

Proline Prosonic Flow P 500

For maximum performance
in confined spaces thanks to
brand-new FlowDC function

Tried-and-tested ultrasonic clamp-on flow measuring technology

- Non-intrusive flow measurement without maintenance:
 - Installation on the outer wall of the pipe without opening the pipeline
 - Independent of pressure, density and conductivity
 - Ideal for corrosive, abrasive and toxic fluids
- Applicable for a wide variety of liquids such as chemicals, liquid hydrocarbons, solvents, acids, bases, water, etc.
- Wide nominal diameter range: DN 15 to 4000 (½ to 156")
- Suitable for pipes made of metal, plastic, GRP or composite materials (lined/unlined)
- Consistently high measuring performance provided by coupling pads for reliable sound transmission
- Specified measuring accuracy even for very short inlet runs ($\geq 2 \times \text{DN}$) thanks to innovative FlowDC function
- Heartbeat Technology for device verification during operation without process interruption



Proline

simply clever

Process monitoring is becoming more demanding and the need for maximum product quality is steadily increasing. This is why Endress+Hauser provides industry-specific flow measurement solutions optimized for future technology requirements.

The new generation of our Proline flow-meters is based on a uniform device concept. This means time and cost savings, as well as maximum safety over the entire plant life cycle.



Webserver

Time-saving local operation without additional hard-/software



Heartbeat Technology

For permanent self-monitoring, diagnostics and device verification



Simple operation (HMI)

Time-saving operating concept with guided parameterization



HistoROM

Automatic data storage and data restoration



W@M Life Cycle Management

Open information system for device documentation and management



Seamless system integration

Direct and transparent through digital communication



Prosonic Flow P 500

Measure wherever you want to – without limitations

Ultrasonic flow measurement with clamp-on sensors has been used successfully in a wide variety of applications and industries for decades.

- Non-intrusive and safe measurement of corrosive, abrasive and toxic fluids – even when process pressure is high
- Measurement independent of conductivity, pressure and viscosity
- Simple installation, no maintenance
- New measuring points can be retrofitted at any time without opening the pipeline
- Low capital cost investment and high cost efficiency with increasing pipe diameter (up to DN 4000/156")

In clamp-on flow measuring technology, only undisturbed flow profiles guarantee high measuring accuracy. In many cases, the inlet runs required for this purpose downstream of fittings ($\geq 15 \times \text{DN}$) are not present in process facilities. Therefore, corresponding flow disturbances may impair the accuracy of an ultrasonic measurement.

Endress+Hauser's newly developed FlowDC function still guarantees consistent (specified) measuring performance in such cases, even with a greatly reduced inlet run! Together with the unique advantages of Proline flow measuring technology, this opens up numerous applications for users:

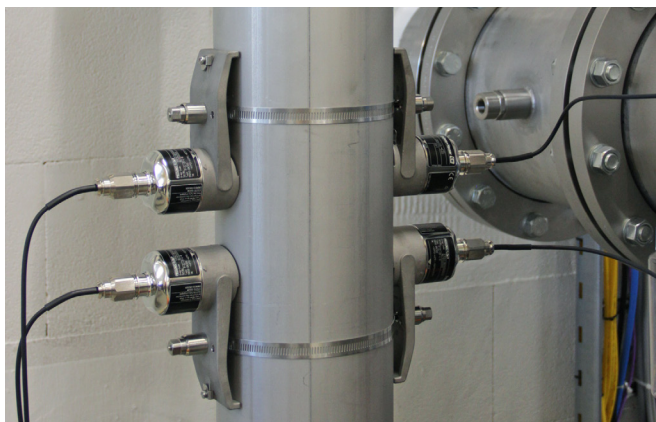
- Maintenance-free long-term operation: robust, SIL-compliant industrial design for harsh ambient conditions
- High operational safety: Heartbeat Technology for self-diagnostics, device verification and process monitoring during operation
- High flexibility in operation and configuration: local display, web server, WLAN, operating tools (FieldCare, HART handheld) or digital communication (HART, Modbus RS485)



E-book
Prosonic Flow P 500
for your tablet

Flexible – reliable – maintenance free

You can count on it



FlowDC function: constantly high performance

- Massive reduction of required inlet run from the usual min. $15 \times \text{DN}$ to just $2 \times \text{DN}$
- Consistent measuring accuracy even when installed close to flow disturbance generating fittings such as tube bends, reduction or extension pieces
- Maximum flexibility when planning process facilities where space for the pipe networks is at a minimum
- Simple retrofitting of measuring points with almost no limitations

