

Product Brochure

CORIOLIS MASS FLOW METERS

Worldwide Unmatched Design and Performance

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RHEONIK. GET FLOW MEASURED

WHEN
**HARDWARE
ENGINEERING**
MEETS
**OUTSTANDING
ELECTRONICS**



35+ years of Coriolis innovations, precision, dedication & passion

For more than **35 years**, we have made it our mission to empower our partners in industry. By enabling them to improve their process flow measurements, they have saved both costs and resources while increasing productivity and quality.

Rheonik is 100 % focused on perfecting **Coriolis mass flow meters**. Because our entire engineering knowledge is invested in Coriolis flow meter technology, we are really good at it. Our expertise and experience has enabled us to be a **pioneer** of meters for use in areas such as hydrogen, high-pressure or special material devices.

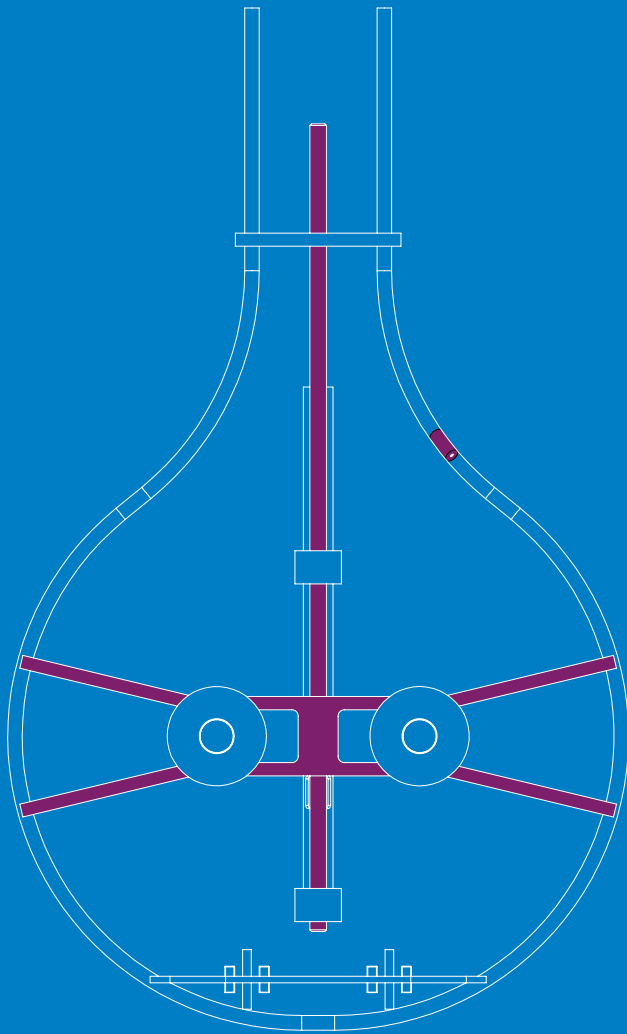
We guarantee our customers the highest degree of quality. Our flexibility means that all our Coriolis mass flow meters can be customized at our production site in Germany to suit any specific requirement.

And we always manufacture our meters with one goal in mind:
absolutely accurate measurement results!

Rheonik offers



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1. Heavy Wall Thickness Pipe

Our unique Omega design accommodates tubing with increased wall thickness for high pressure applications. Heavy wall tubing provides long-term measurement stability and safety margin against potential abrasion and corrosion.

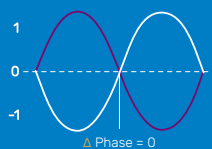
2. Energizing Torsion Rod

The inclusion of energized torsion rods in the meter mechanism produces, in concert with the mass bars, a large highly stable oscillation amplitude. This generates measurement with exceptional signal to noise ratio, even under low flow conditions, for the best possible accuracy. The stability of the oscillation is the key for highly reliable measurement in difficult conditions, i.e. bubbles in liquid or non-homogeneous fluids with different densities.

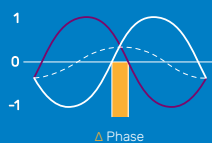
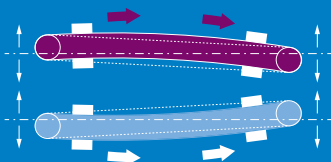
3. Stabilizing Mass Bar

Our mass bar system works in conjunction with the torsion rods to drive harmonic oscillation – like a precision tuning fork – with reduced susceptibility to external vibration and process borne dampening conditions.

