



TELEDYNE HASTINGS INSTRUMENTS
Everywhereyoulook™

HFM-201 Flow Meter
HFC-203 Flow Controller

**MEDIUM CAPACITY
FLOWMETERS
AND CONTROLLERS**

FEATURES

- $\pm 1\%$ full scale accuracy¹
- Input Power +/- 15 VDC or +24 VDC (specify when ordering)
- Available flow ranges:
0-25 slm to 0-1000 slm (N₂ Equivalent)
- NIST Traceable Calibration Certificate

APPLICATIONS

- Leak testing
- Flame Spray
- Aerospace
- Gas Blending
- Environmental Monitoring
- Thin Film Deposition

BENEFITS

- Excellent Stability
- Proven Reliability
- Outstanding Zero Stability

Flow Meters and Flow Controllers



DESCRIPTION

The Teledyne Hastings Instruments (THI) Model HFM Mass Flow Meter and HFC Mass Flow Controller represent a culmination of over 75 years of experience in designing and manufacturing reliable, high quality mass flow instruments.

The HFM/HFC Series of flow instruments is based on a modular design. At the heart of each instrument is an insulated thermal transfer sensor which provides enhanced zero stability. The HFC also features a two-stage, pilot-operated control valve.

All of these standard features, when coupled with the instrument's inherent linear response to flow changes and THI's long-proven reputation for quality, result in the finest flowmeters and flow controllers available today.

Instruments are normally calibrated with the appropriate standard calibration gas (nitrogen), then a gas conversion factor is used to adjust the output the intended gas. Special calibration for other gases, such as oxygen, helium and argon, are available upon special request.



**TELEDYNE
HASTINGS INSTRUMENTS**
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Specifications and Standards

Optional Features

- Fittings –
 - VCR®
 - VCO®
 - NPT
 - Swagelok®,
- Seals -
 - Viton®
 - Kalrez®
 - Neoprene
 - Buna-N
- Outputs -
 - 0-5 VDC
 - 4-20 mA

Cleaned for Oxygen service

EMC

EN 61326-1

Accessories

- Power Supplies available with:
 - Integral Flow Totalizer
 - Alarm Set Points
 - Interconnecting cables



THCD-101 Power Supply & Display

COMMON SPECIFICATIONS HFM-201/HFC-203

Accuracy¹	± 1.0% of F.S.
Repeatability	± 0.05% of F.S.
Maximum Operating Pressure	500 psi
Pressure Coefficient	+0.0067% /psi
Leak Integrity	< 1x10 ⁻⁹ sccs He
Temperature Coefficient (zero) Temperature Coefficient (span)	Zero ± 0.035% F.S. / °C (-20 - 70°C) Span ± 0.06% F.S. / °C (-20 - 70°C)
Standard Output Optional Output	0 - 5 VDC 4 - 20 mA
Connector (±15 VDC) Connector (+24 VDC)	15 - pin subminiature D 9 - pin subminiature D

SPECIFICATIONS HFM-201

Power Requirements (±15 VDC) Power Requirements (+24 VDC)	± (13-36) VDC @ +55mA / -20 mA (< 2 Watt) (13-36) VDC (< 4 Watt)
Wetted Materials	316 SS, Nicobraz 50, Silverbraze 45, Viton®
Weight (approx.)	201(L) - 3.55 lb (1.61 kg) 201(H) - 3.25 lb (1.47 kg)

SPECIFICATIONS HFC-203

Power Requirements (±15 VDC) Power Requirements (+24 VDC)	± (14-16) VDC @ +40mA/-175 mA (< 3 Watt) (14-32) VDC (< 4.2 Watt)
Wetted Materials	302 SS, 316 SS, Nickel 200, Nicobraz 50, Silverbraze 45, FKM Elastomer, Viton® Kalrez® (Valve Seat), PTFE or Delrin
Setpoint Input	0-5 VDC (Std) /4-20mA (optional)
Weight (approx.)	203(L) - 5.20 lb (2.36 kg) 203(H) - 5.15 lb (2.34 kg)

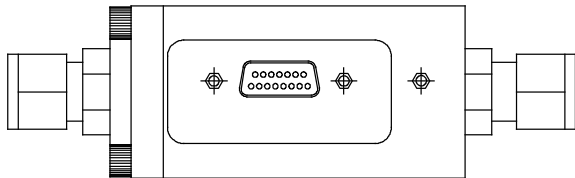
¹ See Product Manual for critical information on instrument accuracy and the use of GCFs (gas conversion factors). Stated accuracy is for nitrogen or other gas specific calibration and use with this gas only.

