

GE  
Measurement & Control

# 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



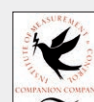
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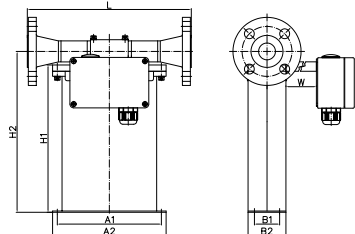
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## General Dimensions RHM 08

### PM0/SM0 (parallel/serial manifold construction)

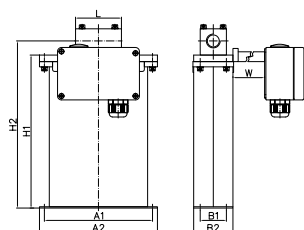


Type removable manifold with PTFE seals and flange connection

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/PH0 (parallel/serial manifold construction with thread connection)



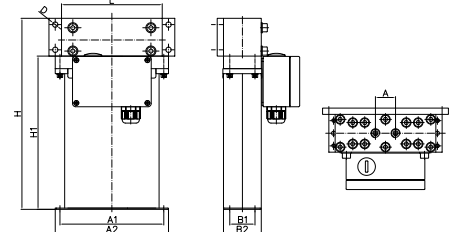
Type removable manifold with PTFE seals and thread connection

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

**PH0**  
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
PH0 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)

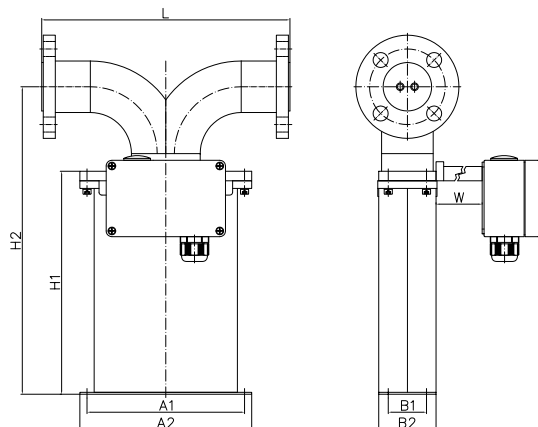
Terminal box (without cable gland) 125 × 80 × 58 mm (4.92 × 3.15 × 2.28 in)  
W = 0 mm for Temperature Range T1 and TA  
W = 150 mm (5.91 in) for Temperature Range T2

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

	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

## General Dimensions RHM 08

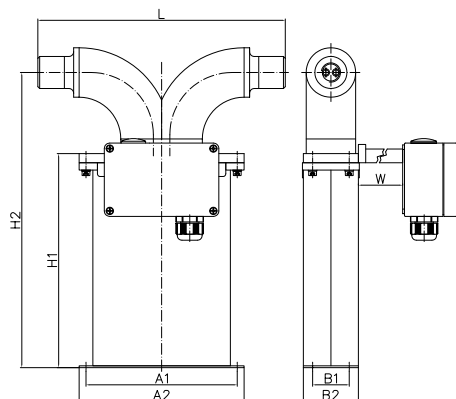
**PFO** (parallel, sealless construction with flange connection)



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
Optional	Flange ANSI 1" 1500# RTJ	300	11.81	R1
	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.

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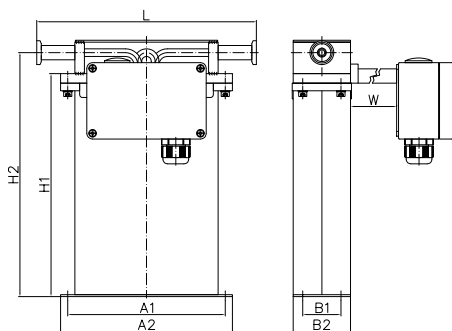
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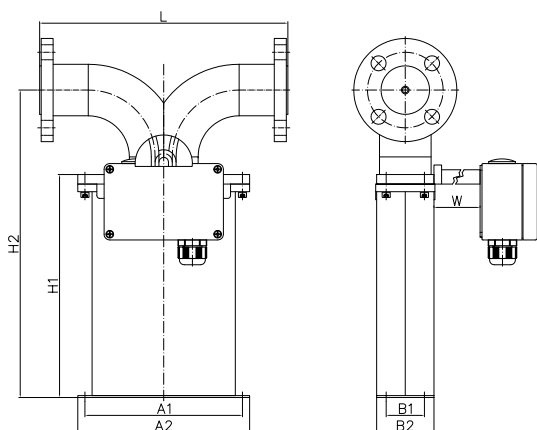
SF0 (serial, sealless construction without dead spaces) (\*)



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 T4  
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

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## 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

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## 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

