

# Proline Prowirl F 200 vortex flowmeter

Versatile flowmeter with detection of wet steam conditions and best-in-class accuracy



Yderligere oplysninger og aktuel pris::

[www.dk.endress.com/7F2C](http://www.dk.endress.com/7F2C)

## Fordele:

- Easy energy management – integrated temperature and pressure measurement for steam and gases
- Space-saving engineering – inlet run compensation
- Same accuracy down to Re 10 000 – most linear Vortex meter body
- Long-term stability – robust drift-free capacitive sensor
- Convenient device wiring – separate connection compartment
- Safe operation – no need to open the device due to display with touch control, background lighting
- Integrated verification – Heartbeat Technology

## Oversigt over specifikationer

- **Max. measurement error** Volume flow (liquid):  $\pm 0.75\%$  Volume flow (optional):  $\pm 0.65\%$  Volume flow (steam, gas):  $\pm 1.00\%$  Mass flow (saturated steam):  $\pm 1.7\%$  (temperature compensated);  $\pm 1.5\%$  (temperature/pressure compensated) Mass flow (superheated steam, gas):  $\pm 1.5\%$  (temperature/pressure compensated);  $\pm 1.7\%$  (temperature compensated + external pressure compensation) Mass flow (liquid):  $\pm 0.85\%$
- **Measuring range** Liquid: 0.076 to 2100 m<sup>3</sup>/h (0.045 to 1300 ft<sup>3</sup>/min) depending on medium: water with 1 bar a, 20 °C (14.5 psi a, 68 °F) Steam, gas: 0.39 to 28000 m<sup>3</sup>/h (0.23 to 17000 ft<sup>3</sup>/min) depending on medium: steam with 180 °C, 10 bar a (356 °F, 145 psi a); air with 25 °C, 4.4 bar a (77 °F, 63.8 psi a)
- **Medium temperature range** Standard: -40 to +260 °C (-40 to +500 °F) High/low temperature (option): -200 to +400 °C (-328 to +752 °F)
- **Max. process pressure** PN 100, Class 600, 20K

- **Wetted materials** Measuring tube: 1.4408 (C3FM); CX2MW similar to Alloy C22, 2.4602 DSC sensor: 1.4404 (316/316L); UNS N06022 similar to Alloy C22, 2.4602 Process connection: 1.4404/F316/F316L); 2.4602

**Anvendelsesområde:** Prowirl F is the multivariable flowmeter with inline wet steam measurement. Its calibration option PremiumCal guarantees excellent measuring accuracy and highest plant availability at low flow rates of gas, steam and liquids. With genuine loop-powered technology, Prowirl F 200 enables cost-effective and seamless integration into existing infrastructures. It offers highest operational safety in hazardous areas. Heartbeat Technology ensures process safety at all times.

## Funktioner og specifikationer

### Liquids

#### Measuring principle

Vortex

#### Product headline

Versatile flowmeter with detection of wet steam conditions and best-in-class accuracy.

Easy energy management – integrated temperature and pressure measurement for steam and gases.

Suitable for a wide range of applications; optimized for steam applications.

#### Sensor features

Space-saving engineering – inlet run compensation. Same accuracy down to Re 10 000 – most linear Vortex meter body. Long-term stability – robust drift-free capacitive sensor.

Wet steam capabilities for DN 25 to 300 (1 to 12"). Flexible positioning of pressure cell. Industrial siphon design for pressure measurement.

## Liquids

### Transmitter features

Convenient device wiring – separate connection compartment. Safe operation – no need to open the device due to display with touch control, background lighting. Integrated verification – Heartbeat Technology. Display module with data transfer function. Robust dual-compartment housing. Plant safety: worldwide approvals (SIL, Haz. area).

### Nominal diameter range

DN 15 to 300 (½ to 12")

### Wetted materials

Measuring tube: 1.4408 (C3FM); CX2MW similar to Alloy C22, 2.4602  
DSC sensor: 1.4404 (316/316L); UNS N06022 similar to Alloy C22, 2.4602

Process connection: 1.4404/F316/F316L); 2.4602

### Measured variables

Volume flow, mass flow, corrected volume flow, energy flow, heat flow difference, temperature

### Max. measurement error

Volume flow (liquid):  $\pm 0.75\%$

Volume flow (optional):  $\pm 0.65\%$

Volume flow (steam, gas):  $\pm 1.00\%$

Mass flow (saturated steam):  $\pm 1.7\%$  (temperature compensated);  $\pm 1.5\%$  (temperature/pressure compensated)

Mass flow (superheated steam, gas):  $\pm 1.5\%$  (temperature/pressure compensated);  $\pm 1.7\%$  (temperature compensated + external pressure compensation)

Mass flow (liquid):  $\pm 0.85\%$

### Measuring range

Liquid: 0.076 to 2100 m<sup>3</sup>/h (0.045 to 1300 ft<sup>3</sup>/min)

depending on medium: water with 1 bar a, 20 °C (14.5 psi a, 68 °F)

Steam, gas: 0.39 to 28000 m<sup>3</sup>/h (0.23 to 17000 ft<sup>3</sup>/min)

depending on medium: steam with 180 °C, 10 bar a (356 °F, 145 psi a);

air with 25 °C, 4.4 bar a (77 °F, 63.8 psi a)

## Liquids

**Max. process pressure**

PN 100, Class 600, 20K

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**Medium temperature range**