Process safety around the clock

- SIL-compliant device development as per IEC 61508
- Robust, maintenance-free measuring system, optionally made of stainless steel for applications such as long-term operation or harsh ambient conditions in the offshore area
- Heartbeat Technology for reliable device and process monitoring:
 - Permanent self-diagnostics according to NAMUR NE107
 - Clear and unambiguous categorization/display of device and process errors
 - Device verification during operation without process interruption. Can be activated at any time onsite or via a control room.
 - Monitoring of diagnostic parameters (detecting process changes)



For numerous applications in your plant

Thanks to the advantages of ultrasonic clamp-on devices, they can be used in a wide range of applications in the process industry:

- Quantity and volume measurement
- Process control and monitoring
- Balancing and totalizing (unidirectional or bidirectional)
- Verifying already installed flowmeters
- Detecting leaks in a pipeline
- Replacement measurements for defective flowmeters when removal is not an option



The perfect frequency for your pipe

Prosonic Flow P 500 can be installed on a wide variety of pipe types and materials:

- Metal pipes (e.g. steel or cast iron)
- Plastic pipes
- GRP pipes
- Composite materials (with/without liner)

The ultrasonic transducers are also available with different frequencies (0.3 – 0.5 – 1 – 2 – 5 MHz) to ensure optimum signal quality for a broad range of pipe diameters, fluids and pipe materials.



Prosonic Flow P 500 in the process industry

For all liquids in your application:
Consistently high performance,
even in confined spaces





Liquid hydrocarbons, e.g. crude oil (on-/offshore)



Gasoline, intermediate products, etc. (petrochemicals/refinery)



Cooling and process water (utilities)



Water in penstocks (energy/power plant industry)



Liquid raw materials such as acids or bases (chemicals)



Fluid detection, e.g. oil/water (tank dewatering)



Replacement measurements for defective flowmeters



Verification of installed flowmeters

Technical data

Transmitter	
	 
	Proline 500 (remote version)
Display	4-line backlit display with touch control (operation from outside)
Operation	Via local display, web server or WLAN as well as various operating tools (FieldCare, HART handheld terminal, etc.)
Materials	Aluminum, stainless steel die cast
Power supply	AC 100 to 230 V (50/60 Hz) DC 24 V (50/60 Hz)
Connection cable length	Between transmitter/sensor: 5, 10, 15 and 30 meters (15, 32, 50, 100 ft) Option: armored sensor cable for harsh offshore conditions
Ambient temperature	Standard: -40 to +60 °C (-40 to +140 °F) Option: -50 to +60 °C (-58 to +140 °F)
Degree of protection	IP66/67 (Type 4X enclosure)
Outputs Inputs Communication	Port 1 (communication): Current output (4–20 mA, HART) or digital communication via Modbus RS485 Port 2/3 Freely configurable I/O modules: – Current output (4–20 mA) – Pulse/frequency/switch output – Pulse output (phase-shifted) – Relay output – Current input (4–20 mA) – Status input
Approvals	▪ ATEX, IECEx, cCSAus, NEPSI, INMETRO, EAC, etc. ▪ SIL: Use for flow monitoring up to SIL 2 (single-channel architecture) or SIL 3 (multi-channel architecture with homogeneous redundancy) ▪ Radio approval

Sensor



Prosonic Flow P

Nominal diameter	DN 15 to 4000 (½ to 156")
Max. flow	Depending on sensor version at max. 15 m/s (50 ft/s): 0 to 678 550 m³/h (0 to 2 987 656 gal/min)
Process pressure	No pressure limitation (measurement from outside)
Process temperature	–40 to +170 °C (–40 to +338 °F)
Degree of protection	IP68 (Type 6P enclosure)
Max. measured error (volume flow)	DN 15 (½"): ±3% o.r. ± 5 mm/s (±0.20 in/s) DN 25 to 200 (1 to 8"): ±2% o.r. ± 7.5 mm/s (±0.30 in/s) DN ≥ 200 (8"): ±2% o.r. ± 3 mm/s (±0.12 in/s)
Turndown	Over 150:1
Materials	Stainless steel (ultrasonic transducer, housing, sensor holders, strapping bands)
Pressure loss	No pressure loss (measurement from outside)
Approvals	ATEX, IECEx, cCSAus, NEPSI, INMETRO, EAC, etc.

Subject to modification

The Prosonic Flow P 500 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  and the  mark.

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Eco-friendly produced and printed
on paper from sustainable forestry.

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