

Вихревые расходомеры Prowirl F 200, 7F2B

Технические характеристики

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Proline Prowirl F 200 / 7F2B



Benefits:

- Integrated temperature measuring for mass/ energy flow of saturated steam
- Highest process safety – dualsens version enables redundant measurement
- High availability – proven robustness, resistance to vibrations, temperature shocks & water hammer
- No maintenance – lifetime calibration
- 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

Specs at a glance

- **Max. measurement error** Volume flow (liquid): $\pm 0.75\%$ Volume flow (steam, gas): $\pm 1.00\%$ Mass flow (liquid): $\pm 0.85\%$ Mass flow (steam,, gas): $\pm 1.7\%$
- **Measuring range** Liquid: 0.16 to 2412 m³/h (0.09 to 1420 ft³/min) depending on medium: water with 1 bar a, 20 °C (14.5 psi a, 68° F) Steam, gas: 2 to 32 166 m³/h (1.18 to 18 932 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 (C3FM); CX2MW similar to Alloy C22, 2.4602 DSC sensor: 1.4435 (316/316L); UNS N06022 similar to Alloy C22, 2.4602 Connection: 1.4404 (F316/F316L); CX2MW similar to Alloy C22, 2.4602; 1.4408 (CF3M)

Field of application: The Prowirl F measuring tube is the first choice in heavy duty applications. The proven and patented capacitive DSC sensor ensures high precision measured values even under the toughest process conditions. Prowirl F 200 offers wetsteam detection and industry-compliant two-wire technology for seamless integration into existing infrastructures and control systems, as well as high operational safety in hazardous areas thanks to an intrinsically safe design, and a familiar installation procedure.

Features and specifications

Liquids

Measuring principle

Product headline

std_productprofile_product_usp_8110.

std_productprofile_product_usp2_38908_1511797531.

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

Sensor features

std_productprofile_product_benefits_8113. High availability – proven resistance to vibrations, temperature shocks & water hammer.

std_productprofile_product_benefits_8115.

std_productprofile_product_differentiating_tech_features_6578.

std_productprofile_product_differentiating_tech_features_6577.

std_successorproducts_product_differentiating_tech_features_6580_15

Transmitter features

Convenient device wiring – separate connection compartment. Safe operation 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 safety: worldwide approvals (SIL, Haz. area).

Nominal diameter range

DN 15 to 300 (½ to 12")

Liquids

Wetted materials

Measuring tube: 1.4408 (C3FM); CX2MW similar to Alloy C22, 2.4602
DSC sensor: 1.4435 (316/316L); UNS N06022 similar to Alloy C22, 2.46
Connection: 1.4404 (F316/F316L); CX2MW similar to Alloy C22, 2.4602 (CF3M)

Measured variables

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

Max. measurement error

Volume flow (liquid): ± 0.75 %
Volume flow (steam, gas): ± 1.00 %
Mass flow (liquid): ± 0.85 %
Mass flow (steam, gas): ± 1.7 %

Measuring range

Liquid: 0.16 to 2412 m³/h (0.09 to 1420 ft³/min)
depending on medium: water with 1 bar a, 20 °C (14.5 psi a, 68° F)
Steam, gas: 2 to 32 166 m³/h (1.18 to 18 932 ft³/min)
depending on medium: steam with 180 °C, 10 bar a (356 °F, 145 psi a); a
°C, 4.4 bar a (77 °F, 63.8 psi a)

Max. process pressure

PN 40, Class 300, 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)
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)

Liquids

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

Current Input 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)

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

Hazardous area approvals

ATEX, IECEx, cCSAus, EAC

Other approvals and certificates

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 technology according to ISO 9001:2015 – Section 7.1.5.2 a (TÜV SÜD attestation)

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

Product headline

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std_productprofile_product_usp2_38908_1511797531.

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

Sensor features

std_productprofile_product_benefits_8113. High availability – proven resistance to vibrations, temperature shocks & water hammer.

std_productprofile_product_benefits_8115.

std_productprofile_product_differentiating_tech_features_6578.

std_productprofile_product_differentiating_tech_features_6577.

std_successorproducts_product_differentiating_tech_features_6580_15

Gas

Transmitter features

Convenient device wiring – separate connection compartment. Safe operation need to open the device due to display with touch control, background light. Integrated verification – Heartbeat Technology.

Display module with data transfer function. Robust dual-compartment housing for 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: 1.4435 (316/316L); UNS N06022 similar to Alloy C22, 2.46
Connection: 1.4404 (F316/F316L); CX2MW similar to Alloy C22, 2.4602 (CF3M)

Measured variables

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

Max. measurement error

Volume flow (liquid): ±0.75 %

Volume flow (steam, gas): ±1.00 %

Mass flow (liquid): ±0.85%

Mass flow (steam, gas): ±1.7 %

Measuring range

Liquid: 0.16 to 2412 m³/h (0.09 to 1420 ft³/min)

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

Steam, gas: 2 to 32 166 m³/h (1.18 to 18 932 ft³/min)

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

Max. process pressure

PN 40, Class 300, 20K

Gas**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

Current input 4-20 mA (passive)

Digital communication

HART, PROFIBUS PA, FOUNDATION Fieldbus

Gas**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)

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

Hazardous area approvals

ATEX, IECEx, cCSAus, EAC

Other approvals and certificates**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 technology according to ISO 9001:2015 – Section 7.1.5.2 a (TÜV SÜD attestation)

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)

Steam**Measuring principle****Product headline**

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

Steam

Sensor features

std_productprofile_product_benefits_8113. High availability – proven ro resistance to vibrations, temperature shocks & water hammer.

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std_productprofile_product_differentiating_tech_features_6578.

std_productprofile_product_differentiating_tech_features_6577.

std_successorproducts_product_differentiating_tech_features_6580_15

Transmitter features

Convenient device wiring – separate connection compartment. Safe opera need to open the device due to display with touch control, background ligl Integrated verification – Heartbeat Technology.

Display module with data transfer function. Robust dual-compartment ho 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: 1.4435 (316/316L); UNS N06022 similar to Alloy C22, 2.46

Connection: 1.4404 (F316/F316L); CX2MW similar to Alloy C22, 2.4602 (CF3M)

Measured variables

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

Max. measurement error

Volume flow (liquid): ± 0.75 %

Volume flow (steam, gas): ± 1.00 %

Mass flow (liquid): ± 0.85 %

Mass flow (steam,, gas): ± 1.7 %

Steam

Measuring range

Liquid: 0.16 to 2412 m³/h (0.09 to 1420 ft³/min)

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

Steam, gas: 2 to 32 166 m³/h (1.18 to 18 932 ft³/min)

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

Max. process pressure

PN 40, Class 300, 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)

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)

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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

Steam**Outputs**

4-20 mA HART (passive)

4-20 mA (passive)

Pulse/frequency/switch output (passive)

Inputs

Current input 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)

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

Hazardous area approvals

ATEX, IECEx, cCSAus, 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 management according to ISO 9001:2015 – Section 7.1.5.2 a (TÜV SÜD attestation)

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)

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