

TELEDYNE HASTINGS

MEDIUM CAPACITY FLOWMETERS AND CONTROLLERS

INSTRUMENTS

Models HFM-201, HFC-203

FEATURES

- $\pm 1\%$ of Full-Scale Accuracy¹
- Proven Reliability
- Range — 30 to 500 slm (Air Equivalent)
- NIST Traceable Calibration

APPLICATIONS

- Leak Testing
- Medical Research
- Vapor Deposition
- R&D and Process Flows
- Semiconductor Processes
- Pollution Monitoring
- Gas Blending



HFM-201



HFC-203



Power Supplies Available

DESIGN FEATURES

The Teledyne Hastings Instruments (THI) Model HFM Mass Flowmeter and HFC Mass Flow Controller represent a culmination of over 60 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. This sensor is designed to be removable/replaceable in the field to virtually eliminate long down time due to clogging. Additionally, the HFM/HFC design features an integral filter and an easily replaceable closed loop electronics card.* 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.

Optional Features

- Fittings
- O-ring seals
- Enhanced response time
- Enhanced EMF stability
- High pressure rating (1000 psig)
- 4-20 mA converters
- Cleaned for oxygen service

Accessories

- Power Supplies with integral Flow Totalizers & Alarm Set Points
- Interconnecting cables

*Note: After changing components, instruments require recalibration to meet accuracy specifications.

MODELS HFM-201, HFC-203

SPECIFICATIONS HFM-201

Accuracy¹ and Linearity	±1% F.S.
Repeatability	±0.05% F.S.
Standard Pressure Rating	500 psig
Pressure Coefficient	-0.0067%/psi (0-1000 psig N ₂) typical
High-Pressure Option	Proof tested to 1500 psig
Leak Integrity	< 1x10 ⁻⁹ sccs
Temperature Coefficient³	Zero ±0.035% FS/°C (0-60°C) Span ±0.05% RDG/°C (0-60°C)
STP	0°C and 760 Torr
Power	±15 VDC @ ±25 mA
Flow Signal	(inherently linear) 0-5.00 VDC or 4-20 mA
Wetted Material²	316 SS, Viton®, 82/18 Au/Ni Braze, Trace Silver Solder
Connector	15-pin subminiature D
Fittings	1/2-in. Swagelok®, others available
Weight (approx.)	3.3 lb (1500 g)

SPECIFICATIONS HFC-203

Accuracy and Linearity	±1% F.S.
Repeatability	±0.05% F.S.
Std. Pressure Rating	500 psig
High Pressure Option	Proof tested to 1500 psig
Pressure Coefficient	-0.0067%/psi (0-1000 psig N ₂) typical
Control Valve DP*	Per customer order
Leak Integrity	< 1x10 ⁻⁹ sccs
Temperature Coefficient³	Zero ±0.035% FS/°C (0-60°C) Span ±0.05% RDG/°C (0-60°C)
STP	0°C and 760 Torr
Power	±15 VDC @ +60 mA/-185 mA
Flow Signal	(inherently linear) 0-5.00 VDC or 4-20 mA
Command Signal	0-5.00 VDC or 4-20 mA
Wetted Material²	316 SS, Nickel, Viton, 82/18 Au/Ni Braze, Trace Silver Solder, Kalrez®
Connector	15-pin subminiature D
Fittings	1/2-in. Swagelok, others available
Weight (approx.)	5.6 lb (2540 g)

*Consult factory for other pressures.

Teledyne 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.

