

# Proline Promass F 300

## Coriolis flowmeter

Flowmeter with premium accuracy, robustness and a compact, easily accessible transmitter



Thông tin thêm và mức tính giá hiện tại:

[www.apsc.endress.com/8F3B](http://www.apsc.endress.com/8F3B)

### Lợi ích:

- Highest process safety – immune to fluctuating and harsh environments
- Fewer process measuring points – multivariable measurement (flow, density, temperature)
- Space-saving installation – no in-/outlet run needs
- Full access to process and diagnostic information – numerous, freely combinable I/Os and fieldbuses
- Reduced complexity and variety – freely configurable I/O functionality
- Integrated verification – Heartbeat Technology

### Tổng quan về thông số kỹ thuật

- **Max. measurement error** Mass flow (liquid):  $\pm 0.10\%$  (standard),  $0.05\%$  (option) Volume flow (liquid):  $\pm 0.10\%$  Mass flow (gas):  $\pm 0.25\%$  Density (liquid):  $\pm 0.0005\text{ g/cm}^3$
- **Measuring range** 0 to 2 200 000 kg/h (0 to 80 840 lb/min)
- **Medium temperature range** Standard:  $-50$  to  $+150\text{ }^\circ\text{C}$  ( $-58\text{...}+302\text{ }^\circ\text{F}$ ) Option:  $-50$  to  $+240\text{ }^\circ\text{C}$  ( $-58\text{...}+464\text{ }^\circ\text{F}$ ) High temperature option:  $-50$  to  $+350\text{ }^\circ\text{C}$  ( $-58\text{...}+662\text{ }^\circ\text{F}$ ) Option:  $-196$  to  $+150\text{ }^\circ\text{C}$  ( $-320$  to  $+302\text{ }^\circ\text{F}$ )
- **Max. process pressure** PN 100, Class 600, 63K
- **Wetted materials** Measuring tube: 1.4539 (904L); 1.4404 (316/316L); Alloy C22, 2.4602 (UNS N06022) Connection: 1.4404 (316/316L); Alloy C22, 2.4602 (UNS N06022); 1.4301 (F304)

**Phạm vi ứng dụng:** Promass F has a long-standing reputation as a highly accurate sensor. Immune to fluctuating and harsh environments, it is suited for the broadest range of applications. With its compact

transmitter Promass F 300 offers high flexibility in terms of operation and system integration: access from one side, remote display and improved connectivity options. Heartbeat Technology ensures measurement reliability and enables extension of recalibration cycles.

## Tín năng và thông số kỹ thuật

### Density/Concentration

#### Measuring principle

Coriolis

#### Product headline

Flowmeter with premium accuracy, robustness and a compact, easily accessible transmitter.

Highest measurement performance for liquids and gases under varying, demanding process conditions.

#### Sensor features

Highest process safety – immune to fluctuating and harsh environments. Fewer process measuring points – multivariable measurement (flow, density, temperature). Space - saving installation – no in-/outlet run needs.

Mass flow: measurement error  $\pm 0.05\%$  (PremiumCal). Medium temperature:  $-196$  to  $350\text{ }^{\circ}\text{C}$  ( $-320$  to  $662\text{ }^{\circ}\text{F}$ ). Nominal diameter: DN 8 to 250 ( $\frac{3}{8}$  to 10").

#### Transmitter features

Full access to process and diagnostic information – numerous, freely combinable I/Os and fieldbuses. Reduced complexity and variety – freely configurable I/O functionality. Integrated verification – Heartbeat Technology.

Compact dual-compartment housing with up to 3 I/Os. Backlit display with touch control and WLAN access. Remote display available.

