



# TELEDYNE HASTINGS INSTRUMENTS

Everywhere you look™

**HFM-D-300A**      *Mass Flow Meter*  
**HFC-D-302A**      *Mass Flow Controller*

## FEATURES

- Range 0 - 5 sccm to 0-25 slm (N<sub>2</sub> Equivalent)
- Excellent Accuracy  
±(0.5% of Reading + 0.2% of Full Scale)
- All-Metal Seals  
HFC-D-302 Valve Features Kalrez® Seat
- 0-5 VDC or 4-20 mA I/O
- RS232 / RS485
- Typical Settling Time:
  - HFM-D-300 < 1 second
  - HFC-D-302 1 –2 seconds
- Status LEDs
- Auto-Zero (HFC-D-302 Controller Only)
- Totalizer
- Large Diameter Sensor Tube
- Low Wetted Surface Area
- Operating Pressures to 500 psi or higher
- NIST Traceable Calibration

## APPLICATIONS

- Leak Testing
- High Purity Gas Delivery
- Thin Film Deposition
- Gas Blending
- Pharmaceutical
- Fuel Cell R&D
- Environmental Monitoring
- Medical Research

## BENEFITS

- High Accuracy
- Fast Metering Response
- Superior Linearity
- Rapid Controller Settling Time
- Digital Extended Range

# Mass Flow Meters & Controllers



**HFM-D-300A** *Mass Flow Meter*



**HFC-D-302A** *Mass Flow Controller*

## Description

Teledyne Hastings Instruments' products represent over 70 years of experience in the design and manufacture of mass flow instruments. The all-metal Digital 300 Series is a culmination of this experience with patented technologies that make these instruments the finest flow-meters and controllers available today.

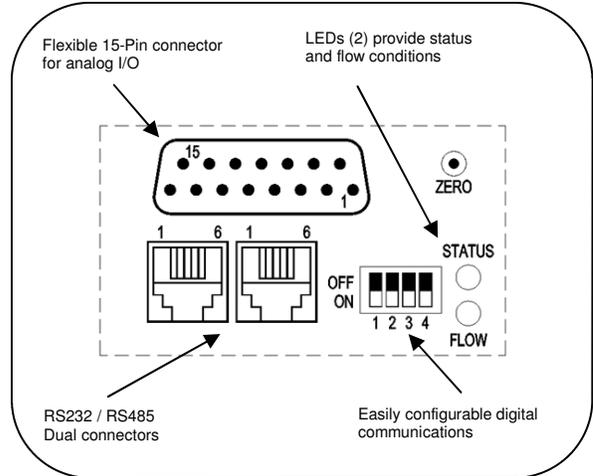
The Digital 300 Series of thermal mass flow meters and controllers from Teledyne are designed to accurately measure mass flow without corrections or compensations for gas pressure and temperature. They are accurate to better than ±(0.5% of reading + 0.2% of full scale) for full scale flow rates from 0-5 sccm to 0-25 slm.



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**Specifications and Standards**

