

RHM 60

Rheonik Coriolis Mass Flowmeter for Medium Flow and High Pressure Applications

The RHM 60 can measure flow rates up to 180 t/hr with the unique Omega shape sensor technology, manufactured by GE's Rheonik mass flowmeter experts.

Applications

- Loading of boats, vessels, rail tank wagons
- High temperatures and other challenging applications
- Highly viscous media (low pressure drop and excellent low flow performance)

Features

- Available as heavy duty version (increased wall thickness of measuring pipes for additional safety up to 283 bar)
- Flow Accuracy of up to 0.15 %
- Repeatability better than 0.05%
- Unique torsion swinger



- Customer adaptations possible for application optimized solutions
- Typical measuring ranges from 60 to 3000 kg/min
- Hazardous Area Approvals (ATEX, CSA, ...)

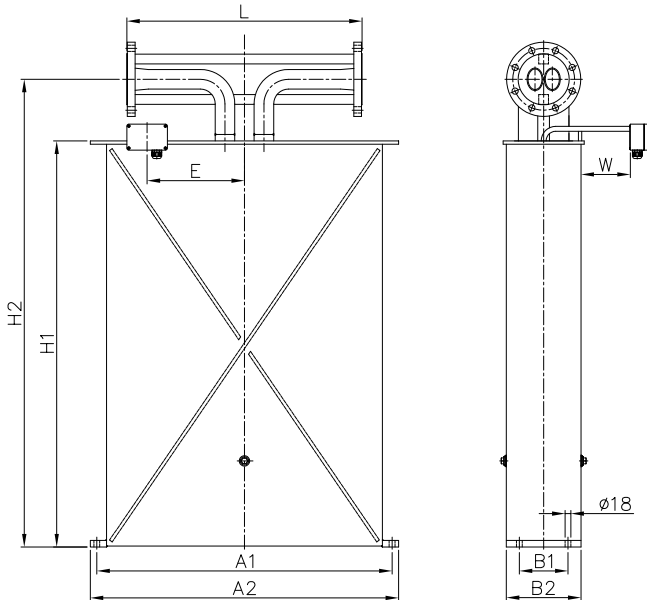
Advantages

- Medium flow rates in combination with high operating pressure
- Torsion swinger design assures most stable and basically drift free measurement
- Increased signal to noise ratio by torsion swinger
- Longest lifetime and increased safety (low stress in welds and increased wall thickness against abrasion)
- No moving parts, practically no maintenance



General Dimensions RHM 60

Type PF0 (welded parallel measuring loops without sealings)



A1 = 910 mm (35.83 in) B1 = 150 mm (5.91 in) H1 = 1253 mm (49.33 in) E = 300 mm (11.81 in)
 A2 = 950 mm (37.40 in) B2 = 230 mm (9.06 in) H2 = 1443 mm (56.81 in) W = 150 mm (5.91 in)

| Process Connection | | Face to face length (L) (*) | | Order Code |
|---------------------------------|--------------------------------|-----------------------------|-------|------------|
| | | mm | in | |
| Standard Connections | Flange DIN DN100/PN40 | 725 | 28.54 | C1 |
| | Flange DIN DN100/PN100 | 725 | 28.54 | C2 |
| | Flange ANSI 4" 150# RF/SF | 725 | 28.54 | F1 |
| | Flange ANSI 4" 300# RF/SF | 725 | 28.54 | F2 |
| | Flange ANSI 4" 600# RF/SF (**) | 725 | 28.54 | F3 |
| | Flange ANSI 4" 900# RTJ | 900 | 35.43 | R0 |
| Optional Connections (Examples) | Flange DIN DN100 / PN16 | 725 | 28.54 | D4 |
| | Flange ANSI 4" 900#RF/SF (**) | 900 | 35.43 | F4 |
| | Flange ANSI 4" 1500 RF/SF (**) | 900 | 35.43 | F5 |
| | Flange ANSI 4" 1500 RTJ | 900 | 35.43 | R2 |
| | Flange ANSI 4" 2500 RTJ | 900 | 35.43 | R3 |
| | Flange ANSI 6" 300# RTJ | 900 | 35.43 | R5 |
| | Flange ANSI 6" 1500# RF/SF | 900 | 35.43 | AA |
| | JIS Flanges upon Request | | | |

(*) Customization possible on request

(**) Flange reduces the maximum allowable pipe pressure by a factor of 0.73

Weight with standard flange ANSI 4" 150#: approx. 235 kg (518 lb)

Shipping box acc. ISPM 15 approx. 180 x 120 x 75 cm (71 x 48 x 30 in), gross weight with 150# standard flanges and RHE 08 transmitter circa 310 kg (683 lb)

Finish type of our ANSI flanges corresponds to SF (AARH 125-250 pinch - Ra 3,2 up to 6,3 pinch)

For differently sized flanges / fittings, please consult your local agent.

Pressure Rating RHM 60

Pressurized part of the meter consists of the measuring loops and the connection part (flanges / fittings). The weaker of both parts decides the maximum allowed operating pressure.