Hastings Instruments reserves the right to change or modify the design of its equipment without any obligation to provide notification of change or intent to change.

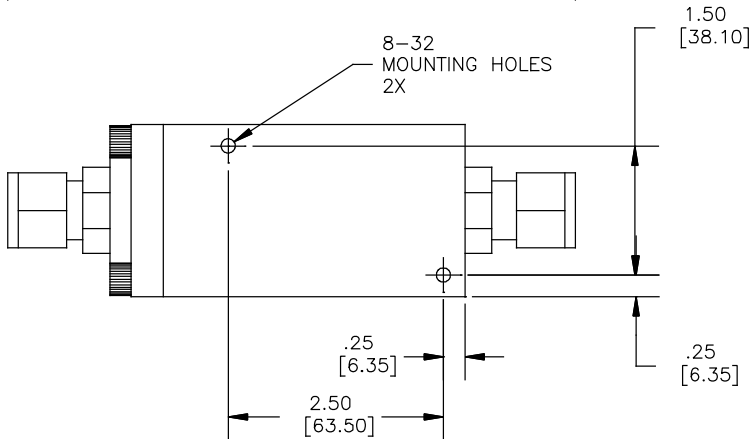
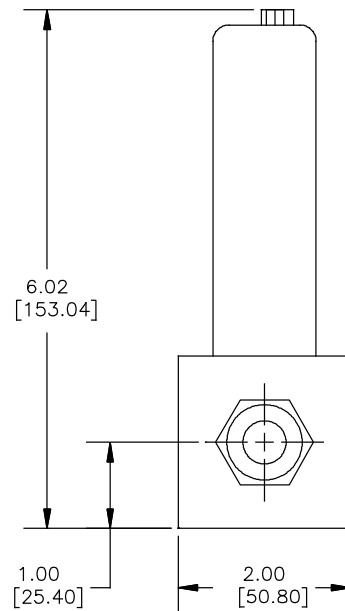
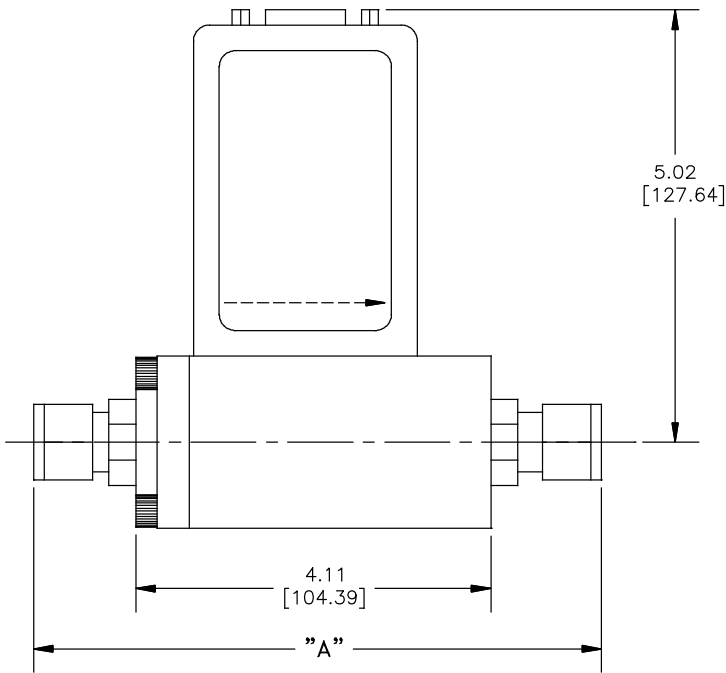
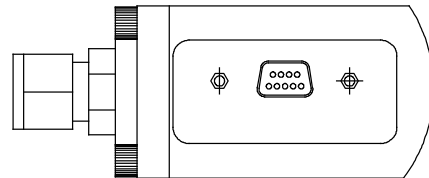
Viton® is a registered trademark of DuPont Performance Elastomers
 Kalrez® is a registered trademark of DuPont Dow Elastomers
 Teflon® is a registered trademark of E.I. DuPont de Nemours & Co.
 VCR® is a registered trademark of Swagelok Company.

