TELEDYNE HASTINGS INSTRUMENTS
Everywhereyoulook™

Mass Flow Meters & Controllers

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

FEATURES

- Accuracy
  - ±0.75% of Full-Scale for .005 to 10 slm
  - ±1.0% of Full-Scale for 10 to 25 slm
- All-Metal Seals
  - HFC-302 Valve Features Kalrez® Seat
- 0-5 VDC or 4-20 mA I/O
- Typical Settling Time:
  - HFM-300 ≤ 0.4 sec
  - HFC-302 ≤ 1 sec
- Range 0 - 5 sccm to 0-25 slm (N_2 Equivalent)
- 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 Response
- Superior Linearity
- Rapid Settling Time
- Foldover Protection

HFM-300 Mass Flow Meter

HFC-302 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 seal 300 Series is a culmination of this experience with patented technologies that make these instruments the finest flowmeters and controllers available today.

The 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 ±0.75% of full-scale for .005 to 10 slm and ±1.0% of full-scale for 10 to 25 slm.

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Specifications and Standards

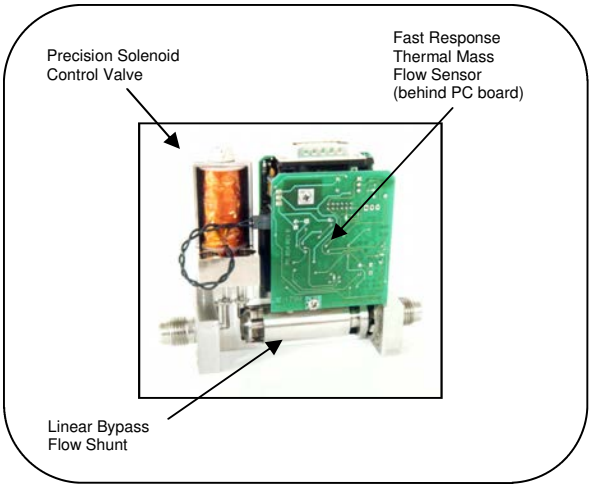
DESCRIPTION (cont.)

The 300 Series uses a thermal-based mass flow sensor. This sensor is designed to provide exceptional linear response to changing flow rates. In addition, the electronics associated with each sensor are precisely tuned to give fast response times.

The HFC-302 flow controller features a precision solenoid proportional control valve. Teledyne configures and tests each individual valve based on the users flow rate, gas, and pressure conditions.

Instruments are normally calibrated with the appropriate standard calibration gas (usually nitrogen), then a gas conversion factor (GCF) is used to adjust the output for the intended gas. Special calibrations for other gases, such as oxygen, helium, and argon, are available upon special request.

