### Specifications

**Detector**

- **Service:** Liquids, gases, slurries, high viscosity media
- **Nominal Sizes:** 1/10" – 6"
- **Flow Capacity:** 0 – 11,000 lb/min (0 – 5000 kg/min)
- **Process Connections:** ANSI flanged, NPT, Tri-Clamp
- **Process Pressure Limits:** According to ANSI flange rating
- **Process Temperature:** -328°F to +662°F (-200°C to +350°C)
- **Material of Measuring Tubes:** 316L stainless, Hastelloy C22, Titanium
- **Secondary Containment:** Rupture pressure (RCCS34-39) to 1885 psi (130 bar)
- **Approvals:** Remote detector: Intrinsically Safe for Class I, Division 1, Groups A, B, C, D.
  - Explosion proof for Class I, Division 1, Groups A, B, C, D.
- **Sanitary:** 3-A Sanitary Standards, Inc.

**Converter**

- **Functions:** Flow (mass and volume), density, temperature, concentration, net flow
- **Power Supply:** 90-264 VAC; 20.5-28.8 VDC
- **Ambient Temperature:** (-20°C to +50°C)
- **Standard IO:** 2 isolated current outputs
- **Communication:** HART; FOUNDATION fieldbus™
- **Display:** 4-line, backlit LCD

<table>
<thead>
<tr>
<th>Accuracy</th>
<th>Liquid</th>
<th>±0.1% of reading</th>
<th>±0.1% of reading ± zero point stability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas</td>
<td>±0.5% of reading</td>
<td>±0.5% of reading ± zero point stability</td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td>±1°C</td>
<td>±0.5% of reading</td>
<td></td>
</tr>
<tr>
<td>Density</td>
<td>10 g/l with special calibration</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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**What does vigilance® mean to Yokogawa?**

**For starters, always, always making sure the products and solutions that leave our research and development labs are the best the world has seen - from day one throughout your business life cycle.**

Our innovative technologies and committed experts help design, install and manage your production systems efficiently and dynamically. In an ever-changing business environment, we help plan for the future to ensure continuity and flexibility in your automation strategies. Yokogawa goes the extra mile to do things right. Let us be vigilant about your business.

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**A Yokogawa Commitment to Industry**
The ROTA MASS 3 Series mass flowmeter features a heavy wall, seamless, dual tube design uniquely decoupled from any process vibration or pipeline stress guaranteeing reliability and output stability. Nine different detectors enable customization of the meter for the best combination of mass flow range, pressure drop, and accuracy at the lowest possible cost.

The versatile ROTA MASS can be used in the most difficult applications from cryogenics to molten liquids as well as sanitary applications and aggressive chemicals.

With its multi-measurement and multi-parameter capability, the ROTA MASS is essentially a process control station. The state of the art converter provides a wealth of features including remote configuration via HART, multiple languages, advanced diagnostics, infrared programming and a four-line display for easy setup and operation.

The Coriolis principle

The measurement principle of the ROTA MASS is unaffected by changes in the physical properties of the medium (from clean liquids to sludge) or changes in environmental conditions. Even fluctuating pressures and variations in viscosity or temperature do not affect the measurement accuracy.

The Coriolis principle permits the accurate measurement of mass, density, temperature and volume. Electromagnetic forces cause resonant vibrations of the measurement tubes. Coriolis forces acting on the medium flowing through the tubes alter these vibrations by a small amount. The interaction between the resonance vibrations of the tubes and the small deviations caused by the Coriolis forces results in a small phase shift which is detected by two electromagnetic pickups. The small phase shift is a measure of mass flow while change in the resonant frequency is a measure of the fluid density. This value can also be used to provide a measurement of fluid concentration and net flow.

When combined with modern digital technology this measurement principle provides unsurpassed accuracy for flows between 0 – 300 tons/hour.

More than just a flowmeter . . .

The answer to your most difficult and demanding flow measurement problems

- **Unique “Box within a box” design**
  The measuring tubes are decoupled from pipeline stresses and vibration guaranteeing reliability and output stability

- **Heavy wall dual tube design**
  Provides increased safety, higher operating pressures and excellent performance under all operating conditions

- **Extended flow range capability**
  Nine detector sizes cover mass flow ranges from 0 – 3.6 lb/min to 0 – 11,000 lb/min.

- **Wide temperature range**
  Process temperatures from −328°F to +662°F. Insulated enclosures and steam jackets are available

- **True sanitary design**
  The measuring tubes are self-draining with no flat sections or 90 degree angles to trap process liquid

- **Tolerates high levels of gas entrainment**
  ROTA MASS can be configured to avoid drop-outs and maintain normal operation when gas is present in the liquid

- **Multiple outputs**
  Two analog and two pulse outputs can be configured to provide information simultaneously on mass flow rate, total flow, density and temperature

- **Four line LCD display with infrared switches**
  Up to four display lines can be programmed to indicate a wide variety of information. Infrared switches permit programming “through the glass” without the need to open the enclosure

Stability by design

With its unique, robust “box-in-box-design” the ROTA MASS is completely decoupled from external vibration and mechanical stress
The ROTAMASS 3 Series Coriolis Flowmeter

The NEW standard in Coriolis flowmeter technology

The ROTAMASS 3 Series mass flowmeter features a heavy wall, seamless, dual tube design uniquely decoupled from any process vibration or pipeline stress guaranteeing reliability and output stability. Nine different detectors enable customization of the meter for the best combination of mass flow range, pressure drop, and accuracy at the lowest possible cost.

The versatile ROTAMASS can be used in the most difficult applications from cryogenics to molten liquids as well as sanitary applications and aggressive chemicals.

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<td>Process Connections: ANSI flanged, NPT, Tri-Clamp</td>
<td>Standard IO: 2 isolated current outputs</td>
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<tr>
<td>Process Pressure Limits: According to ANSI flange rating Tube pressure to 3600 psi (250 bar)</td>
<td>2 pulse/frequency outputs (20-10,000 Hz)</td>
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<td>Process Temperature: -328°F to +662°F (-200°C to +350°C)</td>
<td>1 status input (voltage free contact)</td>
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<td>Material of Measuring Tubes: 316L stainless, Hastelloy C22, Titanium</td>
<td>Communication: HART; FOUNDATION fieldbus™</td>
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<td>Secondary Containment: Rupture pressure (RCCS34-30) to 1885 psi (130 bar) Available with rupture proof test</td>
<td>Display: 4-line, backlit LCD</td>
</tr>
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<td>Approvals: Hazardous Area Classification: Factory Mutual (FM) Remote detector: Intrinsically Safe for Class I, Division 1, Groups A, B, C, D. Explosion proof for Class I, Division 1, Groups A, B, C, D. FM, (Canada) pending</td>
<td>Accuracy: Liquid: ±0.1% of reading +/− zero point stability Gas: ±0.5% of reading +/− zero point stability Temperature: ±1°C +/− 0.5% of reading Density: 10 1 g/l with special calibration</td>
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**commitment means building the future to last.**

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