Proline Prowirl F 200 vortex flowmeter

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

Benefits:
- Easy energy management – integrated temperature and pressure measurement for steam and gases
- Reliable, secure measurement technology – compliance with international Vortex standard ISO 12764
- 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 (optional): ±0.65 % 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: 0.076 to 2100 m³/h (0.045 to 1300 ft³/min) depending on medium: water with 1 bar a, 20 °C (14.5 psi a, 68° F) Steam, gas: 0.39 to 28000 m³/h (0.23 to 17000 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)
Field of application: 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.

Features and specifications

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.

- Max. process pressure PN 100, Class 600, 20K
- Wetted materials Measuring tube: 1.4408 (CF3M); CX2MW similar to Alloy C22, 2.4602
Transmitter features

Nominal diameter range
DN 15 to 300 (½ to 12”)

Wetted materials
Measuring tube: 1.4408 (CF3M); 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): ±0.75 %
Volume flow (optional): ±0.65 %
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: 0.076 to 2100 m³/h (0.045 to 1300 ft³/min)
depending on medium: water with 1 bar a, 20 °C (14.5 psi a, 68° F)
Steam, gas: 0.39 to 28000 m³/h (0.23 to 17000 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)
### Liquids

<table>
<thead>
<tr>
<th><strong>Max. process pressure</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>PN 100, Class 600, 20K</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Medium temperature range</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard: −40 to +260 °C (−40 to +500 °F)</td>
</tr>
<tr>
<td>High/low temperature (option): −200 to +400 °C (−328 to +752 °F)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Ambient temperature range</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Compact version (standard): −40 to +80 °C (−40 to +176 °F)</td>
</tr>
<tr>
<td>Compact version (option): −50 to +80 °C (−58 to +176 °F)</td>
</tr>
<tr>
<td>Remote version (standard): −40 to +85 °C (−40 to +185 °F)</td>
</tr>
<tr>
<td>Remote version (option): −50 to +85 °C (−58 to +185 °F)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Sensor housing material</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor connection housing: AlSi10Mg, coated; 1.4408 (CF3M)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Transmitter housing material</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>AlSi10Mg, coated; 1.4404 (316L)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Degree of protection</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Compact version: IP66/67, type 4X enclosure</td>
</tr>
<tr>
<td>Sensor remote version: IP66/67, type 4X enclosure</td>
</tr>
<tr>
<td>Transmitter remote version: IP66/67, type 4X enclosure</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Display/Operation</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>4-line backlit display with touch control (operation from outside)</td>
</tr>
<tr>
<td>Configuration via local display and operating tools possible</td>
</tr>
<tr>
<td>Remote display available</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Outputs</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>4-20 mA HART (passive)</td>
</tr>
<tr>
<td>4-20 mA (passive)</td>
</tr>
<tr>
<td>Pulse/frequency/switch output (passive)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Inputs</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Input 4-20 mA (passive)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Digital communication</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>HART, PROFIBUS PA, FOUNDATION Fieldbus</td>
</tr>
</tbody>
</table>
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

**Product safety**
- CE, C-TICK, EAC, UK Ex

**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**
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.

**Transmitter features**

**Nominal diameter range**
DN 15 to 300 (½ to 12")

**Wetted materials**
Measuring tube: 1.4408 (CF3M); CX2MW similar to Alloy C22, 2.4602

**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 (optional): ±0.65 %
- 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: 0.076 to 2100 m³/h (0.045 to 1300 ft³/min)
  depending on medium: water with 1 bar a, 20 °C (14.5 psi a, 68° F)
- Steam, gas: 0.39 to 28000 m³/h (0.23 to 17000 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 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)

**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)
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**
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 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
Gas

**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)

Steam

**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.
Steam

Transmitter features

Nominal diameter range
DN 15 to 300 (½ to 12”)

Wetted materials
Measuring tube: 1.4408 (CF3M); 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): ±0.75 %
Volume flow (optional): ±0.65 %
Volume flow (optional): ±0.65 %
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: 0.076 to 2100 m³/h (0.045 to 1300 ft³/min)
depending on medium: water with 1 bar a, 20 °C (14.5 psi a, 68° F)
Steam, gas: 0.39 to 28000 m³/h (0.23 to 17000 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)
### Steam

<table>
<thead>
<tr>
<th><strong>Max. process pressure</strong></th>
<th>PN 100, Class 600, 20K</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Medium temperature range</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard: ‒40 to +260 °C (‒40 to +500 °F)</td>
<td></td>
</tr>
<tr>
<td>High/low temperature (option): ‒200 to +400 °C (‒328 to +752 °F)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Ambient temperature range</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Compact version (standard): ‒40 to +80 °C (‒40 to +176 °F)</td>
<td></td>
</tr>
<tr>
<td>Compact version (option): ‒50 to +80 °C (‒58 to +176 °F)</td>
<td></td>
</tr>
<tr>
<td>Remote version (standard): ‒40 to +85 °C (‒40 to +185 °F)</td>
<td></td>
</tr>
<tr>
<td>Remote version (option): ‒50 to +85 °C (‒58 to +185 °F)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Sensor housing material</strong></th>
<th>Sensor connection housing: AlSi10Mg, coated; 1.4408 (CF3M)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Transmitter housing material</strong></th>
<th>AlSi10Mg, coated; 1.4404 (316L)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Degree of protection</strong></th>
<th>Compact version: IP66/67, type 4X enclosure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor remote version: IP66/67, type 4X enclosure</td>
<td></td>
</tr>
<tr>
<td>Transmitter remote version: IP66/67, type 4X enclosure</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Display/Operation</strong></th>
<th>4-line backlit display with touch control (operation from outside)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configuration via local display and operating tools possible</td>
<td></td>
</tr>
<tr>
<td>Remote display available</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Outputs</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4-20 mA HART (passive)</td>
<td></td>
</tr>
<tr>
<td>4-20 mA (passive)</td>
<td></td>
</tr>
<tr>
<td>Pulse/frequency/switch output (passive)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Inputs</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Input 4-20 mA (passive)</td>
<td></td>
</tr>
</tbody>
</table>
Steam

**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**
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)