

# Mass Flowmeter

for Dry Gases



measuring  
•  
monitoring  
•  
analyzing

MAS



- Accuracy:  $\pm 1.5\%$  of Full Scale
- Mass Flow Based Measurement
- Insensitive to Temperature and Pressure Changes
- Ranges: From 0...10 SCCM to 0...500 SLM
- Nylon<sup>®</sup>, Aluminum, or Stainless Steel Construction
- Max. Pressure: 500 PSIG (SS)
- Exceptional Versatility
- Remote Display Capability
- Analog Output Standard
- Totalizer Option



KOBOLD companies worldwide:

ARGENTINA, AUSTRALIA, AUSTRIA, BELGIUM, BULGARIA, CANADA, CHILE, CHINA, COLOMBIA, CZECH REPUBLIC, EGYPT, FRANCE, GERMANY, HUNGARY, INDIA, INDONESIA, ITALY, MALAYSIA, MEXICO, NETHERLANDS, PERU, POLAND, REPUBLIC OF KOREA, ROMANIA, SINGAPORE, SPAIN, SWITZERLAND, TAIWAN, THAILAND, TUNISIA, TURKEY, UNITED KINGDOM, USA, VIETNAM

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## Mass Flowmeter for Dry Gases Model MAS

### Description

KOBOLD's MAS mass flowmeter measures gas flow rates in ranges from 0...10 sccm to 0...500 slm. Accuracy is  $\pm 1.5\%$  of the full scale over a wide range of temperatures and pressures. Response time is two seconds to within 2% of final flow. In contrast to volumetric flow metering devices, the MAS needs no pressure or temperature corrections. This makes the unit ideal for a wide variety of gas flow applications including general process control, flow into vacuum systems, leak testing, and flow calibration. The MAS is available in Nylon<sup>®</sup>, aluminum, or stainless steel; with or without a digital display. The display is a 3-1/2" digit LCD, with 180° rotation for easy viewing. The remote display option comes standard with 5 feet of cable, but may be ordered with up to 100 feet of cable for remote surface mounting.



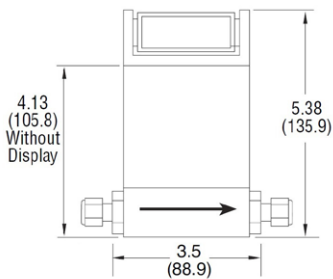
### Specifications

<b>Accuracy:</b>	$\pm 1.5\%$ Full Scale (at 59...77 °F and 5...60 PSIA)
<b>Repeatability:</b>	$\pm 0.5\%$ Full Scale
<b>Drift Coefficients</b>	
<b>Temperature:</b>	0.08% FS/°F or better
<b>Pressure:</b>	0.01% FS/PSI
<b>Gas &amp; Ambient Temperature:</b>	32...122 °F
<b>Max. Pressure</b>	
<b>Nylon<sup>®</sup>, Aluminum:</b>	150 PSIG
<b>SS:</b>	500 PSIG
<b>Installation Position:</b>	Any

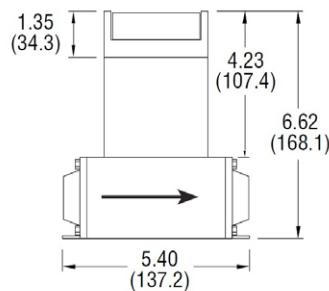
<b>Wetted Parts</b>	
<b>Nylon<sup>®</sup>:</b>	Nylon <sup>®</sup> , 316 SS, FKM
<b>Aluminum:</b>	Aluminum, 316 SS, FKM
<b>SS:</b>	316 SS, FKM
<b>Leak Integrity</b>	
<b>Nylon<sup>®</sup>, Aluminum:</b>	1x10 <sup>-4</sup> scc/sec Helium
<b>SS:</b>	1x10 <sup>-7</sup> scc/sec Helium
<b>Input Power</b>	
<b>Standard:</b>	12 V <sub>DC</sub> , 100 mA max.
<b>Option “..V2”:</b>	24 V <sub>DC</sub> , 100 mA max.
<b>Output</b>	
<b>Standard:</b>	0-5 V <sub>DC</sub> (linear)
<b>Option “..A”:</b>	4-20 mA (linear)

### Dimensions

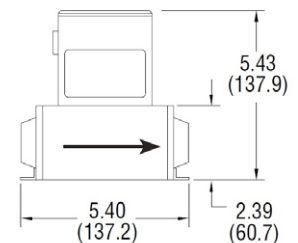
#### Nylon<sup>®</sup> Models:



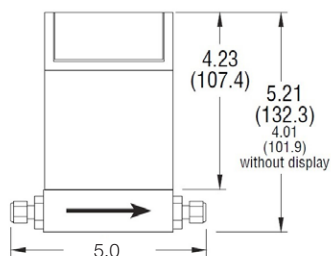
#### Aluminum with Display Models:



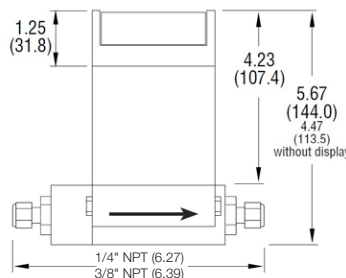
#### Aluminum without Display Models:



