TELEDYNE HASTINGS INSTRUMENTS

LOW CAPACITY FLOWMETERS AND CONTROLLERS

Models HFM-200, HFC-202

FEATURES

- ±1% of Full-Scale Accuracy[1]
- Proven Reliability
- Range — 10 to 25,000 sccm (N_2 Equivalent)
- NIST Traceable Calibration

APPLICATIONS

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

HFM-200 / HFC-202

Power Supplies Available

DESIGN FEATURES

The Teledyne Hastings Instruments (THI) Model HFM Mass Flowmeter and HFC Mass Flow Controller represent 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 an externally adjustable valve with easily replaceable flow orifices.

All of these standard features, when coupled with the instrument's inherent linear response to flow changes and THIs' 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.

TELEDYNE INSTRUMENTS
Hastings Instruments
A Teledyne Technologies Company

MODELS HFM-200, HFC-202

SPECIFICATIONS HFM-200

Accuracy[1] 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 Coefficient[3]	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 Material[2]	316 SS, Viton®, 82/18 Au/Ni Braze, Trace Silver Solder
Connector	15-pin subminiature D
Fittings	1/4-in. Swagelok®, others available
Weight (approx.)	1.8 lb (0.82 kg)

SPECIFICATIONS HFC-202

Accuracy[1] 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 Coefficient[3]	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 Material[2]	316 SS, 302 SS, Nickel, Viton, 82/18 Au/Ni Braze, Trace Silver Solder, Kalrez®
Connector	15-pin subminiature D
Fittings	1/4-in. Swagelok, others available
Weight (approx.)	1.8 lb (0.82 kg)

*Consult factory for other pressures.

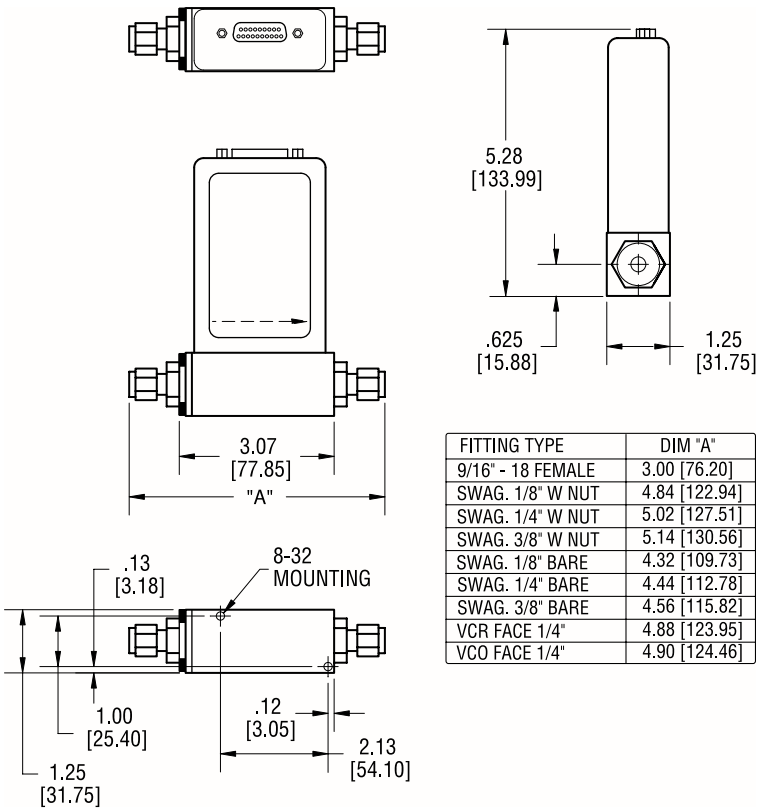
Teledyne Hastings Instruments reserves the right to change or modify the design of its equipment without any obligation to provide notification of change or intent to change.

[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.

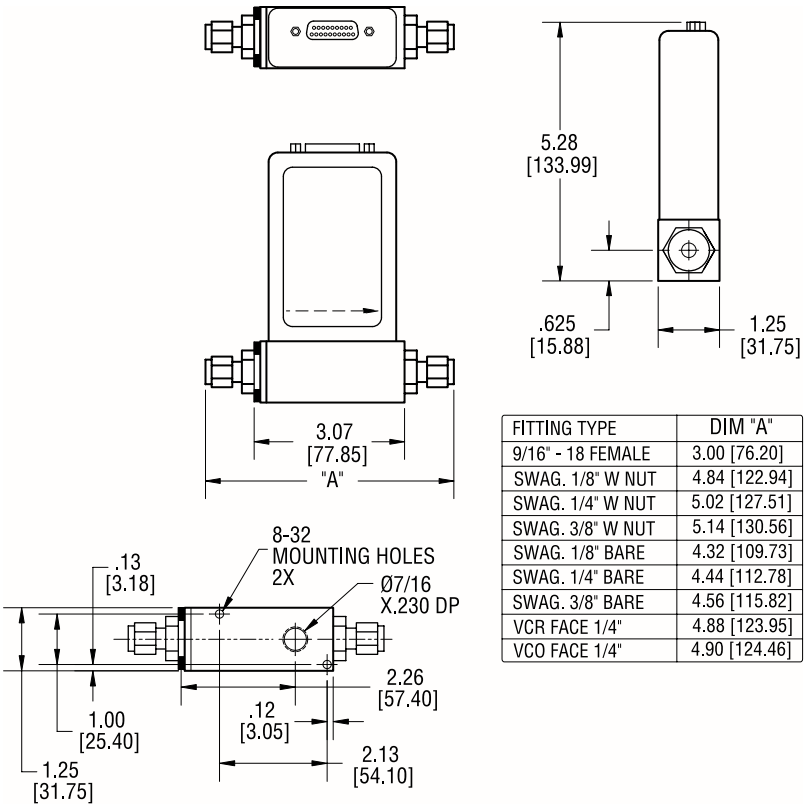
[3] Specifications listed are for Revision G electronics (81-275).

Model HFM-200



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]
VCR FACE 1/4"	4.88 [123.95]
VCO FACE 1/4"	4.90 [124.46]

Model HFC-202



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VCO FACE 1/4"	4.90 [124.46]

All dimensions shown are in inches [mm].

MODELS HFM-200, HFC-202

Selection Chart

Typical instrument ordering/options number:

Model No.	Circuit Board	Output	Fittings	O-Rings	Working Pressure	Calibration Type
HFM-200	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

**0-5 Volts only.

Order No.	Options
	Fittings
01	1/4" Swagelok (Standard)
02	1/8" Swagelok
03	VCR® 1/4"
04	VCO® 1/4"
05	1/4" Elbow
06	No Fittings 9/16-18 Female

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

Range Information

Range _____

Flow Units _____

Gas _____

Standard Conditions* _____

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

Selection Chart

Typical instrument ordering/options number:

Model No.	Circuit Board	Output	Fittings	O-Rings	Working Pressure	Calibration Type
HFC-202	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	1/4" Swagelok (Standard)
02	1/8" Swagelok
03	VCR 1/4"
04	VCO 1/4"
05	1/4" Elbow
06	No Fittings 9/16-18 Female

Order No.	Options
	O-Rings
01	Viton (Standard)
02	Kalrez
03	Neoprene
04	Buna-N
	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

Range Information

Range _____

Flow Units _____

Gas _____

Upstream Pressure (min/max) _____

Downstream Pressure (min/max) _____

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

Standard Conditions* _____

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