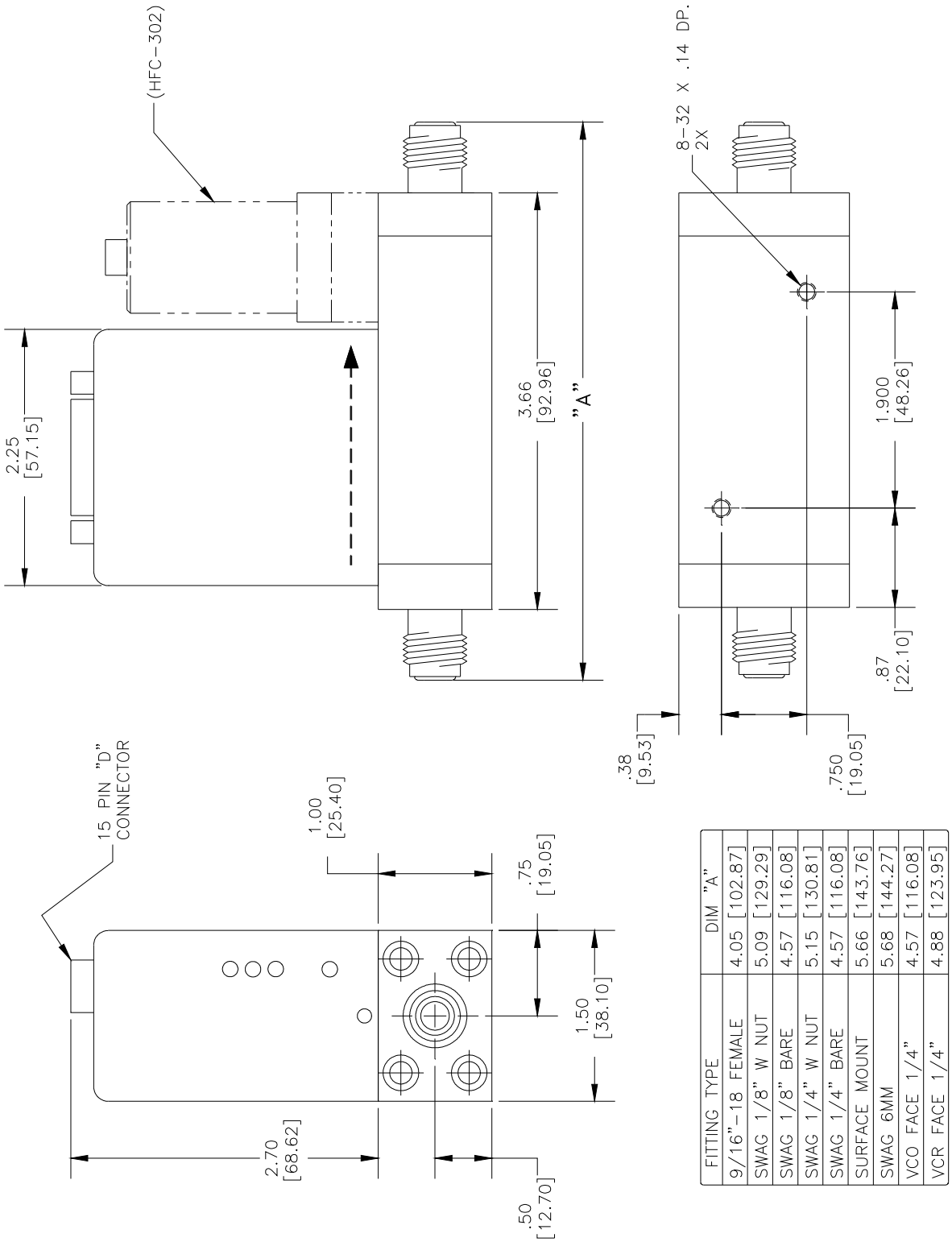
Our application engineers can help you review your system requirements and work with you to provide a solution.



Specifications	HFM-300	HFC-302
Range	0 - 5 sccm to 0 - 25 slm (N2)	0 - 5 sccm to 0 - 25 slm (N2)
Accuracy	± 0.75% of F.S. 5 sccm to 10 slm (N2)	± 0.75% of F.S. 5 sccm to 10 slm (N2)
	± 1.0% of F.S. 10 slm to 25 slm (N2)	± 1.0% of F.S. 10 slm to 25 slm (N2)
Repeatability	± 0.2% of F.S.	± 0.2% 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	30 min for optimum accuracy
	2 min for ± 2% of full scale	2 min for ± 2% of full scale
Settling Time	≤ 0.4 sec (10% to 100% F.S.)	Typically < 1 sec (10% to 100% F.S.)
Temperature Coefficient of Zero	< ± 0.12% / °C of F.S. (-20—70°C)	< ± 0.12% / °C of F.S. (-20—70°C)
Temperature Coefficient of Span	< ± 0.08% / °C of Rdg. (-20—70°C)	< ± 0.08% / °C of Rdg. (-20—70°C)
Analog I/O (standard)	0-5 VDC (Load Min. 2 kΩ)	0-5 VDC (Load Min. 2 kΩ)
Analog I/O (optional)	4-20 mA (Load < 600 Ω)	4-20 mA (Load < 600 Ω)
Connector	15-pin subminiature D	15-pin subminiature D
Attitude Sensitivity of Zero	< 1.4 % of F.S. (N2 @ 50 psig)	< 1.4 % of F.S. (N2 @ 50 psig)
Power Requirements	± 15 VDC @ ± 70 mA	± 15 VDC @ 185 mA
Wetted Materials	316L SS, Nickel 200, 302 SS	316L SS, Nickel 200, 302 SS, Kalrez® (valve seat)
Weight (approx.)	1.95 lb. (0.88 kg)	2.45 lb. (1.12 kg)