Standard: -40 to +260 °C (-40 to +500 °F)

High/low temperature (option): -200 to +400 °C (-328 to +752 °F)

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**Ambient temperature range**

Compact version (standard): -40 to +80 °C (-40 to +176 °F)

Compact version (option): -50 to +80 °C (-58 to +176 °F)

Remote version (standard): -40 to +85 °C (-40 to +185 °F)

Remote version (option): -50 to +85 °C (-58 to +185 °F)

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**Sensor housing material**

Sensor connection housing: AlSi10Mg, coated; 1.4408 (CF3M)

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**Transmitter housing material**

AlSi10Mg, coated; 1.4404 (316L)

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**Degree of protection**

Compact version: IP66/67, type 4X enclosure

Sensor remote version: 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

Remote display available

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**Outputs**

4-20 mA HART (passive)

4-20 mA (passive)

Pulse/frequency/switch output (passive)

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**Inputs**

Current Input 4-20 mA (passive)

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**Digital communication**

HART, PROFIBUS PA, FOUNDATION Fieldbus

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## Liquids

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### Power supply

DC 12 to 35 V (4-20 mA HART with/without pulse/frequency/switch output)

DC 12 to 30 V (4-20 mA HART, 4-20 mA)

DC 12 to 35 V (4-20 mA HART, pulse/frequency/switch output, 4-20 mA input)

DC 9 to 32 V (PROFIBUS PA, pulse/frequency/switch output)

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### Hazardous area approvals

ATEX, IECEX, cCSAus, JPN, EAC

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### Product safety

CE, C-TICK, EAC, UK Ex

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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)

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### Marine approvals and certificates

ABS, LR, BV, DNV GL

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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 (on request); welding test acc. to ISO 15614-1, similar to ASME IX (on request)

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## Gas

**Measuring principle**

Vortex

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**Product headline**

Versatile flowmeter with detection of wet steam conditions and best-in-class accuracy.

Easy energy management – integrated temperature and pressure measurement for steam and gases.

Suitable for a wide range of applications; optimized for steam applications.

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**Sensor features**

Space-saving engineering – inlet run compensation. Same accuracy down to Re 10 000 – most linear Vortex meter body. Long-term stability – robust drift-free capacitive sensor.

Wet steam capabilities for DN 25 to 300 (1 to 12"). Flexible positioning of pressure cell. Industrial siphon design for pressure measurement.

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**Transmitter features**

Convenient device wiring – separate connection compartment. Safe operation – no need to open the device due to display with touch control, background lighting. Integrated verification – Heartbeat Technology. Display module with data transfer function. Robust dual-compartment housing. Plant safety: worldwide approvals (SIL, Haz. area).

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**Nominal diameter range**

DN 15 to 300 (½ to 12")

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**Wetted materials**

Measuring tube: 1.4408 (C3FM); CX2MW similar to Alloy C22, 2.4602

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**Measured variables**

Volume flow, mass flow, corrected volume flow, energy flow, heat flow difference, temperature

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## Gas

**Max. measurement error**

Volume flow (liquid):  $\pm 0.75\%$

Volume flow (optional):  $\pm 0.65\%$

Volume flow (steam, gas):  $\pm 1.00\%$

Mass flow (saturated steam):  $\pm 1.7\%$  (temperature compensated);  $\pm 1.5\%$  (temperature/pressure compensated)

Mass flow (superheated steam, gas):  $\pm 1.5$  (temperature/pressure compensated);  $\pm 1.7\%$  (temperature compensated + external pressure compensation)

Mass flow (liquid):  $\pm 0.85\%$

**Measuring range**

Liquid: 0.076 to 2100 m<sup>3</sup>/h (0.045 to 1300 ft<sup>3</sup>/min)

depending on medium: water with 1 bar a, 20 °C (14.5 psi a, 68 °F)

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depending on medium: steam with 180 °C, 10 bar a (356 °F, 145 psi a);  
air with 25 °C, 4.4 bar a (77 °F, 63.8 psi a)

**Max. process pressure**

PN 100, Class 600, 20K

**Medium temperature range**

Standard: -40 to +260 °C (-40 to +500 °F)

High/low temperature (option): -200 to +400 °C (-328 to +752 °F)

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Remote version (standard): -40 to +85 °C (-40 to +185 °F)

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**Sensor housing material**

Sensor connection housing: AlSi10Mg, coated; 1.4408 (CF3M)

**Transmitter housing material**

AlSi10Mg, coated; 1.4404 (316L)

## Gas

**Degree of protection**

Compact version: IP66/67, type 4X enclosure

Sensor remote version: 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

Remote display available

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**Outputs**

4-20 mA HART (passive)

4-20 mA (passive)

Pulse/frequency/switch output (passive)

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**Inputs**

Current Input 4-20 mA (passive)

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**Digital communication**

HART, PROFIBUS PA, FOUNDATION Fieldbus

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**Power supply**

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DC 12 to 35 V (4-20 mA HART, pulse/frequency/switch output, 4-20 mA input)

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**Hazardous area approvals**

ATEX, IECEx, cCSAus, JPN, EAC, UK Ex

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**Product safety**

CE, C-TICK, EAC

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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**

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**Marine approvals and certificates**

ABS, LR, BV, DNV GL

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**Pressure approvals and certificates**

PED, CRN, AD 2000

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**Material certificates**

3.1 material

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**Steam****Measuring principle**

Vortex

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## Steam

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