#### Nominal diameter range

DN 8 to 250 ( $\frac{3}{8}$  to 10")

**Density/Concentration****Wetted materials**

Measuring tube: 1.4539 (904L); 1.4404 (316/316L); Alloy C22, 2.4602 (UNS N06022)

Connection: 1.4404 (316/316L); Alloy C22, 2.4602 (UNS N06022); 1.4301 (F304)

**Measured variables**

Mass flow, density, temperature, volume flow, corrected volume flow, reference density, concentration

**Max. measurement error**

Mass flow (liquid):  $\pm 0.10$  % (standard), 0.05 % (option)

Volume flow (liquid):  $\pm 0.10$  %

Mass flow (gas):  $\pm 0.25$  %

Density (liquid):  $\pm 0.0005$  g/cm<sup>3</sup>

**Measuring range**

0 to 2 200 000 kg/h (0 to 80 840 lb/min)

**Max. process pressure**

PN 100, Class 600, 63K

**Medium temperature range**

Standard:  $-50$  to  $+150$  °C ( $-58$ ... $+302$  °F)

Option:  $-50$  to  $+240$  °C ( $-58$ ... $+464$  °F)

High temperature option:  $-50$  to  $+350$  °C ( $-58$ ... $+662$  °F)

Option:  $-196$  to  $+150$  °C ( $-320$  to  $+302$  °F)

**Ambient temperature range**

Standard:  $-40$  to  $+60$  °C ( $-40$  to  $+140$  °F)

Option:  $-50$  to  $+60$  °C ( $-58$  to  $+140$  °F)

**Sensor housing material**

Standard: 1.4301 (304)

Option: 1.4404 (316/316L)

**Transmitter housing material**

AlSi10Mg, coated; 1.4409 (CF3M) similar to 316L; stainless steel for hygienic transmitter design

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## Density/Concentration

### Degree of protection

Compact version: IP66/67, type 4X enclosure.

External WLAN antenna: IP67

IP69

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### Display/Operation

4-line backlit display with touch control (operation from outside)

Configuration via local display and operating tools possible

Remote display available

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### Outputs

3 outputs:

4-20 mA HART (active/passive)

4-20 mA WirelessHART

4-20 mA (active/passive)

Pulse/frequency/switch output (active/passive)

Double pulse output (active/passive)

Relay output

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### Inputs

Status input

4-20 mA input

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### Digital communication

HART, PROFIBUS DP, PROFIBUS PA, FOUNDATION Fieldbus, Modbus

RS485, Profinet, Ethernet/IP, OPC-UA

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### Power supply

DC 24 V

AC 100 to 230 V

AC 100 to 230 V / DC 24 V (non-hazardous area)

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### Hazardous area approvals

ATEX, IECEx, cCSAus, NEPSI, INMETRO, EAC, UK Ex

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### Product safety

CE, C-tick, EAC marking

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**Density/Concentration****Functional safety**

Functional safety according to IEC 61508, applicable in safety-relevant applications in accordance with IEC 61511

**Metrological approvals and certificates**

Calibration performed on accredited calibration facilities (acc. to ISO/IEC 17025)

Heartbeat Technology complies with the requirements for measurement traceability according to ISO 9001:2015 – Section 7.1.5.2 a (TÜV SÜD attestation)

MI-005 (Liquids other than water, Hydrocarbons, LPG, cryogenic liquids)

NTEP (Liquids other than water, LPG, cryogenic liquids)

MC (Liquids other than water, cryogenic liquids)

MI-002, PTB

**Marine approvals and certificates**

LR approval, DNV GL approval, ABS approval, BV approval, CCS approval

**Pressure approvals and certificates**

PED, CRN, AD 2000

**Material certificates**

3.1 material

NACE MR0175/MR0103, PMI; welding test acc. to EN ISO, ASME, NORSOK

**Hygienic approvals and certificates**

3-A, EHEDG, cGMP

**Density****Measuring principle**

Coriolis

**Product Headline**

Flowmeter with premium accuracy, robustness and a compact, easily accessible transmitter.

Highest measurement performance for liquids and gases under varying, demanding process conditions.

## Density

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### Sensor features

Highest process safety – immune to fluctuating and harsh environments. Fewer process measuring points – multivariable measurement (flow, density, temperature). Space - saving installation – no in-/outlet run needs.

Mass flow: measurement error  $\pm 0.05$  % (PremiumCal). Medium temperature:  $-196$  to  $350$  °C ( $-320$  to  $662$  °F). Nominal diameter: DN 8 to 250 ( $\frac{3}{8}$  to 10").

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### Transmitter features

Full access to process and diagnostic information – numerous, freely combinable I/Os and fieldbuses. Reduced complexity and variety – freely configurable I/O functionality. Integrated verification – Heartbeat Technology.

