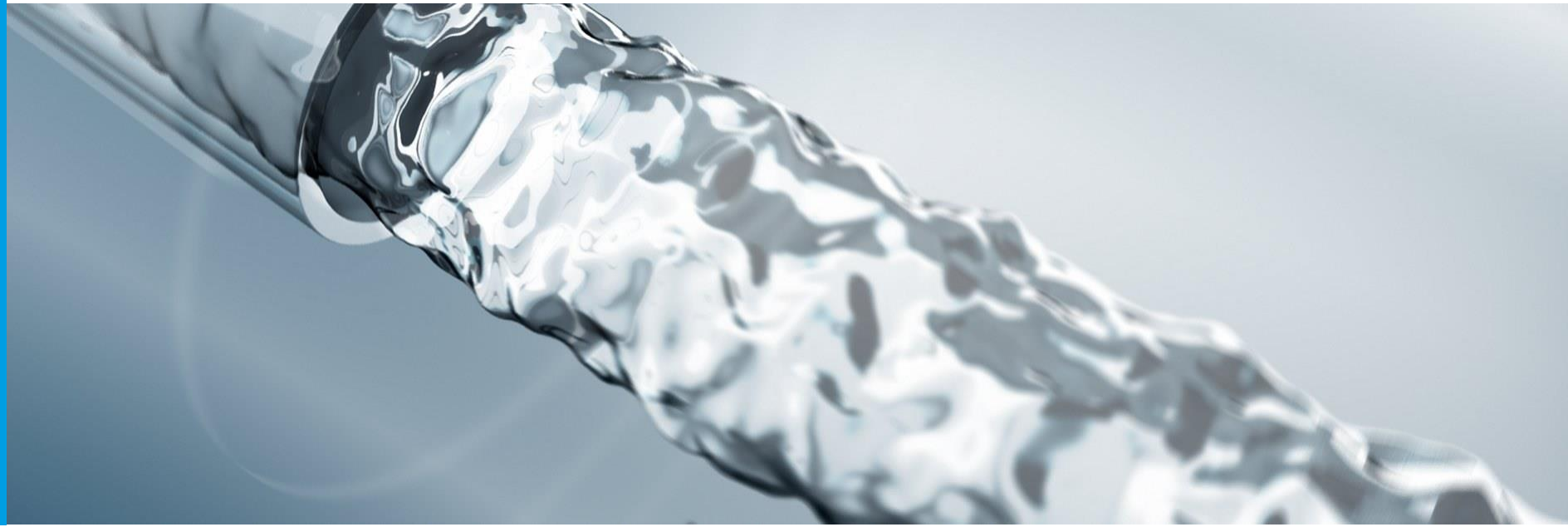
# Proline Promass E 300/E 500

Promass E 300
Promass E 500





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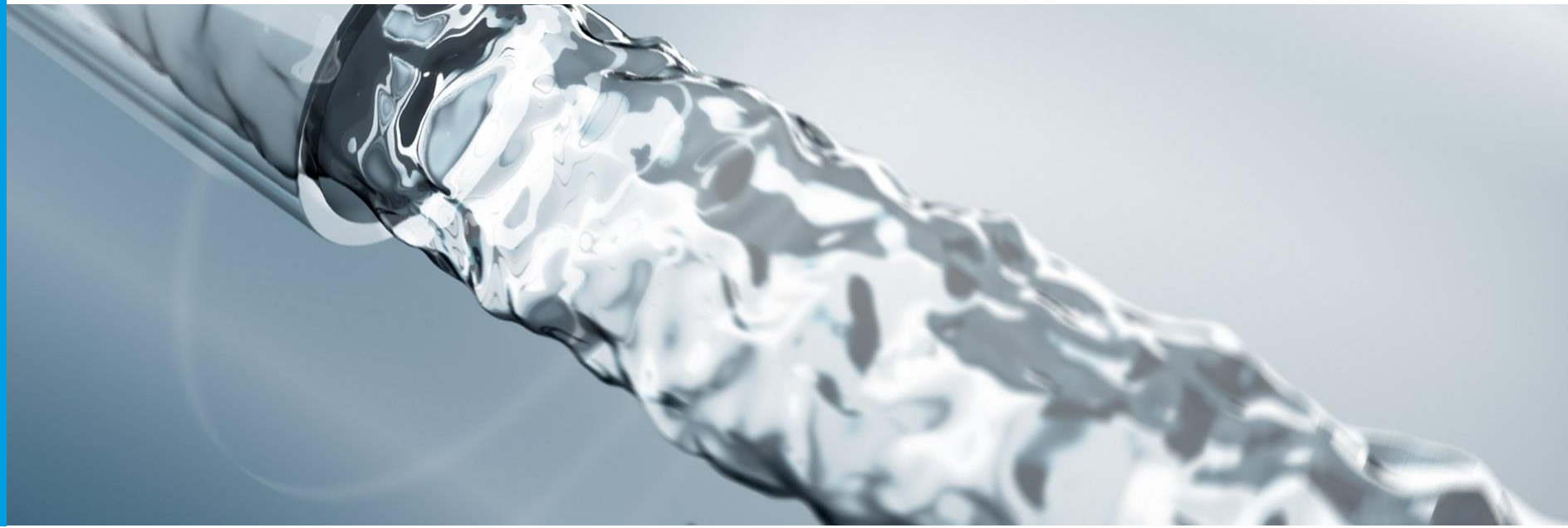
# Proline Promass E 300/E 500

