

Proline

Prosonic Flow G 300/500

Redefines process gas measurement

For demanding applications in the oil and gas as well as chemical industries

- Flexible ultrasonic flow measurement using transit time differential method – ideally suited for raw and processed natural gas, coal seam gas, shale gas, process gas, gas mixtures as well as wet biogas and digester gas
- Robust sensor made of stainless steel for long-term operation
- Powerful process control around the clock as a result of pressure and temperature-compensated values measured in real time
- Advanced gas analysis functions for the calculation of additional process variables as well as for the input of customer-specific gases and gas mixtures
- Maximum reliability also in wet gas applications
- High measuring accuracy ($\pm 0.5\%$) and turndown ($>133:1$)



Prosonic Flow G 300
on your smart device



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 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.



Web server

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

Prosonic Flow G 300/500

The robust flow specialist for every gas application

Thanks to state-of-the-art drilling technology, enormous gas resources are being discovered and developed all around the world. As a result, demand for natural gas as a fuel and energy source will rise strongly in the future.

Whether raw or processed natural gas, process gas or gas mixtures, either in the offshore or onshore sector: the new Prosonic Flow G 300/500 from Endress+Hauser is the ideal measuring device for all gaseous fluids. It combines tried-and-tested ultrasonic flow measuring technology with decades of experience in the oil and gas as well as chemical industries.

With Prosonic Flow G it is possible to precisely measure both dry and wet gases with no limitations – irrespective of fluctuating process and environmental conditions. This opens up completely new options for process monitoring and control together with extensive functionality of the Proline 300/500 transmitters:

- Low maintenance long-term operation: robust industrial design for process temperatures of up to 150 °C (302 °F) and pressures up to 100 bar (1450 psi)
- High operational safety: Heartbeat Technology for permanent self-diagnostics and device verifications during operation
- Powerful process control: one-of-a-kind gas analysis functions for pure gases or user-defined gas mixtures with up to 8 selectable components
- Versatile application areas due to 6 gas compensation models
- High flexibility during operation and configuration via local display, web server, WLAN, operating tools (FieldCare, HART handheld terminal) or digital communication (HART, Modbus RS485)



E-Book – Prosonic Flow G for your tablet

With additional information: Application examples, measuring principle film and device information at a glance.

Robust, intelligent and safe

Four reasons that speak for Prosonic Flow G



Pressure and temperature compensation

- For high-performance process control thanks to pressure- and temperature-compensated values measured in real time
- For greater measuring accuracy in density calculation for determining the mass flow and/or corrected volume flow
- For a maximum of possible applications, regardless of fluctuating process and environmental conditions
- For minimizing additional pressure and temperature measuring points
- For calculation of other important process variables (see “Advanced gas analysis”)



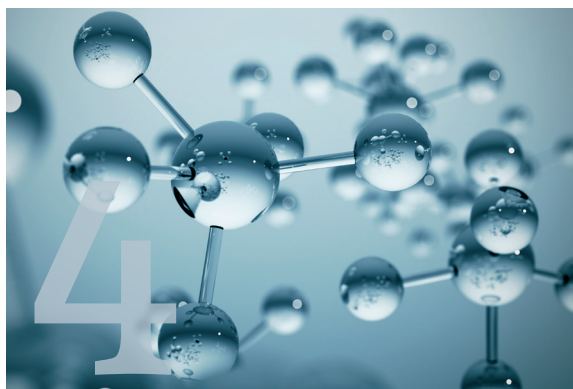
Measurement of wet gases – no problem

- Robust, condensate-insensitive sensor design for highly accurate measured values of moist or wet gases
- Active condensate dissipation system, meaning that drops of water cannot remain in the sensor area
- Faultless continuation of ultrasonic measurement without impeding signal quality



