



**TELEDYNE HASTINGS INSTRUMENTS**  
Everywhere you look™

**HFM-200** Flow Meter

**HFC-202** Flow Controller

## GENERAL PURPOSE FLOW METERS AND FLOW CONTROLLERS

### FEATURES

- $\pm 1\%$  of Full-Scale Accuracy<sup>1</sup>
- Input Power +/- 15 VDC or +24 VDC (specify when ordering)
- Available Flow Ranges:  
0 - 10 sccm up to 0 - 25 slm (N2 Equivalent)
- NIST Traceable Calibration

### APPLICATIONS

- Gas Blending
- Environmental Monitoring
- Thin Film Deposition
- Leak Testing
- Medical Research
- Chromatography
- R&D

### BENEFITS

- Excellent Stability
- Proven Reliability
- Outstanding Zero Stability

# Flow Meters and Flow Controllers



### DESCRIPTION

The Teledyne Hastings Instruments (THI) Model HFM Mass Flowmeter and HFC Mass Flow Controller represent over 65 years of experience in designing and manufacturing reliable, high quality 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 instrument's inherent linear response to flow changes and THI's long-proven reputation for quality, result in the finest flow meters 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.



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A Teledyne Technologies Company

## Specifications and Standards

### Options:

- Fittings –
  - VCR®
  - VCO®
  - Swagelok®
- Seals -
  - Kalrez®
  - Neoprene
  - Buna-N
- Output -
  - 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-100 Power Supply & Display

### COMMON SPECIFICATIONS HFM-200/HFC-202

<b>Accuracy<sup>1</sup></b>	± 1.0% of F.S.
<b>Repeatability</b>	± 0.05% of F.S.
<b>Standard Operating Pressure</b>	500 psi
<b>High Pressure Option</b>	1000 psi
<b>Pressure Coefficient</b>	+0.0067% /psi
<b>Leak Integrity</b>	< 1x10 <sup>-9</sup> sccs He
<b>Operating Temperature</b>	-10°C - 65°C
<b>Temperature Coefficients</b>	Zero ± 0.035% C of F.S. (0-60°C) Span ± 0.05% C of Rdg (0-60°C)
<b>Standard Output</b>	0 - 5 VDC
<b>Optional Outputs</b>	4 - 20 mA
<b>Connector (±15 VDC)</b>	15-pin subminiature D
<b>Connector (+24 VDC)</b>	9-pin subminiature D

### SPECIFICATIONS HFM-200

<b>Power Requirements (±15 VDC)</b>	± (14-16) VDC @ ±30mA (< 1 Watt)
<b>Power Requirements (+24 VDC)</b>	(14-32) VDC (< 1.9 Watt)
<b>Wetted Materials<sup>2</sup></b>	316 SS, Viton®, 82/18 Au/Ni Braze, Trace Ag solder
<b>Weight (approx.)</b>	1.45 lb (0.66 kg)

### SPECIFICATIONS HFC-202

<b>Power Requirements (±15 VDC)</b>	± (14-16) VDC @ +60mA/-185 mA (< 3 Watt)
<b>Power Requirements (+24 VDC)</b>	(14-32) VDC (< 4.2 Watt)
<b>Wetted Materials<sup>2</sup></b>	302 SS, 316 SS, Nickel, Viton®, 82/18 Au/Ni Braze, Trace Ag solder, Kalrez® (Valve Seat)
<b>Setpoint Input</b>	0-5 VDC (Std) /4-20mA (optional)
<b>Weight (approx.)</b>	1.65 lb (0.75 kg)

