

RHM 08

One of the most popular Rheonik Mass Flowmeters

The RHM 08 can measure flow rates up to 50 kg/min (110 lb/min) with temperatures in excess of 350°C and pressures up to 1067 bar. This model offers unique, versatile solutions, manufactured by GE's Rheonik mass flowmeter experts.



Applications

- General control
- Dosing
- Mixing
- Batching
- Injections
- Filling

Features

- Available as very high pressure versions up to 1067 bar
- Flow uncertainty down to 0.10%
- Repeatability better than 0.05%
- Unique torsion oscillator
- Typical measuring ranges from 0.5 to 50 kg/min
- Minimal flows as low as 0.3 kg/min
- Optimized solutions for batching operation
- Customization possible
- Extra compact design with minimal space requirement
- Hazardous Area Approvals (ATEX, CSA, ...)

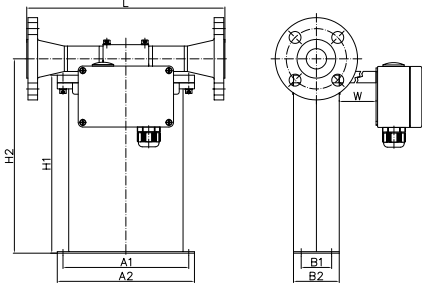
Advantages

- 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
- Removable connection manifold available



General Dimensions RHM 08

PM0/SM0 (parallel/serial manifold construction)

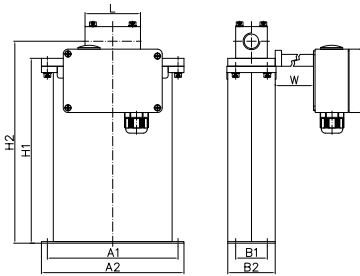


Type removable manifold with PTFE seals and flange connection

H1 = 234 mm (9.21 in)
H2 = 255 mm (10.04 in)

	Process Connection	Face to face length (L)		Order Code
		mm	in	
Standard	Flange DIN DN25/PN40	260	10.24	D1
	Flange DIN DN25/PN100	300	11.81	D2
	Flange ANSI 1" 150# RF/SF	260	10.24	A1
	Flange ANSI 1" 300# RF/SF	260	10.24	A2
	Flange ANSI 1" 600# RF/SF	300	11.81	A3
	Flange ANSI 1" 1500# RF/SF	350	13.78	A6
	Flange ANSI 1" 1500# RTJ	350	13.78	R1
Optional	Flange DIN DN25/PN16	260	10.24	D0
	Flange DIN DN25/PN160	300	11.81	D3
	Flange JIS RF 10k 25A (1")	260	10.24	J1
	Flange JIS RF 20k 25A (1")	260	10.24	J2

PM0/SM0/PHO (parallel/serial manifold construction with thread connection)



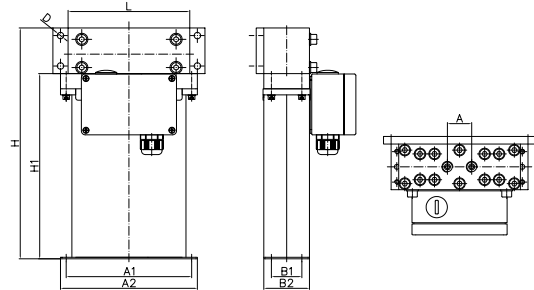
Type removable manifold with PTFE seals and thread connection

PM0/SM0
H1 = 234 mm (9.21 in)
H2 = 255 mm (10.04 in)

PHO
H1 = 244 mm (9.61 in)
H2 = 264 mm (10.39 in)

	Process Connection	Face to face length (L)		Order Code
		mm	in	
PM0/SM0 Standard	Female Thread G ½"	70	2.76	G1
	Female Thread ½" NPT	70	2.76	N1
PHO Standard	Female Thread G ½"	120	4.72	G1
	Female Thread ½" NPT	120	4.72	N1
	Autoclave 9/16" MP (13/16" - 16 UN female thread)	120	4.72	P1
	Autoclave 3/8" MP (9/16" - 18 UN female thread)	120	4.72	P2

PHH (parallel, very high pressure manifold construction)



Type parallel, very high pressure manifold with PTFE seals and thread connection (orientation upwards)

H1 = 244 mm (9.61 in)
A = 32 mm (1.26 in)
D = 6.5 mm (0.26 in)
L = 160 mm (6.30 in)

A1 = 165 mm (6.50 in)
A2 = 180 mm (7.09 in)