Promass E 300
Promass E 500





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  - Oil & Gas

# Proline Promass E 300/500

300 aluminum


500 digital


500


## Promass E 300

The flowmeter for reduced cost of ownership, with a compact, easily accessible transmitter.

## Promass E 500

The flowmeter for reduced cost of ownership, with a compact, easily accessible transmitter.

**Promass E 300/500** provides simplicity and reliable Coriolis technology in a compact design for basic applications in various industries.
Combining multivariable Coriolis measurement with a robust and fully featured compact or remote field housing. Offering a large graphic display with touch control HMI and web server for easy field access.

# Promass sensors proven in use

**Promass sensors, tried and tested in over 500 000 applications, offer:**

- Multivariable flow measurement in compact design.
- Insensitivity to vibrations thanks to balanced tube measuring system.
- Immune to external piping forces due to robust design.
- Easy installation – no inlet and outlet runs required.

**Promass E** is the preferred sensor for applications with basic requirements in a multitude of industries. It's all welded stainless dual-tube design makes this meter a very robust device for a large range of process temperatures and fluid properties. Additional certificates such as 3A, EHEDG and a large variety of hygienic process connections make Promass E also the perfect fit for basic hygienic applications.

# Proline 300 transmitter

## Promass 300 for compact field installation also in harsh environments

- Multivariable flow measurement in compact design for field installations.
- Available in aluminum or hygienic stainless.
- Up to 3 fully flexible I/Os including wireless.
- Large fully graphical display with touch control and wireless accessible web server.

**Proline 300** is the preferred transmitter for the process industry also for hazardous areas and harsh environments. Featuring a large graphical display and touch control HMI as well as web server and wireless communication for easy set-up. Offering a wide range of digital communication protocols for easy system integration.

# Proline 500 transmitter

## Promass 500 for remote field installation also in harsh environments

- Multivariable flow measurement with remote access (up to 300 m).
- Up to 4 fully flexible I/Os including wireless.
- Large fully graphical display with touch control HMI and wireless accessible web server.

**Proline 500** is the preferred solution when access to the sensor or mounting space is limited. The sensor is equipped with the integrated* ISEM electronic to ensure a fully digital integration (Proline 500 digital) with remote cable length up to 300 m and supports mixed-zone hazardous areas installations. Featuring a large graphical display with touch control HMI as well as web server and wireless communication for easy set-up. Offering 4 fully flexible I/Os and a wide range of digital communication protocols for easy system integration.