NO FLOW



FLOW



The Measurement Principle

Each mass flow sensor has two measuring tubes connected to an oscillation system driven by two precisely controlled excitation coils. As liquids or gases flow through the sensor, Coriolis force acts on these tubes and causes a slight deflection in their geometry. This deflection is detected by sensing coils that generate a sinusoidal Voltage signal and is directly proportional to mass flow rate.

Rheonik Sensors

Unique Omega technology

Rheonik was founded in **1986** with the sole purpose of developing Coriolis mass flow meters unmatched in design and performance and as a result, the unique Omega tube design using torsion rods and a mass bars as core elements was born. Unlike other Coriolis mass flow meters, the Omega tube design can provide solutions for applications with line pressures up to **1722 bar (24,969 psi)** at an **uncertainty of 0.05 %**. The unique, highly stable mechanical design of the Rheonik Omega tube meter offers many advantages over more common unsupported bent tube designs.

One of the biggest advantages of the Omega design is the ability to easily adapt sensors to the most extreme requirements, like those requiring exotic materials or the ability to withstand extremely high pressures. Requirements such as these are implemented without changes to the mechanical design - our flexibility is truly unmatched.

Rheonik unique features

- **Up to 1722 bar (24,969 psi)**
- **Connection range from ¼" up to 12"**
- **Flow range from 0.001 kg/min (0.002 lb/min) to 30,000 kg/min (66,139 lb/min)**
- **Wide turndown > 100:1**
- **Up to 4000 measurement cycles/sec**
- **Up to 0.05 % uncertainty**
- **Exotic materials available**
- **Assurance Factor® at any time**

**BETTER
MEASUREMENTS
COME FROM
BETTER
OSCILLATION**



**IT'S A
MATCH**

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MEASUREMENTS
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RHM 015
0.001 - 1.2 kg/min



RHM 02
0.01 - 2.7 kg/min



RHM 03
0.03 - 7.5 kg/min



RHM 04
0.05 - 18 kg/min



RHM 06
0.1 - 36 kg/min



RHM 10
0.25 - 90 kg/min

FROM
0.001 kg/min
0.002 lb/min
TO
30,000 kg/min
66,139 lb/min



RHM 15
0.5 - 240 kg/min



RHM 20
1 - 480 kg/min



RHM 30
10 - 900 kg/min



RHM 40
20 - 1500 kg/min



RHM 60
30 - 3000 kg/min



RHM 80
80 - 8000 kg/min



RHM 100
120 - 12000 kg/min



RHM 160
250 - 30000 kg/min

Absolute Precision from size to size

Rheonik Coriolis sensors are not just mass flow meters for liquids and gases from **0.001 kg/min** to **30.0000 kg/min**. With superior Omega technology they are extreme performers in every respect. Even at pressures of up to **1722 bar (24,969 psi)**, they still deliver flow measurement with an **uncertainty of 0.05 %** and a measurement **turndown capability of >100:1**. Precise but rugged design and construction means Rheonik sensors have excellent zero-point stability, even under the harshest conditions, ensuring high accuracy and reproducibility of measurement results in every application, whether high/low temperature, very high pressure, very low flows or fast injection (dosing) and filling.

The Rheonik Coriolis sensor's unique torsion bar/mass bar design allows for a wide variety of material types and wall thickness to be used for the measuring tubes - even tubes made of **exotic materials** for highly corrosive fluids. Our experienced manufacturing team are experts at fine-tuning the torsion bar/mass weight system regardless of tube type to make mechanism oscillation strong, uniform and at the correct resonant frequency. Further flexibility is delivered through our **AnyPipe** and **AnyFlange** commitment where process connections on all our meters can be tailored to suit your pipe system - not the other way around - to simplify installation and reduce cost and complexity.

Rheonik sensors have the smallest pipe footprint available and can be installed where other meters just won't fit. Rugged design with no moving parts make Rheonik flow meters essentially maintenance free and this translates to the **lowest cost of ownership** available. Intended for long-term use and manufactured to the highest quality, Rheonik meters offer the very best in process and investment security.

Rheonik Flow Range

	RHM 015	RHM 02	RHM 03	RHM 04	RHM 06	RHM 10	RHM 15	RHM 20	RHM 30	RHM 40	RHM 60	RHM 80	RHM 100	RHM 160
Line Size	¼" - 1"	¼" - 1"	¼" - 1"	¼" - 1"	½" - 1"	½" - 1½"	¾" - 2"	1" - 3"	1¼" - 3"	2" - 3"	4"	6"	8"	12"
Qmin														
kg/min	0,001	0,005	0,02	0,03	0,05	0,125	0,25	0,5	5	10	30	100	150	250
lbs/min	0,002	0,01	0,04	0,07	0,11	0,28	0,55	1,1	11	22	66	220	330	551
Qnom@														
kg/min	0,6	1,8	5	12	25	60	180	360	800	1.200	2.500	5.000	10.000	23.000
lbs/min	1,3	4	11	26	55	132	399	793	1.764	2.646	5.512	11.023	22.049	50.706
Qmax														
kg/min	1,2	2,7	7,5	18	36	90	240	480	900	1.500	3.000	8.000	12.000	30.000
lbs/min	2,65	6	17	40	79	198	529	1.058	1.984	3.307	6.614	17.637	26.455	66.139



