



Level



Pressure



Flow



Temperature



Liquid
Analysis



Registration



Systems
Components



Services



Solutions

Proline Promass 83X/84X

The groundbreaking Coriolis flowmeter for the oil and gas industry



A “Hercules” of the premium class – highly accurate and ultracompact

- Cost optimization and time savings due to maximum flow rates up to 4100 metric t/h:
Faster loading and unloading, less downtime in port
- World's first production series four-tube Coriolis flowmeter in stainless steel (316L) – ideally suited for demanding offshore ambient conditions
- Accurate billing with excellent, fully traceable accuracy: $\pm 0.05\%$ o.r. (PremiumCal)
- Robust, balanced device – immune to external pipe vibrations and process influences
- Outstanding measuring performance, even in applications with entrained gas
- Maintenance-free device without moving parts
- Worldwide sales and service network for engineering, supply of complete systems, commissioning, etc.

Endress + Hauser 

People for Process Automation



Promass X for big jobs

Day after day, flowmeters measure huge amounts of crude oil and hydrocarbons – when loading and unloading oil tankers, rail cars or trucks and for transport in pipelines. Combining maximum flow performance and highest accuracy no longer requires compromises.

The Promass X sets new benchmarks with its rugged stainless steel design and the innovative four-pipe technology. Material throughputs of up to 4100 metric tons per hour can now be measured with the highest precision in the world. This saves time and money, particularly when

loading and unloading oil tankers. Despite its size, Promass X has an optimally balanced measuring system that is immune to external influences and ensures absolutely stable measured values even with changing process conditions and entrained gas.

Promass X can be combined with different transmitters: Promass 83 with extended functionality or Promass 84 with custody transfer approvals.

Wherever, you can always depend on the performance capabilities of our Proline flowmeters: a long service life and high operational reliability.



Global calibration concept

For over 35 years, we have developed and built high-tech calibration rigs to document the accuracy of our flowmeters in a reliable and traceable manner. All of our calibration rigs are accredited by national authorities in accordance with ISO/IEC 17025. This is one-of-a-kind and confirms the high confidence national authorities place in Endress+Hauser's measurement technology. Our global calibration concept offers the following advantages:

- Worldwide accreditation of all flow calibration rigs
- Periodic inspection by national standard authorities
- Complete traceability back to national standards (e.g. METAS, PTB, NPL, LNE, NIST, CN), as laid down in ISO/IEC 17025
- High-tech calibration rigs based on a common design platform
- Calibration service in more than 40 countries

100% traceability

At Endress+Hauser, each flowmeter is subjected to rigorous testing on accredited and fully traceable calibration facilities. Verification comparisons between device under test, calibration rig, test equipment and a country's hierarchically highest "national standard" are the only way of conclusively establishing the end-to-end traceability of values measured – and consequently of the measuring uncertainty stated by the device manufacturer.

With "PremiumCal" – the world's best production calibration facility – we can specify Promass X to a fully traceable measured error of maximum $\pm 0.05\%$. An international best!



Prototype Kilogram



National standard



Gravimetric scales (E+H)



Calibration rig (E+H)



Flowmeter

Save millions with Promass X



Any measurement inaccuracy, however small, during loading, transport or transfer of hydrocarbons results in monetary shortfalls – whether incurred by the buyer or seller. Despite the accuracy requirements defined by custody transfer authorities, different measurement methods result time and again in discussions between the trade partners about the actual supplied quantity. This is no longer necessary, as Promass X allows you to solve these problems in one go:

- Neither too much nor too little – thanks to direct and highly accurate mass measurement ($\pm 0.05\%$)
- Less downtime in port – thanks to the highest throughput up to 4100 metric t/h (~30 370 barrels, $\rho = 0.85$)
- Traceable, long-term reliable measurement results

A calculation example

Let us assume the price of crude oil is 110 USD and an oil tanker holds 800 000 barrels. If the measuring error when loading the ship is lowered from 0.1% to 0.05%, this results in savings of some 44 000 USD per ship. For 100 loaded ships, therefore, this means 4.4 million USD.



Technical data

Promass 83/84 (transmitter)

Promass 83: Standard transmitter with extended functionality
 Promass 84: In addition with custody transfer approvals

- Outputs HART (4–20 mA), PROFIBUS DP/PA, FOUNDATION Fieldbus, MODBUS

Promass X (sensor)

- Maximum flow rate 4100 metric t/h (30 370 barrels/h; $\rho = 0.85$)
- Measuring tube material 1.4404/316L
- Process connections Flanges: EN (DIN), ASME
 Sizes: DN 300 (12"), DN 350 (14"), DN 400 (16")
- Process temperature -50 to $+180$ °C (-58 to $+356$ °F)
- Ambient temperature Standard: -20 to $+60$ °C (-4 to $+140$ °F)
 Option: -40 to $+60$ °C (-40 to $+140$ °F)
- Process pressure Up to 100 bar (1440 psi)

- Degree of protection IP 67 (NEMA 4X)
- Measured error (liquids)
 - Mass/volume flow Standard: $\pm 0.1\%$ o.r.
 Optional: $\pm 0.05\%$ o.r. (PremiumCal)
 - Density Standard calibration: ± 0.01 g/cm³
 Special calibration: ± 0.001 g/cm³
 Ref./field calibration: ± 0.0005 g/cm³
 - Temperature ± 0.5 °C $\pm (0.005 \times \text{fluid temperature})$
- Repeatability Standard: $\pm 0.05\%$
 Optional: $\pm 0.025\%$ (PremiumCal)
- Approvals Pressure: PED Cat. III, CRN, AD2000
 Materials: conforms to NORSOK M-630 and NACE MR175/MR103
- Custody transfer approvals MID (OIML R117)
- Ex approvals ATEX, FM, CSA, IECEx

Subject to modification

The Promass 83X/84X measuring system fulfills the EMC requirements according to IEC/EN 61326 and NAMUR NE21. It also conforms to the requirements of the EU and ACMA directives and thus carries the **CE** and **UL** mark.

Instruments International

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