Outline Drawing: HFM-201 (L) Flow Meter

±15 VOLT VERSION



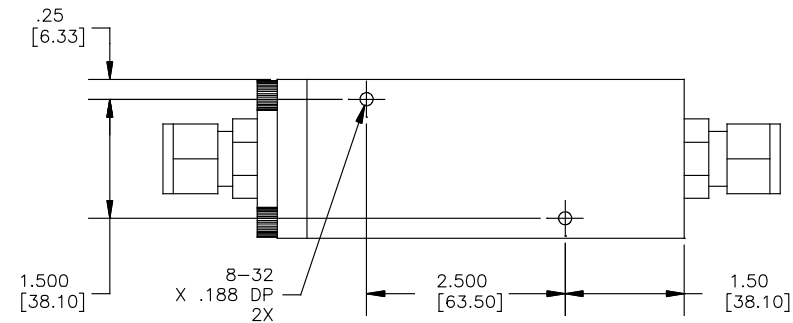
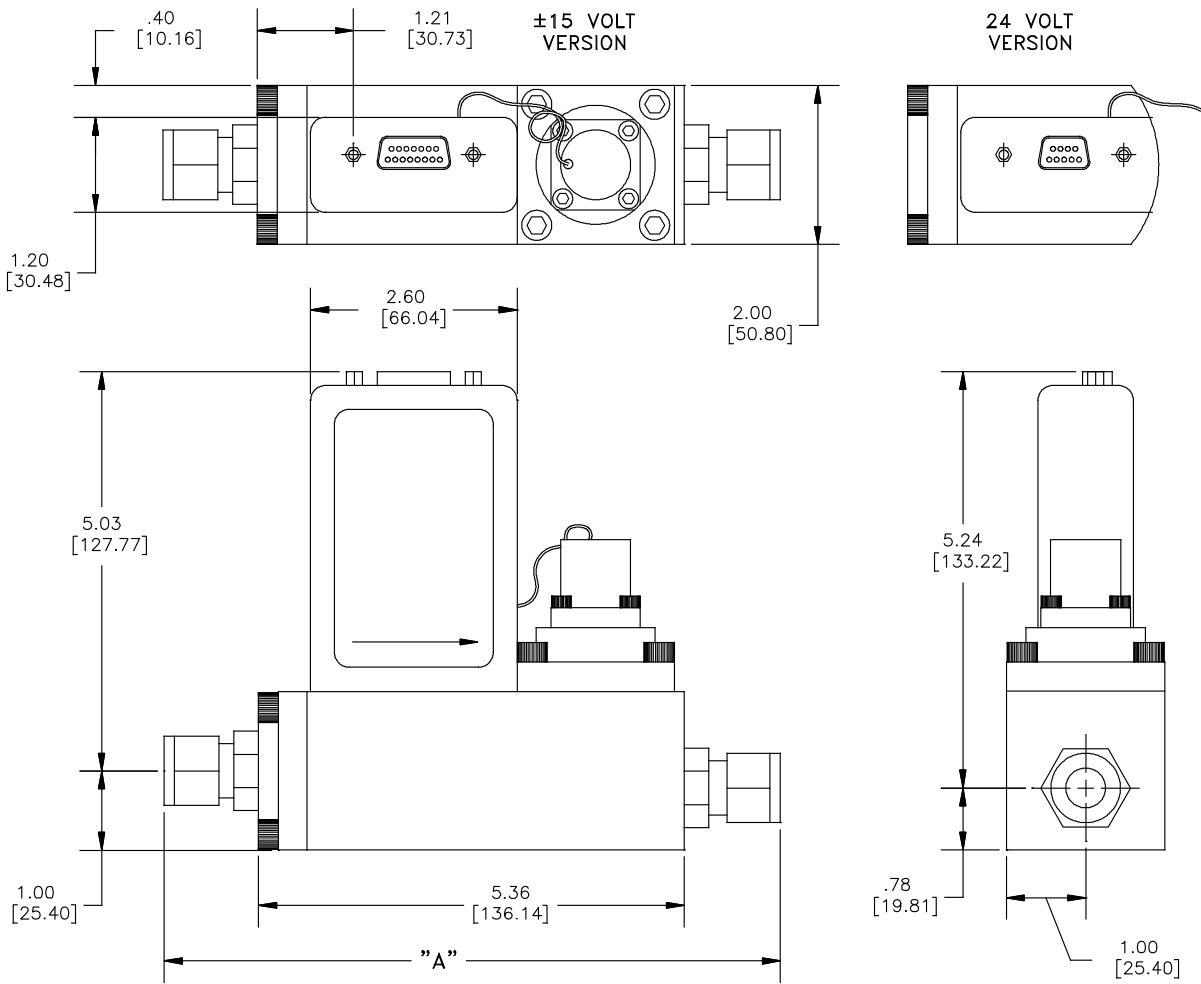
24 VOLT VERSION



