

RHM 015 - Ultimate Coriolis Mass Flowmeter for extremely low flow measurements

The RHM 015 can reliably measure flow rates as low as 1 g/min (0.002 lb/min). With its extremely wide turn-down ratio of 300 to 1, this model is perfect for laboratory and test applications. A true low flow mass flowmeter [manufactured by Rheonik](#), the mass flowmeter experts.



GENERAL

The RHM 015 has been in production for many years and is available in a wide range of varying models. The meter has been optimized for applications which have extremely low flow conditions.

As with all other Rheonik meters, this model is based on the patented Omega tube design with increased signal to noise ratio.

This unique design, which offers excellent performance and reliability, has created the most satisfied customers worldwide. Unlike other mass flowmeter manufacturers, Rheonik uses a patented torsion rod swinger with the Omega shape and support bars which results in high accuracy measurement, which is independent of pressure, even at very low flow velocities. The meter has also extremely good repeatability and high stability for critical applications.

APPLICATIONS

Suitable for virtually any mass flow application such as:

- General flow control
- Dosing
- Batching
- Injections
- Filling

FEATURES

The outstanding features include:

- Suitable for pressures up to 868 bar
- Nominal measuring ranges from 0.002 kg/min to 0.6 kg/min
- Minimal flows as low as 0.001 kg/min
- Available as single pipe system for sanitary applications
- CIP suitable
- Accuracy better than 0.2%
- Repeatability better than 0.05%
- Optimised solutions for your batching operation
- Extra compact design with minimal space requirement

ADVANTAGES

- No pressure effect – no deterioration of accuracy due to pressure changes by the patented Omega Shape
- Better performance than thermal meter
- Patented torsion swinger design assures longest life time and increased safety (low stress in welds and increased wall thickness against abrasion)
- No moving parts – practically no maintenance
- Removable connection block
- EEx Approvals

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PERFORMANCE RHM 015

Max Flow 0.6 kg/min (1.32 lb/min)

1) Standard Models

Rates / turndown ratio	in kg/min	in lb/min	error in % of reading
nominal rate Q _{nom} :	0.600	1.32	0.20
0.2 *Q _{nom} (5: 1)	0.120	0.26	0.20
0.1 *Q _{nom} (10:1)	0.060	0.13	0.20
0.05 *Q _{nom} (20:1)	0.030	0.07	0.20
0.006 *Q _{nom} (150:1)	0.004	0.01	0.50

Typical ΔP in bar (psi)	
1 cP	100 cP
1.9 (26.9)	54.6 (792)
0.1 (1.6)	10.9 (159.2)
~0 (0.8)	5.5 (79.1)
~0 (0.4)	2.8 (39.9)
~0 (0)	0.4 (5.3)

2) Optimized Low Flow Models^(*) / optimized to be operated between 0.02 Q_{max} and 0.4 Q_{max}

0.3 *Q _{max} (1:1)	0.200	0.44	0.20
0.006 *Q _{max} (50:1)	0.004	0.01	0.20

0.2 (2.9)	18.1 (262.5)
~0 (0)	0.4 (5.3)

(*) serial/single path version offers the same accuracy at half the flow - 0.2% @ 0.002 kg/min

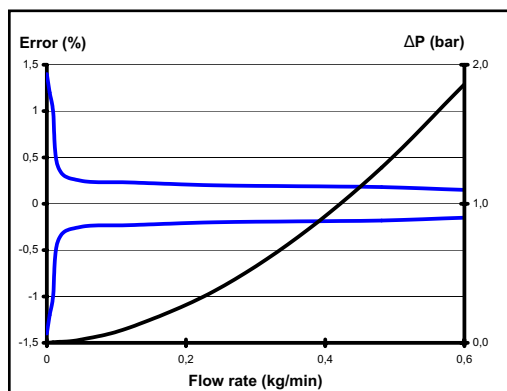
3) Gold Line Models / application fine tuned meters

1 *Q _{nom} (1:1)	0.600	1.32	0.12
0.1 *Q _{nom} (10:1)	0.060	0.13	0.15
0.05 *Q _{nom} (20:1)	0.030	0.06	0.20

