

# 0~1,000 SLM Mass Flow Meter / Controller

## HFM-301 MASS FLOW METER / HFC-303 MASS FLOW CONTROLLER



HFM 301 / HFC 303 은 Full Metal Body 의 기체용 질량 유량계 및 제어기 입니다.  
 최대 허용 압력은 1,000 psig(음션) 이며, 아날로그 출력을 지원합니다.  
 낮은 압력 강하가 발생하도록 디자인되어 있습니다.  
 0~25 slm 에서 1,000 slm(N<sub>2</sub>) 까지의 측정범위에 적합한 제품입니다.  
 ±(1.00% of full scale) 정확도

### Applications and Industries (응용 분야)

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

### Features (특징)

- Range 25 to 1,000 slm (Air Equivalent)
- ±1.0% of Full-Scale Accuracy
- Settings Times : HFM-301 ≤ 0.4 sec  
 HFC-303 ≤ 2.0 sec
- Operating Pressures to 500 psi or higher
- NIST Traceable Calibration

### Flow Unit (유량 단위)

기준 STP : 0°C & 760 Torr / N <sub>2</sub>	
·SLM	25 ~ 1,000
·SCFH	52.97 ~ 2118.9
·Kg/Hr	1.87 ~ 74.99
·SM <sup>3</sup> /H	1.5 ~ 60
·Mole/Hr	66.92 ~ 2676.91

### Specifications

#### HFM-301 (Meter)

#### HFC-303 (Controller)

	HFM-301 (Meter)	HFC-303 (Controller)
Range	25 slm to 1,000 slm (Air)	25 slm to 1,000 slm (Air)
Accuracy	±1.00% of full scale	±1.00% of full scale
Repeatability	±0.07% of full scale	±0.07% of full scale
Standard Operating Pressure	500 psig	500 psig
High-Pressure Option	1000 psi (proof tested to 1500 psi)	1000 psi (proof tested to 1500 psi)
Pressure Coefficient	< 0.026% of readings/psi (N <sub>2</sub> )(0~1000 psig)	< 0.026% of readings/psi (N <sub>2</sub> )(0~1000 psig)
Leak Integrity	< 1x10 <sup>-9</sup> sccs He	< 1x10 <sup>-9</sup> sccs He
Temperature Coefficients	Zero : < 0.085%/°C of F.S (0~60°C) Span : < 0.11%/°C of Rdg (15~60°C)	Zero : < 0.085%°C of F.S (0~60°C) Span : < 0.11%°C of Rdg (15~60°C)
Standard Output	0~5 VDC	0~5 VDC
Optional Outputs	4~20 mA	4~20 mA
Connector	15 Pin D-sub	15 Pin D-sub
Attitude Sensitivity of Zero	< 0.25% of F.S. (N <sub>2</sub> @ 19.7 psia)	< 0.25% 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)	< 0.06% of reading (N <sub>2</sub> @ 19.7 psia)
Settling Time	≤ 0.4 sec (0% to 100% F.S.)	≤ 2.0 sec (10% to 100% F.S.)
Power Requirements	±15 VDC @ ±55 mA	±15 VDC @ 150 mA
Wetted Materials	Viton®, 316 SS, Nickel 200, 302 SS	316L SS, Nickel 200, 302 SS, Viton®, Teflon®, Kalrez® (Valve seat)
Setpoint Input		0~5 VDC (standard) / 4~20 mA (optional)
Weight (approx.)	3.5 lb (1.6 kg) (0~300 slm) 3.4 lb (1.5 kg) (300~1000 slm)	5.3 lb (2.4 kg) (0~300 slm) 5.2 lb (2.3 kg) (300~1000 slm)