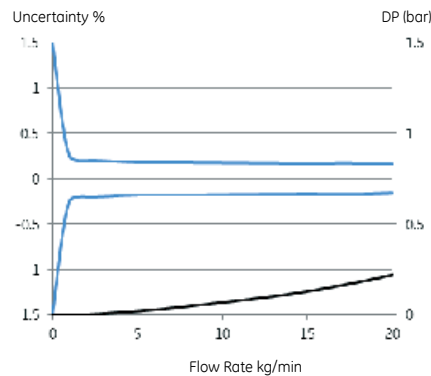
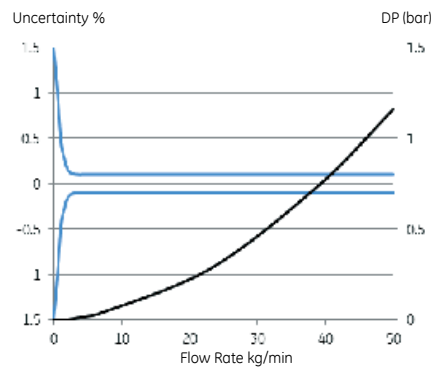
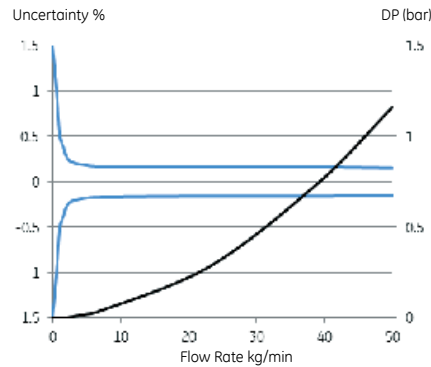
Low Flow Models (**) - selected sensors		
Flow Rate		Uncertainty
kg/min	lb/min	in % of reading
20	44	0.20
10	22	0.20
5.0	11	0.20
1.0	2.2	0.20
0.6	1.3	0.60

**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 H<sub>2</sub>O, 18-24°C (66 - 76°F), 1 - 3 bar (15 - 45 psi) and installation according to field manual.
- Pressure drop indications refer to H<sub>2</sub>O, 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

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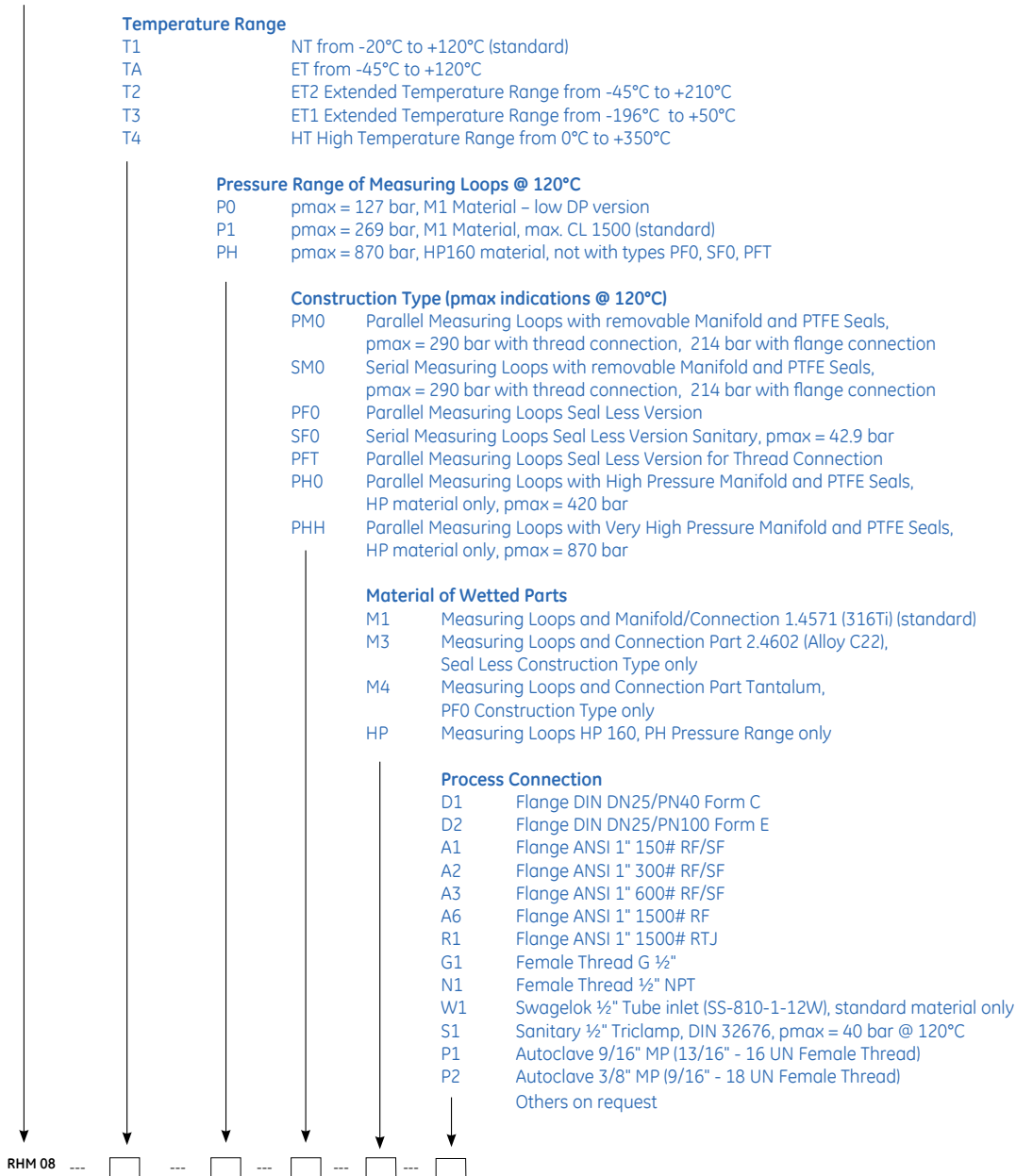
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# Basic Order Code RHM 08

## Sensor Size



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920-495A

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