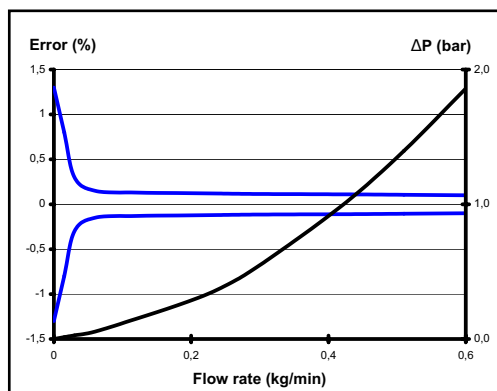
1.9 (26.9)	54.6 (792)
~0 (0.8)	5.5 (79.1)
~0 (0.4)	2.8 (39.9)

Repeatability better ± 0.05 % of rate
Temperature better ± 1°C

Standard Models



Gold Line Models

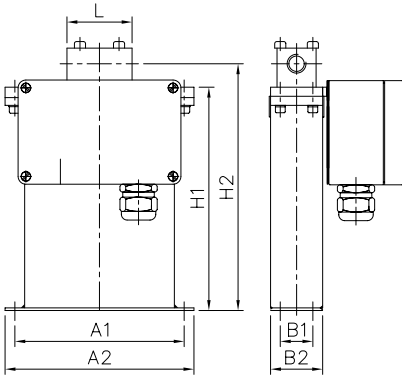


For serial (single pipe/path) sanitary design Q_{max} is 0.3 kg/min (50%)
 Error of reading (including zero drift) indications refer to reference conditions H₂O, 18-24°C (66-76°F), 1-3 bar (15-45 psi)
 Pressure drop refers to Newton liquids, with parallel measuring loops and block/manifold connection
 Nominal flow refers to approx. 10 m/s (33 ft/sec) velocity in measuring loops for best performance
 Calibration to customer range possible

GENERAL OUTLINE DIMENSIONS RHM 015

Type I (w/ removable manifold block - serial/parallel / PTFE seals)

thread type:

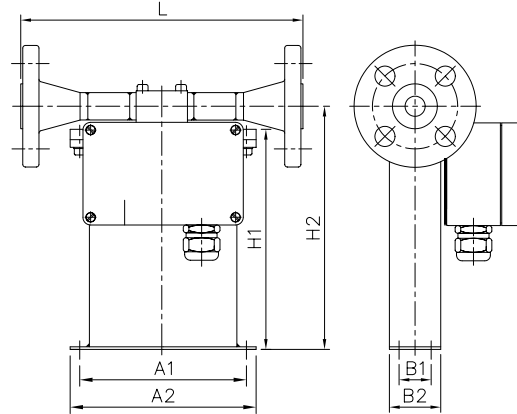


Weight approx. 2kg (4.4 lb)

A1=130 mm (5.12")
A2=145 mm (5.71")

B1=25 mm (0.98")
B2=40 mm (1.57")

flange type:



Weight approx. 4kg (8.8 lb)

H1=172 mm (6.77")
H2=188 mm (7.40")

For ET temperature models, terminal box will be replaced by 2 meters free telefon cable.

Process Connection for thread type		Face to face length (L)
Standard	G ¼" female	50 mm (1.97")
	NPT ¼" female	50 mm (1.97")
Optional	Autoclave	50 mm (1.97")
	M20 x 1.5	70 mm (2.76")
	9/16" Butech thread	70 mm (2.76")

Process Connection for flange type		Face to face length (L)
Standard	½" / CL 150 acc. ANSI B16.5	220 mm (8.67")
	½" / CL 300 acc. ANSI B16.5	220 mm (8.67")
	½" / CL 600 acc. ANSI B16.5	220 mm (8.67")
	DN15 / PN40 acc. DIN 2635 - C	220 mm (8.67")
	DN15 / PN100 acc. DIN 2637 - E	220 mm (8.67")
Optional	½" / CL 900 acc. ANSI B16.5	300 mm (11.82")
	½" / CL 1500 acc. ANSI B16.5	300 mm (11.82")
	½" / CL 2500 acc. ANSI B16.5	300 mm (11.82")
	DN15 / PN160 acc. DIN 2638 - E	220 mm (8.67")
Special	1" Graylock or equivalent hubb	standard (*) - 220 mm (8.67")
	Swagelok male	standard (*) - 220 mm (8.67")
	VCR ½"	standard (*) - 220 mm (8.67")
	Novaswiss	standard (*) - 220 mm (8.67")