B1 = 40 mm (1.57 in)
B2 = 60 mm (2.36 in)

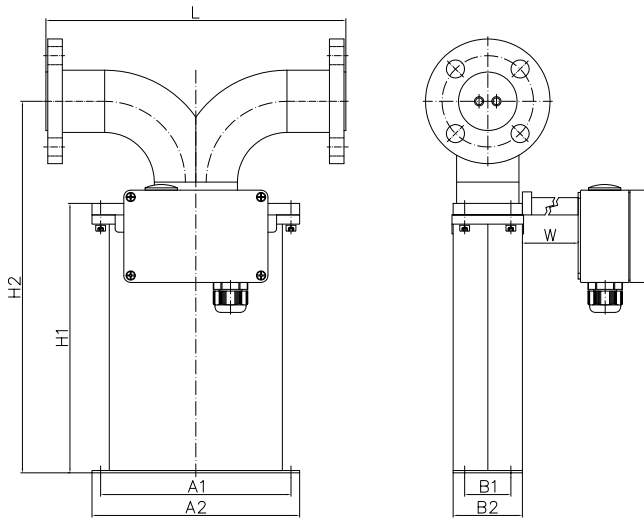
Terminal box (without cable gland) 125 x 80 x 58 mm (4.92 x 3.15 x 2.28 in)
W = 0 mm for Temperature Range T1 and TA
W = 150 mm (5.91 in) for Temperature Range T2

	Process Connection	Overall Height (H)		Order Code
		mm	in	
Standard	Autoclave 3/8" MP (9/16" - 18 UN female thread) - orientation vertical!	304	11.97	P2

For weights and packaging dimensions please see last page of this section.

General Dimensions RHM 08

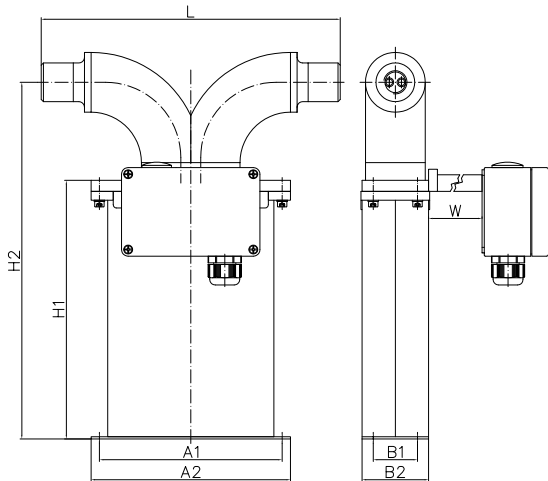
PFO (parallel, sealless construction with flange connection)



Type parallel, welded measuring loops without seals and flange connection

	Process Connection	Face to face length (L)		Order Code
		mm	in	
Standard	Flange DIN DN25/PN40	260	10.24	D1
	Flange DIN DN25/PN100	300	11.81	D2
	Flange ANSI 1" 150# RF/SF	260	10.24	A1
	Flange ANSI 1" 300# RF/SF	260	10.24	A2
	Flange ANSI 1" 600# RF/SF	300	11.81	A3
	Flange ANSI 1" 1500# RF	300	11.81	A6
	Flange ANSI 1" 1500# RTJ	300	11.81	R1
Optional	Flange DIN DN25/PN16	260	10.24	D0
	Flange DIN DN25/PN160	300	11.81	D3
	Flange ANSI 1" 2500# RF	300	11.81	A8
	Flange ANSI 1" 2500 RTJ	300	11.81	R2
	Flange JIS RF 10k 25A (1")	260	10.24	J1
	Flange JIS RF 20k 25A (1")	260	10.24	J2
	Grayloc Hub 1 GR 5 (1")	300	11.81	H1
	Grayloc Hub 1 GR 7 (1")	300	11.81	H5

PFT (parallel, sealless construction with thread connection)



Type parallel, welded measuring loops without seals and thread connection

	Process Connection	Face to face length (L)		Order Code
		mm	in	
Standard	Female Thread G ½"	270	10.63	G1
	Female Thread ½" NPT	270	10.63	N1
	Swagelok ½" Tube inlet (SS-810-1-12W)	360	14.17	W1

A1 = 165 mm (6.50 in)
 A2 = 180 mm (7.09 in)
 H1 = 234 mm (9.21 in)
 H2 = 322 mm (12.68 in)

