

# TELEDYNE HASTINGS

## HIGH CAPACITY FLOWMETERS AND CONTROLLERS

# INSTRUMENTS

### Models HFM-306, HFC-308

#### FEATURES

This product bulletin lists specifications, options, and features which are to be used for discussion purposes only. Evaluation versions of this instrument may be available, but the performance characteristics may be significantly different than those listed here. Contact Teledyne Hastings Instruments for updated information.

- **Range — 2500-10,000 slm (Air Equivalent)**
- **$\pm 3.0\%$  of Full-Scale Accuracy<sup>1</sup>**
- **Rapid Settling Times:**  
HFM-306  $\leq 0.4$  seconds  
HFC-308  $\leq 3.0$  seconds
- **Operating Pressures to 500 PSI**
- **NIST Traceable Calibration**
- **Class 1, Div. 2 Enclosures Available**

#### APPLICATIONS

- Gas Blending/Delivery Systems
- R&D and Process Flows
- Petrochemical
- Fuel Cell



HFM-306



HFC-308

#### DESIGN FEATURES

Teledyne Hastings Instruments (THI) products represent over 55 years of experience in the design and manufacture of mass flow products. The 300 Series is a culmination of this experience with patented technologies that make these the finest flowmeters and controllers available today.

The THI 300 Series Mass Flow Products are designed to accurately measure mass flow without corrections or compensations for gas pressure and temperature. The HFM-306/HFC-308 versions are accurate to better than  $\pm 3.0\%$  of full scale. THI mass flow instruments do not require any periodic maintenance under normal operating conditions with clean gas. The HFM-306/HFC-308 series includes a flow straightening section which helps establish well-defined flow for higher accuracy. An innovative valve design gives stable performance while providing excellent response to changing set points. Instruments are normally calibrated with the appropriate standard calibration gas (air), then a correction factor is used.

The 300 Series products contain a number of features that set them apart from other available instruments: (1) They are inherently linear; no linearization circuitry is employed. Should recalibration in the field be desired (a calibration standard is required), the customer needs to simply set the zero and span points. (2) The output signal is linear for very large overflows and will not come back on scale when a flow an order of magnitude over the full scale flow rate is measured. (3) The instrument incorporates a removable/replaceable sensor module. (4) The unit has very fast settling times.



**TELEDYNE INSTRUMENTS**

*Hastings Instruments*

A Teledyne Technologies Company

# MODELS HFM-306/HFC-308

## DESIGN FEATURES (cont)

### Optional Features

Fittings—VCR<sup>®</sup>, VCO<sup>®</sup> and Swagelok<sup>®</sup>  
Cleaned for oxygen service

### Accessories

Power supplies/readouts  
Flow totalizers  
Alarm set points  
Interconnecting cables

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

## COMMON SPECIFICATIONS HFM-306/HFC-308

Accuracy <sup>1</sup>	± 3.0% of F.S.
Repeatability	± 0.2% of F.S.
Maximum Operating Pressure	500 psi
Pressure Coefficient	0.015%/psi (N <sub>2</sub> ) (0-500 psig)
Leak Integrity	< 1x10 <sup>-9</sup> sccs He
Temperature Coefficient (zero)	< 0.079%/°C of F.S. (0-60°C)
Temperature Coefficient (span)	< 0.092%/°C of reading (15-50°C)
Standard Output	0-5 VDC
Optional Output	4-20 mA
Connector	15-pin subminiature D
Attitude Sensitivity of Zero	< 0.2% of F.S. (N <sub>2</sub> @ 19.7 psia)
Attitude Sensitivity of Span	< 0.06% of reading (N <sub>2</sub> @ 19.7 psia)

## SPECIFICATIONS HFM-306

Settling Time	≤ 0.4 sec (0% to 100% F.S.)
Power Requirement	±15 VDC @ ±55 mA; +24 VDC
Wetted Materials	302 SS, 316 SS, Nickel 200
Weight (approx.)	38 lb (___ kg)

## SPECIFICATIONS HFC-308

Settling Time	≤ 2.0 sec (10% to 100% F.S.)
Power Requirement	±15 VDC @ ±150 mA; +24 VDC
Wetted Materials	302 SS, 316 SS, Nickel 200, Viton, Kalrez <sup>®</sup> (valve seat)
Setpoint Input	0-5 VDC (standard)/4-20 mA (optional)
Weight (approx.)	38 lb (___ kg)

*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.*

<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.

Kalrez<sup>®</sup> is a registered trademark of Dupont Dow Elastomers L.L.C.

Swagelok<sup>®</sup> is a registered trademark of Crawford Company.

VCR<sup>®</sup> is a registered trademark of Cajon Company.

VCO<sup>®</sup> is a registered trademark of Cajon Company.

Viton<sup>®</sup> is a registered trademark of Dupont Dow Elastomers L.L.C.

**Model HFM-306**

*Drawings to come in future bulletins*

**Model HFC-308**

# MODELS HFM-306/HFC-308

## Selection Chart

Typical instrument ordering/options number:

Model No.	Circuit Board	Output	Fittings	Seals	Pressure	Calibration Type	Input Voltage	Enclosure
HFM-306	01	01	02	01	01	01	01	01

Order No.	Options
<b>Circuit Board</b>	
01	Pinout H (Standard)
02	Pinout U
<b>Output</b>	
01	0-5 Volts (Standard)
02	4-20mA
<b>Fittings</b>	
01	Swagelok (Standard)
02	Sanitary
03	Pipe Thread
04	Flange

Order No.	Options
<b>Seals</b>	
01	Viton (Standard)
02	Kalrez®
03	Neoprene
04	Buna N
<b>Pressure</b>	
01	500 psi (Standard)
<b>Calibration Type</b>	
01	NIST 5 Point (Standard)
02	NIST 10 Point
03	NIST 20 Point
04	Curve

Order No.	Options
<b>Input Voltage</b>	
01	±15 VDC (Standard)
02	+24 VDC
<b>Enclosure</b>	
01	Standard
02	Class 1, Div. 2

### 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	Seals	Pressure	Calibration Type	Valve	Input Voltage	Enclosure
HFC-308	01	01	02	01	01	01	01	01	01

Order No.	Options
<b>Circuit Board</b>	
01	Pinout H (Standard)
02	Pinout U
<b>Output</b>	
01	0-5 Volts (Standard)
02	4-20mA
<b>Fittings</b>	
01	Swagelok (Standard)
02	Sanitary
03	Pipe Thread
04	Flange

Order No.	Options
<b>Seals</b>	
01	Viton (Standard)
02	Kalrez®
03	Neoprene
04	Buna N
<b>Pressure</b>	
01	500 psi (Standard)
<b>Calibration Type</b>	
01	NIST 5 Point (Standard)
02	NIST 10 Point
03	NIST 20 Point
04	Curve

Order No.	Options
<b>Valve</b>	
01	Normally Closed (Standard)
02	Normally Open
<b>Input Voltage</b>	
01	±15 VDC (Standard)
02	+24 VDC
<b>Enclosure</b>	
01	Standard
02	Class 1, Div. 2

### Range Information

Range \_\_\_\_\_

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

Gas \_\_\_\_\_

Standard Conditions\* \_\_\_\_\_

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