



## RHM160

Coriolis Mass Flow Meter  
for High Flow Terminal and  
Pipeline Applications

### 사양

- Standard 압력 50bar (725 psi)
- 온도 범위 : -196 ~ 120°C (-320 ~ 248°F)
- 질량 유량 정밀도 0.15%
- 밀도 정밀도 0.5%
- 재현성 0.05%
- 일반 유량 측정 범위 750 ~ 30000 kg/min
- 600 kg/min 까지의 낮은 유량도 정확하게 측정 가능
- 유일한 비틀림 기준진동 시스템
- 방폭 지역 사용 인증 완료
- Stainless Steel 316 Ti 외함 가능
- 분리형 및 소형의 트랜스미터

### 적용

- Terminal Transfer
- Allocation Metering
- Viscous Fluids
- Barge, Ship, Rail Car and Truck Filling

### 이점

- 비틀림 진동자 디자인은 외란 영향을 적게 받아 안정적이고 탁월한 측정이 보장 된다.
- 외부 노이즈 및 진동에 영향을 받지 않는다.
- 배관 압력 변화에 민감하지 않다.
- 견고하고 두꺼운 센서 튜브는 안전한 운전 성능 보장
- 비틀림 기준진동으로 기계적인 스트레스 영향이 적어 센서의 내구성 보장
- 고성능 (goldline) 센서 선정 가능

## RHM160 General Specifications

<b>Nominal Max Flow Range:</b>	30000 kg/min (66139 lb/min)
<b>Density Range:</b>	5 to 5000 kg/m <sup>3</sup> (0.31 to 312 lb/ft <sup>3</sup> )
<b>Temperature Range:</b>	3 temperature range options cover temperatures from -196°C to 120°C (-320°F to 248°F)
<b>Pressure Ratings:</b>	Dependent upon material and process connection
<b>Electrical Connection:</b>	Cable entry M25 x 1.5 (standard) M20 x 1.5, ½" NPT, ¾" NPT (optional) Max cable length to remote RHE transmitter 30m (98 ft). 100m (330ft) with optional high performance cable
<b>Sensor Housing Materials:</b>	1.4301 / 304 stainless steel (standard), 1.4571 / 316Ti stainless steel (optional) Epoxy coated aluminium electrical box (standard), 1.4571 / 316Ti stainless steel (optional)
<b>Enclosure Type:</b>	Protection Class IP 65. Optional IP 66 / NEMA 4X
<b>Material of Wetted Parts:</b>	Sensors are available in a variety of standard and custom materials to suit a wide range of pressure ratings and chemical compatibility requirements. See the pressure ratings listing in this document for further details
<b>Finishes:</b>	ANSI flange finish: AARH 125 to 250 µm, Ra 3.2 to 6.3 µm
<b>Certifications and Approvals:</b>	ATEX approval Zone 0: Ex II 1 G Ex ia IIC T1-T6 Ga ATEX rating Zone 2: Ex II 3 G Ex nA IIC T1-T6 Gc CSA USA-Canada, Class I, Div. 1, Groups A, B, C, D PED according to 97/23/EC Module B + C1
<b>Documentation:</b>	All sensors are supplied with a traceable calibration certificate. Optional documentation items available: - Traceable material certificates - Certificates of origin and conformity - Welding - NACE - Quality - Production and manufacturing procedures Other documentation to client requirements available
<b>Proof Testing:</b>	Hydrotest, dye penetrant, x-ray, PMI

## Transmitter Range



RHE45



RHE21



RHE26



RHE27

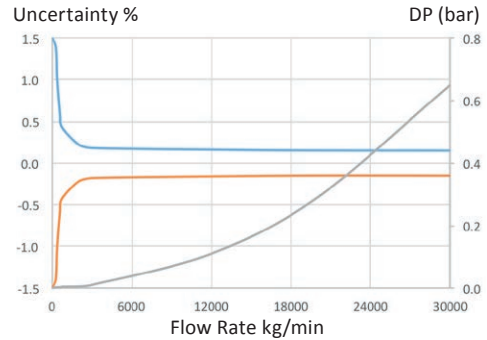


RHE28

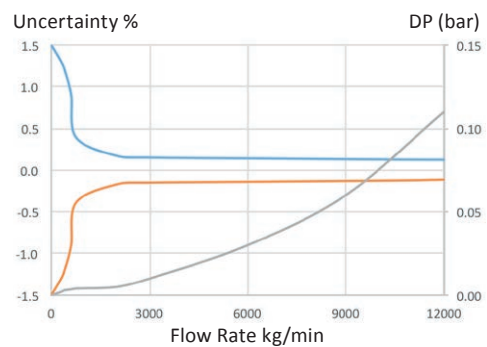
Any Rheonik Mass Flow Transmitter model can be combined with an RHM160 sensor to provide an overall mass flow measurement system to suit any requirement. Rheonik Coriolis transmitters are designed for process, industrial and OEM applications. Together they offer a tremendous range of options for system designers and end users alike.