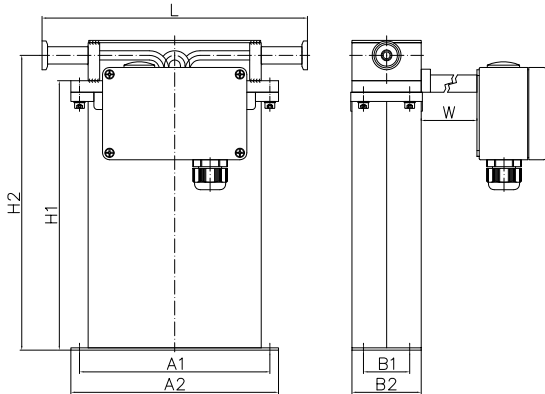
B1 = 40 mm (1.57 in)
 B2 = 60 mm (2.36 in)

Terminal box (without cable gland) 125 x 80 x 58 mm (4.92 x 3.15 x 2.28 in)
 W = 0 mm for Temperature Range T1 and TA
 W = 150 mm (5.91 in) for Temperature Range T2, T3 and T4

For weights and packaging dimensions please see last page of this section.

General Dimensions RHM 08

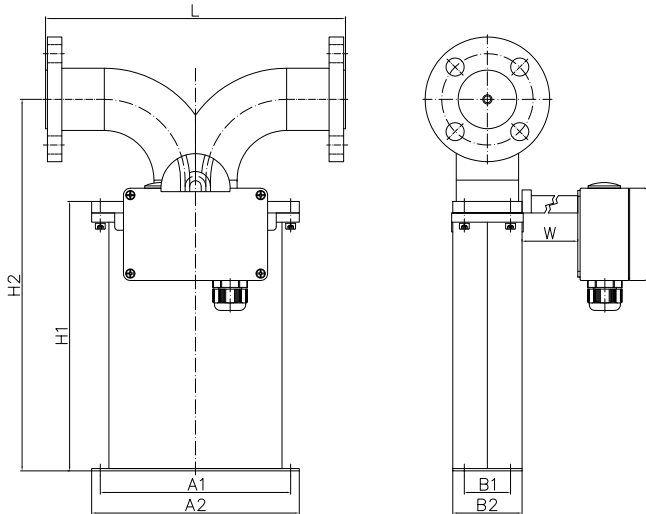
SF0 (serial, sealless construction without dead spaces) (*)



Type single path, welded measuring loops without seals and sanitary connection

H2 = 256 mm (10.08 in)

	Process Connection	Face to face length (L)		Order Code
		mm	in	
Standard	Sanitary ½" Triclamp, DIN 32676	230	9.06	S1
Optional	Sanitary NW10, DIN 11851	230	9.06	S2



Type single path, welded measuring loops without seals and flange connection

H2 = 322 mm (12.68 in)

	Process Connection	Face to face length (L)		Order Code
		mm	in	
Standard	Flange DIN DN25/PN40	260	10.24	D1
	Flange ANSI 1" 150# RF/SF	260	10.24	A1
	Flange ANSI 1" 300# RF/SF	260	10.24	A2
Optional	Flange DIN DN25/PN16	260	10.24	D0

A1 = 165 mm (6.50 in)
A2 = 180 mm (7.09 in)
H1 = 234 mm (9.21 in)

B1 = 40 mm (1.57 in)
B2 = 60 mm (2.36 in)

Terminal box (without cable gland) 125 x 80 x 58 mm (4.92 x 3.15 x 2.28 in)
W = 0 mm for Temperature Range T1 and TA
W = 150 mm (5.91 in) for Temperature Range T2, T3 and T4

(*) SF0 construction contains brazed joints (brazing material B-Ni82CrSiBFe-970/1000) which are not as corrosion resistant as the piping material 1.4571 (316Ti).

Weight in standard manifold construction with female threads: approx. 5 kg (11 lb)

Weight in standard sealless construction and 150# flanges: approx. 8 kg (18 lb)

Shipping in carton box approx. 50 x 50 x 50 cm (19.7 x 19.7 x 19.7 in), gross weight with sealless construction, 150# standard flanges and RHE 08 transmitter approx. 15 kg (33 lb)

Finish type of our ANSI flanges corresponds to SF (AARH 125 up to 250 µm, 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

Please note that larger diameter process connections are always possible

Pressure Rating RHM 08

The maximum pressure (pmax) of a sensor is determined by its weakest part. The weakest part can be the measuring loops (pmax indicated below) or the construction type (pmax indicated in the Basic Order Code section, last page) or the selected flanges / fittings (for pmax please see respective standard).