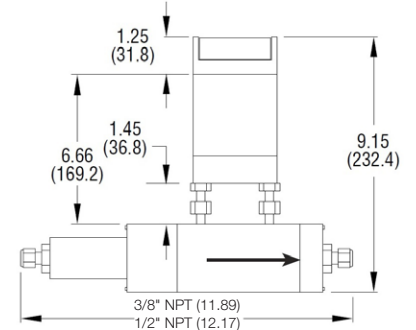
#### Stainless Steel-Low Flow Models:



#### Stainless Steel-Medium Flow Models:



#### Stainless Steel-High Flow Models:





**Order Details\*** (Example: **MAS-3005AHP**)

Mass Flowmeter with Nylon® Body				
Range Nitrogen	Max. Press. Drop (cm H <sub>2</sub> O)	Fittings (NPT)	Model Number	
			With Display	Without Display
0...10 SCCM	1	1/4"	MAS-1001	MAS-2001
0...20 SCCM	1	1/4"	MAS-1002	MAS-2002
0...50 SCCM	1	1/4"	MAS-1003	MAS-2003
0...100 SCCM	1	1/4"	MAS-1004	MAS-2004
0...200 SCCM	1	1/4"	MAS-1005	MAS-2005
0...500 SCCM	1	1/4"	MAS-1006	MAS-2006
0...1 SLM	1	1/4"	MAS-1007	MAS-2007
0...2 SLM	6	1/4"	MAS-1008	MAS-2008
0...5 SLM	6	1/4"	MAS-1009	MAS-2009
0...10 SLM	6	1/4"	MAS-1010	MAS-2010
0...20 SLM	25	1/4"	MAS-1011	MAS-2011
0...30 SLM	47	1/4"	MAS-1012	MAS-2012
0...40 SLM	88	1/4"	MAS-1013	MAS-2013
Mass Flowmeter with Aluminum Body				
0...75 SLM	6	1/2"	MAS-1115	MAS-2115
0...125 SLM	6	1/2"	MAS-1116	MAS-2116
0...175 SLM	6	1/2"	MAS-1117	MAS-2117

Mass Flowmeter with Stainless Steel Body					
Range Nitrogen	Max. Press. Drop (cm H <sub>2</sub> O)	Fittings Swagelok® Style	Body Size	Model Number	
				With Display	Without Display
0...10 SCCM	6	1/4"	L	MAS-3001	MAS-4001
0...20 SCCM	6	1/4"	L	MAS-3002	MAS-4002
0...50 SCCM	6	1/4"	L	MAS-3003	MAS-4003
0...100 SCCM	6	1/4"	L	MAS-3004	MAS-4004
0...200 SCCM	6	1/4"	L	MAS-3005	MAS-4005
0...500 SCCM	6	1/4"	L	MAS-3006	MAS-4006
0...1 SLM	6	1/4"	L	MAS-3007	MAS-4007
0...2 SLM	6	1/4"	L	MAS-3008	MAS-4008
0...5 SLM	6	1/4"	L	MAS-3009	MAS-4009
0...10 SLM	105	1/4"	L	MAS-3010	MAS-4010
0...15 SLM	105	1/4"	L	MAS-3011	MAS-4011
0...20 SLM	40	1/4"	M	MAS-3012	MAS-4012
0...30 SLM	60	1/4"	M	MAS-3013	MAS-4013
0...50 SLM	80	3/8"	M	MAS-3014	MAS-4014
0...100 SLM	105	3/8"	M	MAS-3015	MAS-4015
0...100 SLM	6	3/8"	H	MAS-3016	MAS-4016
0...200 SLM	6	3/8"	H	MAS-3017	MAS-4017
0...300 SLM	140	3/8"	H	MAS-3018	MAS-4018
0...400 SLM	140	1/2"	H	MAS-3019	MAS-4019
0...500 SLM	140	1/2"	H	MAS-3020	MAS-4020

\* When Placing an Order, Please Specify Detailed Service Conditions (Type of Gas, Flow Rate, Pressure, Temperature, etc.)

Options	
Description	Model Suffix
4-20 mA Output	..A
24 V <sub>DC</sub> Input Power	..V2
Remote Display with 5 foot Cable	..RD
Medium Pressure Calibration (40...150 PSIG) (Nylon® and Aluminum Bodies Only)	..MP
Medium Pressure Calibration (40...100 PSIG) (Stainless Steel Body Only)	..MP
High Pressure Calibration (100...500 PSIG) (Stainless Steel Body Only)	..HP
Cleaned for Oxygen Service	..O2
Calibrated for Hydrogen Service	..H2
Kalrez® Seals (Low/Medium/High Flow Body)	..OR6 (L/M/H)
Custom Range Unit	..E
1/8" Fittings Swagelok® Style (Nylon® Bodies only) (5 SLPM Max.)	..C0
1/4" Fittings Swagelok® Style (Nylon® Bodies Only)	..C1
3/8" Fittings Swagelok® Style (Nylon® Bodies Only)	..C2
Total and Actual Flow Display	..T

Accessories	
MAS-5000	110 VAC to 12 VDC Power Supply