Compact dual-compartment housing with up to 3 I/Os. Backlit display with touch control and WLAN access. Remote display available.

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### Nominal diameter range

DN 8 to 250 ( $\frac{3}{8}$  to 10")

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### Wetted materials

Measuring tube: 1.4539 (904L); 1.4404 (316/316L); Alloy C22, 2.4602 (UNS N06022)

Connection: 1.4404 (316/316L); Alloy C22, 2.4602 (UNS N06022); 1.4301 (F304)

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### Measured variables

Mass flow, density, temperature, volume flow, corrected volume flow, reference density, concentration

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### Max. measurement error

Mass flow (liquid):  $\pm 0.10$  % (standard),  $0.05$  % (option)

Volume flow (liquid):  $\pm 0.10$  %

Mass flow (gas):  $\pm 0.25$  %

Density (liquid):  $\pm 0.0005$  g/cm<sup>3</sup>

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### Measuring range

0 to 2 200 000 kg/h (0 to 80 840 lb/min)

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## Density

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### Max. process pressure

PN 100, Class 600, 63K

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### Medium temperature range

Standard: -50 to +150 °C (-58 to +302 °F)

Option: -50 to +240 °C (-58 to +464 °F)

High temperature option: -50 to +350 °C (-58 to +662 °F)

Option: -196 to +150 °C (-320 to +302 °F)

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### Ambient temperature range

Standard: -40 to +60 °C (-40 to +140 °F)

Option: -50 to +60 °C (-58 to +140 °F)

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### Sensor housing material

Standard: 1.4301 (304)

Option: 1.4404 (316/316L)

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### Transmitter housing material

AlSi10Mg, coated; 1.4409 (CF3M) similar to 316L; stainless steel for hygienic transmitter design

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### Degree of protection

Compact version: IP66/67, type 4X enclosure.

External WLAN antenna: IP67

IP69

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### Display/Operation

4-line backlit display with touch control (operation from outside)

Configuration via local display and operating tools possible

Remote display available

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## Density

### Outputs

3 outputs:

4-20 mA HART (active/passive)

4-20 mA WirelessHART

4-20 mA (active/passive)

Pulse/frequency/switch output (active/passive)

Double pulse output (active/passive)

Relay output

### Inputs

Status input

4-20 mA input

### Digital communication

HART, PROFIBUS DP, PROFIBUS PA, FOUNDATION Fieldbus, Modbus RS485, Profinet, Ethernet/IP, OPC-UA

### Power supply

DC 24 V

AC 100 to 230 V

AC 100 to 230 V / DC 24 V (non-hazardous area)

### Hazardous area approvals

ATEX, IECEx, cCSAus, NEPSI, INMETRO, EAC, UK Ex

## Liquids

### Measuring principle

Coriolis

### Product headline

Flowmeter with premium accuracy, robustness and a compact, easily accessible transmitter.

Highest measurement performance for liquids and gases under varying, demanding process conditions.



## Liquids

### Sensor features

Highest process safety – immune to fluctuating and harsh environments. Fewer process measuring points – multivariable measurement (flow, density, temperature). Space - saving installation – no in-/outlet run needs.

Mass flow: measurement error  $\pm 0.05$  % (PremiumCal). Medium temperature:  $-196$  to  $350$  °C ( $-320$  to  $662$  °F). Nominal diameter: DN 8 to 250 ( $\frac{3}{8}$  to 10").

### Transmitter features

Full access to process and diagnostic information – numerous, freely combinable I/Os and fieldbuses. Reduced complexity and variety – freely configurable I/O functionality. Integrated verification – Heartbeat Technology.

Compact dual-compartment housing with up to 3 I/Os. Backlit display with touch control and WLAN access. Remote display available.

