Flow Measurement

Proline
Prosonic Flow B 200
For reliable biogas flow measurement without compromises

Process monitoring made easy

- Innovative measurement: industry-optimized ultrasonic flowmeter for measuring wet biogas, landfill or digester gas without pressure loss
- Broad range of applications: ideally suited for applications with fluctuating process conditions, low pressure and wet or dirty gases
- Easy and transparent energy balancing:
  - Direct measurement of the methane content (CH_4) in the pipe
  - Calculation of additional characteristic values such as corrected volume, calorific value or Wobbe index
- Traceable measurement results: each device is tested on accredited calibration rigs (ISO/IEC 17025)
- Worldwide sales and service network with highly competent application consultants

Endress+Hauser
People for Process Automation

Proline
simply clever

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

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

Consistent and uniform Proline is a proven and uniform product concept, designed to do the same things the same way, thereby increasing the safety and efficiency of your operations.

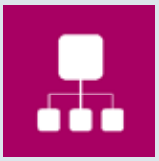
Optimal application solutions Proline incorporates all modern flow measuring technologies, and thus optimizing plant up-time – true to our motto: "The industry-optimized flowmeter for your application."

Ingeniously simple Proline is user-friendly through and through, ensuring that your process can be securely controlled with confidence.

Added value in every respect

Data Storage Concept
- Automatic data storage ensures maximum plant safety
- Simple data restoration enables quick exchange of components
- Event logbook and data logger for quick failure analysis

Heartbeat Technology™
- Diagnostics for reduced maintenance and quick remedies
- Permanent self-monitoring for all Proline measuring technologies
- Attested verification concept i.e. printed documents for quality reporting per ISO 9001



Seamless system integration
- Direct and transparent through a wide range of fieldbuses
- Risk-free due to extended host testing and certification
- Compatibility over the entire product life cycle enables device replacement without expert know-how

W@M®
- Open information system for device documentation and management
- Device-specific information for everyday work
- Quality of information unparalleled in scope and depth

Web server
- Time-saving operation without additional software
- Comprehensive access to device, diagnostics and process information
- Fast data upload/download for maintenance and service

Simple operation (HMI)
- Universal formats by display, embedded Web server, PAS, AMS or handheld
- Optimal usability through guided parameterization
- User-specific menu structures and device access

Prosonic Flow B 200

Measure biogas without limitations

The biogas market is growing rapidly. No wonder, as the gas obtained from fermentation of energy crops, organic waste, liquid manure, sewage sludge or leftover plant materials can be used in a variety of beneficial ways – including fueling vehicles or generating heat and electricity in combined heat and power plants.

For biogas plants to work properly, various process parameters have to be monitored around the clock: gas composition, pressure, temperature, and above all the produced gas quantity.

Prosonic Flow B 200 is an industry-optimized ultrasonic flowmeter that measures the volume flow of biogas, landfill or digester gas reliably and with high accuracy, even under greatly fluctuating operating conditions.

Ultrasonic measurement has numerous benefits compared to conventional methods:

- Reliable measurement – high accuracy (±1.5%) and a highly operable flow range (30:1)
- Energy saving – no pressure losses
- Maintenance-free – no moving parts
- Space-saving – short inlet and outlet runs
- Wide range of uses – independent of the composition and the moisture of a gas
- Measurement possible even with minimum operating pressure


Prosonic
111.57m³/h
68.67%
50.00°C
8.22kWh/Hm³

Prosonic Flow B 200

Advantages at a glance

Simple operation

- Fast commissioning due to the uniform Endress+Hauser operating concept
- Menu-guided parameter configuration - supported by explanatory texts (“Tool tips”) in 17 languages
- Optimum process control due to simultaneous display of important characteristic variables, e.g. volume flow, calorific value, methane content, energy flow or temperature

Secure data storage

- High plant availability through customer-friendly data-storage concept (HistoROM®)
- No data loss – automatic storage of device data
- Fast restoration of device and configuration data for servicing
- Integral data logger for querying, monitoring and analysis of measured values
- Display module backup function, e.g. for the transfer of configuration data to other measuring points

Maximum operational safety

- Fulfills all requirements of the biogas industry
- Continuous self-diagnosis and error monitoring
- Clear and precise categorization of device or process errors
- Internationally recognized Hazardous Area (Ex) approvals