(*)For electronic-less sensor installations and in case of transmitter and sensor placement in the hazardous area (e.g. Zone 1, Cl. 1 Div 1)

500 digital

500 (*)

Sensor junction box



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# Promass E 300 in brief


**Benefits**

- Robust meter for basic applications with reduced cost of ownership.
- Multivariable flow measurement in compact design for field installations.
- Large fully graphical display with touch control HMI and WLAN accessible web server.

| | |
|---|---|
| **Transmitter Housing (compact)** | Coated aluminum, stainless steel hygienic |
| **Line size** | DN 8 to 80 |
| **Accuracy** | Mass flow 0.15%, (optional 0.1%) |
| **Outputs/system integration** | Up to 3 fully flexible I/O, including Modbus RS485, EtherNet/IP, 4 to 20 mA HART, pulse/freq./stat., PROFIBUS PA/DP, PROFINET IP, FOUNDATION Fieldbus |
| **Display/HMI** | Fully graphical display, touch control, web server with wireless access |
| **Hazardous area approvals** | Zone 1+2; Cl. 1 Div. 1+2; ATEX, EAC, IECEx, NEPSI, INMETRO, TIIS, CSA C/US |

# Promass E 500 in brief

500 digital

500

## Benefits

- Robust meter for basic applications with reduced cost of ownership.
- Multivariable flow measurement in compact design for remote installations (up to 300 m) and 4 I/Os.
- Large fully graphical display with touch control HMI and WLAN accessible web server.

| | |
|---|---|
| **Transmitter housing** | Coated aluminum, stainless steel cast, Polycarbonate |
| **Junctionbox housing (sensor)** | Coated aluminum, stainless steel hygienic (ultracompact), stainless steel cast |
| **Line size** | DN 8 to 80 |
| **Accuracy** | Mass flow 0.15%, (optional 0.1%) |
| **Outputs/system integration** | Up to 4 fully flexible I/O, including Modbus RS485, EtherNet/IP, 4 to 20 mA HART, pulse/freq./stat., PROFIBUS PA/DP, PROFINET IP, FOUNDATION Fieldbus |
| **Display/HMI** | Fully graphical display, touch control, web server with wireless access |
| **Hazardous area approvals** | ATEX, EAC, IECEx, NEPSI, INMETRO, TIIS, CSA C/US . 500 analog: Zone 1, Zone 2, Cl. 1 Div. 1, Div. 2. 500 digital: Zone 1, Cl. 1 Div. 1 (mixed installation); Zone 2. |

# Housing options Proline 300/500

## Proline 300 compact


Alu


Alu

SS Hygienic

### Remote display



Alu


CF3M SS

- Non hazardous area
- Zone 2
- Cl.1 Div 2

- Zone 1
- Cl.1 Div 1.

## Proline 500 remote

### 500 digital


Poly-carbonate


Alu

### 500


Alu


CF3M

### Sensor junction boxes



Alu


Compact

Ultra-compact

SS hygienic

# Promass E 300 key messages

**Promass E 300 –** the flowmeter with minimized total cost of ownership, and a compact, easily accessible transmitter.

| Customer benefit | Feature |
|---|---|
| Cost-effective –an alternative to conventional Volumetric flowmeters | multi-purpose device; |
| Fewer process measuring points | Multivariable measurement (flow, density, temperature) |
| Space-saving installation | no in/outlet run needs |
| Easy scale-up covering a large range of applications | Large DN range from DN 8 to 80 |
| Easy field access | Compact transmitter with large full graphic display and built-in web server with WLAN access |
| Easy system integration | Large range of digital fieldbus protocols |
| Wireless communication for primary measuring values or asset management | WirelessHART |
| Full access to process and diagnostic information | numerous, freely combinable I/Os and fieldbuses |
| Reduced complexity and variety | freely configurable I/O functionality |

# Promass E 500 key messages

**Promass E 500 –** the flowmeter with minimized total cost of ownership, as remote version with up to 4 I/Os.

| Customer benefit | Feature |
|---|---|
| Cost-effective –an alternative to conventional Volumetric flowmeters | multi-purpose device; |
| Fewer process measuring points | Multivariable measurement (flow, density, temperature) |
| Space-saving installation | no in/outlet run needs |
| Easy scale-up covering a large range of applications | Large DN range from DN 8 to 250 |
| Easy field access | Remote transmitter with large full graphic display and built-in web server with WLAN access and up to 4 I/Os |
| Easy system integration | Large range of digital fieldbus protocols |
| Wireless communication for primary measuring values or asset management | WirelessHART |
| Full access to process and diagnostic information | numerous, freely combinable I/Os and fieldbuses |
| Reduced complexity and variety | freely configurable I/O functionality |

