>
<tr>
<td>E910*</td>
<td>Glass</td>
<td>0.34-108</td>
<td>0.23-88</td>
<td>0.25-97</td>
<td>0.13-104</td>
<td>0.29-108</td>
<td>0.47-162</td>
<td>0.26-144</td>
<td>0.56-269</td>
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<td>1</td>
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<tr>
<td>E100</td>
<td>Glass &amp; Stainless Steel</td>
<td>6.8-200</td>
<td>4.6-140</td>
<td>5.2-145</td>
<td>6-150</td>
<td>6.5-175</td>
<td>9-270</td>
<td>5.3-160</td>
<td>11.7-360</td>
<td>7</td>
<td>2</td>
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<tr>
<td>E200</td>
<td>Glass &amp; Stainless Steel</td>
<td>11-280</td>
<td>7-220</td>
<td>8-240</td>
<td>10-270</td>
<td>10.5-275</td>
<td>14.5-410</td>
<td>9-260</td>
<td>19-560</td>
<td>7</td>
<td>2</td>
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<tr>
<td>E300</td>
<td>Glass &amp; Stainless Steel</td>
<td>36-750</td>
<td>32-690</td>
<td>35-770</td>
<td>38-840</td>
<td>39-850</td>
<td>56-1180</td>
<td>47-1350</td>
<td>99-2500</td>
<td>7</td>
<td>3</td>
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<tr>
<td>E406</td>
<td>Glass &amp; Stainless Steel</td>
<td>72-1450</td>
<td>75-1490</td>
<td>83-1660</td>
<td>88-1800</td>
<td>90-1850</td>
<td>111-2430</td>
<td>163-3680</td>
<td>278-6509</td>
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All flow rates are at 70°F and 14.7 psia

**NOTE:** Reference tubes are supplied with correlation charts for air and water flow rates at STP. If you require a correlation chart for other gases or liquids, or at pressures or temperatures other than standard, please indicate such when ordering.

*0-100 calibrated correlated reference tube scale only

Flow charts for tubes are located at [www.mathesongas.com/literature](http://www.mathesongas.com/literature)

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### Ordering Information

<table>
<thead>
<tr>
<th>Model Series</th>
<th>Number of Metering Tubes</th>
<th>End Blocks/Seal Material</th>
<th>Valve Types</th>
<th>Connections</th>
<th>Accessories</th>
<th>Connection Orientation</th>
<th>Flow Tube (Capacities)</th>
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<tbody>
<tr>
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</table>

**Model Number Generator For FM-1050 Series Glass Tube Flowmeters**

**MODEL SERIES**

E = Model FM-1050 Glass Tube Flowmeter with 150mm tube

**NUMBER OF METERING TUBES**

1 = Single Tube Unit

**END BLOCKS/SEAL MATERIAL**

3 = Chrome Plated Brass with Buna-N Seals
4 = 316 Stainless Steel with Viton Seals

**VALVE TYPES**

A = Utility Valve on Inlet
B = Utility Valve on Outlet
C = High Accuracy Valve on Inlet
D = High Accuracy Valve on Outlet
G = No Valve

**CONNECTIONS**

1 = 1/8” NPT Female (std)
2 = 1/4” NPT Female
4 = 1/4” Tube
6 = 1/4” Hose (3/16”-3/8” Hose Tapered)

**ACCESSORIES (ORDER SEPARATELY)**

0 = None
1 = Flush Panel Mounting Bezel – Clear
5 = Base Plate
7 = Flush Panel Mounting Bezel – Black

**CONNECTION ORIENTATION**

1 = Back In and Back Out

**FLOW TUBE (CAPACITIES)**

EXXX = See Capacity Table For FM-1050 Series Flowmeters

**ADDITIONAL OPTIONS**

+/- 1% Accuracy, Full Scale, With Certification, Gases, Reference Scales
+/- 5% Accuracy, Full Scale with Certification, Gases, Direct Read
MMSP-0003-XX Clean for O₂ Service

*These are Reference Scale Flowmeters. Be sure to request calibration data for the gas(es) you will be measuring*