Seamless system integration / Life Cycle Management

- Genuine two-wire, loop powered device integrates easily into existing process control systems
- Cost-effective life cycle management by means of the tried-and-tested W@M information system for planning, maintenance and service
- Full compatibility between field device and process control system after a failure, since older device software can be ordered at any time

For more information on W@M
www.us.endress.com/wam

Industry-optimized sensors

- Robust sensor – reliable measurement of wet, dirty or corrosive gases
- Versatile mounting by means of lap-joint flanges
- Continuous measurement of the methane content (CH_4) enables targeted reaction to problems in the process
- High measuring accuracy
  – Independent of the gas composition
  – Over the entire measuring range from 4 to 20 mA
- Trusted measurement results – each measuring device is tested on accredited, fully traceable calibration rigs (ISO/IEC 17025)

Your benefits throughout the life cycle

- Maximum reliability in operation
- Minimum operating and maintenance costs
- Efficient process monitoring and energy balancing

Reliable process control

Direct methane (CH_4) content measurement

Fermentation processes are not always uniform. The operating conditions, which in some cases fluctuate greatly, result in different levels of methane content (CH_4) in the biogas, which have to be monitored constantly. With the Prosonic Flow B 200, it is now possible – using precisely measured sound velocity and an integrated temperature sensor – to simultaneously measure the methane content directly in the pipe, without the need for additional devices. This is a worldwide one-of-a-kind feature and opens up completely new perspectives for biogas plant operators:

- Continuous, around-the-clock monitoring of gas quantity and quality
- Fast and targeted reaction in case of interference in the fermentation process
- Efficient process control and energy balancing by calculating additional characteristic values such as:
  - Corrected volume
  - Calorific value
  - Wobbe index (indicates the quality of fuel gas)

Two-wire technology at Endress+Hauser

Combining the benefits of the ultrasonic flow measuring principle with efficient two-wire technology no longer requires compromises. Prosonic Flow B 200 enables seamless integration into existing plant systems along with tried-and-tested sensors:

- High operational safety in hazardous areas due to intrinsically safe design (Ex ia)
- Reduced costs for installation and wiring
- Common installation practice

Perfectly standardized
Uniform operation, menu structures, function designations, software, interfaces, data management, system integration, documentation, product structures, etc.

High flexibility
Modular housing components and electronic modules

Increased safety
Consistent implementation of all requirements of common industrial standards and recommendations

Precise diagnostics
Clear categorization of device or process errors according to NE107: Maintenance/Out of specification/Function check/ Failure

Simply unforgettable
Customer-friendly data storage concept (HistoROM): back up, copy, compare or restore data

Fulfills industry standards
Interference immunity, data retention, signal level, software, pressure equipment directive, self-monitoring, etc.

Technical data

Prosonic Flow 200 (transmitter)	
Display	4-line, with push buttons or optical keys (Touch Control)
Operation	– Via the local display – Via operating tools, e.g. FieldCare®/ DeviceCare from Endress+Hauser – Via HART handheld
Power supply	DC 18 to 30 V
Ambient temperature	–40 to +140°F (–40 to +60°C)
Degree of protection	IP66/67 (Type 4X enclosure)
Design	Compact (aluminum or stainless steel housing)
Galvanic isolation	All circuits for outputs and power supply are galvanically isolated from each other
Outputs	Current output (4–20 mA, HART®) Pulse/frequency/switch output
Communication	HART
Ex approvals	ATEX, IECEx, cCSAus
Ignition protection type	Intrinsically safe (Ex ia) Flame-proof (Ex d)

Prosonic Flow B (sensor)	
Nominal diameters	2 to 8" (DN 50 to 200)
Process connections	Lap-joint flange: ASME, EN
Process pressure	145 psi (10 bar)
Process temperature	32 to 176°F (0 to 80°C)
Degree of protection	IP67 (Type 4X enclosure)
Max. measured error	– Volume flow: ±1.5% o.r. (9.8 to 98.4 ft/s or from 3 to 30 m/s) – Methane content: ±2% o.f.s.
Operable flow range	30:1
Materials	1.4404/316L (stainless steel)
Pressure loss	Negligible
Approvals	PED

Subject to modification

The Prosonic Flow B 200 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 ✓ mark.

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