

# Proline Promass Q 500 Coriolis flowmeter

Innovative specialist for challenging applications, as remote version with up to 4 I/Os



More information and current pricing:

[www.ie.endress.com/8Q5B](http://www.ie.endress.com/8Q5B)

## Benefits:

- Secured measuring quality – unmatched accuracy of mass flow, volume flow and density
- Optimized performance for liquids with entrained gas – MFT (Multi-Frequency Technology)
- 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 Ethernet
- 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):  $\pm 0.2\text{ kg/m}^3$  (standard),  $\pm 0.1\text{ kg/m}^3$  (option)
- **Measuring range** 0 to 2 400 000 kg/h (0 to 88183 lb/min)
- **Medium temperature range** Standard:  $-50$  to  $+205^\circ\text{C}$  ( $-58$  to  $+401^\circ\text{F}$ ) Option:  $-196$  to  $+150^\circ\text{C}$  ( $-321$  to  $+302^\circ\text{F}$ )
- **Max. process pressure** PN 100, Class 600, 63K
- **Wetted materials** Measuring tube: 1.4404 (316/316L); stainless steel for cryogenic applications Connection: 1.4404 (316/316L)

**Field of application:** Promass Q 500 provides the highest measurement accuracy for mass flow, volume flow and density. Being the preferred choice for custody transfer applications, it has also been optimized for

liquid applications where entrained gas is known to be present. With its innovative remote transmitter Promass Q 500 maximizes installation flexibility and operational safety in demanding environments. Heartbeat Technology ensures safe processes.

## Features and specifications

### Liquids

#### Measuring principle

Coriolis

#### Product headline

Innovative specialist for challenging applications, as remote version with up to 4 I/Os.

Secured measuring quality – unmatched accuracy of mass flow, volume flow and density.

Highest measurement performance for custody transfer, density and under tough process conditions.

#### Sensor features

Optimized performance for liquids with entrained gas – MFT (Multi-Frequency Technology). 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). Density: measurement error  $\pm 0.2$  kg/m<sup>3</sup>. High turndown due to low pressure loss/zero point.

#### 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.

#### Nominal diameter range

DN 25 to 250(1 to 10")

## Liquids

### Wetted materials

Measuring tube: 1.4404 (316/316L); stainless steel for cryogenic applications

Connection: 1.4404 (316/316L)

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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):  $\pm 0.2$  kg/m<sup>3</sup> (standard),  $\pm 0.1$  kg/m<sup>3</sup> (option)

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### Measuring range

0 to 2 400 000 kg/h (0 to 88183 lb/min)

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### Max. process pressure

PN 100, Class 600, 63K

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### Medium temperature range

Standard:  $-50$  to  $+205$  °C ( $-58$  to  $+401$  °F)

Option:  $-196$  to  $+150$  °C ( $-321$  to  $+302$  °F)

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### Ambient temperature range

Standard:  $-4$  to  $+60$  °C ( $-4$  to  $+140$  °F)

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

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### Sensor housing material

1.4404 (316L), highest corrosion resistance

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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## Liquids

### 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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### 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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## Liquids

### 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, Liquified gases, Cryogenic liquids)

OIML R117 (Liquids other than water, Liquified gases, Cryogenic liquids)

NTEP (Liquids other than water, Cryogenic liquids)

MC (Liquids other than water, Cryogenic liquids)

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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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## Gas

### Measuring principle

Coriolis

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**Gas****Product headline**

Innovative specialist for challenging applications, as remote version with up to 4 I/Os.

Secured measuring quality – unmatched accuracy of mass flow, volume flow and density.

Highest measurement performance for custody transfer, density and under tough process conditions.

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**Sensor features**

Optimized performance for liquids with entrained gas – MFT (Multi-Frequency Technology). 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). Density: measurement error  $\pm 0.2\text{ kg/m}^3$ . High turndown due to low pressure loss/zero point.