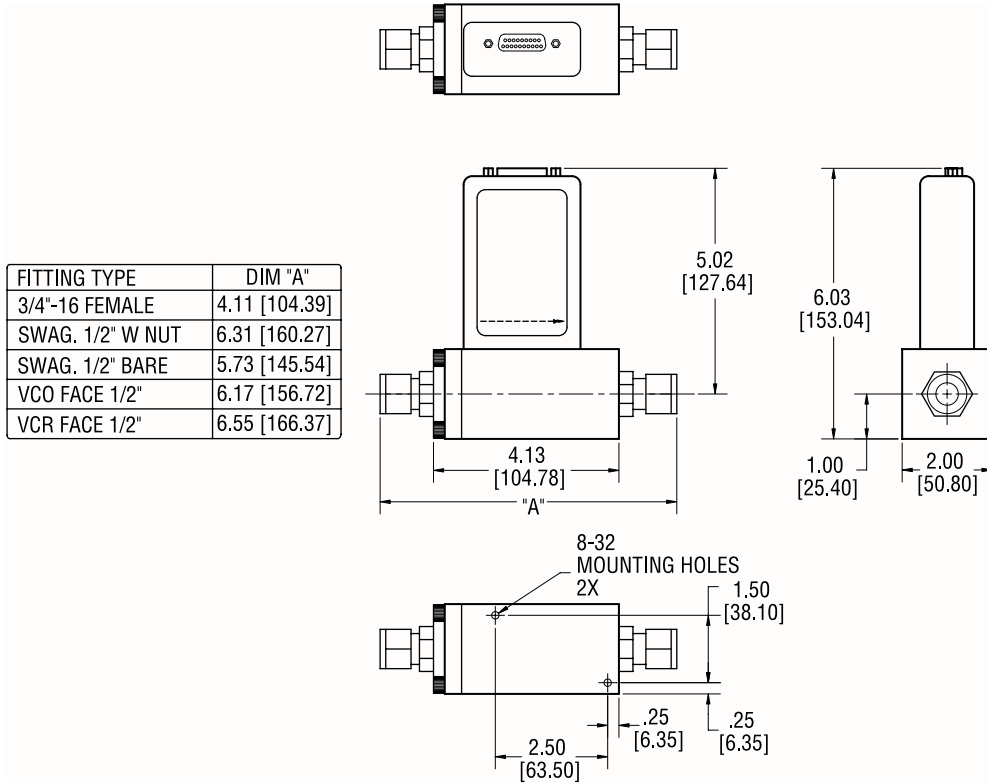
¹ See Product Manual for critical information on instrument accuracy and the use of GCFs (gas conversion factors). Stated accuracy is for nitrogen or other gas specific calibration and use with this gas only.

² See Selection Chart for optional materials. Viton is standard O-Ring option.

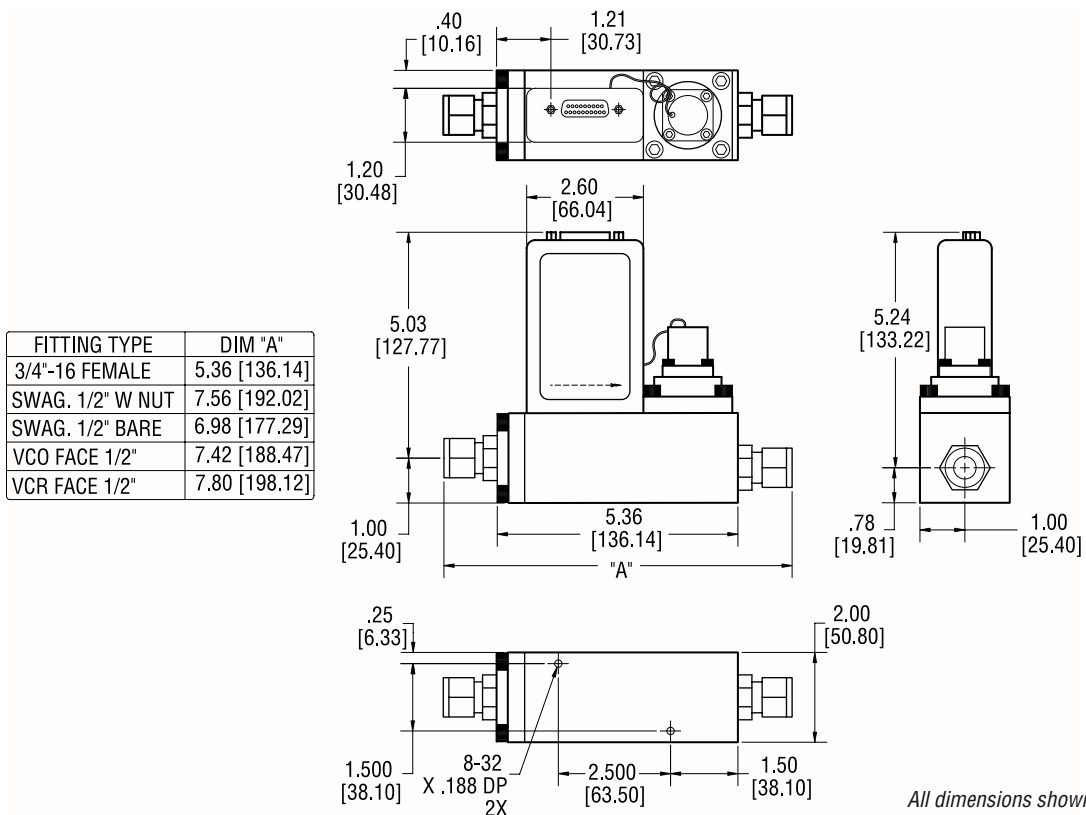
³ Specifications listed are for Revision G electronics (81-275).