# Promass E sensor



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# Promass E

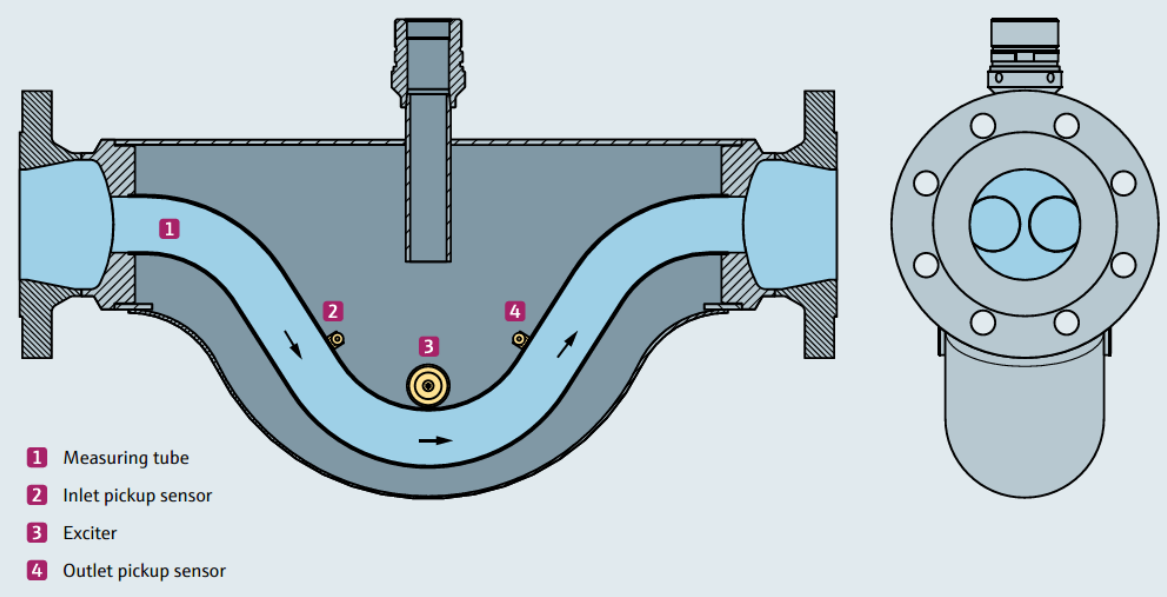
Promass E is the fastest growing sensor in our portfolio. Performance and robustness have been continuously improved over the past years leading to the Promass E available today. Focusing on reduced cost of ownership this sensor is providing an excellent value for costumers looking for Coriolis technology for basic applications.

**Ideal for flow measurement...**

...with reduced cost of ownership.
...in standard applications.
...reduced accuracy requirements.
...of gases.
...of medium flow rates.
...with density measurement.
...in hygienic applications.

# Sensor design

Promass E has a fully welded, dual tube design with curved tubes. Due to the tube design, dimensions are small and the weight is low, allowing installation without pipe support and full drainability in vertical installations.



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# Large range of DN

With line sizes from DN 8 to 80 (3/8 to 3") and a large turndown scale up is easy.

## Measuring ranges for liquids

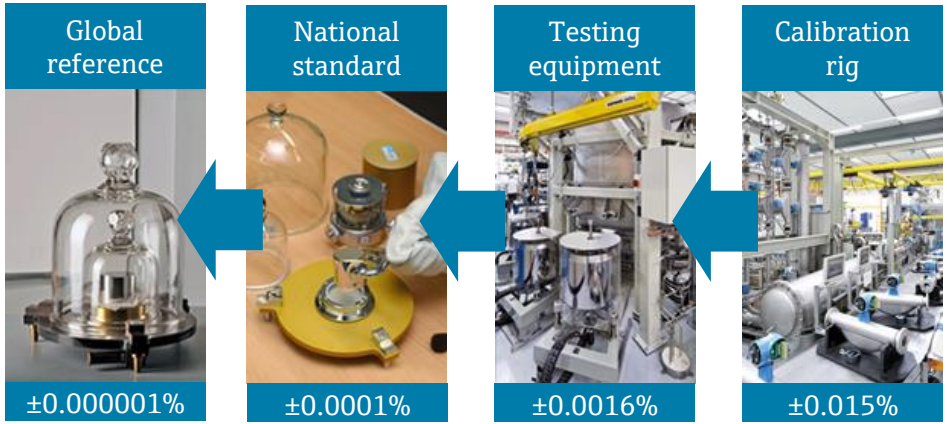
| DN | | Measuring range full scale values $\dot{m}_{min(F)}$ to $\dot{m}_{max(F)}$ | |
|---|---|---|---|
| [mm] | [in] | [kg/h] | [lb/min] |
| 8 | ⅜ | 0 to 2 000 | 0 to 73.50 |
| 15 | ½ | 0 to 6 500 | 0 to 238.9 |
| 25 | 1 | 0 to 18 000 | 0 to 661.5 |
| 40 | 1½ | 0 to 45 000 | 0 to 1 654 |
| 50 | 2 | 0 to 70 000 | 0 to 2 573 |
| 80 | 3 | 0 to 180 000 | 0 to 6 615 |