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

Pmax of P1 measuring pipes

M1 standard material - 1.4571 (316Ti)

OD x WT 60.3 x 2.9 mm (2.37 x 0.11 in)

| bar | °C | psi | °F |
|-----|-----|------|-----|
| 104 | 50 | 1508 | 122 |
| 93 | 120 | 1349 | 248 |
| 80 | 210 | 1160 | 410 |
| 67 | 350 | 972 | 662 |

Pmax of P1 measuring pipes

M3 optional material - 2.4602 (Alloy C22)

OD x WT 60.3 x 2.8 mm (2.37 x 0.11 in)

| bar | °C | psi | °F |
|-----|-----|------|-----|
| 138 | 50 | 2002 | 122 |
| 122 | 120 | 1769 | 248 |
| 104 | 210 | 1508 | 410 |
| 86 | 350 | 1247 | 662 |

Pmax of P2 high pressure measuring pipes

M1 standard material - 1.4571 (316Ti)

OD x WT 60.3 x 5.54 mm (2.37 x 0.22 in)

| bar | °C | psi | °F |
|-----|-----|------|-----|
| 206 | 50 | 2988 | 122 |
| 184 | 120 | 2669 | 248 |
| 159 | 210 | 2306 | 410 |
| 134 | 350 | 1944 | 662 |

Pmax of P3 high pressure measuring pipes,

M3 optional material - 2.4602 (Alloy C22)

OD x WT 60.3 x 5.54 mm (2.37 x 0.22 in)

| bar | °C | psi | °F |
|-----|-----|------|-----|
| 283 | 50 | 4105 | 122 |
| 250 | 120 | 3626 | 248 |
| 214 | 210 | 3104 | 410 |
| 178 | 350 | 2582 | 662 |

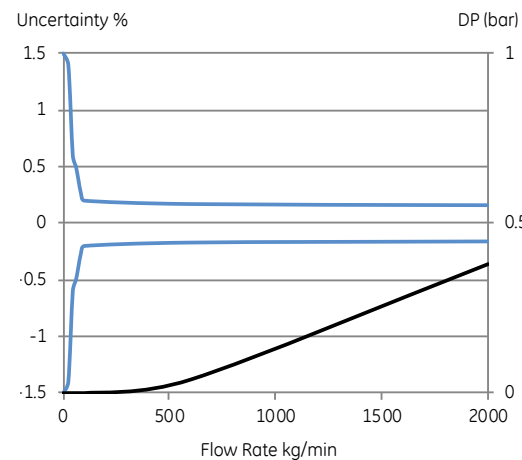
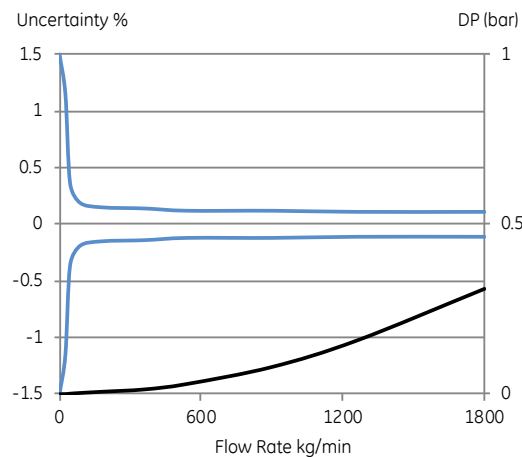
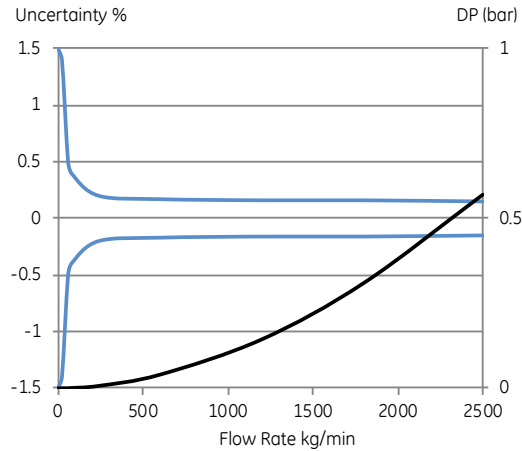
Performance RHM 60

Flow Range 60-3000 kg/min (6614 lb/min), Qnom (*) 2200 kg/min (4850 lb/min)

| Standard Models | | |
|-----------------|-------------|-----------------|
| Flow rate | | Uncertainty |
| in (kg/min) | in (lb/min) | in % of reading |
| 2500 (**) | 5512 | 0.20 |
| 1000 | 2205 | 0.20 |
| 300 | 661 | 0.20 |
| 100 | 220 | 0.20 |
| 60 | 132 | 0.50 |

| Goldline Models — optimized for high accuracy | | |
|---|-------------|-----------------|
| Flow rate | | Uncertainty |
| in (kg/min) | in (lb/min) | in % of reading |
| 1800 | 3968 | 0.15 |
| 300 | 661 | 0.15 |
| 180 | 397 | 0.15 |

| Extended Calibration — optimized for operation at low end of sensor | | |
|---|-------------|-----------------|
| Flow rate | | Uncertainty |
| in (kg/min) | in (lb/min) | in % of reading |
| 2000 | 4409 | 0.20 |
| 100 | 220 | 0.20 |
| 60 | 132 | 0.50 |
| 45 | 99 | 0.60 |



Repeatability

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

Density

Better than ± 0.0015 g/cc - Gold Line: Field adjustable to better ± 0.001 g/cc

Temperature

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

(*) Nominal flow Qnom refers to approx. 7 - 10 m/s (23 - 33 ft/s) velocity in measuring loops for best performance.