(*) customization possible on request

Our standard seals are PTFE - Manifold block on request available without seals but with brazed connection block

Above table only shows our general process fittings

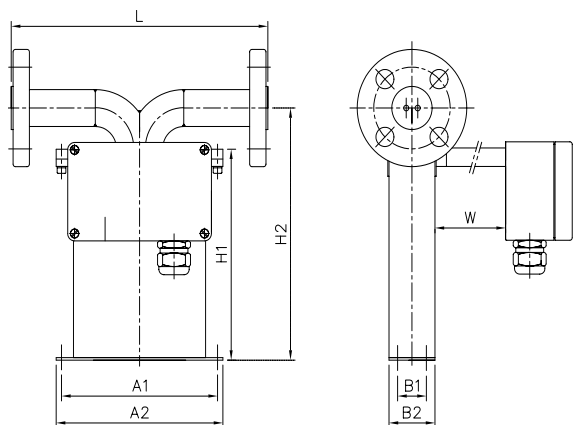
For further customization with regard to face to face length and special fittings please contact your local agent

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GENERAL OUTLINE DIMENSIONS RHM 015

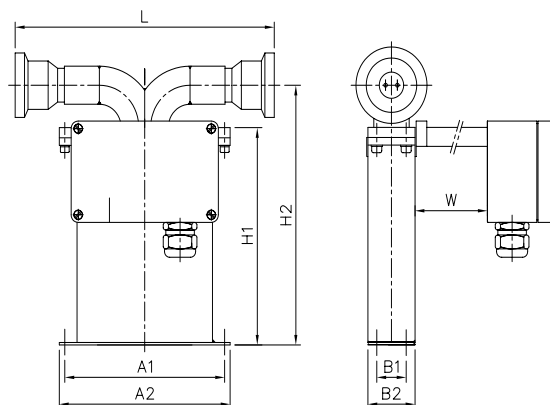
Type II (sealless welded, parallel measuring loops w/o seals)

flange type:



Weight approx. 4kg (8.8 lb)

special fittings:



Weight approx. 4kg (8.8 lb)

A1=130 mm (5.12")
A2=145 mm (5.71")

B1=25 mm (0.98")
B2=40 mm (1.57")

H1=172 mm (6.77")
H2=205 mm (8.07")

W=0 mm for NT temperature models and W=100 mm for HT temperature models

For ET temperature models, terminal box will be replaced by 2 meters free teflon cable

Process Connection		Face to face length (L)
Standard	1/2" / CL 150 acc. ANSI B16.5	220 mm (8.67")
	1/2" / CL 300 acc. ANSI B16.5	220 mm (8.67")
	1/2" / CL 600 acc. ANSI B16.5	220 mm (8.67")
	DN15 / PN40 acc. DIN 2527 - C	220 mm (8.67")
	DN15 / PN100 acc. DIN 2527 - E	220 mm (8.67")
Optional	1/2" / CL 900 acc. ANSI B16.5	300 mm (11.82")
	1/2" / CL 1500 acc. ANSI B16.5	300 mm (11.82")
	1/2" / CL 2500 acc. ANSI B16.5	300 mm (11.82")
	DN15 / PN160 acc. DIN 2527 - E	220 mm (8.67")
Special	1/2" JIS 10 K FF	standard (*) - 220 mm (8.67")
	Free pipe ends 8.00 x 1.00 mm	standard (*) - 220 mm (8.67")
	Free pipe ends 12.00 x 1.00 mm	standard (*) - 220 mm (8.67")
	Pipe connection 12 x 1.5	standard (*) - 220 mm (8.67")
	Swagelok male	standard (*) - 220 mm (8.67")

(*) customization possible on request

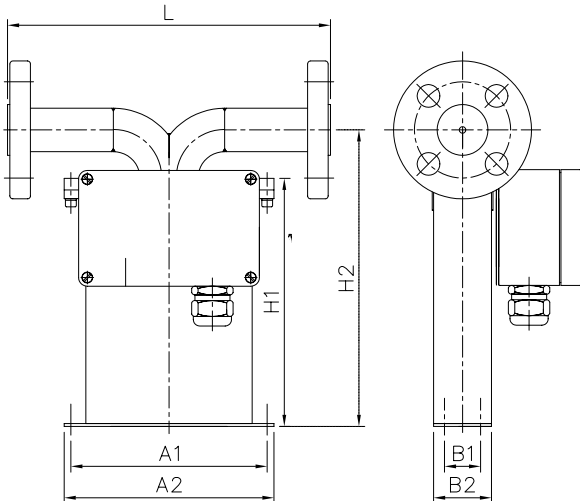
Above table only shows our general process fittings