# Large range of process connections

The choice of process connections is adapted to the requirements of the industry specifics. It includes DIN, ANSI and JIS flanges in stainless steel. Also available hygienic couplings and clamps. All process connections are welded to the sensor body and without gaskets.


Process connection up to PN 100

# Calibration excellence




Promass F offers the best accuracy specification in its class (0.10%).

- The Endress+Hauser approach is accredited calibration rigs based on ISO/IEC 17025 as the traceability foundation.
- This means full traceability with an uninterrupted chain of proof regarding the test equipment, from the test device to the hierarchically highest standard in each country “national standard”, confirmed by an accreditation.

# Density measurement

Promass E 300/500 are available with the following density accuracy specifications:

Example Promass E 100/300/500

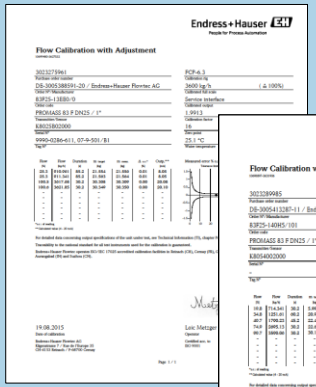
**Density (liquids)**

- Reference conditions:±0.0005 g/cm³
- Standard density calibration:±0.01 g/cm³
  (valid over the entire temperature range and density range )