**DESCRIPTION (cont.)**

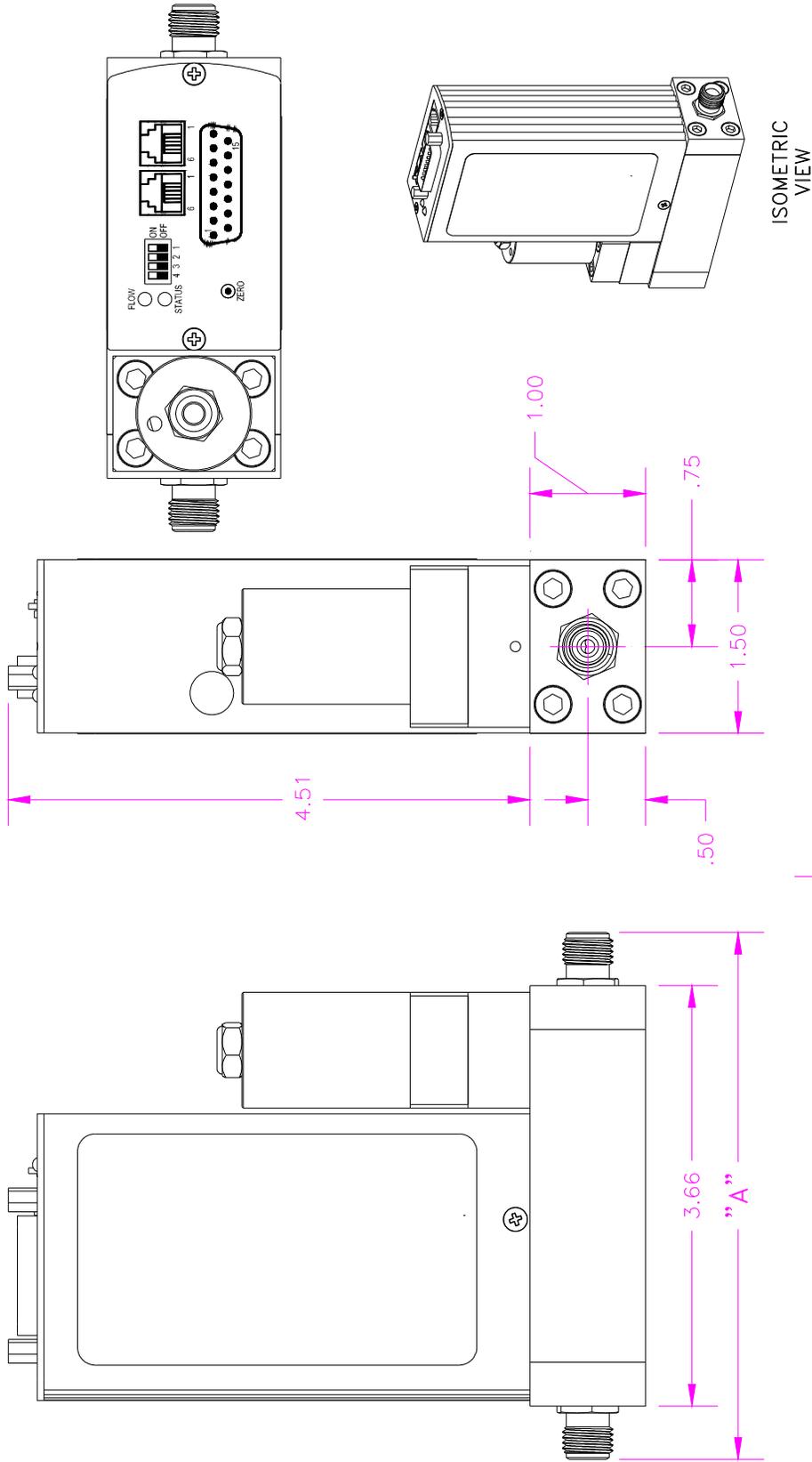


Specifications	HFM-D-300A (meter)	HFC-D-302A (controller)
Range	0 - 5 sccm to 0 - 25 slm (N2)	0 - 5 sccm to 0 - 25 slm (N2)
Accuracy	± (0.5% of reading + 0.2% of full scale)	± (0.5% of reading + 0.2% of full scale)
Repeatability	± 0.15% of F.S.	± 0.15% of F.S.
Maximum Working Pressure	500 psig (Optional 1000 psig)	500 psig (Optional 1000 psig)
Operating Temperature	-20 — 70 °C	-20 — 70 °C
Warm up time	30 min for optimum accuracy 6 min within rated accuracy	30 min for optimum accuracy 2 min for ± 2% of full scale accuracy
Settling Time	Typically ≤ 1 seconds	Typically < 1-2 seconds
Temperature Coefficient of Zero	< ± 0.2% / °C of full scale max (-20—70 °C)	N/A for controller with auto-zero enabled
Temperature Coefficient of Span	< ± 0.1% / °C of full scale max (-20—70 °C)	< ± 0.1% / °C of full scale max (-20—70 °C)
Analog I/O (standard)	0-5 VDC	0-5 VDC
Analog I/O (optional)	0-10 VDC, 0-20 mA, 4-20 mA	0-10 VDC, 0-20 mA, 4-20 mA
Analog Connector	15-pin subminiature D	15-pin subminiature D
Digital Connector	Dual RJ-12	Dual RJ-12
Attitude Sensitivity of Zero	< 1.4 % of full scale (N2 @ 50 psig)	< 1.4 % of full scale before autozero
Power Requirements	11-36 VDC @ 3.1 Watt (max), ±12, ±15 VDC	11-36 VDC @ 6.7 Watt (max), ±12, ±15 VDC
Wetted Materials	316L SS, Nickel 200, 304 SS, 302 SS	316L SS, Nickel 200, 302 SS, 304 SS, Kalrez® (valve seat)
Weight (approx.)	2.1 lb. (0.9 kg)	2.6 lb. (1.2 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.*