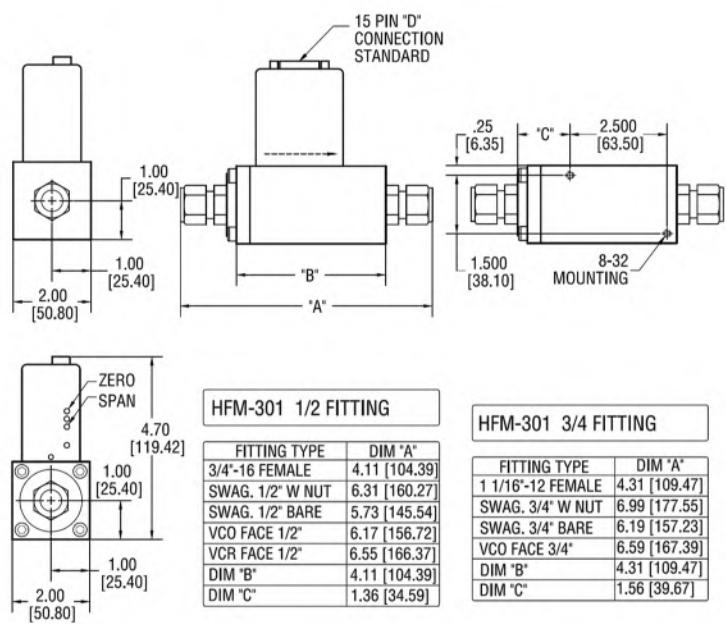
### U Pinout

Pin #	Signal
1	Signal Common
2	Do not use
3	Do not use
4	+15 VDC
5	
6	Output 0-5 VDC (4-20mA)
7	Signal Common
8	Case Ground
9	Valve Override
10	
11	-15 VDC
12	External Input
13	Signal Common
14	Signal Common
15	Set Point 0-5 VDC (4-20mA)

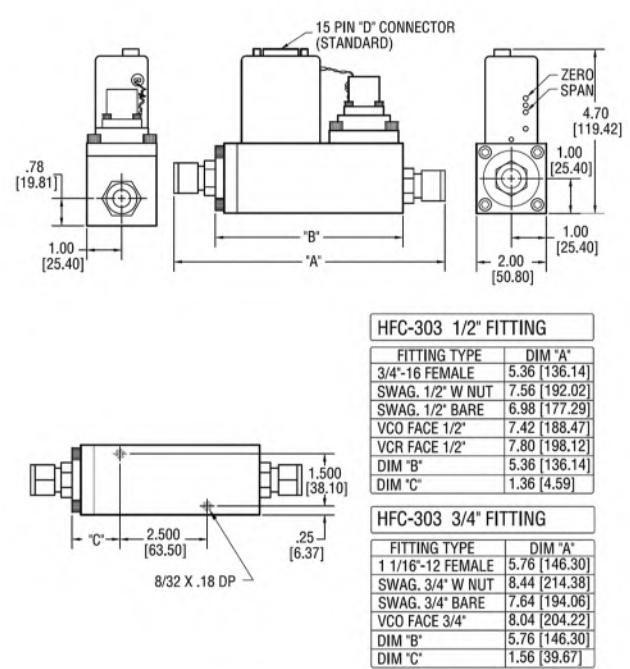
### H Pinout

Pin #	Signal
1	Do not use
2	Do not use
3	Do not use
4	Do not use
5	Signal Common
6	Output 0-5 VDC (4-20mA)
7	Case Ground
8	Valve Override
9	-15 VDC
10	Do not use
11	+15 VDC
12	Signal Common
13	External Input
14	Set Point 0-5 VDC (4-20mA)
15	Do not use

### HFM-301 Outline Drawings



### HFC-303 Outline Drawings



### HFM-301 Selection chart

Circuit Board		Seals	
01	Pinout H (Standard)	01	Viton (Standard)
02	Pinout U	02	Kalrez®
03	Pinout M	03	Neoprene
		04	Buna-N
Output		Pressure	
01	0-5 Volts (Standard)	01	500 psi (Standard)
02	4-20mA	02	1000 psi (1500 proof)
Fittings**		Calibration Type	
01	1/2" VCR®	01	NIST 5 Point (Standard)
02	1/2" Swagelok (Standard < 300 slm)	02	NIST 10 Point
03	1/2" VCO®	03	NIST 20 Point
04	3/4" Swagelok (Standard > 300 slm)	04	Curve

### HFC-303 Selection chart

Calibration Type		Seals	
01	NIST 5 Point (Standard)	01	Viton (Standard)
02	NIST 10 Point	02	Kalrez®
03	NIST 20 Point	03	Neoprene
04	Curve	04	Buna-N
Output		Pressure	
01	0-5 Volts (Standard)	01	500 psi (Standard)
02	4-20mA	02	1000 psi (1500 proof)
03	I/O 4-20mA		
Fittings**		Circuit Board	
01	1/2" VCR®	01	Pinout H (Standard)
02	1/2" Swagelok (Standard < 300 slm)	02	Pinout U
03	1/2" VCO®	03	Pinout M
04	3/4" Swagelok (Standard > 300 slm)		

Model No.	Circuit Board	Output	Fittings	Seals	Pressure	Calibration Type
HFM-301	01	01	02	01	01	01

Model No.	Circuit Board	Output	Fittings	Seals	Pressure	Calibration Type
HFC-303	01	01	02	01	01	01