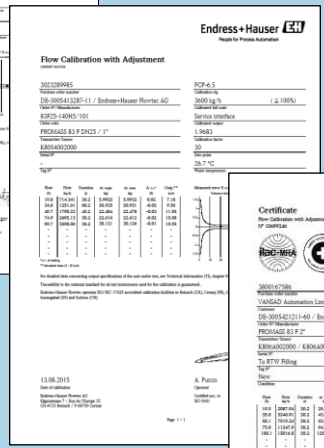
# Calibration protocols

## Flow

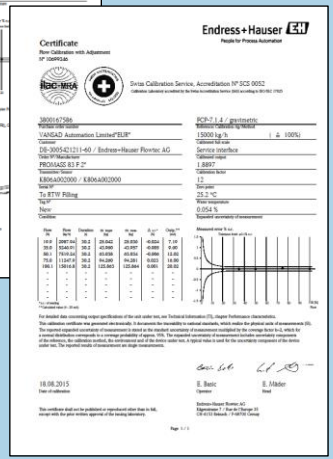
Standard




5 point

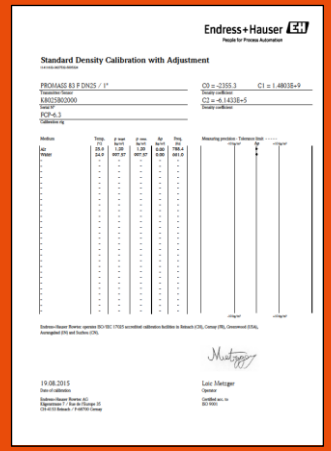



5 point traceable



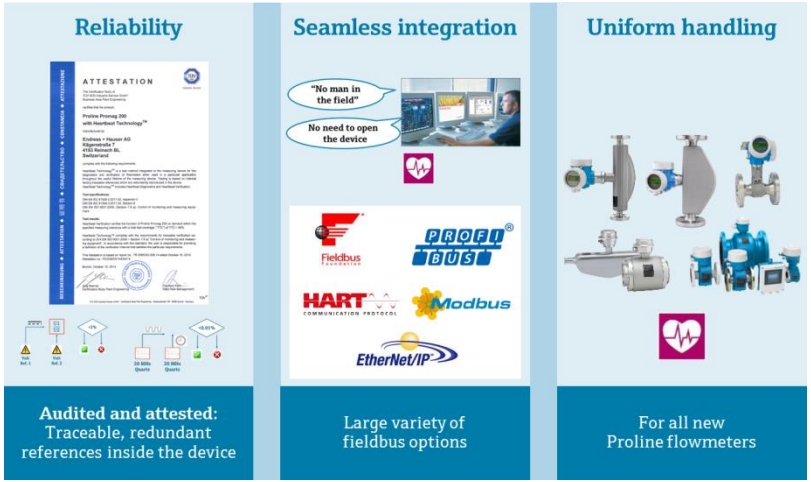

## Density

Standard



# Designed for safety with Heartbeat Technology

Built-in self monitoring and verification capability ensures reliable flow measurement throughout the lifetime of the device.





Embedded Heartbeat Verification guarantees a traceable and attested means of in-situ testing of measurement quality without process interruption.

# Corrosion resistant wetted parts

Promass E comes standard with 904L (1.4539) measuring tubes.

904L™ stainless steel performs equal to or better than 316L stainless steel with respect to diffused copper ion concentrations and conductivity changes of USP purified water in contact with the respective stainless steel alloys. In addition, 904L™ stainless steel has properties superior to 316L stainless steel, thereby improving the reliability, functionality and accuracy of a Coriolis mass flowmeter.

**Uniform corrosion in wet process phosphoric acid at 60°C**

| Steel Grade | Corrosion Rate, mm/year |
|---|---|
| 316L | >5 |
| 904L | 1.2 |
| 254 SMO® | 0.05 |

Composition: 54% $P_2O_5$, 0.06% HCl, 1.1% HF, 4.0% $H_2SO_4$, 0.27% $Fe_2O_3$, 0.17% $Al_2O_3$, 0.10% $SiO_2$, 0.20% CaO and 0.70% MgO.

**Corrosion rates in a fatty acid column for the distillation of tall oil at 253°C**

| Steel Grade | Corrosion Rate, mm/year |
|---|---|
| 316L | 0.88 |
| 317LMN | 0.29 |
| 904L | 0.06 |
| 254 SMO® | 0.01 |

**Uniform corrosion in pickling acid* at 25°C**

| Steel Grade | Corrosion Rate, mm/year |
|---|---|
| 316L | >6 |
| 904L | 0.47 |
| 254 SMO® | 0.27 |
| 654 SMO® | 0.06 |

*Composition: 20% $HNO_3$ + 4% HF.

# Surface roughness

Surface finishes, accessible and inaccessible, that directly or indirectly come in contact with a product, must often exhibit specific surface roughness characteristics to enhance their cleaning and sterilization.

Promass E is available with the following surface finishes

| Surface finish | Polish | Availability |
|---|---|---|
| Not polished | Not polished | All DN |
| 0.8µm, [32µ-in] | Mechanically polished (wetted parts) | All DN |
| 0.4µm, [16µ-in] | Mechanically polished (wetted parts) | All DN |

# Hygienic test, inspection and certificates

In the pharmaceutical, food and beverage and biotech industries, contamination-free processing is critical. The integrity of the sanitary manufacturing application is essential for full compliance to the validation process. As a result, inline devices must themselves meet standards set by governing agencies to ensure there are no weak links in the sanitary chain.

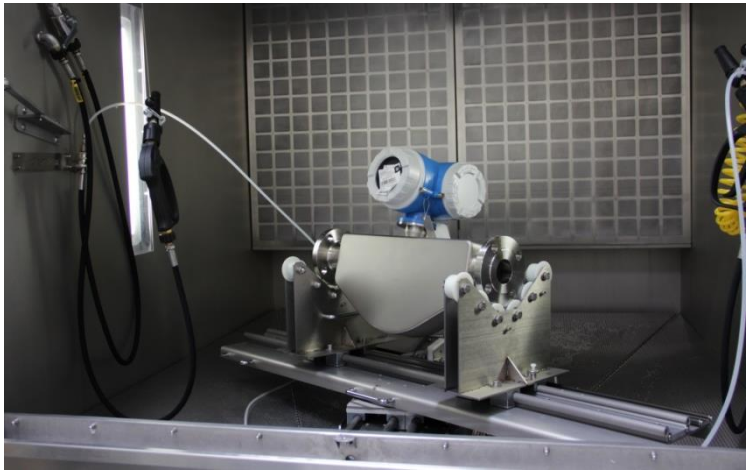


3A and EHEDG certificates are available in conjunction with hygienic process connections for all line sizes DN 8 to 100 (3/8 to 3").