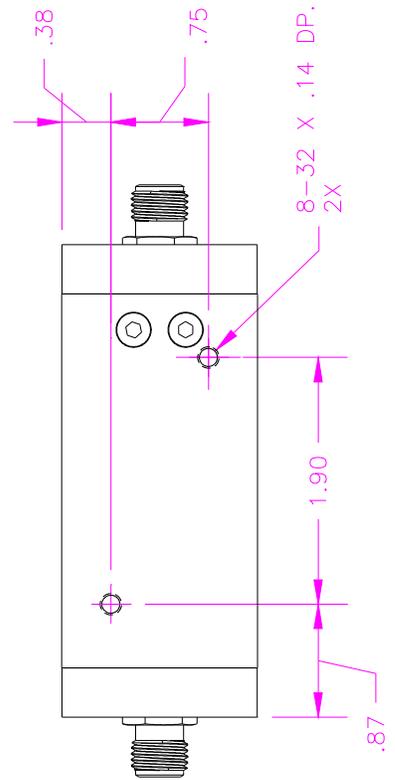
Viton® is a registered trademark of Dupont Performance Elastomers  
 Kalrez® is a registered trademark of Dupont Performance Elastomers  
 Teflon® is a registered trademark of E.I. Dupont de Nemours & Co.  
 VCR® is a registered trademark of Swagelok Company.

Outline Drawing - HFM-D-300A/HFC-D-302A



FITTINGS

FITTING TYPE	DIM "A"
9/16"-18 FEMALE	4.05 [102.87]
SWAG 1/8" W NUT	5.09 [129.29]
SWAG 1/8" BARE	4.57 [116.08]
SWAG 1/4" W NUT	5.15 [130.81]
SWAG 1/4" BARE	4.57 [116.08]
VCO FACE 1/4"	4.57 [116.08]
VCR FACE 1/4"	4.88 [123.95]
SURFACE MOUNT	5.66 [143.76]
SWAG 6MM W NUT	5.68 [144.27]





# Selection Chart

Model No.	Pinout	Input / Output	Fittings	Pressure	Cal	Digital
HFM-D-300A						
HFC-D-302A						

Pinout	
01	Pinout H (Std)

Input/Output	
01	0-5 VDC (Std)
02	0-10 VDC
03	4-20 mA
04	0-20 mA

Fittings	
01	1/4" VCR <sup>®</sup>
02	1/4" Swagelok (Std)
03	1/8" Swagelok
04	1/4" VCO <sup>®</sup>
05	9/16 - 18 Female ST
06	Surface mount
07	6mm Swagelok (non-weld)

Pressure	
01	500 psig (std)
02	1000 psig (1500 proof)

Calibration	
01	N <sub>2</sub> or Air
02	2 NIST Traceable Cal Reports
03	3 NIST Traceable Cal Reports
04	4 NIST Traceable Cal Reports
05	5 NIST Traceable Cal Reports
06	6 NIST Traceable Cal Reports
07	7 NIST Traceable Cal Reports
08	8 NIST Traceable Cal Reports
09	9 NIST Traceable Cal Reports

Digital	
01	RS232 (std)
02	RS485

### Range Information for all Instruments

Each calibration will require the following information:

Range \_\_\_\_\_

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

Gas \_\_\_\_\_

### For the HFC Instruments also

Upstream Pressure \_\_\_\_\_  
(maximum & minimum)

Downstream Pressure \_\_\_\_\_  
(maximum & minimum)

Does the downstream pressure change with flowrate? Y/N \_\_\_\_\_

For volumetric units the standard temperature and pressure of the unit is also required  
0°C & 760 Torr will be used when other values are not specified