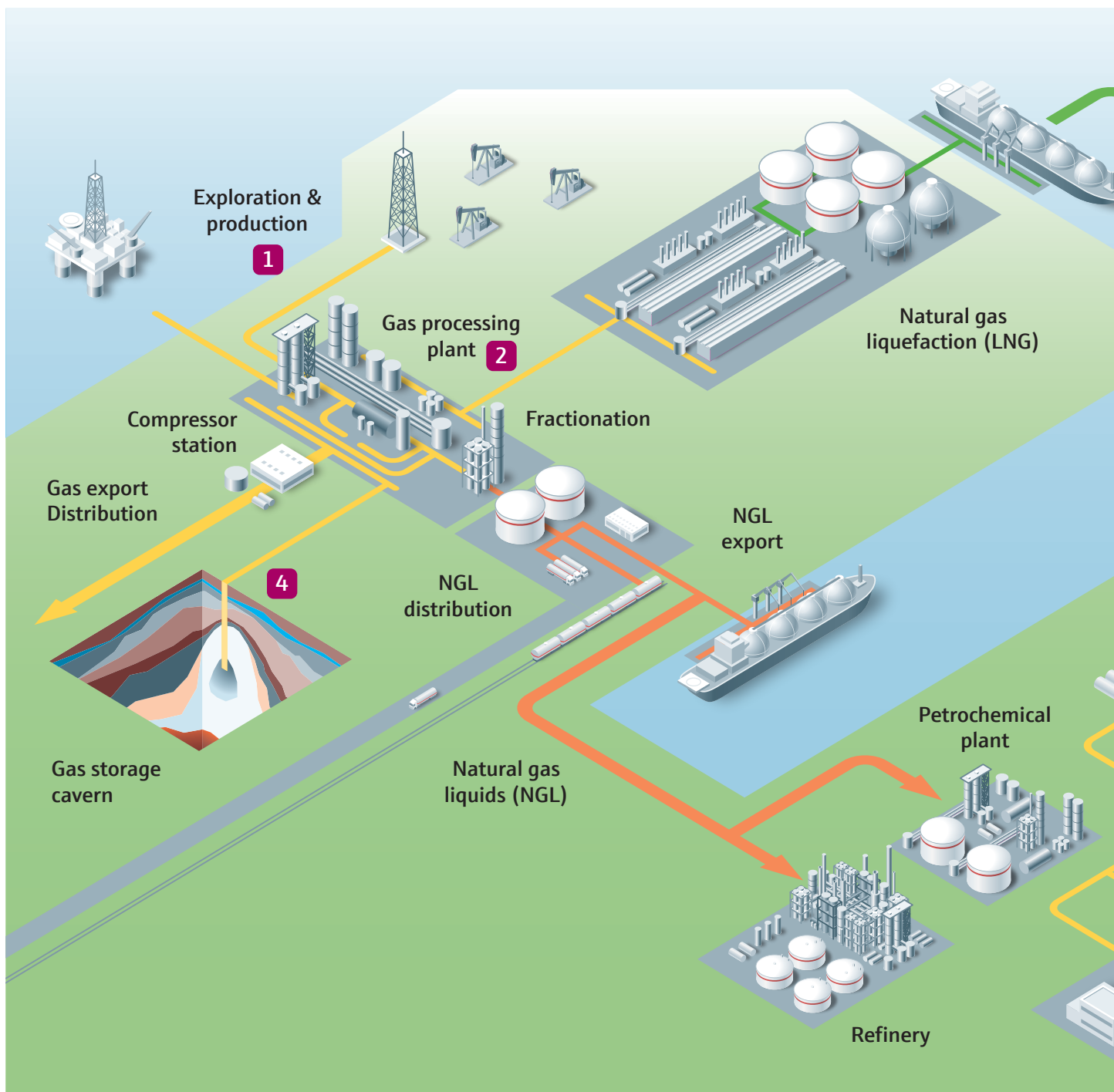
Process reliability around the clock

- SIL-compliant device development according to IEC 61508
- With built-in rupture disk (10 to 15 bar / 145 to 217.5 psi) for controlled draining of overpressure in case of leakage
- Reliable device/process monitoring thanks to Heartbeat Technology:
 - Permanent self-diagnostics
 - Clear categorization and display of device and process errors according to NAMUR NE107
 - Device verification during operation without process interruption (TÜV-certified)



Advanced gas analysis – one-of-a-kind, worldwide

- Optimal process monitoring thanks to the simultaneous measurement and evaluation of directly measured variables such as flow velocity, sound velocity, pressure and temperature
- Comprehensive gas analysis by calculating additional process variables based on various gas models:
 - Volume flow, corrected volume flow and mass flow
 - Energy flow
 - Calorific value, Wobbe index
 - Gas type, molar mass
 - Methane content (%), e.g. in biogas
 - Density and viscosity