1/2" BASE SIZE

FITTING TYPE	DIM "A"
3/4"-16 FEMALE (DIM B)	4.11 [104.39]
SWAG. 1/2" W NUT	6.31 [160.27]
SWAG. 1/2" BARE	5.73 [145.54]
VCO FACE 1/2"	6.17 [156.72]
VCR FACE 1/2"	6.55 [166.37]
12mm SWAGELOK	6.55 [166.37]
10mm SWAGELOK	6.37 [161.79]
3/8" MALE NPT	6.01 [152.65]
1/2" MALE NPT	6.33 [160.78]

Outline Drawing: HFC-203 (L) Flow Controller

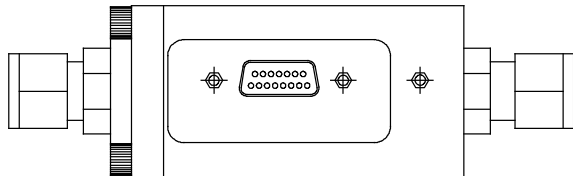


1/2" BASE SIZE

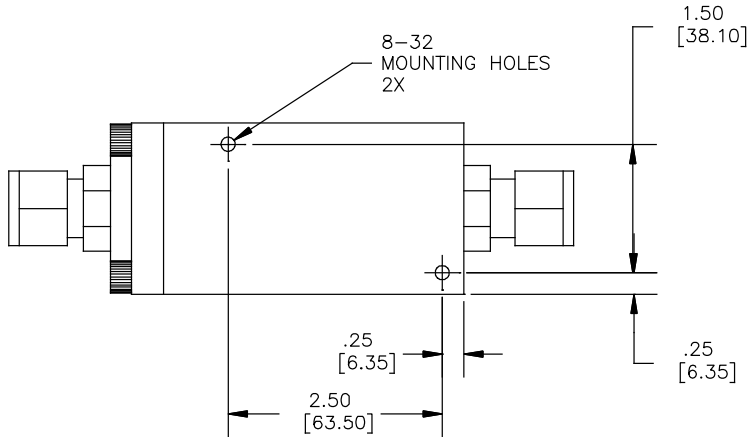
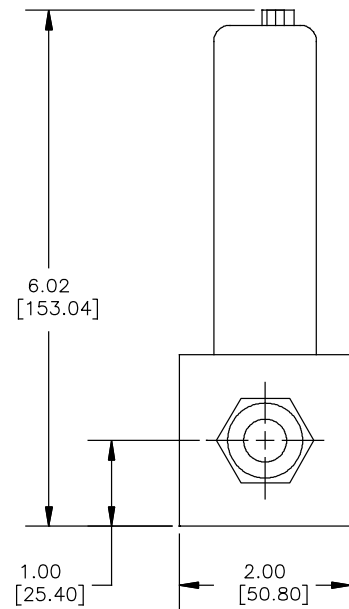
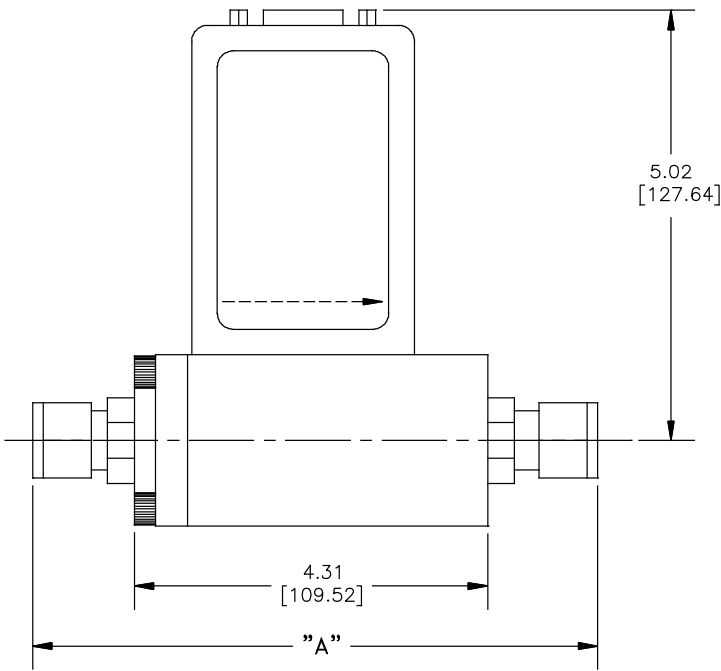
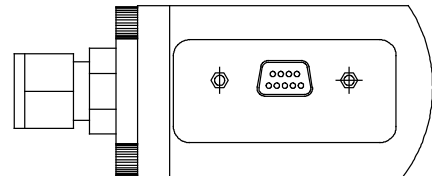
FITTING TYPE	DIM "A"
3/4"-16 FEMALE (DIM B)	5.36 [136.14]
SWAG. 1/2" W NUT	7.56 [192.02]
SWAG. 1/2" BARE	6.98 [177.29]
VCO FACE 1/2"	7.42 [188.47]
VCR FACE 1/2"	7.80 [198.12]
12mm SWAGELOK	7.78 [197.61]
10mm SWAGELOK	7.60 [193.04]
3/8" MALE NPT	7.24 [183.89]
1/2" MALE NPT	6.33 [160.78]

