Proline Prowirl R 200 vortex flowmeter

Flowmeter with best-in-class accuracy despite pipe reduction

More information and current pricing:
www.endress.com/7R2C

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: 0.2 to 540 m³/h (0.15 to 320 ft³/min) depending on medium: water with 1 bar a, 20 °C (14.5 psi a, 68° F) Steam, gas: 1.5 to 7260 m³/h (0.9 to 4270 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

to +752 °F) High/low temperature (on request): –200 to +450 °C (–328 to +842 °F)
- **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

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 enables 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").

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)
Mass flow (liquid): ±0.85%

Measuring range

Liquid: 0.2 to 540 m^3/h (0.15 to 320 ft^3/min)
depending on medium: water with 1 bar a, 20 °C (14.5 psi a, 68° F)
Steam, gas: 1.5 to 7260 m^3/h (0.9 to 4270 ft^3/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

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.
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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

Gas

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: 0.2 to 540 m^3/h (0.15 to 320 ft^3/min)
depending on medium: water with 1 bar a, 20 °C (14.5 psi a, 68° F)
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Sensor connection housing: AlSi10Mg, coated; 1.4408 (CF3M)

Transmitter housing material

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Gas

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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

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

Inputs

4-20 mA (passive)

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Steam

Transmitter features

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