### Nominal diameter range

DN 8 to 250 ( $\frac{3}{8}$  to 10")

### Wetted materials

Measuring tube: 1.4539 (904L); 1.4404 (316/316L); Alloy C22, 2.4602 (UNS N06022)

Connection: 1.4404 (316/316L); Alloy C22, 2.4602 (UNS N06022); 1.4301 (F304)

### Measured variables

Mass flow, density, temperature, volume flow, corrected volume flow, reference density, concentration

### Max. measurement error

Mass flow (liquid):  $\pm 0.10$  % (standard),  $0.05$  % (option)

Volume flow (liquid):  $\pm 0.10$  %

Mass flow (gas):  $\pm 0.25$  %

Density (liquid):  $\pm 0.0005$  g/cm<sup>3</sup>

### Measuring range

0 to 2 200 000 kg/h (0 to 80 840 lb/min)

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## Liquids

**Max. process pressure**

PN 100, Class 600, 63K

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**Medium temperature range**

Standard: -50 to +150 °C (-58 to +302 °F)

Option: -50 to +240 °C (-58 to +464 °F)

High temperature option: -50 to +350 °C (-58 to +662 °F)

Option: -196 to +150 °C (-320 to +302 °F)

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**Ambient temperature range**

Standard: -40 to +60 °C (-40 to +140 °F)

Option: -50 to +60 °C (-58 to +140 °F)

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**Sensor housing material**

Standard: 1.4301 (304)

Option: 1.4404 (316/316L)

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**Transmitter housing material**

AlSi10Mg, coated; 1.4409 (CF3M) similar to 316L; stainless steel for hygienic transmitter design

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**Degree of protection**

Compact version: IP66/67, type 4X enclosure.

External WLAN antenna: IP67

IP69

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**Display/Operation**

4-line backlit display with touch control (operation from outside)

Configuration via local display and operating tools possible

Remote display available

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## Liquids

### Outputs

3 outputs:

4-20 mA HART (active/passive)

4-20 mA WirelessHART

4-20 mA (active/passive)

Pulse/frequency/switch output (active/passive)

Double pulse output (active/passive)

Relay output

### Inputs

Status input

4-20 mA input

### Digital communication

HART, PROFIBUS DP, PROFIBUS PA, FOUNDATION Fieldbus, Modbus RS485, Profinet, Ethernet/IP, OPC-UA

### Power supply

DC 24 V

AC 100 to 230 V

AC 100 to 230 V / DC 24 V (non-hazardous area)

### Hazardous area approvals

ATEX, IECEx, cCSAus, NEPSI, INMETRO, EAC, UK Ex

### Product safety

CE, C-tick, EAC marking

### Functional safety

Functional safety according to IEC 61508, applicable in safety-relevant applications in accordance with IEC 61511

## Liquids

### **Metrological approvals and certificates**

Calibration performed on accredited calibration facilities (acc. to ISO/IEC 17025)

Heartbeat Technology complies with the requirements for measurement traceability according to ISO 9001:2015 – Section 7.1.5.2 a (TÜV SÜD attestation)

MI-005 (Liquids other than water, Hydrocarbons, LPG, cryogenic liquids)

NTEP (Liquids other than water, LPG, cryogenic liquids)

MC (Liquids other than water, cryogenic liquids)

MI-002, PTB

### **Marine approvals and certificates**

LR approval, DNV GL approval, ABS approval, BV approval, CCS approval

### **Pressure approvals and certificates**

PED, CRN, AD 2000

### **Material certificates**

3.1 material

NACE MR0175/MR0103, PMI; welding test acc. to EN ISO, ASME, NORSOK

### **Hygienic approvals and certificates**

3-A, EHEDG, cGMP

## Steam

### **Measuring principle**

Coriolis

### **Product headline**

Flowmeter with premium accuracy, robustness and a compact, easily accessible transmitter.

Highest measurement performance for liquids and gases under varying, demanding process conditions.

## Steam

### Sensor features

Highest process safety – immune to fluctuating and harsh environments. Fewer process measuring points – multivariable measurement (flow, density, temperature). Space - saving installation – no in-/outlet run needs.

Mass flow: measurement error  $\pm 0.05$  % (PremiumCal). Medium temperature:  $-196$  to  $350$  °C ( $-320$  to  $662$  °F). Nominal diameter: DN 8 to 250 ( $\frac{3}{8}$  to 10").

### Transmitter features

Full access to process and diagnostic information – numerous, freely combinable I/Os and fieldbuses. Reduced complexity and variety – freely configurable I/O functionality. Integrated verification – Heartbeat Technology.

Compact dual-compartment housing with up to 3 I/Os. Backlit display with touch control and WLAN access. Remote display available.