Delrin® is a registered trademark of E.I. DuPont de Nemours.
Kalrez® is a registered trademark of Dupont Dow Elastomers L.L.C.
Swagelok® is a registered trademark of Crawford Company.
Teflon® is a registered trademark of E.I. DuPont de Nemours.
VCR® is a registered trademark of Cajon Company.
VCO® is a registered trademark of Cajon Company.
Viton® is a registered trademark of Dupont Dow Elastomers L.L.C.

Model HFM-201



Model HFC-203



All dimensions shown are in inches [mm].

MODELS HFM-201, HFC-203

Selection Chart

Typical instrument ordering/options number:

Model No.	Circuit Board	Output	Fittings	O-Rings	Working Pressure	Calibration Type
HFM-201	01	01	01	01	01	01

Order No.	Options
Circuit Board	
01	Standard
02	Fast Response - No RF rejection
Output	
01	0-5 Volts (Standard)
02	4-20mA**
Fittings	
01	1/2" Swagelok (Standard)
02	VCR® 1/2"
03	No Fittings
04	VCO® 1/2"

Order No.	Options
O-Rings	
01	Viton (Standard)
02	Kalrez®
03	Neoprene
04	Buna-N
Working Pressure	
01	500 psig (Standard)
02	1000 psig

Order No.	Options
Calibration Type	
01	NIST 5 Point (Standard)
02	NIST 10 Point
03	NIST 20 Point
04	Curve Fit

Range Information

Range _____

Flow Units _____

Gas _____

Standard Conditions* _____

*Referenced to standard temperature and pressure (0°C and 760 Torr, respectively).

**0-5 Volts only.

Selection Chart

Typical instrument ordering/options number:

Model No.	Circuit Board	Output	Fittings	O-Rings	Valve Bonnet Assembly	Valve Seat	Working Pressure	Calibration Type	Valve
HFC-203	01	01	01	01	01	01	01	01	01

Order No.	Options
Circuit Board	
01	Standard
Output	
01	0-5 Volts (Standard)
02	4-20mA Output
03	4-20mA I/O
Fittings	
01	1/2" Swagelok (Standard)
02	VCR 1/2"
03	No Fittings
04	VCO® 1/2"
O-Rings	
01	Viton (Standard)
02	Kalrez
03	Neoprene
04	Buna-N
05	Silicone

Order No.	Options
Valve Bonnet Assembly	
01	Standard
02	H ₂ , He
Valve Seat	
01	Viton/Teflon® (Standard)
02	Kalrez/Teflon
03	Viton/Delrin®
04	Neoprene/Teflon
05	Buna-N/Teflon
Working Pressure	
01	500 psig (Standard)
02	1000 psig
Calibration Type	
01	NIST 5 Point (Standard)
02	NIST 10 Point
03	NIST 20 Point
04	Curve Fit

Order No.	Options
Valve	
01	Normally Closed (Standard)
02	Normally Open

Range Information

Range _____

Flow Units _____

Gas _____

Upstream Pressure _____

Downstream Pressure _____

Is downstream pressure dependent on flow resistance? Y/N _____

Standard Conditions* _____

*Referenced to standard temperature and pressure (0°C and 760 Torr, respectively).

Your Customer Service Representative



TELEDYNE INSTRUMENTS
Hastings Instruments
 A Teledyne Technologies Company

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
 P.O. Box 1436
 Hampton, VA 23661