Outline Drawing: HFM-201 (H) Flow Meter

±15 VOLT
VERSION



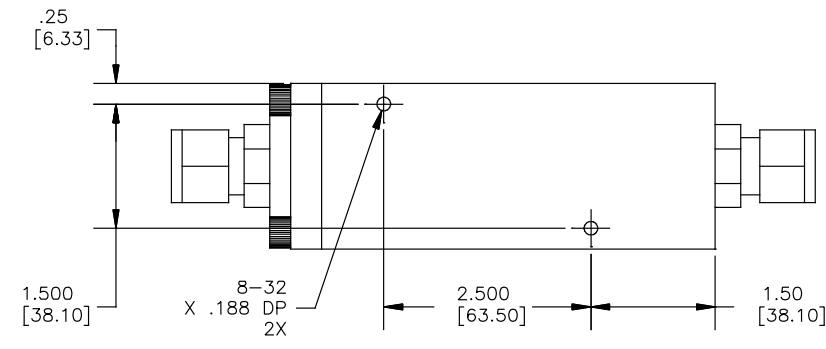
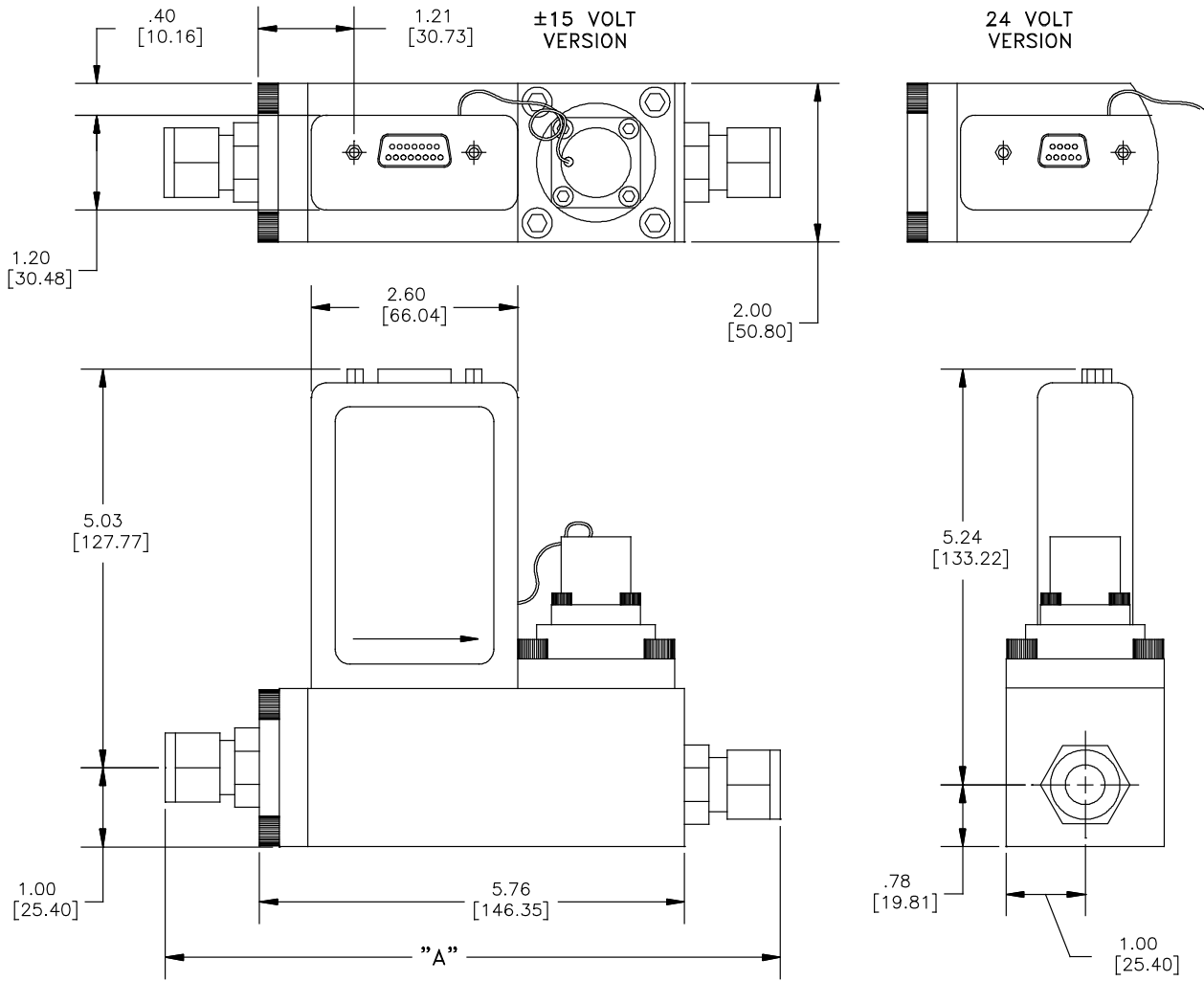
24 VOLT
VERSION



