

FLOW COMPONENTS AND CONTROLS *For Gases and Liquids*



**MATHESON
TRI•GAS**

ask...The Gas Professionals™

Matheson Tri-Gas specializes in the design and manufacture of flow control products for OEM and private label applications. We custom design flowmeters with the accuracy necessary for highly sensitive analytical instrumentation or with the rugged features needed for process control applications.

Our reputation as a leading manufacturer of flowmeters has been built by continually applying our innovative talents. Matheson customers count on us for product differentiation and fluid handling expertise.

ISO-9001 Certification

Matheson is part of an elite group of companies who provide proof of compliance to the internationally accepted ISO-9000 Quality Standards. Certification to the ISO-9001 Standard is a clear declaration of our comprehensive Quality Management System.

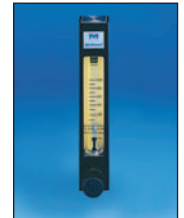
Calibration

Matheson's calibration laboratory is the cornerstone of our organization. We offer NIST traceable calibrations and have developed many special procedures for calibrating flowmeters to an extensive list of fluids and conditions. Over the years, Matheson has built a comprehensive library of Direct Reading scales (both English and metric) and flow correlation tables and curves for Reference (mm) scales.

Product Line Overview

Matheson offers an extensive line of variable area flow control products for both liquids and gases.

FM1000 / FM1050 Series	High Accuracy; Glass Tube
FM1100 / FM1127 Series	High Capacity; Glass Tube
PG1000 Series	Acrylic Body; Glass Tube, Gases Only
PM1000 Series	Machined Acrylic Block and Tube
7300/7400 Series	Proportioners and Mixers



Model Series	FM1000	FM1050	FM1100
Scale Length	65 mm	150 mm	70 mm
Connection Center Distance	4.5"	8 13/16"	7"
Scale Types (Note 1, 2)	Reference, Direct Read Air	Reference, Direct Read	Reference, Direct Read
Flow Range - Air (Note 3)	10 ccm-70 lpm .02-150 cfh	.13 ccm-64 lpm .0003-135 cfh	10-500 lpm .5-15 CFM
Flow Range - Water	.4 ccm-2.2 lpm .004-34 gph	.06 ccm-2.2 lpm .001-34 gph	.5-20 lpm .1-5 gpm
Accuracy (standard)	+/- 5% f.s.	+/- 5% f.s.	+/- 10% f.s.
Accuracy (optional)	consult factory	+/- 3% direct read +/- 1% reference	
Repeatability	0.25% of reading	0.25% of reading	
Pressure Rating	250 psig	250 psig	200 psig
Temperature Rating	250° F	250° F	250° F
Tube Cube Construction	Yes	Yes	No
End Blocks/Seal Materials	3, 4	3, 4	4, 8
Floats (standard)	GL,SS	GL,SS	SS
Floats (optional)	SAP, CER, CAR, TAN	SAP, CAR, TAN	
Valve Types	A, B, C, D, G	A, B, C, D, G	J, L, Y
Connection Fitting (standard)	1	1	7
Connection Fittings (optional)	2,4,6	2,4,6	2,8
Connection Orientations	1	1	1
Mounting Accessories	0, 1, 5, 7	0, 1, 5, 7	0, 8
Multi-Tube Units Available	Yes, 4 max.	Yes, 4 max.	No
Mixers, Proportioners Available	Yes	Yes	No

NOTES: 1-Reference tubes are supplied with correlation charts for air water flow rates at STP. If you required a correlation chart for other gases or liquids, or at pressures or temperatures other than standard, please indicate such when ordering.

2-Direct Reading Scales Available in English or Metric Units 3-Air Flow Rates at 70°F and 14.7 psia

The Matheson Tube Cube®



The Tube Cube is an innovative design developed and patented by Matheson. It allows the interchange of flow tubes within a single frame. With the Tube Cube, you can quickly and easily change flow ranges without having to disconnect the flowmeter from your system to change the entire frame.

The Tube Cube's design eliminates chipped ends and tube breakage during tube changes. Tube alignment and scale orientation are automatic. Direct acting, nonrotating centering seals assure proper sealing and seat alignment. The vinyl blowout back panel provides an added measure of safety.

The Tube Cube is standard on the FM1000, FM1050 Series flowmeters.

Flow Control Valves



Matheson offers a variety of valve configurations to meet your particular requirements.

Our High Accuracy Valve provides precise and repeatable flow control for sensitive, critical applications. It provides a full 15 turns between no flow and full flow.

Our Utility and Control Valves provide more moderate flow control precision, but still assure drift-free, stable flow settings.

If you prefer a valveless flowmeter, Matheson can configure your flowmeter with a valve cavity that is plugged enabling a valve to be added at a later date.

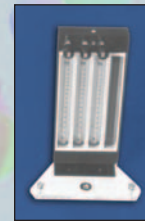
Multi-Tube Units, Mixers & Proportioners



Matheson offers a specialized line of Multiple Tube Units. They are designed for applications where it is necessary or desirable, because of space limitations, appearance, or efficiency, to mount a series of flowmeters side by side in

a common support frame. These multi-tube units are configured with individual inlet and outlets for each tube and provide for the straight through flow of fluids.

A variation of the multi-tube design, mixers and proportioners manifold the outlets of the tubes together to provide a homogenous mix of multiple gas or liquid streams. A proportioner blends two inlet streams; a mixer blends three or four.