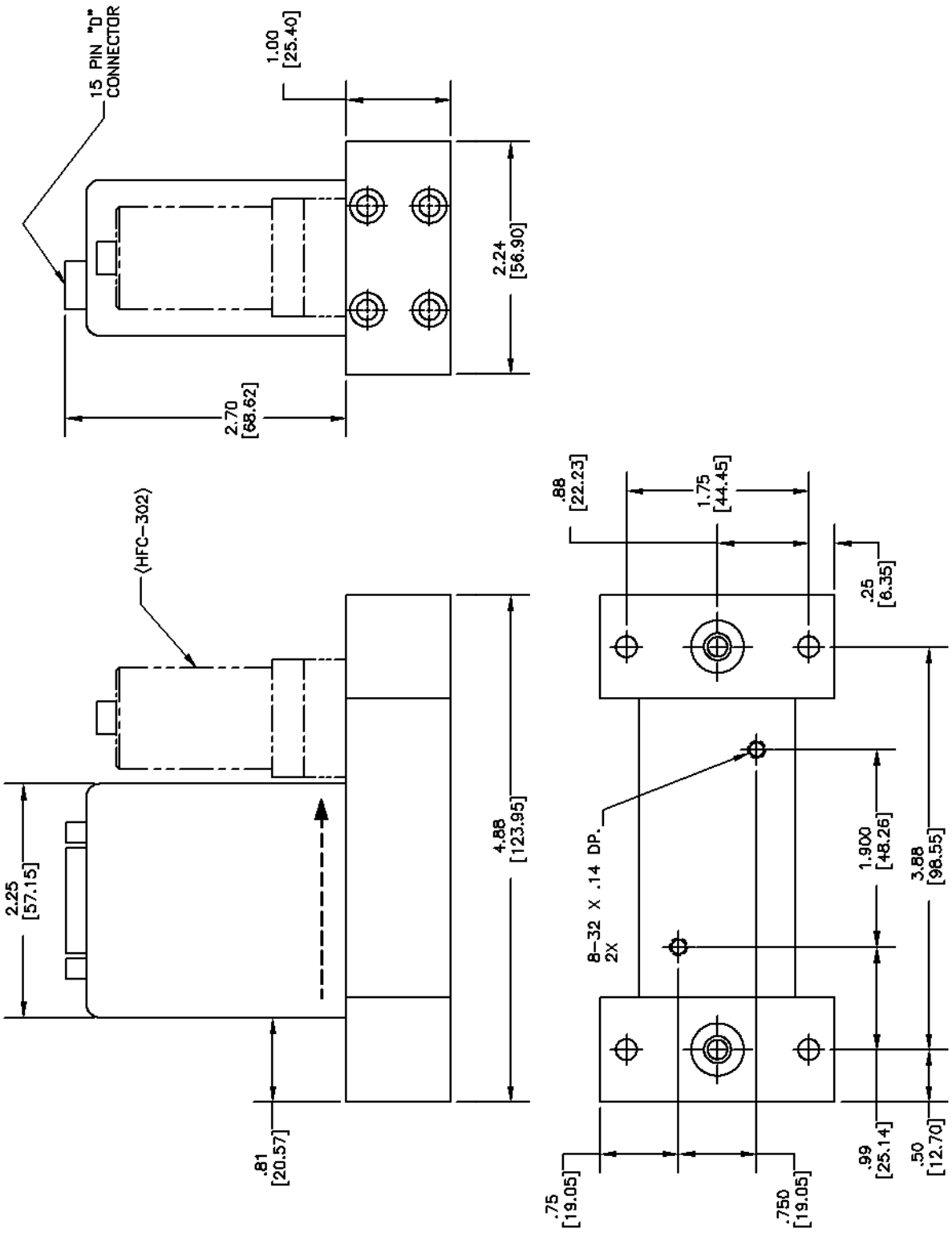
Teledyne Hastings Instruments reserves the right to change or modify the design of its equipment without any obligation to provide notification of change or intent to change.

Outline Drawing - 300-302



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]
SURFACE MOUNT	5.66 [143.76]
SWAG 6MM	5.68 [144.27]
VCO FACE 1/4"	4.57 [116.08]
VCR FACE 1/4"	4.88 [123.95]

Outline Drawing (Surface Mount)



Selection Chart

Model No.	Circuit Board	Output	Fittings	Pressure	Cal
HFM-300 HFC-302					

Circuit Board	
01	Pinout H (Std)
02	Pinout U

Output (HFM-300)	
01	0-5 Volts (Std)
02	4-20 mA

Output (HFC-302)	
01	0-5 Volts (Std)
02	4-20 Out / 0-5 In
03	4-20mA Input/Output

Fittings	
01	1/4" VCR®
02	1/4" Swagelok (Std)
03	1/8" Swagelok
04	1/4" VCO®
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	NIST 5 point (Std)
02	NIST 10 Point
03	NIST 20 Point
04	Curve w/ Polynomial

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CE ISO 9001 CERTIFIED

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