# Cleaning services

During manufacturing the wetted parts of the sensor may get contaminated with hydrocarbon oils and greases. An optional cleaning service is available to ensure proper removal of the contaminants.

Therefore Promass E is available with a cleaning option to ensure oil and fat free surfaces.



Cleaning booth @ Flowtec

# Temperature ranges

Promass E is available with one temperature specifications

| Temperature | Design | Availability |
|---|---|---|
| 150 °C (302 °F) | standard neck | all DN |

# Industry specifics



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# Industry portfolio overview

| | Chemical | Oil & Gas | Food & Beverages | Life Sciences |
|---|---|---|---|---|
| Promass F | ◆◆ | ◆◆ | ◆◆ | ◆ |
| Promass E | ◆◆ | ◆ | ◆ | ◆ |
| Promass S | | | ◆◆ | ◆ |
| Promass P | | | | ◆◆ |
| Promass K | ◆ | ◆ | ◆ | ◆ |
| Promass I | ◆ | ◆ | ◆ | ◆ |
| Promass A | ◆ | ◆ | ◆ | ◆ |
| Promass Q | ◆ | ◆ | ◆ | |
| Promass H | ◆ | ◆ | | |
| Promass O | | ◆ | | |
| Promass X | | ◆ | | |
| Cubemass C | ◆ | ◆ | | |

Feature product ◆◆

Industry portfolio ◆

Specialist ◆

# Promass E 300/500 in Chemical Industry

The flowmeter with minimized total cost of ownership. Highly accurate measurement of liquids and gases for a wide range of standard applications.

| Customer benefit | Feature |
|---|---|
| NAMUR conformity | Built in NAMUR length, NE107 conform HMI |

- Temperature rating 150 °C
- Sizes: DN 8 to 80 (3/8 to 3")
- High corrosion resistance stainless steel 904L /1.4539
- Slightly bent compact stainless steel design, little space required. Reduction of the installation cost.
- Designed according to SIL
- Heartbeat Technology

# Promass E 300/500 in Food & Beverage

The flowmeter with minimized total cost of ownership. Highly accurate measurement of liquids and gases for a wide range of standard applications.

| Customer benefit | Feature |
|---|---|
| Hygienic design | EHEDG, 3A |
| Easy integration | Large range of process connections |

- Full certification, 3A/EHEDG, FDA suitable for CIP/SIP
- Sizes: DN 8 to 80 (3/8 to 3")
- Slightly bent compact stainless steel design, little space required. Reduction of the installation cost.
- Fully drainable design
- IP69K

# Promass E 300/500 in Oil & Gas

The flowmeter with minimized total cost of ownership. Highly accurate measurement of liquids and gases for a wide range of standard applications.

| Customer benefit | Feature |
|---|---|
| Highest safety | SIL, worldwide accepted Ex-approvals |

- Sizes up to DN 80
- High corrosion resistance stainless steel 904L/1.4539
- Slightly bent compact stainless steel design, little space required. Reduction of the installation cost.
- Process temperature up to 150 °C
- SIL and Heartbeat Technology

# Promass E 300/500 in Life Sciences

The flowmeter with minimized total cost of ownership. Highly accurate measurement of liquids and gases for a wide range of standard applications.

| Customer benefit | Feature |
|---|---|
| GMP compliance | Hygienic design according to EHEDG, 3A |
| Cleanability | GMP design with full drainability |
| Easy integration | Large range of hygienic process connections |

- cGMP compliant fully welded
- Full certification, 3A/EHEDG, FDA suitable for CIP/SIP
- Slightly bent compact stainless steel design, little space required. Reduction of the installation cost.
- Hygienic process connections
- Fully drainable design

# Thank you very much for your attention



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