pmax of P0 measuring loops, low DP version
M1 standard material - 1.4571 (316Ti)
OD x WT 8 x 0.5 mm (0.315 x 0.020 in)

bar	°C	psi	°F
142	50	2060	122
127	120	1842	248
110	210	1595	410
93	350	1349	662

pmax of P1 measuring loops
M3 optional material - 2.4602 (Alloy C22)
OD x WT 8 x 1 mm (0.315 x 0.039 in)

bar	°C	psi	°F
416	50	6034	122
367	120	5323	248
313	210	4540	410
261	350	3785	662

pmax of P1 measuring loops, standard
M1 standard material - 1.4571 (316Ti)
OD x WT 8 x 1 mm (0.315 x 0.039 in)

bar	°C	psi	°F
301	50	4366	122
269	120	3902	248
233	210	3379	410
196	350	2843	662

pmax of PH measuring loops
HP optional material - HP160
OD x WT 8 x 1.6 mm (0.315 x 0.063 in)

bar	°C	psi	°F
1067	20	15476	68
900	50	13053	122
870	120	12618	248

Performance RHM 08

Max Flow Rate Q_{max} and Q_{nom} (*) = 50 kg/min (110 lb/min)

Standard Models		
Flow Rate		Uncertainty
kg/min	lb/min	in % of reading
50	110	0.20
20	44	0.20
10	22	0.20
2.5	5.5	0.20
1.0	2.2	0.50

Goldline Models (**)- selected sensors		
Flow Rate		Uncertainty
kg/min	lb/min	in % of reading
50	110	0.10
20	44	0.10
10	22	0.10
5.0	11	0.10
2.5	5.5	0.12

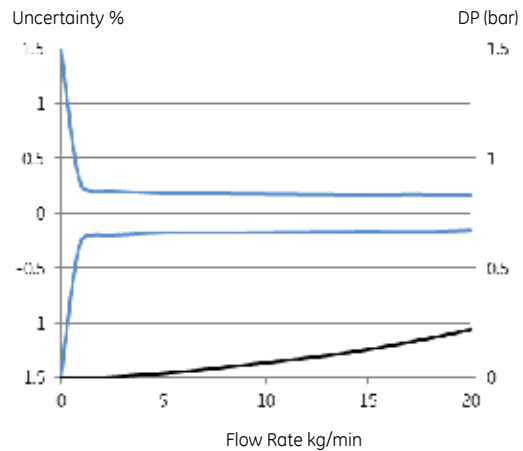
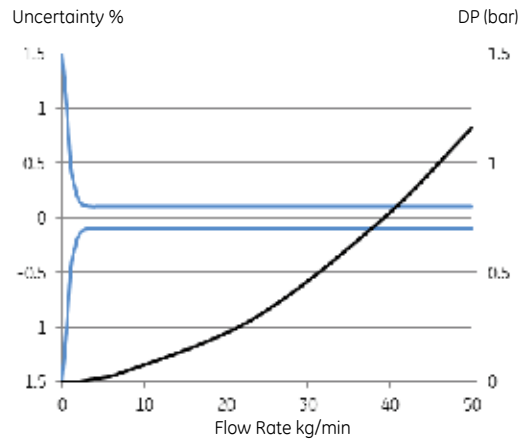
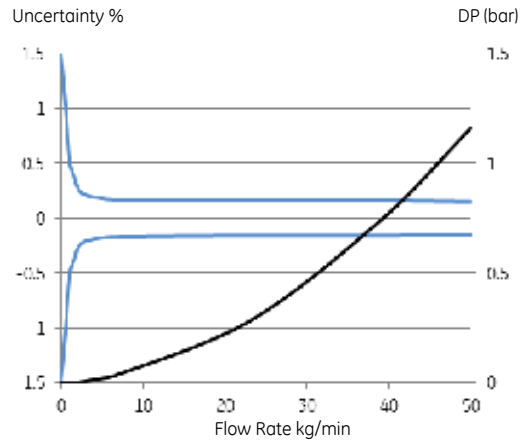
Low Flow Models (**)- selected sensors		
Flow Rate		Uncertainty
kg/min	lb/min	in % of reading
20	44	0.20
10	22	0.20
5.0	11	0.20
1.0	2.2	0.20
0.6	1.3	0.60

Repeatability

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

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. For PH0 and PHH Construction Type, Q_{max} and upper calibration limit is 25 kg/min, Q_{nom} is 20 kg/min.
(**) Selected sensors are only available in combination with temperature ranges T1, TA, standard material and pressure range.