3/4" BASE SIZE

FITTING TYPE	inches-mm
1 1/16-12 FEMALE (DIM B)	4.31 [109.52]
3/4" SWAGELOK	6.99 [177.60]
20mm SWAGELOK	6.96 [176.83]
3/4" VCO FACE	6.59 [167.44]
3/4" VCR FACE	7.52 [191.06]

Outline Drawing: HFC-203 (H) Flow Controller



3/4" BASE SIZE

FITTING TYPE	inches-mm
1 1/16-12 FEMALE (DIM B)	5.76 [146.35]
3/4" SWAGELOK	8.44 [214.43]
20mm SWAGELOK	8.41 [213.66]
3/4" VCO FACE	8.04 [204.27]
3/4" VCR FACE	8.97 [227.89]

Selection Chart

Model No.	Circuit Board	Output	Fittings	O - Rings	Working Pressure	Calibration Type
HFM-201 HFC-203						

Circuit Board	
01	Standard (± 15 VDC)
03	24 VDC Supply

Output	
01	0-5 Volts (Std)
02	4-20 mA ** (Output Only)
03	4-20 mA I/O

Fittings: HFM-201L/HFC-203L	
01	1/2" Swagelok (Std)
02	1/2" VCR [®]
03	No Fitting, 3/4-16 MS Straight
04	1/2" VCO [®]
05	12 mm Swagelok
06	3/8" Male NPT
07	1/2" Male NPT
08	10 mm Swagelok

Fittings: HFM-201H/HFC-203H	
09	3/4" Swagelok (Std)
10	3/4" VCO [®]
11	20 mm Swagelok
12	No Fitting, 1 1/16 MS Straight
13	3/4" VCR [®]

O - Rings	
01	Viton (std)
02	Kalrez
03	Neoprene
04	Buna-N

Working Pressure	
01	500 psig max (Std)
02	1000 psig

Calibration	
01	NIST 5 point (Std)
02	NIST 10 Point
03	NIST 20 Point
04	Curve Fit

** 0-5 Volts input

Range Information for all Instruments

Each calibration will require the following information:

Range _____
 Flow Units _____
 Gas _____

For the HFC Instruments also

Upstream Pressure _____
(maximum & minimum)

Downstream Pressure _____
(maximum & minimum)

Does the downstream pressure change with flowrate? Y/N _____

For volumetric units the standard temperature and pressure of the unit is also required 0°C & 760 Torr will be used when other values are not specified



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