

# TELEDYNE HASTINGS

## LOW CAPACITY FLOWMETERS AND CONTROLLERS

# INSTRUMENTS

### Models HFM-210, HFC-212

#### FEATURES

- $\pm 1\%$  of Full-Scale Accuracy<sup>1</sup>
- Proven Reliability
- Range — 10 to 30,000 sccm (N<sub>2</sub> Equivalent)
- NIST Traceable Calibration
- Tylan® FC-280 Footprint

#### APPLICATIONS

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



HFM-210 / HFC-212

#### DESIGN FEATURES

The Teledyne Hastings Instruments (THI) Model HFM Mass Flowmeter and HFC Mass Flow Controller represent over 55 years of experience in designing and manufacturing reliable, high quality mass flow instruments. The HFM/HFC Series flow instrument can be set up to measure and control any of a wide variety of gases under many different pressure conditions as required.

The Models HFM-210 and HFC-212 were specifically designed to meet the footprint dimensions of the Tylan® FC-280 model. They are based on refinements to the existing Hastings 200 Series flow product line.

The HFM/HFC Series of flow instruments is based on a modular design. At the heart of each instrument is an insulated thermo electric sensor which provides enhanced zero stability and allows installation in any orientation plane in most low pressure applications. 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 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/readouts  
Interconnecting cables

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

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*Hastings Instruments*  
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# MODELS HFM-210, HFC-212

## SPECIFICATIONS HFM-210

<b>Accuracy<sup>1</sup> and Linearity</b>	±1% F.S.
<b>Repeatability</b>	±0.05% F.S. (max.)
<b>Standard Pressure Rating</b>	500 psig
<b>Pressure Coefficient</b>	+0.0067% Rdg/psi (0-1000 psig N <sub>2</sub> )
<b>High-Pressure Option</b>	Proof tested to 1500 psig
<b>Leak Integrity</b>	< 1x10 <sup>-9</sup> sccs
<b>Temperature Coefficient (0°-50°C)</b>	Zero ±0.08% F.S./°C (max.) Span ±0.15% Rdg/°C (max.)
<b>STP</b>	0°C and 760 Torr
<b>Input Power</b>	±15 VDC at ±30 mA (max.)
<b>Flow Signal</b>	0-5.00 VDC or 4-20 mA (inherently linear)
<b>Wetted Material</b>	316 SS, Viton®, 87/13 Au/Ni Braze
<b>Connector</b>	15 pin Subminiature D
<b>Fittings Available</b>	Swage (1/8", 1/4" & 3/8"), VCO, VCR
<b>Weight (approx.)</b>	1.8 lb (0.82 kg)

## SPECIFICATIONS HFC-212

<b>Accuracy<sup>1</sup> and Linearity</b>	±1% F.S.
<b>Repeatability</b>	±0.05% F.S. (max.)
<b>Standard Pressure Rating</b>	500 psig
<b>Pressure Coefficient</b>	+0.0067% Rdg/psi (0-1000 psig N <sub>2</sub> )
<b>Control Valve DP</b>	Per customer request
<b>High-Pressure Option</b>	Proof tested to 1500 psig
<b>Leak Integrity</b>	< 1x10 <sup>-9</sup> sccs
<b>Temperature Coefficient (0°-50°C)</b>	Zero ±0.08% F.S./°C (max.) Span ±0.15% Rdg/°C (max.)
<b>STP</b>	0°C and 760 Torr
<b>Input Power</b>	±15 VDC at +60 mA/-185 mA (max.)
<b>Flow Signal</b>	0-5.00 VDC or 4-20 mA (inherently linear)
<b>Command Input</b>	0-5.00 VDC or 4-20 mA available
<b>Wetted Material</b>	316 SS, Nickel, Viton®, 87/13 Au/Ni Braze
<b>Connector</b>	15 pin Subminiature D
<b>Fittings Available</b>	Swage (1/8", 1/4" & 3/8"), VCO, VCR
<b>Weight (approx.)</b>	1.8 lb (0.82 kg)

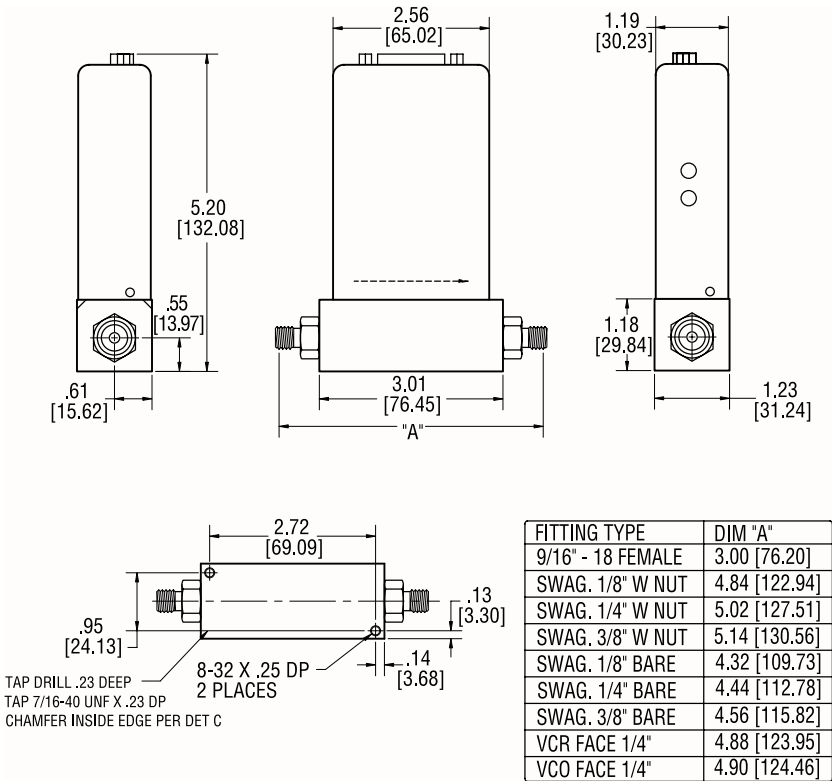
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Kalrez® is a registered trademark of Dupont Dow Elastomers L.L.C.  
Swagelok® is a registered trademark of Crawford Company.  
VCR® is a registered trademark of Cajon Company.  
Viton® is a registered trademark of Dupont Dow Elastomers L.L.C.