RHE 21
Wall or Pipe Mount



RHE 26
Panel or DIN rail Mount



RHE 27
Panel Mount



RHE 28
Wall Mount

ASSURANCE
Factor® ○ ● ● ●

Flow Assurance at any time
for all Rheonik Transmitter



RHE 42
Integral/Wall or Pipe Mount



RHE 45
Integral/Compact Mount



RHE 46
DIN rail Mount

FOR
MASS, VOLUME,
DENSITY,
TEMPERATURE

Advanced functions & demand-driven diagnostics

Combine any transmitter with any sensor to measure mass, volume, density and temperature. Rheonik transmitters provide all the features you would expect from a high quality flow meter – **Partially Filled Pipe Management** for aerated flows, self-learning **Batch Control**, built in **PID Controller**, **Net Oil** calculation, **Precision Flow Analysis**, on board **Data Recording** of 500.000 entries. RHE 40 series transmitters feature high speed digital signal processing. A wide range of metric and English engineering units, including API and gas standard volume calculation, allow users to absolutely configure the meter to local requirements. All transmitters have Modbus communications as standard. With a **wide range** of options including discrete **I/O** – analog, digital, pulse, frequency – and digital connectivity including Fieldbus and Profibus, end users can get the absolute max out of their metering investment once installed.

The most important feature, however, is monitoring the entire measurement performance. Through **Rheonik Assurance Factor®** advanced diagnostics, you have complete overview of the meter condition at all times – and in real time – to provide high confidence in the measurement and highlight process issues as they occur. Assurance Factor® uses clear, visual indication on transmitter displays and can be polled through the wide range of connectivity options available with Rheonik RHE models.

Rheonik Transmitter Range Solutions suitable for every installation type

	RHE 21	RHE 26	RHE 27	RHE 28	RHE 42	RHE 45	RHE 46
Mounting	Wall, Pipe	Panel, DIN rail	Panel	Wall	Integral/ Wall, Pipe	Integral	DIN rail
Housing Material	Stainless Steel	Polymer	Polymer	Aluminium	Aluminium	Aluminium	Polymer
Protection Class	IP66, IP66/67	IP20	IP20	IP65, IP66	IP65, IP66/67	IP66	IP20
Display	Yes	Yes	Yes	Yes	Optional	Optional	No
I/O & Interfaces	4 – 20 mA, Pulse/ Frequency, Status, HART, Modbus RS485	4 – 20 mA, Pulse/ Frequency, Status, Modbus RS485	4 – 20 mA, Pulse/ Frequency, Status, HART, Modbus RS485	4 – 20 mA, Pulse/ Frequency, Status, HART, Modbus RS485	4 – 20 mA, Pulse/ Frequency, Status, HART, Modbus RS485, Modbus TCP, Foundation Fieldbus, Profibus PA	4 – 20 mA, Pulse/ Frequency, Status, HART, Modbus RS485, Modbus TCP, Ethernet/IP, EtherCAT, Profibus DP, Profinet	4 – 20 mA, Pulse/ Frequency, Status, Modbus RS485, Modbus TCP, Ethernet/IP, Profinet RT
Supply Voltage	12 – 24 VDC / 100 – 240 VAC	12 – 24 VDC	12 – 24 VDC / 100 – 240 VAC	12 – 24 VDC / 100 – 240 VAC	12 – 24 VDC	12 – 24 VDC	12 – 24 VDC
Hazardous Areas Classifications	for RHE Transmitter Zone 1, 2; Div. 1, 2	Safe Area	Safe Area	Zone 2; Div. 2	Zone 1, 2; Div. 1, 2	Safe Area	Safe Area
	for RHM Sensor Zone 0, 1, 2; Div. 1, 2	Zone 0, 1, 2; Div. 1, 2	Zone 0, 1, 2; Div. 1, 2	Zone 0,1,2; Div. 1, 2	Zone 0, 1, 2; Div. 1, 2	Safe Area	Zone 2; Div. 2

**RHEONIK
FOR
BETTER
PROCESS
RELIABILITY**

ASSURANCE
Factor® ●●●●



**What flow measurement
challenge do you have that
we can solve together?**

ABLE

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