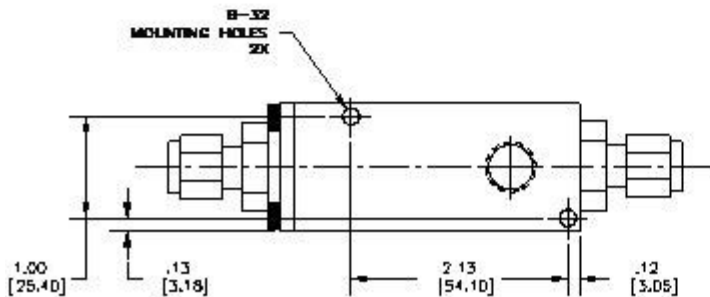
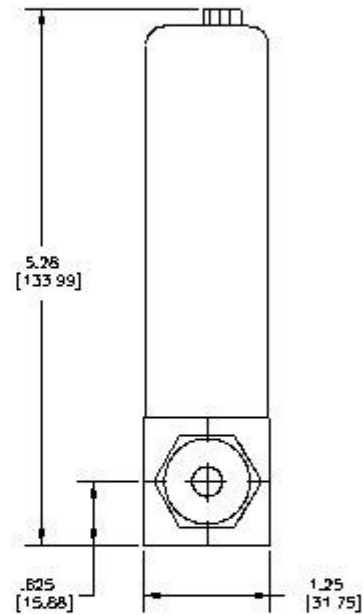
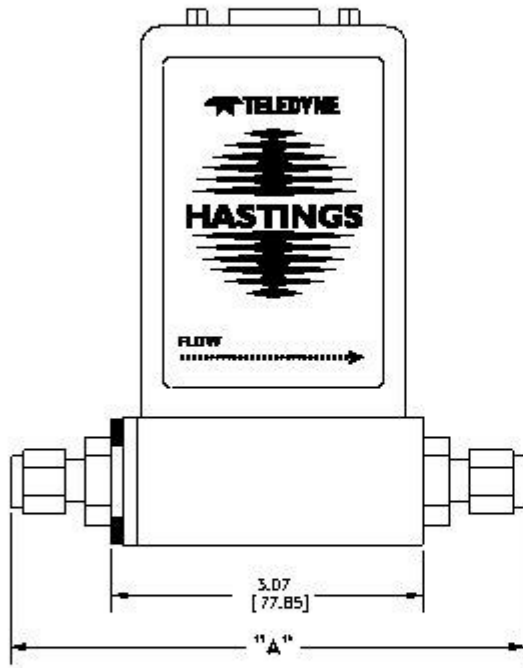
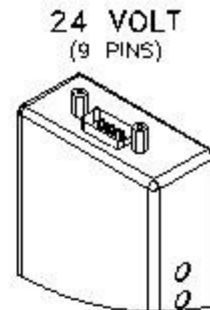
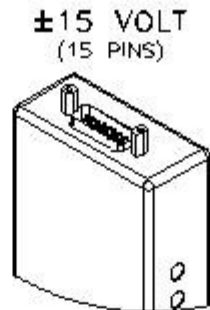
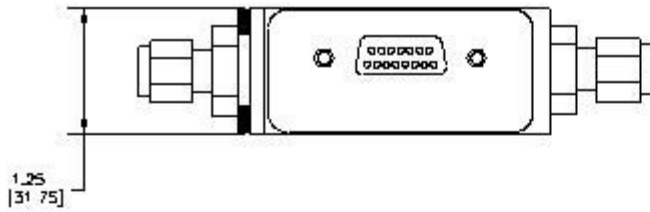
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Viton® is a registered trademark of DuPont Performance Elastomers  
Kalrez® is a registered trademark of DuPont Dow Elastomers  
VCR® is a registered trademark of Swagelok Company.

<sup>1</sup> 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.

<sup>2</sup> See Selection Chart for optional materials. Viton is standard O-ring.

Outline Drawings



FITTING TYPE	DIM "A"
9/16" - 18 FEMALE	3.00 [76.20]
SWAG 1/8" W NUT	4.84 [122.94]
SWAG, 1/4" W NUT	5.02 [127.51]
SWAG, 3/8" W NUT	5.14 [130.56]
SWAG 1/8" BARE	4.32 [109.73]
SWAG, 1/4" BARE	4.44 [112.78]
SWAG, 3/8" BARE	4.56 [115.82]
SWAG 1/4" x 9/16-18 CLAND ELBOW	5.41 [137.41]
SWAG 6MM x 9/16-18	5.11 [129.79]
VCR FACE 1/4"	4.88 [123.95]
VCO FACE 1/4"	4.90 [124.46]

# Selection Chart

Model No.	Circuit Board	Output	Fittings	O-Rings	Working Pressure	Cal
HFM-200						
HFC-202						

**Options**

Circuit Board	
01	Standard ( $\pm 15$ VDC)
03	24 VDC Supply
Output	
01	0-5 Volts (Std)
02	4-20 mA ** (Output Only)
03	4-20 mA I/O
Fittings	
01	1/4" Swagelok (Std)
02	1/8" Swagelok
03	1/4" VCR <sup>®</sup>
04	1/4" VCO <sup>®</sup>
05	1/4" Elbow
06	No fittings 9/16-18 Fem.
07	6mm Swagelok
08	3/8" Swagelok
O-Rings	
01	Viton <sup>®</sup> (Std)
02	Kalrez <sup>®</sup>
03	Neoprene
04	Buna-N
Working Pressure	
01	500 psig (Std)
02	1000 psig
Calibration	
01	NIST 5 point (Std)
02	NIST 10 Point
03	NIST 20 Point
04	Curve Fit

\*\* 0-5 VDC Input

**Range Information**

Range \_\_\_\_\_

Flow Units \_\_\_\_\_

Gas \_\_\_\_\_

Upstream Pressure (min/max) \_\_\_\_\_

Downstream Pressure (min/max) \_\_\_\_\_

Is downstream pressure dependent on flow resistance? Y/N \_\_\_\_\_

**STP** \_\_\_\_\_ **°C & 760 Torr**

Standard Temperature (OC) and pressure (760 Torr) assumed unless otherwise specified



Telephone: (757) 723-6531  
 Toll Free: (800) 950-2468  
 Fax: (757) 723-3925  
 World Wide Web: <http://www.teledyne-hi.com>  
 E-mail: [hastings\\_instruments@teledyne.com](mailto:hastings_instruments@teledyne.com)  
 804 Newcombe Ave.  
 Hampton, VA 23669

