

# Proline Promass F 500 Coriolis flowmeter

Flowmeter with premium accuracy and robustness, as remote version with up to 4 I/Os



More information and current pricing:

[www.us.endress.com/8F5B](http://www.us.endress.com/8F5B)

## Benefits:

- 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

## Specs at a glance

- **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)

**Field of application:** 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 innovative remote transmitter Promass F 500 maximizes installation flexibility and operational safety in demanding environments. Heartbeat Technology ensures measurement reliability and enables extension of recalibration cycles.

## Features and specifications

### Steam

#### Measuring principle

Coriolis

#### Product headline

Flowmeter with premium accuracy and robustness, as remote version with up to 4 I/Os.

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  $350\text{ °C}$  ( $-320$  to  $662\text{ °F}$ ). 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.

Remote version with up to 4 I/Os. Backlit display with touch control and WLAN access. Standard cable between sensor and transmitter.

## Steam

**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)

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

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

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## Steam

**Ambient temperature range**

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

Option: -60 to +60 °C (-76 to +140 °F)

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**Sensor housing material**

Standard: 1.4301 (304), corrosion resistant

Option: 1.4404 (316L)

Sensor connection housing (standard): AlSi10Mg, coated

Sensor connection housing (option): 1.4301 (304); 1.4404 (316L);  
1.4409 (CF3M) similar to 316L

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**Transmitter housing material**

AlSi10Mg, coated; 1.4409 (CF3M) similar to 316L; Polycarbonat

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**Degree of protection**

Sensor remote version (standard): IP66/67, type 4X enclosure

Sensor remote version (option): IP69.

Transmitter remote version: IP66/67, Type 4X enclosure

External WLAN antenna: IP67

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**Display/Operation**

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

Configuration via local display and operating tools possible

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**Steam****Outputs**

4 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

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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

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**Marine approvals and certificates**

LR approval, DNV GL approval, ABS approval, BV 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**

cGMP

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**Density****Measuring principle**

Coriolis

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**Product Headline**

Flowmeter with premium accuracy and robustness, as remote version with up to 4 I/Os.

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

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## Liquids

### Measuring principle

Coriolis

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### Product headline

Flowmeter with premium accuracy and robustness, as remote version with up to 4 I/Os.

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

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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  $350\text{ }^{\circ}\text{C}$  ( $-320$  to  $662\text{ }^{\circ}\text{F}$ ). 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.

Remote version with up to 4 I/Os. Backlit display with touch control and WLAN access. Standard cable between sensor and transmitter.

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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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## Liquids

### 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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### Max. process pressure

PN 100, Class 600, 63K

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### Medium temperature range

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

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

High temperatur option:  $-50$  to  $+350$  °C ( $-58$ ... $+662$  °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:  $-60$  to  $+60$  °C ( $-76$  to  $+140$  °F)

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## Liquids

### Sensor housing material

Standard: 1.4301 (304), corrosion resistant

Option: 1.4404 (316L)

Sensor connection housing (standard): AlSi10Mg, coated

Sensor connection housing (option): 1.4301 (304); 1.4404 (316L);  
1.4409 (CF3M) similar to 316L

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### Transmitter housing material

AlSi10Mg, coated; 1.4409 (CF3M) similar to 316L; Polycarbonat

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### Degree of protection

Sensor remote version (standard): IP66/67, type 4X enclosure

Sensor remote version (option): IP69.

Transmitter remote version: IP66/67, Type 4X enclosure

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### Display/Operation

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

Configuration via local display and operating tools possible

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### Outputs

4 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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## Liquids

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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

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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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### 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

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### Pressure approvals and certificates

PED, CRN, AD 2000

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## Liquids

### 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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## Gas

### Measuring principle

Coriolis

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### Product headline

Flowmeter with premium accuracy and robustness, as remote version with up to 4 I/Os.

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

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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  $350\text{ }^{\circ}\text{C}$  ( $-320$  to  $662\text{ }^{\circ}\text{F}$ ). 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.

Remote version with up to 4 I/Os. Backlit display with touch control and WLAN access. Standard cable between sensor and transmitter.

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## Gas

**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)

**Max. process pressure**

PN 100, Class 600, 63K

**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:  $-60$  to  $+60$  °C ( $-76$  to  $+140$  °F)

## Gas

**Sensor housing material**

Standard: 1.4301 (304), corrosion resistant

Option: 1.4404 (316L)

Sensor connection housing (standard): AlSi10Mg, coated

Sensor connection housing (option): 1.4301 (304); 1.4404 (316L);  
1.4409 (CF3M) similar to 316L

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**Transmitter housing material**

AlSi10Mg, coated; 1.4409 (CF3M) similar to 316L; Polycarbonat

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**Degree of protection**

Sensor remote version (standard): IP66/67, type 4X enclosure

Sensor remote version (option): IP69.

Transmitter remote version: IP66/67, Type 4X enclosure

External WLAN antenna: IP67

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**Display/Operation**

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

Configuration via local display and operating tools possible

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**Outputs**

4 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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## Gas

**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

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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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**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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Gas	<b>Marine approvals and certificates</b> LR approval, DNV GL approval, ABS approval, BV approval
	<b>Pressure approvals and certificates</b> PED, CRN, AD 2000
	<b>Material certificates</b> 3.1 material NACE MR0175/MR0103, PMI; welding test acc. to EN ISO, ASME, NORSOK
	<b>Hygienic approvals and certificates</b> 3-A, EHEDG, cGMP

Density/Concentration	<b>Measuring principle</b> Coriolis
	<b>Product headline</b> Flowmeter with premium accuracy and robustness, as remote version with up to 4 I/Os. Highest measurement performance for liquids and gases under varying, demanding process conditions.
	<b>Sensor features</b> 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").

## Density/Concentration

### 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.

Remote version with up to 4 I/Os. Backlit display with touch control and WLAN access. Standard cable between sensor and transmitter.

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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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### Max. process pressure

PN 100, Class 600, 63K

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### Medium temperature range

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

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

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

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

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**Density/Concentration****Ambient temperature range**

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

Option: -60 to +60 °C (-76 to +140 °F)

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**Sensor housing material**

Standard: 1.4301 (304), corrosion resistant

Option: 1.4404 (316L)

Sensor connection housing (standard): AlSi10Mg, coated

Sensor connection housing (option): 1.4301 (304); 1.4404 (316L);

1.4409 (CF3M) similar to 316L

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**Transmitter housing material**

AlSi10Mg, coated; 1.4409 (CF3M) similar to 316L; Polycarbonat

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**Degree of protection**

Sensor remote version (standard): IP66/67, type 4X enclosure

Sensor remote version (option): IP69.

Transmitter remote version: IP66/67, Type 4X enclosure

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**Display/Operation**

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

Configuration via local display and operating tools possible

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**Outputs**

4 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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**Density/Concentration****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

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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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**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

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**Pressure approvals and certificates**

PED, CRN, AD 2000

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Density/Concentration

**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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More information [www.us.endress.com/8F5B](http://www.us.endress.com/8F5B)