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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 25 to 250 (1 to 10")

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**Wetted materials**

Measuring tube: 1.4404 (316/316L); stainless steel for cryogenic applications

Connection: 1.4404 (316/316L)

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**Measured variables**

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

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## Gas

**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):  $\pm 0.2\text{ kg/m}^3$  (standard),  $\pm 0.1\text{ kg/m}^3$  (option)

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**Measuring range**

0 to 2 400 000 kg/h (0 to 88183 lb/min)

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**Max. process pressure**

PN 100, Class 600, 63K

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**Medium temperature range**

Standard:  $-50$  to  $+205^\circ\text{C}$  ( $-58$  to  $+401^\circ\text{F}$ )

Option:  $-196$  to  $+150^\circ\text{C}$  ( $-321$  to  $+302^\circ\text{F}$ )

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**Ambient temperature range**

Standard:  $-40$  to  $+60^\circ\text{C}$  ( $-40$  to  $+140^\circ\text{F}$ )

Option:  $-60$  to  $+60^\circ\text{C}$  ( $-76$  to  $+140^\circ\text{F}$ )

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**Sensor housing material**

1.4404 (316L), highest corrosion resistance

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**

IP66/67, type 4X enclosure. 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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**Gas****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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**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, Liquified gases, Cryogenic liquids)

OIML R117 (Liquids other than water, Liquified gases, Cryogenic liquids)

NTEP (Liquids other than water, Cryogenic liquids)

**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**

Innovative specialist for challenging applications, as remote version with up to 4 I/Os.

Secured measuring quality – unmatched accuracy of mass flow, volume flow and density.

Highest measurement performance for custody transfer, density and under tough process conditions.

## Steam

### Sensor features

Optimized performance for liquids with entrained gas – MFT (Multi-Frequency Technology). 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). Density: measurement error  $\pm 0.2 \text{ kg/m}^3$ . High turndown due to low pressure loss/zero point.

### 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.

### Marine approvals and certificates

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

## Density

### Measuring principle

Coriolis

### Product Headline

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## Density

### Sensor features

Optimized performance for liquids with entrained gas – MFT (Multi-Frequency Technology). 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). Density: measurement error  $\pm 0.2\text{ kg/m}^3$ . High turndown due to low pressure loss/zero point.

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

### Nominal diameter range

DN 25 to 250 (1 to 10")

### Wetted materials

Measuring tube: 1.4404 (316/316L); stainless steel for cryogenic applications

Connection: 1.4404 (316/316L)

### 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):  $\pm 0.2\text{ kg/m}^3$  (standard),  $\pm 0.1\text{ kg/m}^3$  (option)

### Measuring range

0 to 2 400 000 kg/h (0 to 88183 lb/min)

## Density

**Max. process pressure**

PN 100, Class 600, 63K

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**Medium temperature range**

Standard: -50 to +205°C (-58 to +401 °F)

Option: -196 to +150 °C (-321 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**

1.4404 (316L), highest corrosion resistance

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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## Density

### 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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### Other approvals and certificates

CE, C-tick, EAC marking

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

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, Liquefied gases, Cryogenic liquids)

OIML R117 (Liquids other than water, Liquefied gases, Cryogenic liquids)

NTEP (Liquids other than water, Cryogenic liquids)

MC (Liquids other than water, Cryogenic liquids)

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

PED, CRN, AD 2000

3.1 material

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

3-A, EHEDG, cGMP

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## Density/Concentration

### Measuring principle

Coriolis

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### Product headline

Innovative specialist for challenging applications, as remote version with up to 4 I/Os.

Secured measuring quality – unmatched accuracy of mass flow, volume flow and density.

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### Sensor features

Optimized performance for liquids with entrained gas – MFT (Multi-Frequency Technology). 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). Density: measurement error  $\pm 0.2$  kg/m<sup>3</sup>. High turndown due to low pressure loss/zero point.

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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 25 to 250(1 to 10")

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### Wetted materials

Measuring tube: 1.4404 (316/316L); stainless steel for cryogenic applications

Connection: 1.4404 (316/316L)

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**Density/Concentration****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):  $\pm 0.2$  kg/m<sup>3</sup> (standard),  $\pm 0.1$  kg/m<sup>3</sup> (option)

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**Measuring range**

0 to 2 400 000 kg/h (0 to 88183 lb/min)

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**Max. process pressure**

PN 100, Class 600, 63K

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**Medium temperature range**

Standard:  $-50$  to  $+205$  °C ( $-58$  to  $+401$  °F)

Option:  $-196$  to  $+150$  °C ( $-321$  to  $+302$  °F)

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**Ambient temperature range**

Standard:  $-4$  to  $+60$  °C ( $-4$  to  $+140$  °F)

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

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**Sensor housing material**

1.4404 (316L), highest corrosion resistance

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**

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

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**Density/Concentration****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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**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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## Density/Concentration

### **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, Liquified gases, Cryogenic liquids)

OIML R117 (Liquids other than water, Liquified gases, Cryogenic liquids)

NTEP (Liquids other than water, Cryogenic liquids)

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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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More information [www.ie.endress.com/8Q5B](http://www.ie.endress.com/8Q5B)