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GENERAL OUTLINE DIMENSIONS RHM 015

Type III (sealless welded, serial measuring loops - single path w/o seals)

flange type:

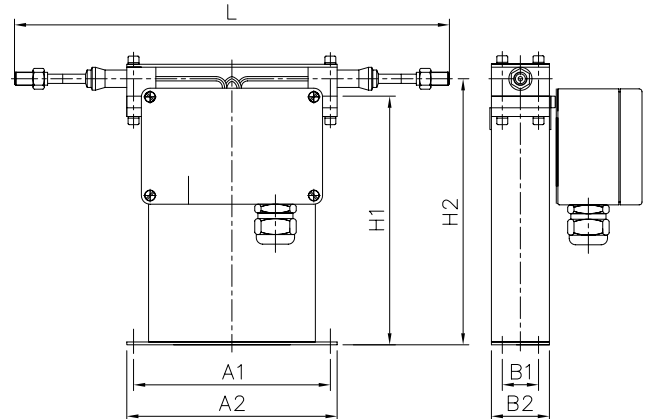


Weight approx. 4kg (8.8 lb)

A1=130 mm (5.12")
A2=145 mm (5.71")

B1=25 mm (0.98")
B2=40 mm (1.57")

special/sanitary fittings:



Weight approx. 4kg (8.8 lb)

H1=172 mm (6.77")
H2=188 mm (7.40") for sanitary fittings
H2=205 mm (8.07") for flange type

For ET temperature models, terminal box will be replaced by 2 meters free teflon cable

	Process Connection	Face to face length (L)
Sanitary fittings	½" / Sanitary Tri Clamp acc. DIN 32676	190 mm (7.48")
	DN10 / Sanitary acc. DIN 11851	190 mm (7.48")
Flange	½" / CL 150 acc. ANSI B16.5	220 mm (8.67")
	½" / CL 300 acc. ANSI B16.5	220 mm (8.67")
	DN15 / PN40 acc. DIN 2527 - C	220 mm (8.67")
Specials	Swagelok male	standard (*) - 220 mm (8.67")
	Free pipe ends 8.00 x 1.00 mm	standard (*) - 220 mm (8.67")
	Free pipe ends 12.00 x 1.00 mm	standard (*) - 220 mm (8.67")

(*) customization possible on request

Above table only shows our general process fittings

For further customization with regard to special fittings and face to face length please contact your local agent

GENERAL SPECIFICATIONS RHM 015

Temperature rating

- NT Models -20 to +120°C (-4 to +248°F)
- ET1 Models -200 to +50°C (-328 to +122°F)
- ET2 Models -45 to +210°C (-49 to +410°F)
- HT Models 0 to +350°C (+32 to +662°F)

Electrical connection

- Junction box / aluminium coated (standard) IP 65 (Nema 4X)
- Junction box in SS on request
- Cable entry M25 x 1.5 (½" and ¾" NPT optional)
- Max cable length between RHM and RHE:
100 m (330 ft)
200 m (660 ft) only with factory approval

Housing

- Stainless Steel: 1.4301 / SS 304
- Protection class: IP 65 (Nema 4X)
- higher on request -

Material of wetted parts

- 1.4539 / SS 904L (measuring loops)
- 1.4571 / SS 316Ti (process connection)
- Hastelloy C4 on request
- Tantalum on request
- Other material on request

Pressure rating

- 300 bar @ 120°C (4350 psi @ 248°F)
- Optional high pressure version
400 bar @ 120°C (5800 psi @ 248°F)
- higher pressure on request -

Approvals

- ATEX (CESI 02 ATEX 053 X):
Ex II 1 G, EEx ia IIC T6-T1
- CSA (220705)
Class I, Div 1 and 2,
Groups A, B, C and D; Type 3
- Custody Transfer Approvals
(PTB 1.32-97027224 and NMI TC 3382)
- PED according to directive 97/23/EC
available



For further information
please contact your
local representative