### Nominal diameter range

DN 8 to 250 ( $\frac{3}{8}$  to 10")

### Wetted materials

Measuring tube: 1.4539 (904L); 1.4404 (316/316L); Alloy C22, 2.4602 (UNS N06022)

Connection: 1.4404 (316/316L); Alloy C22, 2.4602 (UNS N06022); 1.4301 (F304)

### Measured variables

Mass flow, density, temperature, volume flow, corrected volume flow, reference density, concentration

### Max. measurement error

Mass flow (liquid):  $\pm 0.10$  % (standard),  $0.05$  % (option)

Volume flow (liquid):  $\pm 0.10$  %

Mass flow (gas):  $\pm 0.25$  %

Density (liquid):  $\pm 0.0005$  g/cm<sup>3</sup>

### Measuring range

0 to 2 200 000 kg/h (0 to 80 840 lb/min)

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**Steam****Max. process pressure**PN 100, Class 600, 63K

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**Medium temperature range**

Standard: -50 to +150 °C (-58 to +302 °F)

Option: -50 to +240 °C (-58 to +464 °F)

High temperature option: -50 to +350 °C (-58 to +662 °F)

Option: -196 to +150 °C (-320 to +302 °F)

---

**Ambient temperature range**

Standard: -40 to +60 °C (-40 to +140 °F)

Option: -50 to +60 °C (-58 to +140 °F)

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**Sensor housing material**

Standard: 1.4301 (304)

Option: 1.4404 (316/316L)

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**Transmitter housing material**AlSi10Mg, coated; 1.4409 (CF3M) similar to 316L; stainless steel for hygienic transmitter design

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**Degree of protection**

Compact version: IP66/67, type 4X enclosure.

External WLAN antenna: IP67

IP69

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**Display/Operation**

4-line backlit display with touch control (operation from outside)

Configuration via local display and operating tools possible

Remote display available

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## Steam

### Outputs

3 outputs:

4-20 mA HART (active/passive)

4-20 mA WirelessHART

4-20 mA (active/passive)

Pulse/frequency/switch output (active/passive)

Double pulse output (active/passive)

Relay output

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### Inputs

Status input

4-20 mA input

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### Digital communication

HART, PROFIBUS DP, PROFIBUS PA, FOUNDATION Fieldbus, Modbus  
RS485, Profinet, Ethernet/IP, OPC-UA

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### Power supply

DC 24 V

AC 100 to 230 V

AC 100 to 230 V / DC 24 V (non-hazardous area)

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### Hazardous area approvals

ATEX, IECEx, cCSAus, NEPSI, INMETRO, EAC, UK Ex

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### Product safety

CE, C-tick, EAC marking

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### Functional safety

Functional safety according to IEC 61508, applicable in safety-relevant applications in accordance with IEC 61511

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**Steam****Metrological approvals and certificates**

Calibration performed on accredited calibration facilities (acc. to ISO/IEC 17025)

Heartbeat Technology complies with the requirements for measurement traceability according to ISO 9001:2015 – Section 7.1.5.2 a (TÜV SÜD attestation)

MI-005 (Liquids other than water, Hydrocarbons, LPG, cryogenic liquids)

NTEP (Liquids other than water, LPG, cryogenic liquids)

MC (Liquids other than water, cryogenic liquids)

MI-002, PTB

**Marine approvals and certificates**

LR approval, DNV GL approval, ABS approval, BV approval, CCS approval

**Pressure approvals and certificates**

PED, CRN, AD 2000

**Material certificates**

3.1 material

NACE MR0175/MR0103, PMI; welding test acc. to EN ISO, ASME, NORSOK

**Hygienic approvals and certificates**

3-A, EHEDG, cGMP

**Gas****Measuring principle**

Coriolis

**Product headline**

Flowmeter with premium accuracy, robustness and a compact, easily accessible transmitter.

Highest measurement performance for liquids and gases under varying, demanding process conditions.



**Gas****Sensor features**

Highest process safety – immune to fluctuating and harsh environments. Fewer process measuring points – multivariable measurement (flow, density, temperature). Space - saving installation – no in-/outlet run needs.

Mass flow: measurement error  $\pm 0.05$  % (PremiumCal). Medium temperature:  $-196$  to  $350$  °C ( $-320$  to  $662$  °F). Nominal diameter: DN 8 to 250 ( $\frac{3}{8}$  to 10").