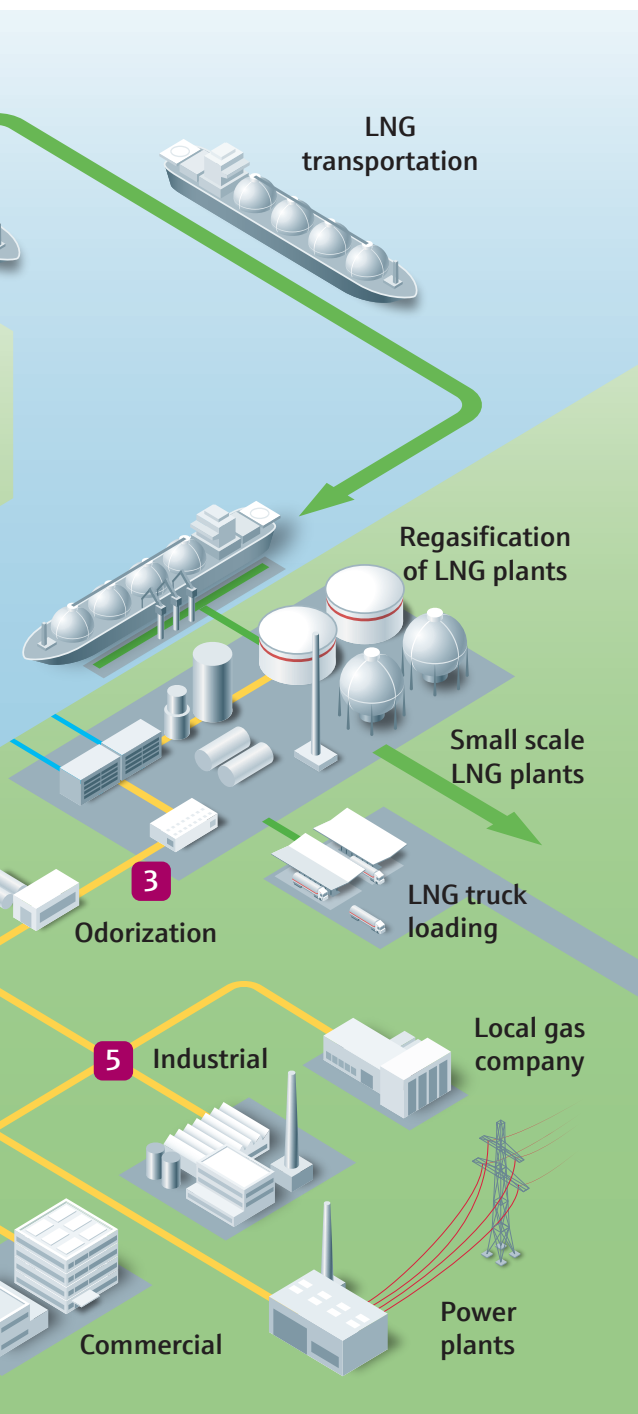


Calibration measuring technology for the highest accuracy

Precision that is worth it

At Endress+Hauser, all flowmeters are subjected to strict quality controls and are checked, calibrated and adjusted at the foremost state-of-the-art calibration facilities in the world. The newly developed air calibration facility in Reinach (Switzerland) ensures that you can also rely on Prosonic Flow G 300/500 for maximum measuring performance in your plant:

- Accredited by the Swiss Accreditation Service (SAS) in accordance with ISO/IEC 17025
- Fully traceable to national standards
- Measuring sections for DN 50 to 300 (2 to 12")
- Measuring range: 2 to 8700 m³/h (71 to 307 238 ft³/h)
- Minimum measuring uncertainty: $\pm 0.25\%$ o.r.
- Master meters: rotary piston and turbine gas meters



Prosonic Flow G 300/500 in the gas industry

Universally applicable





Sites for quantity metering and gas analysis (examples)

