

RHM 160

Coriolis Mass Flowmeter for Very High Flow Applications

The RHM 160 can measure flow rates up to 1800 t/h (66,140 lb/min) with pressures up to 50 bar. This large sized model is optimal for loading and unloading applications - manufactured by GE's Rheonik mass flowmeter experts.



Applications

- Loading of boats, vessels, rail tank wagons
- Oil exploration
- Highly viscous media (low pressure drop and excellent performance at low flow conditions)

Features

- Suitable for pressure up to 50 bar
- Flow uncertainty down to 0.15%
- Density uncertainty down to 0.5%
- Repeatability better than 0.05%
- Unique torsion oscillator
- Typical measuring ranges from 750 to 30000 kg/min
- Minimal flows as low as 600 kg/min

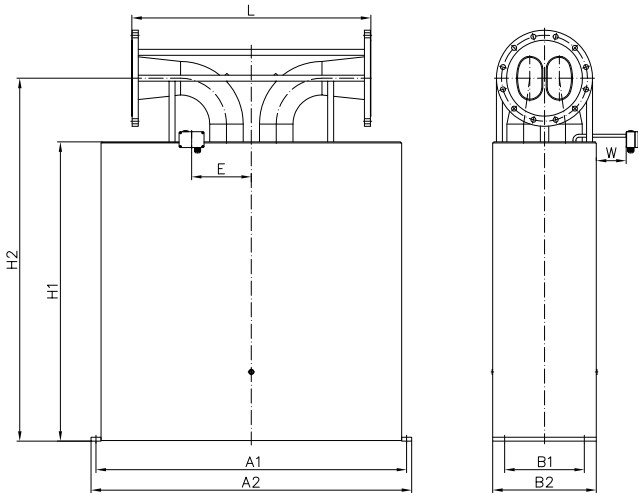
Advantages

- High flow rates for fast filling
- Torsion oscillator design assures most stable and basically drift free measurement and increased signal to noise ratio
- Not sensitive to changes in pressure
- Longest life time and increased safety (low stress in welds and increased wall thickness against abrasion)
- No moving parts, practically no maintenance



General Dimensions RHM 160

PFO (parallel, seamless/welded construction with flange connection)



	Process Connection	Face to face length (L)		Order Code
		mm	in	
Standard	Flange DIN DN300/PN16	1200	47.24	D1
	Flange DIN DN300/PN40	1200	47.24	D2
	Flange ANSI 12" 150# RF/SF	1200	47.24	A1
	Flange ANSI 12" 300# RF/SF	1200	47.24	A2
Optional	Flange ANSI 10" 300# RF/SF	900	35.43	A4
	Flange ANSI 12" 600# RF/SF	1200	47.24	A6

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)

Terminal box (without cable gland) 125 x 80 x 58 mm (4.92 x 3.15 x 2.28 in),

Weight with 150# flanges: approx. 770 kg (1698 lb)

Shipping in wooden crate as per ISPM 15, approx. 240 x 190 x 120 cm (95 x 75 x 47 in), gross weight with 150# flanges and RHE 08 transmitter approx. 1150 kg (2535 lb)

Finish type of our ANSI flanges corresponds to SF (AARH 125 up to 250 µin, Ra 3.2 up to 6.3 µm)

For customization with regard to face to face length and special fittings, please consult your local agent

Pressure Rating RHM 160

p_{max} of P1 measuring loops @ 120°C / 248°F
M1 standard material - 1.4571 (316Ti)
OD x WT 168.3 x 5 mm (6.63 x 0.197 in)

Flange	bar	psi
Flange DIN DN300/PN16	15.2	220
Flange DIN DN300/PN40	30.0	435
Flange ANSI 10" 300# RF/SF	20.0	290
Flange ANSI 12" 150# RF/SF	16.4	238
Flange ANSI 12" 300# RF/SF	42.9	622
Flange ANSI 12" 600# RF/SF	42.9	622

p_{max} of P1 measuring loops @ 120°C / 248°F
M3 optional material - 2.4602 (Alloy C22)
OD x WT 168.3 x 5 mm (6.63 x 0.197 in) (*)

Flange	bar	psi
Flange DIN DN300/PN16	16.0	232
Flange DIN DN300/PN40	40.0	580
Flange ANSI 12" 150# RF/SF	16.9	245
Flange ANSI 12" 300# RF/SF	50.0	725
Flange ANSI 12" 600# RF/SF	50.0	725

(*) For optional materials like Alloy C22, wall thickness of measuring loops may change by +/- 10%.

