



ENERGY TAJHIZ MELAL

تجهیزات انرژی، تأسیسات و اتوماسیون صنایع

کاتالوگ محصولات



Endress+Hauser

درباره شرکت Endress+Hauser

شرکت Endress+Hauser یک برند سوئیسی پیشرو و جهانی در حوزه تجهیزات ابزار دقیق و اتوماسیون صنعتی است که با بیش از هفت دهه تجربه، به عنوان یکی از بزرگترین تامین کنندگان سیستم های اندازه گیری، حسگرها، ترانسمیترها و راهکارهای هوشمند کنترل فرایند شناخته می شود. این شرکت با تمرکز بر دقت بالا، کیفیت ساخت ممتاز و نوآوری در تکنولوژی، محصولاتی را برای اندازه گیری فشار، دما، سطح، جریان، درخشندگی، کیفیت سیال و تحلیل های فرایندی ارائه می دهد که در صنایع نفت و گاز، پتروشیمی، نیروگاهی، مواد غذایی و دارویی کاربرد گسترده دارند. راهکارهای Endress+Hauser به عنوان نقطه اتکا در سیستم های کنترل فرایند، امکان پایش دقیق و بهینه سازی عملکرد خطوط تولید را فراهم می کنند.

سبد محصولات این برند شامل ترانسمیترهای پیشرفته، سنسورهای دیجیتال، ابزارهای کالیبراسیون و سیستم های ارتباطی هوشمند است که با استفاده از فناوری های IoT و ارتباطات صنعتی، امکان پایش لحظه ای، تحلیل داده و بهینه سازی انرژی و بهره وری فرایندها را در سطوح مختلف عملیاتی فراهم می آورد. حضور جهانی، پشتیبانی فنی گسترده و شبکه خدمات حرفه ای، Endress+Hauser را به انتخابی مطمئن و استراتژیک برای پروژه های صنعتی پیچیده تبدیل کرده است.

مرجع تجهیزات انرژی، تأسیسات و اتوماسیون صنایع

انرژی تجهیز ملل، فروشگاه تخصصی تأمین تجهیزات انرژی، تأسیسات و احتراق است. از مشعل و کنترلر تا شیرآلات کنترلی و سیستم های هوشمند موتورخانه، هر آنچه برای راه اندازی، نگهداری و بهینه سازی سیستم های انرژی نیاز دارید، در یک مجموعه مهندسی شده در دسترس شماست.

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وب سایت: www.energy-tajhiz.com

ایمیل: info@energy-tajhiz.com

تلفن ثابت:

همراه:

وب سایت:

ایمیل:

Proline Prowirl F 200 vortex flowmeter

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



More information and current pricing:

www.endress.com/7F2C

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): $\pm 0.75\%$ Volume flow (optional): $\pm 0.65\%$ 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: 0.2 to 2100 m³/h (0.15 to 1300 ft³/min) depending on medium: water with 1 bar a, 20 °C (14.5 psi a, 68 °F) Steam, gas: 1.5 to 28000 m³/h (0.9 to 16000 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)

- **Max. process pressure** PN 100, Class 600, 20K
- **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

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 enables 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.

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 (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): $\pm 0.75\%$

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: 0.2 to 2100 m³/h (0.15 to 1520 ft³/min)

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

Steam, gas: 1.5 to 28000 m³/h (0.9 to 16600 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

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)

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)

Liquids

Digital communication

HART, PROFIBUS PA, FOUNDATION Fieldbus, PROFINET over Ethernet-APL, Modbus TCP over Ethernet-APL

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, KC

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, CCS

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)

Liquids

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

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 (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): $\pm 0.75\%$

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): ± 1.5 (temperature/pressure compensated); $\pm 1.7\%$ (temperature compensated + external pressure compensation)

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

Measuring range

Liquid: 0.2 to 2100 m³/h (0.15 to 1520 ft³/min)

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

Steam, gas: 1.5 to 28000 m³/h (0.9 to 16600 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 100, Class 600, 20K

Medium temperature range

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

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, PROFINET over Ethernet-APL, Modbus TCP over Ethernet-APL

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)

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Product safety

CE, C-TICK, EAC

Functional safety

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More information www.endress.com/7F2C





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