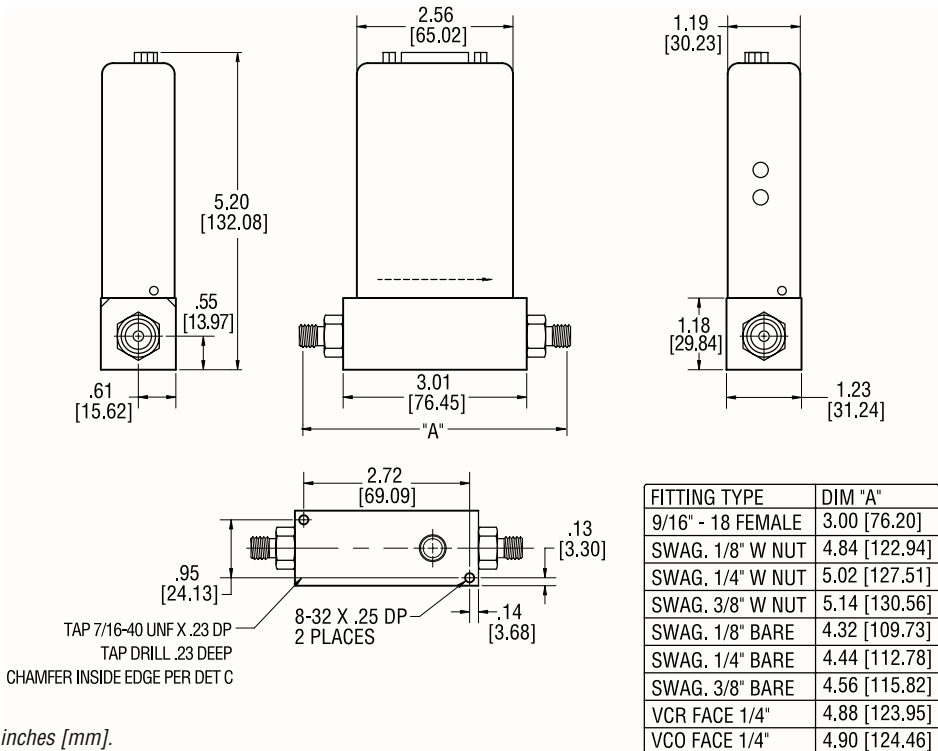
<sup>1</sup>See Product Manual for critical information on instrument accuracy and the use of GCFs (gas conversion factors). Stated accuracy is for nitrogen or other gas specific calibration and use with this gas only.

## MODELS HFM-210, HFC-212

# Model HFM-210



## Model HFC-212



*All dimensions shown are in inches [mm].*

# MODELS HFM-210, HFC-212

## Selection Chart

Typical instrument ordering/options number:

Model No.	Circuit Board	Output	Fittings	O-Rings	Working Pressure	Calibration Type
HFM-210	01	01	01	01	01	01

Order No.	Options
<b>Circuit Board</b>	
01	Standard
02	Fast Response
<b>Output</b>	
01	0-5 Volts (Standard)
02	4-20mA
<b>Fittings</b>	
01	1/4" Swagelok (Standard)
02	1/8" Swagelok
03	VCR® 1/4"
04	VCO® 1/4"
05	1/4" Elbow
06	No Fittings

Order No.	Options
<b>O-Rings</b>	
01	Viton (Standard)
02	Kalrez®
03	Neoprene
<b>Working Pressure</b>	
01	500 psig (Standard)
02	1000 psig
<b>Calibration Type</b>	
01	NIST 5 Point (Standard)
02	NIST 10 Point
03	NIST 20 Point

### 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-212	01	01	01	01	01	01

Order No.	Options
<b>Circuit Board</b>	
01	Standard
<b>Output</b>	
01	0-5 Volts (Standard)
02	4-20mA Output
03	4-20mA I/O
<b>Fittings</b>	
01	1/4" Swagelok (Standard)
02	1/8" Swagelok
03	VCR 1/4"
04	VCO 1/4"
05	1/4" Elbow
06	No Fittings

Order No.	Options
<b>O-Rings</b>	
01	Viton (Standard)
02	Kalrez
03	Neoprene
<b>Working Pressure</b>	
01	500 psig (Standard)
02	1000 psig
<b>Calibration Type</b>	
01	NIST 5 Point (Standard)
02	NIST 10 Point
03	NIST 20 Point

### 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](mailto:hastings_instruments@teledyne.com)

P.O. Box 1436

Hampton, VA 23661