**Transmitter features**

Full access to process and diagnostic information – numerous, freely combinable I/Os and fieldbuses. Reduced complexity and variety – freely configurable I/O functionality. Integrated verification – Heartbeat Technology.

Compact dual-compartment housing with up to 3 I/Os. Backlit display with touch control and WLAN access. Remote display available.

**Nominal diameter range**

DN 8 to 250 ( $\frac{3}{8}$  to 10")

**Wetted materials**

Measuring tube: 1.4539 (904L); 1.4404 (316/316L); Alloy C22, 2.4602 (UNS N06022)

Connection: 1.4404 (316/316L); Alloy C22, 2.4602 (UNS N06022); 1.4301 (F304)

**Measured variables**

Mass flow, density, temperature, volume flow, corrected volume flow, reference density, concentration

**Max. measurement error**

Mass flow (liquid):  $\pm 0.10$  % (standard),  $0.05$  % (option)

Volume flow (liquid):  $\pm 0.10$  %

Mass flow (gas):  $\pm 0.25$  %

Density (liquid):  $\pm 0.0005$  g/cm<sup>3</sup>

**Measuring range**

0 to 2 200 000 kg/h (0 to 80 840 lb/min)

## Gas

**Max. process pressure**

PN 100, Class 600, 63K

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**Medium temperature range**

Standard: -50 to +150 °C (-58 to +302 °F)

Option: -50 to +240 °C (-58 to +464 °F)

High temperatur option: -50 to +350 °C (-58 to +662 °F)

Option: -196 to +150 °C (-320 to +302 °F)

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**Ambient temperature range**

Standard: -40 to +60 °C (-40 to +140 °F)

Option: -50 to +60 °C (-58 to +140 °F)

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**Sensor housing material**

Standard: 1.4301 (304)

Option: 1.4404 (316/316L)

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**Transmitter housing material**

AlSi10Mg, coated; 1.4409 (CF3M) similar to 316L; stainless steel for hygenic transmitter design

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**Degree of protection**

Compact version: IP66/67, type 4X enclosure.

External WLAN antenna: IP67

IP69

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**Display/Operation**

4-line backlit display with touch control (operation from outside)

Configuration via local display and operating tools possible

Remote display available

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**Gas****Outputs**

3 outputs:

4-20 mA HART (active/passive)

4-20 mA WirelessHART

4-20 mA (active/passive)

Pulse/frequency/switch output (active/passive)

Double pulse output (active/passive)

Relay output

**Inputs**

Status input

4-20 mA input

**Digital communication**

HART, PROFIBUS DP, PROFIBUS PA, FOUNDATION Fieldbus, Modbus RS485, Profinet, Ethernet/IP, OPC-UA

**Power supply**

DC 24 V

AC 100 to 230 V

AC 100 to 230 V / DC 24 V (non-hazardous area)

**Hazardous area approvals**

ATEX, IECEx, cCSAus, NEPSI, INMETRO, EAC, UK Ex

**Product safety**

CE, C-tick, EAC marking

**Functional safety**

Functional safety according to IEC 61508, applicable in safety-relevant applications in accordance with IEC 61511

## Gas

### **Metrological approvals and certificates**

Calibration performed on accredited calibration facilities (acc. to ISO/IEC 17025)

Heartbeat Technology complies with the requirements for measurement traceability according to ISO 9001:2015 – Section 7.1.5.2 a (TÜV SÜD attestation)

MI-005 (Liquids other than water, Hydrocarbons, LPG, cryogenic liquids)

NTEP (Liquids other than water, LPG, cryogenic liquids)

MC (Liquids other than water, cryogenic liquids)

MI-002, PTB

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### **Marine approvals and certificates**

LR approval, DNV GL approval, ABS approval, BV approval, CCS approval

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### **Pressure approvals and certificates**

PED, CRN, AD 2000

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### **Material certificates**

3.1 material

NACE MR0175/MR0103, PMI; welding test acc. to EN ISO, ASME, NORSOK

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### **Hygienic approvals and certificates**

3-A, EHEDG, cGMP

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Thông tin bổ sung [www.apsc.endress.com/8F3B](http://www.apsc.endress.com/8F3B)