- Serial/single path versions offer the same accuracy at half the flow (Q_{max} serial version = 25 kg/min).
- No relevant pressure effect due to torsional oscillation and semi-circle (non-deforming) measurement section.

- Uncertainty of reading (incl. zero drift) indications refer to reference conditions H₂O, 18-24°C (66 - 76°F), 1 - 3 bar (15 - 45 psi) and installation according to field manual.
- Pressure drop indications refer to H₂O, with parallel measuring loops type P0 and standard manifold block connections.
- For calibration to customer range and / or with improved uncertainty, please consult factory.

General Specifications RHM 08

Temperature Range

- NT Models from -20 to +120°C (-4 to +248°F)
 - ET Models from -45 to +120°C (-49 to +248°F)
 - ET2 Models from -45 to +210°C (-49 to +410°F)
 - ET1 Models from -196 to +50°C (-320 to +122°F)
 - HT Models from 0 to 350°C (+32 to +662°F)
- (Heating for housing optional, please consult your local agent)

Electrical Connection

- Junction box Aluminium coated (standard). Junction box in SS 316Ti optional
- Cable entry M25 x 1.5. Optional cable entries M20 x 1.5, ½ NPT or ¾ NPT
- Max cable length between RHM and RHE is 100m (330 ft). 200m (660 ft) only with factory approval

Material of Wetted Parts

- 1.4571 / SS 316 Ti / UNS S31635 (standard)
- 2.4602 / Alloy C22 / UNS N06022
- Tantalum
- HP160
- 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 (CESI 02 ATEX 053 X) 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 Art.3 (3) Sound Engineering Practice (SEP)
- Others on request

Basic Order Code RHM 08

Sensor Size

Temperature Range

T1	NT from -20°C to +120°C (standard)
TA	ET from -45°C to +120°C
T2	ET2 Extended Temperature Range from -45°C to +210°C
T3	ET1 Extended Temperature Range from -196°C to +50°C
T4	HT High Temperature Range from 0°C to +350°C

Pressure Range of Measuring Loops @ 120°C

P0	pmax = 127 bar, M1 Material – low DP version
P1	pmax = 269 bar, M1 Material, max. CL 1500 (standard)
PH	pmax = 870 bar, HP160 material, not with types PF0, SF0, PFT

Construction Type (pmax indications @ 120°C)

PM0	Parallel Measuring Loops with removable Manifold and PTFE Seals, pmax = 290 bar with thread connection, 214 bar with flange connection
SM0	Serial Measuring Loops with removable Manifold and PTFE Seals, pmax = 290 bar with thread connection, 214 bar with flange connection
PF0	Parallel Measuring Loops Seal Less Version
SF0	Serial Measuring Loops Seal Less Version Sanitary, pmax = 42.9 bar
PFT	Parallel Measuring Loops Seal Less Version for Thread Connection
PH0	Parallel Measuring Loops with High Pressure Manifold and PTFE Seals, HP material only, pmax = 420 bar
PHH	Parallel Measuring Loops with Very High Pressure Manifold and PTFE Seals, HP material only, pmax = 870 bar

Material of Wetted Parts

M1	Measuring Loops and Manifold/Connection 1.4571 (316Ti) (standard)
M3	Measuring Loops and Connection Part 2.4602 (Alloy C22), Seal Less Construction Type only
M4	Measuring Loops and Connection Part Tantalum, PF0 Construction Type only
HP	Measuring Loops HP 160, PH Pressure Range only

Process Connection

D1	Flange DIN DN25/PN40 Form C
D2	Flange DIN DN25/PN100 Form E
A1	Flange ANSI 1" 150# RF/SF
A2	Flange ANSI 1" 300# RF/SF
A3	Flange ANSI 1" 600# RF/SF
A6	Flange ANSI 1" 1500# RF
R1	Flange ANSI 1" 1500# RTJ
G1	Female Thread G ½"
N1	Female Thread ½" NPT
W1	Swagelok ½" Tube inlet (SS-810-1-12W), standard material only
S1	Sanitary ½" Triclamp, DIN 32676, pmax = 40 bar @ 120°C
P1	Autoclave 9/16" MP (13/16" - 16 UN Female Thread)
P2	Autoclave 3/8" MP (9/16" - 18 UN Female Thread)
	Others on request

RHM 08 --- --- --- --- --- ---



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