FM1127	PG1000	PM1000	7300/7400
127 mm	50 mm	37 or 50 mm	150 mm
9"	2.5 or 3"	2.5 or 3"	8 13/16"
Reference, Direct Read	Reference, Direct Read	Reference, Direct Read	Reference, Direct Read
5-500 lpm .5-16 CFM	2.5 ccm-5 lpm .01-10 cfh	.1-80 lpm .2-180 cfh	.13 ccm-24 lpm .0003-135 cfh
.2-22 lpm .05-5 gpm	Gases Only Gases Only	2 ccm-2.4 lpm .05-40 gph	.06 ccm-2.2 lpm .001-34 gph
+/- 10% f.s.	+/- 10% f.s.	+/- 10% f.s.	+/- 5% f.s. +/- 3% direct read +/- 1% reference
	1% of reading	1% of reading	0.25% of reading
200 psig	100 psig	100 psig	200 psig
250° F	160° F	160° F	20 to 250° F
No	No	No	Yes
6, 8	E, N	E, N	1, 4, 6, A, D, E, N
SS	GL,SS	GL,SS	GL, SS SAP, CAR, TAN
J, L, Y	E, G	E, G	B, D, K
7	1	1	1
2,8	1,6	1, 6	2, 3, 4, 5, 6
1	1	1	1
0, 8	0, 5	0, 5	0,5
No	Yes, 4 max.	Yes, 4 max.	Yes, 4 max.
No	No	No	Yes

Legend

End Blocks/Seal Materials

1=Aluminum/Buna-N
3=Chrome Plt Brass/Buna-N
4=Stainless Steel/Viton
6=Stainless Steel/Teflon
8=Brass/Buna-N
A=Aluminum/Viton
D=Stainless Steel/Buna-N
E=Stainless Steel/EPR
N=Stainless Steel/Kalrez

Floats

GL=Black Glass
SS=Stainless Steel
SAP=Sapphire
CAR=Carboloy
CER=Ceramic
TAN=Tantalum

Valve Types

A=Utility Valve on Inlet
B=Utility Valve on outlet
C=High Accuracy Valve on Inlet
D=High Accuracy Valve on Outlet
E=Valve on Inlet
G=No Valve
J=Valve on Inlet
K=Hole Only
L=Valve on Outlet
Y=No Valve/Plug

Connections

1=1/8" NPTF
2=1/4" NPTF
3=1/8" Tube
4=1/4" Tube
5=1/8" Hose
6=1/4" Hose
7=3/8" NPTF
8=1/2" NPTF

Orientation

1=Back In/Back Out

Mounting Accessories

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

OTHER FLOW INSTRUMENTATION FROM MATHESON TRI-GAS GROUP



Mass Flowmeters

Mass Flowmeters

Matheson's Model 8170 Series Mass Flowmeters measure the thermal mass flow of the gas stream. Mass flow devices are absolute measuring instruments, and are therefore not affected by system pressure and temperature variations. The 8170's readout box provides a direct reading LED digital display of standardized flow rate, eliminating the need for reference calibration tables. Readout boxes are available to monitor from one to four gas streams. Accuracy is $\pm 1\%$ full scale. For more information log on to www.mathesontrigas.com.



Mass Flow Controllers

Mass Flow Controllers

Matheson's Model 8270 Series Mass Flow Controllers are similar to the 8170 Series except they incorporate an integral control valve in the transducer, and feedback circuitry that continuously monitors and controls the flow of gas passing through the system. Readout/control boxes are available to control the flow of one to four gas streams. Accuracy is $\pm 1\%$ full scale or one digit. For more information log on to www.mathesontrigas.com.



Mass Flow Totalizer

Mass Flow Totalizer

The Matheson Model 8124 Mass Flow Totalizer tracks the total amount of gas used over a period of time, regardless of varying flow rates. The current total is continuously displayed on a six digit LED readout. Two user-adjustable setpoints and relay contacts are provided for setting alarms. Accuracy is $\pm 1\%$. For more information log on to www.mathesontrigas.com.



Gas Blending Systems

Gas Blending Systems

In addition to rotameter based Mixers and Proportioners, Matheson offers a flow based gas mixing system that automatically blends and dilutes gases to generate precise calibration standards. The Cal-MAT™ Series 4000 is a multi-component gas mixing system that automatically blends up to three individual gases in a balance gas. The gas mixes can be used to generate precise gas calibration standards, create gaseous atmospheres or produce gas mixes for analytical research or production purposes. The system consists of two components, the 4000 Series instrument and the user's personal computer. The user interface is a Microsoft Windows application that communicates with the Cal-MAT™ 4000 via an RS-232 serial interface.

For more information log on to www.mathesontrigas.com.



Dynamic Gas Blending Systems

Dynamic Gas Blending Systems

The 8280 and 8284 Series of Dynamic Gas Blending Systems are used to prepare accurate mixtures of different gases. These systems are dynamic with respect to flow conditions and have no ability to store gas for demand usages. These control systems function utilizing the Matheson 8272/8273 Series Controller Transducers.

For more information log on to www.mathesontrigas.com.



Self-Contained Mass Flowmeter

Self-Contained Mass Flowmeter

The Model 8112 Series Mass Flowmeters are offered as a more accurate alternative to Matheson's Standard Tube Cube flowmeters. This series bridges the gap between standard flowmeters and higher priced mass flowmeters.

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