Performance RHM 160

Max Flow Rate $Q_{max} = 30,000 \text{ kg/min}$ (66,139 lb/min) and $Q_{nom} (*) = 23,000 \text{ kg/min}$ (50,706 lb/min)

Standard Models		
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 Models (**)- selected sensors		
Flow Rate		Uncertainty
kg/min	lb/min	in % of reading
12000	26455	0.15
9000	19842	0.15
7500	16535	0.15
5000	11023	0.15
3000	6614	0.15

Low Flow Models (**)- selected sensors		
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

Repeatability

Better $\pm 0.1\%$ of rate,
Goldline 0.05%

Density

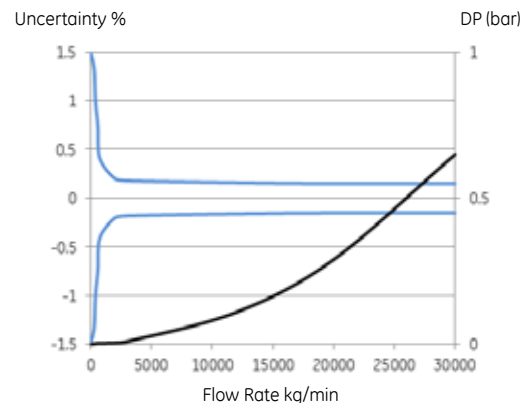
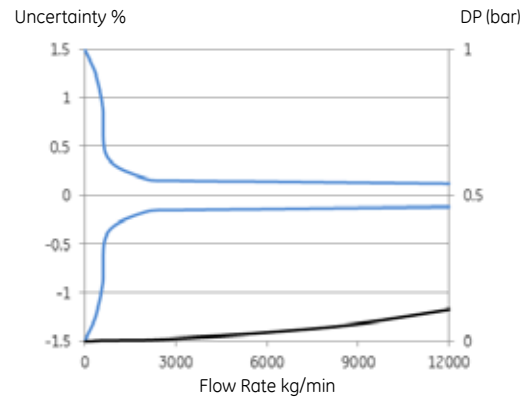
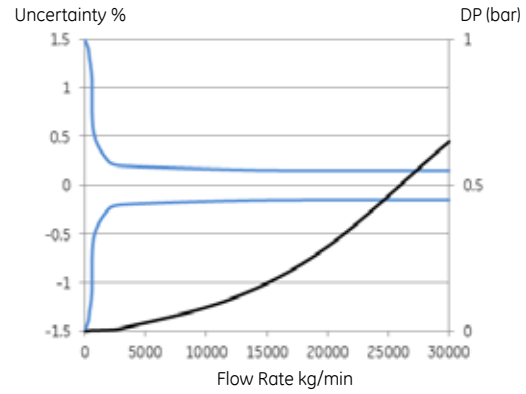
Down to 0.5% uncertainty

Temperature

Better $\pm 1^\circ\text{C}$

(*) Nominal flow Q_{nom} refers to roughly 8 - 10 m/s (26 - 33 ft/s) velocity in measuring loops for best performance.

(**) Selected sensors are only available in combination with temperature options T1, TA, standard material and pressure range.



- Uncertainty of reading (incl. zero drift) indications refer to reference conditions H_2O , 18-24°C (66 - 76°F), 1 - 3 bar (15 - 45 psi) and installation according to field manual.
- Calibration at factory only up to 11,000 kg/min.
- Pressure drop indications refer to H_2O , with measuring loops type P1.
- For calibration to customer range and / or with improved uncertainty, please consult your local agent.

General Specifications RHM 160

Temperature Range

- NT Models from -20 to +120°C (-4 to +248°F)
- ET Models from -45 to +120°C (-49 to +248°F)
- ET1 Models from -196 to +50°C (-320 to +122°F)
(Heating for housing optional, please consult your local agent)

Electrical Connection

- Junction box aluminum coated (standard).
Junction box in SS 316Ti optional
- Cable entry M25 x 1.5. Optional cable entries M20 x 1.5, 1/2" NPT or 3/4" NPT
- Max cable length between RHM and RHE is 30 m (98 ft.). Optional 100 m (328 ft.) with special cable

Material of Wetted Parts

- 1.4571 / SS 316 Ti / UNS S31635 (standard)
- 2.4602 / Alloy C22 / UNS N06022
- Others on request

Sensor Enclosure/Housing

- Stainless Steel 1.4301 / SS 304, optional in 1.4571 / SS 316Ti. Others on request
- Protection Class IP 65. Optional IP 66 / NEMA 4x

Approvals

- ATEX Ex II 1 G, EEx ia IIC T6-T1
- CSA USA-Canada, Class I, Div. 1, Groups A, B, C, D
- PED according to directive 97/23/EC: Module B + C1
- Others on request

Basic Order Code RHM 160

Sensor Size

Temperature Range

- T1 NT from -20°C to +120°C (standard)
- TA ET from -45°C to +120°C
- T3 ET1 Extended Temperature Range from -196°C to +50°C

Pressure Range of Measuring Loops

- P1 pmax = 56 bar@ 120°C, M1 material

Construction Type

- PF0 Parallel Measuring Loops Seal Less Version

Material of Wetted Parts

- M1 Measuring Loops and Connection Part 1.4571 (316Ti) (standard)
- M3 Measuring Loops and Connection Part 2.4602 (Alloy C22)

Process Connection

- D1 Flange DIN DN300/PN16 Form C (EN 1092-1 Form B1)
- D2 Flange DIN DN300/PN40 Form C (EN 1092-1 Form B1)
- A1 Flange ANSI 12" 150# RF/SF
- A2 Flange ANSI 12" 300# RF/SF
- Others on request

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