(**) Highest calibration point in factory is at 2000 kg/min (4409 lb/min). Stated uncertainty is warranted up to 2500 kg/min (5512 lb/min).

Uncertainty of reading (incl. zero drift) indications refer to reference conditions H₂O, 18-24°C (66-76°F), 1-3 bar (15-45psi) and installation according to field manual.

No relevant pressure effect due to torsional oscillation and semi-circle (non-deforming) measurement section.

Pressure drop refers to Newton liquids, with parallel measuring loops and standard connection.

For calibration to customer range, with increased accuracy, please consult factory.

General Specifications RHM 60

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)
- VHT Models from 0 to 400°C (32 to +752°F)
- Heating for Housing (thermal oil, vapor) optional

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, 1/2" NPT or 3/4" 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 / S31635 (standard)
- 2.4602 / Alloy C22 / N06022 on request
- Others on request

Sensor Enclosure/Housing

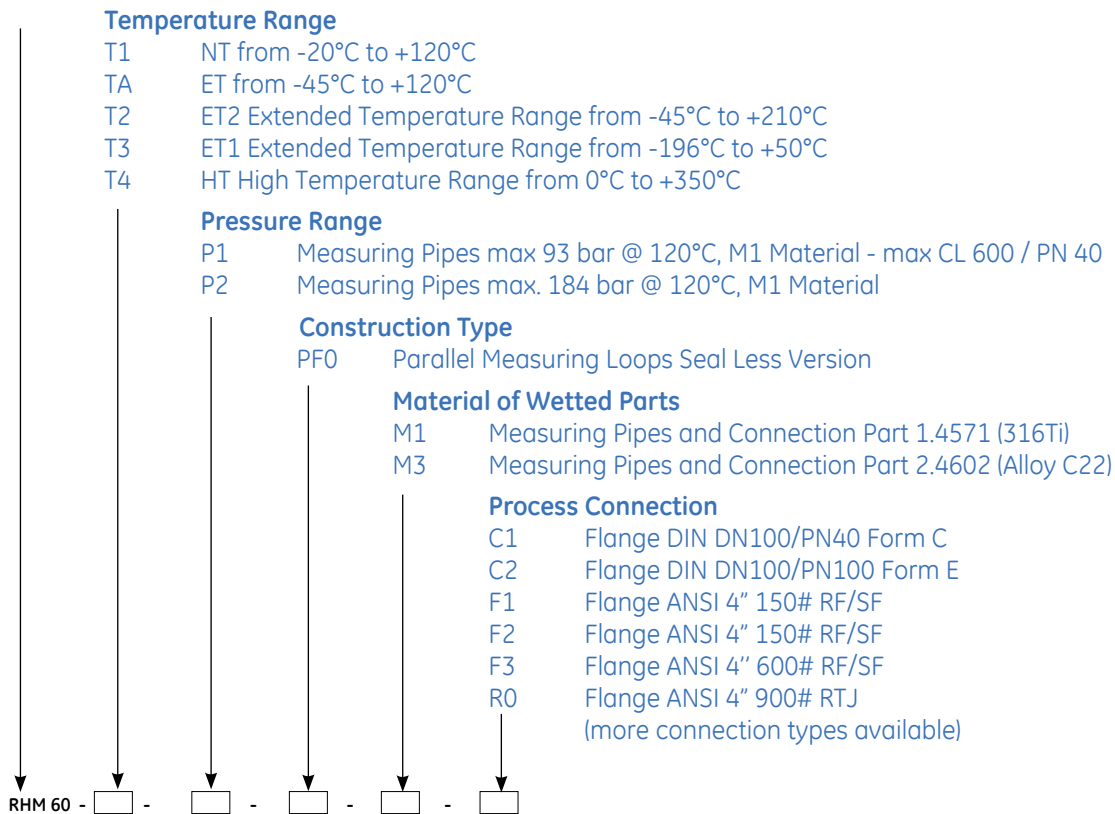
- Stainless Steel: 1.4301 / SS 304, optional in 1.4571 / SS 316Ti. Others on request
- Protection Class IP 65. Optional IP 66 / NEMA 4x

Approvals

- ATEX (CESI 02 ATEX 053 X) Ex II 1 G, EEx ia IIC T6-T1 (only up to 350°C)
- CSA Class I, Division 1, Groups A, B, C and D; Class II, Groups E, F and G
- PED according to directive 97/23/EC Module A1 or Module B+C1 available
- Others on request

Basic Order Code RHM 60

Sensor Size



www.ge-mcs.com

920-502A