Proline Prowirl R 200 vortex flowmeter

Flowmeter with best-in-class accuracy despite pipe reduction

Benefits:
- Easy energy management – integrated temperature and pressure measurement for steam and gases
- Cost and time savings – no pipework modifications needed for line size reduction
- 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, various Ethernet options
- Safe operation – no need to open the device
- Integrated verification – Heartbeat Technology

Specs at a glance
- **Max. measurement error** Volume flow (liquid): ±0.75 % Volume flow (steam, gas): ±1.00 % Mass flow (saturated steam): ±1.7% (temperature compensated); ±1.5% (temperature/pressure compensated) Mass flow (superheated steam, gas): ±1.5 (temperature/pressure compensated); ±1.7% (temperature compensated + external pressure compensation) Mass flow (liquid): ±0.85%
- **Measuring range** Liquid: 0.1 to 540 m³/h (0.061 to 320 ft³/min) depending on medium: water with 1 bar a, 20 °C (14.5 psi a, 68° F) Steam, gas: 0.52 to 7300 m³/h (0.31 to 4300 ft³/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
Field of application: Prowirl R was designed for low flows and is thus the particularly dependable solution for energy management. Additionally its calibration option PremiumCal guarantees excellent measuring accuracy for maximum plant availability. With genuine loop-powered technology, Prowirl R 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.

Features and specifications

**Liquids**

**Measuring principle**
Vortex

**Product headline**
Flowmeter with best-in-class accuracy despite pipe reduction. Easy energy management – integrated temperature and pressure measurement for steam and gases. Dedicated to applications with very low flow or reduced flow.

**Sensor features**
Cost and time savings – no pipework modifications needed for line size reduction. Same accuracy down to Re 10 000 – most linear Vortex meter body. Long-term stability – robust drift-free capacitive sensor. Integrated diameter reduction by 1 or 2 line sizes. Nominal diameter (mating pipe) up to DN 250 (10").

Max. process pressure PN 40, Class 300, 20K

- Wetted materials
  - Measuring tube: 1.4408 (CF3M) DSC sensor: 1.4404/F316/F316L
  - Process connection: 1.4404/F316/F316L

High/low temperature (on request): –200 to +450 °C (–328 to +842 °F)
Liquids

**Transmitter features**
Cost and time savings – no pipework modifications needed for line size reduction. Same accuracy down to Re 10 000 – most linear Vortex meter body. Long-term stability – robust drift-free capacitive sensor.
Integrated diameter reduction by 1 or 2 line sizes. Nominal diameter (mating pipe) up to DN 250 (10"). Flexible positioning of pressure cell.

**Nominal diameter range**
DN 25 to 250 (1 to 10")

**Wetted materials**
Measuring tube: 1.4408 (CF3M)
DSC sensor: 1.4404/F316/F316L
Process connection: 1.4404/F316/F316L

**Measured variables**
Volume flow, mass flow, corrected volume flow, energy flow, heat flow difference, temperature

**Max. measurement error**
Volume flow (liquid): ±0.75 %
Volume flow (steam, gas): ±1.00 %
Mass flow (saturated steam): ±1.7% (temperature compensated); ±1.5% (temperature/pressure compensated)
Mass flow (superheated steam, gas): ±1.5 (temperature/pressure compensated); ±1.7% (temperature compensated + external pressure compensation)
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**Measuring range**
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depending on medium: water with 1 bar a, 20 °C (14.5 psi a, 68° F)
Steam, gas: 0.52 to 7300 m³/h (0.31 to 4300 ft³/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)

**Max. process pressure**
PN 40, Class 300, 20K
Proline Prowirl R 200 / 7R2C

**Liquids**

**Medium temperature range**
Standard: –40 to +260 °C (–40 to +500 °F)
High/low temperature (option): –200 to +400 °C (–328 to +752 °F)
High/low temperature (on request): –200 to +450 °C (–328 to +842 °F)

**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)

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

**Transmitter housing material**
AlSi10Mg, coated; 1.4404 (316L)

**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

**Display/Operation**
4-line backlit display with touch control (operation from outside)
Configuration via local display and operating tools possible
Remote display available

**Outputs**
4-20 mA HART (passive)
4-20 mA (passive)
Pulse/frequency/switch output (passive)

**Inputs**
4-20 mA (passive)

**Digital communication**
HART, PROFIBUS PA, FOUNDATION Fieldbus
 Liquids

**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)

**Hazardous area approvals**
ATEX, IECEx, cCSAus, JPN, EAC, UK Ex

**Product safety**
CE, C-tick, EAC

**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)

**Marine approvals and certificates**
ABS, LR, BV, DNV

**Pressure approvals and certificates**
PED, CRN, AD 2000

**Material certificates**
3.1 material
NACE MR0175/MR0103, PMI (on request); welding test acc. to ISO 15614-1, similar to ASME IX (on request)
Gas

**Measuring principle**
Vortex

**Product headline**
Flowmeter with best-in-class accuracy despite pipe reduction.
Easy energy management – integrated temperature and pressure measurement for steam and gases.
Dedicated to applications with very low flow or reduced flow.

**Sensor features**
Cost and time savings – no pipework modifications needed for line size reduction. Same accuracy down to Re 10 000 – most linear Vortex meter body. Long-term stability – robust drift-free capacitive sensor. Integrated diameter reduction by 1 or 2 line sizes. Nominal diameter (mating pipe) up to DN 250 (10").

**Transmitter features**
Cost and time savings – no pipework modifications needed for line size reduction. Same accuracy down to Re 10 000 – most linear Vortex meter body. Long-term stability – robust drift-free capacitive sensor.
Integrated diameter reduction by 1 or 2 line sizes. Nominal diameter (mating pipe) up to DN 250 (10"). Flexible positioning of pressure cell.

**Nominal diameter range**
DN 25 to 250 (1 to 10")

**Wetted materials**
Measuring tube: 1.4408 (CF3M)
DSC sensor: 1.4404/F316/F316L
Process connection: 1.4404/F316/F316L

**Measured variables**
Volume flow, mass flow, corrected volume flow, energy flow, heat flow difference, temperature
Max. measurement error
Volume flow (liquid): ±0.75 %
Volume flow (steam, gas): ±1.00 %
Mass flow (saturated steam): ±1.7% (temperature compensated); ±1.5% (temperature/pressure compensated)
Mass flow (superheated steam, gas): ±1.5 (temperature/pressure compensated); ±1.7% (temperature compensated + external pressure compensation)
Mass flow (liquid): ±0.85%

Measuring range
Liquid: 0.1 to 540 m³/h (0.061 to 320 ft³/min)
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Steam, gas: 0.52 to 7300 m³/h (0.31 to 4300 ft³/min)
depending on medium: steam with 180 °C, 10 bar a (356 °F, 145 psi a);
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Max. process pressure
PN 40, Class 300, 20K

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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

**Display/Operation**
4-line backlit display with touch control (operation from outside)
Configuration via local display and operating tools possible
Remote display available

**Outputs**
- 4-20 mA HART (passive)
- 4-20 mA (passive)
- Pulse/frequency/switch output (passive)

**Inputs**
- 4-20 mA (passive)

**Digital communication**
HART, PROFIBUS PA, FOUNDATION Fieldbus

**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)

**Hazardous area approvals**
ATEX, IECEx, cCSAus, JPN, EAC, UK Ex

**Product safety**
CE, C-tick, EAC

**Functional safety**
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**Gas**

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**Pressure approvals and certificates**
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**Material certificates**
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**Steam**

**Measuring principle**
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Steam

**Transmitter features**
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More information [www.endress.com/7R2C](http://www.endress.com/7R2C)