## RHM160 Measurement Performance

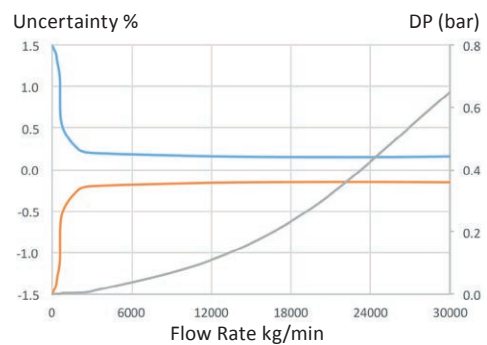
Standard Calibration		
Flow Rate		Uncertainty
kg/min	lb/min	in % of reading
30000**	66139	0.20
15000	33069	0.20
7500	16535	0.20
2000	4409	0.20
750	1653	0.50



Goldline Calibration*		
Flow Rate		Uncertainty
kg/min	lb/min	in % of reading
12000**	26455	0.15
9000	19242	0.15
7500	16535	0.15
5000	11023	0.15
3000	6614	0.15



Low Flow Calibration*		
Flow Rate		Uncertainty
kg/min	lb/min	in % of reading
30000**	66139	0.20
6000	13228	0.20
2000	4409	0.20
750	1653	0.50
600	1323	0.75



\*Goldline and Low Flow Calibration is not available with all configurations of the RHM160. Please check with factory.

\*\*Calibration at factory only up to 11,000 kg/min.

Mass Flow Calibration Options	
<b>A</b>	40:1 Standard Calibration – 0.5% Uncertainty between 30000 and 750 kg/min
<b>B</b>	20:1 Standard Calibration – 0.2% Uncertainty between 30000 and 2000 kg/min
<b>G</b>	4:1 Goldline Calibration – 0.15% Uncertainty between 12000 and 3000 kg/min
<b>2</b>	Low Flow Calibration – 0.2% Uncertainty between 30000 and 2000 kg/min, 0.5% between 2000 and 750 kg/min, 0.75% between 750 and 600 kg/min

- Uncertainty of reading (incl. zero drift) stated at reference condition of: H<sub>2</sub>O, 18-24°C (66-76°F), 1-3 bar (15-45 psi) when installed according to field manual
- Pressure drop indications are based upon H<sub>2</sub>O flowing in a meter with P1 pressure rating
- For customized calibration range or uncertainty levels, please consult factory

### Flow Measurement Repeatability

Standard ± 0.1% of rate

Goldline ± 0.05% of rate

### Density Measurement Performance (liquids)

Standard 2 point calibration ±1% of value

Optional 3 point calibration ±0.5% of value

Gas density – depends upon pressure

### Temperature

Better than ± 1°C

## RHM160 Meter Pressure Ratings

Pressure Code	Material		Process Connection		p <sub>max</sub> @ 120°C (248°F)	
	Order Code	Material Type	Order Code	Flange Type	bar	psi
P1	M1	1.4571 (316Ti) UNS S31635	A4	ANSI 10" 300# RF	20	290
			A1	ANSI 12" 150# RF	16.4	238
			A2	ANSI 12" 300# RF	42.9	622
			A6	ANSI 12" 600# RF	42.9	622
			D1	DIN DN300/PN16	15.2	220
			D2	DIN DN300/PN40	30	435
P1	M3	2.4602 (Alloy C22) UNS N06022	A1	ANSI 12" 150# RF	16.9	245
			A2	ANSI 12" 300# RF	50	725
			A6	ANSI 12" 600# RF	50	725
			D1	DIN DN300/PN16	16	232
			D2	DIN DN300/PN40	40	580

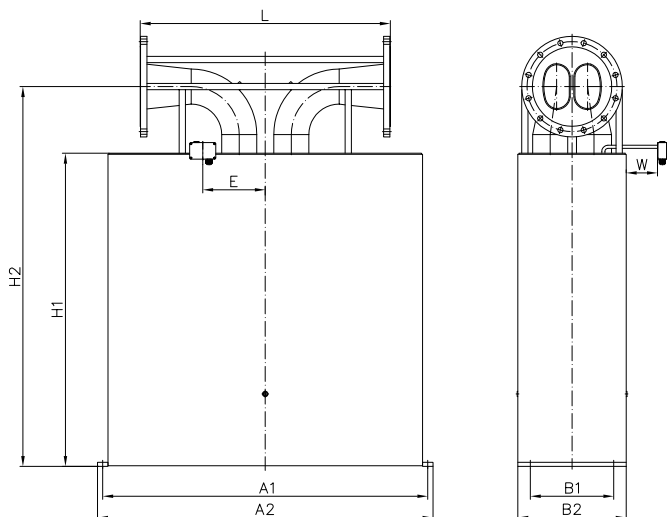
### Other Materials

Additional/custom wetted materials (Inconel, Monel, 304 stainless steel, others) may be possible for chemical compatibility, lower pressure drop, abrasion allowance, other application specific requirements.

Contact factory with specification for assessment and availability.

## RHM160 Mechanical Construction

**PFO:** Seal-less parallel measuring tube construction with flange connections



For customization of face to face length and/or special fittings other than the ones listed on this page, please consult factory.  
Note that larger diameter flange process connections are always possible.

A1 = 1560 mm (61.42 in) A2 = 1610 mm (63.39 in) B1 = 400 mm (15.75 in) B2 = 520 mm (20.47 in) H1 = 1500 mm (59.06 in) H2 = 1820 mm (71.65 in)  
E = 300 mm (11.81 in) W = 150 mm (5.91 in)  
Electrical box: std. = 125 x 80 x 58 mm (4.92 x 3.15 x 2.28 in), RHE16 compact = 120 x 120 x 80 mm (4.72 x 4.72 x 3.15 in)