# Кориолисовые массовые расходомеры Promass F 500

Технические характеристики

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# Proline Promass F 500 Coriolis flowmeter

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



#### **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 Ethernet
- Reduced complexity and variety freely configurable I/O functionality
- Integrated verification Heartbeat Technology

# Specs at a glance

- Max. measurement error Mass flow (liquid): ±0.10 % (standard),
  0.05 % (option) Volume flow (liquid): ±0.10 % Mass flow (gas):
  ±0.25 % Density (liquid): ±0.0005 g/cm³
- Measuring range 0 to 2 200 000 kg/h (0 to 80 840 lb/min)
- 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)
- 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 enables measurement reliability and extension of recalibration cycles.

# Features and specifications

# Liquids

### 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 °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.

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 8 to 250 (% to 10")

## Liquids

#### 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): ±0.10 % (standard), 0.05 % (option)

Volume flow (liquid): ±0.10 % Mass flow (gas): ±0.25 %

Density (liquid): ±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)

### Ambient temperature range

Standard:  $-40 \text{ to } +60 \,^{\circ}\text{C} \ (-40 \text{ to } +140 \,^{\circ}\text{F})$ Option:  $-60 \text{ to } +60 \,^{\circ}\text{C} \ (-76 \text{ to } +140 \,^{\circ}\text{F})$ 

#### 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

# Liquids

### Transmitter housing material

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

### 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

### Display/Operation

4-line backlit display with touch control (operation from outside) Configuration via local display and operating tools possible

### 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

#### Inputs

Status input

4-20 mA input

### **Digital communication**

HART, PROFIBUS DP, PROFIBUS PA, FOUNDATION Fieldbus, Modbus RS485, PROFINET, PROFINET over Ethernet-APL, 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, KC

#### **Product safety**

CE, C-tick, EAC marking

# Liquids

#### **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, gases, cryogenic liquids) MI-002, PTB

### Marine approvals and certificates

LR approval, DNV 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 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 °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.

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 8 to 250 (% 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): ±0.10 % (standard), 0.05 % (option)

Volume flow (liquid): ±0.10 % Mass flow (gas): ±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:  $-50 \text{ to } +150 \,^{\circ}\text{C} \, (-58 \text{ to } +302 \,^{\circ}\text{F})$ Option:  $-50 \text{ to } +240 \,^{\circ}\text{C} \, (-58 \text{ to } +464 \,^{\circ}\text{F})$ 

High temperatur option:  $-50 \text{ to } +350 \,^{\circ}\text{C} \, (-58 \text{ to } +662 \,^{\circ}\text{F})$ 

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

### Ambient temperature range

Standard:  $-40 \text{ to } +60 \,^{\circ}\text{C} \ (-40 \text{ to } +140 \,^{\circ}\text{F})$ Option:  $-60 \text{ to } +60 \,^{\circ}\text{C} \ (-76 \text{ to } +140 \,^{\circ}\text{F})$ 

### Sensor housing material

Standard: 1.4301 (304), corrosion resistant

Option: 1.4404 (316L)

Sensor connection housing (standard): AlSi10Mq, coated

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

1.4409 (CF3M) similar to 316L

### Transmitter housing material

AlSi10Mq, coated; 1.4409 (CF3M) similar to 316L; Polycarbonat

### **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

### **Display/Operation**

4-line backlit display with touch control (operation from outside) Configuration via local display and operating tools possible

### 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

#### Inputs

Status input

4-20 mA input

### **Digital communication**

HART, PROFIBUS DP, PROFIBUS PA, FOUNDATION Fieldbus, Modbus RS485, PROFINET, PROFINET over Ethernet-APL, 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, KC

### **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

#### 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, gases, cryogenic liquids) MI-002, PTB

### Marine approvals and certificates

LR approval, DNV 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 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 °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.

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 8 to 250 (% 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): ±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)

### Ambient temperature range

Standard:  $-40 \text{ to } +60 \,^{\circ}\text{C} \ (-40 \text{ to } +140 \,^{\circ}\text{F})$ Option:  $-60 \text{ to } +60 \,^{\circ}\text{C} \ (-76 \text{ to } +140 \,^{\circ}\text{F})$ 

### Sensor housing material

Standard: 1.4301 (304), corrosion resistant

Option: 1.4404 (316L)

Sensor connection housing (standard): AlSi10Mq, coated

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

1.4409 (CF3M) similar to 316L

#### Transmitter housing material

AlSi10Mq, coated; 1.4409 (CF3M) similar to 316L; Polycarbonat

#### 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

### **Display/Operation**

4-line backlit display with touch control (operation from outside) Configuration via local display and operating tools possible

### **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

### Inputs

Status input

4-20 mA input

### **Digital communication**

HART, PROFIBUS DP, PROFIBUS PA, FOUNDATION Fieldbus, Modbus RS485, PROFINET, PROFINET over Ethernet-APL, 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, KC

#### **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

#### 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, gases, cryogenic liquids) MI-002, PTB

### Marine approvals and certificates

LR approval, DNV 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

cGMP

### Density

#### 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.

# Density

#### 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.

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 8 to 250 (% 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): ±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)

# Density

### 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)

### Ambient temperature range

Standard:  $-40 \text{ to } +60 \,^{\circ}\text{C} \ (-40 \text{ to } +140 \,^{\circ}\text{F})$ Option:  $-60 \text{ to } +60 \,^{\circ}\text{C} \ (-76 \text{ to } +140 \,^{\circ}\text{F})$ 

### Sensor housing material

Standard: 1.4301 (304), corrosion resistant

Option: 1.4404 (316L)

Sensor connection housing (standard): AlSi10Mq, coated

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

1.4409 (CF3M) similar to 316L

#### Transmitter housing material

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

#### 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

### Display/Operation

4-line backlit display with touch control (operation from outside) Configuration via local display and operating tools possible

# Density

#### **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

### Inputs

Status input

4-20 mA input

### **Digital communication**

HART, PROFIBUS DP, PROFIBUS PA, FOUNDATION Fieldbus, Modbus RS485, PROFINET, PROFINET over Ethernet-APL, 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

DC 24 V

AC 100 to 230 V

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

# Density/Concentration

#### 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 °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.

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 8 to 250 (% 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): ±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)

### Ambient temperature range

Standard:  $-40 \text{ to } +60 \,^{\circ}\text{C} \ (-40 \text{ to } +140 \,^{\circ}\text{F})$ Option:  $-60 \text{ to } +60 \,^{\circ}\text{C} \ (-76 \text{ to } +140 \,^{\circ}\text{F})$ 

### Sensor housing material

Standard: 1.4301 (304), corrosion resistant

Option: 1.4404 (316L)

Sensor connection housing (standard): AlSi10Mq, coated

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

1.4409 (CF3M) similar to 316L

#### Transmitter housing material

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

#### 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

### Display/Operation

4-line backlit display with touch control (operation from outside) Configuration via local display and operating tools possible

#### **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

### Inputs

Status input

4-20 mA input

### **Digital communication**

HART, PROFIBUS DP, PROFIBUS PA, FOUNDATION Fieldbus, Modbus RS485, PROFINET, PROFINET over Ethernet-APL, 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, KC

#### **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

### 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, gases, cryogenic liquids) MI-002, PTB

### Marine approvals and certificates

LR approval, DNV 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

# По вопросам продаж и поддержки обращайтесь:

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