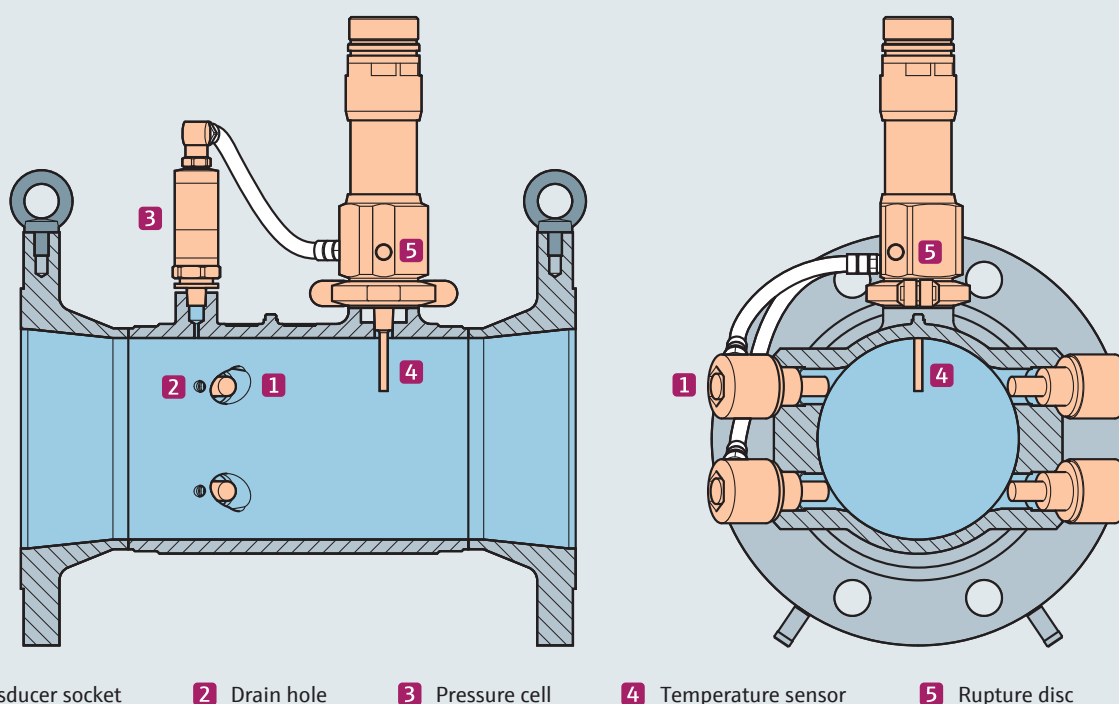
- 1 At the outlet of a test and production separator gas leg
- 2 In gas processing plants (e.g. during dehydration, sweetening, filtering, etc.)
- 3 At the outlet of regasification plants for LNG
- 4 At the inlet/outlet of natural gas storage caverns
- 5 At the inlet to petrochemical plants, power plants, industrial or commercial areas (e.g. for cost allocation)



Technical data

Transmitters		
		
	Proline 300 (compact)	Proline 500 (remote)
Display	<ul style="list-style-type: none"> – 4-line backlit display with Touch Control (operation from outside) – Option: with remote display 	4-line backlit display with Touch Control (operation from outside)
Operation	Via local display, web server, WLAN as well as various operating tools (FieldCare, HART handheld, etc.)	
Materials (housing)	Transmitter: aluminum, stainless steel die-cast Remote display: aluminum, stainless steel die-cast	Proline 500 transmitter digital: aluminum, polycarbonate Sensor connection housing: aluminum, stainless steel die-cast
Power supply	AC 100 to 230 V, DC 24 V (Zone 1, Div. 1) AC/DC 24 to 230 V (Zone 2, Div. 2)	
Ambient temperature	Standard: –40 to +60 °C (–40 to +140 °F) Option: –50 to +60 °C (–58 to +140 °F)	Standard: –40 to +60 °C (–40 to +140 °F) Option: –50 to +60 °C (–58 to +140 °F)
Degree of protection	IP 66/67 (Type 4X enclosure)	
Outputs	Port 1	Port 1
Inputs	Current output (4–20 mA, HART) or digital communication via Modbus RS485	Current output (4–20 mA, HART) or digital communication via Modbus RS485
Communication	Port 2/3 Freely selectable I/O settings: <ul style="list-style-type: none"> – Current output (4–20 mA) – Pulse/frequency/switch output – Pulse output (phase-shifted) – Relay output – Current input (4–20 mA) – Status input 	Port 2/3/4 (Proline 500 digital) Freely selectable I/O settings: <ul style="list-style-type: none"> – Current output (4–20 mA) – Pulse/frequency/switch output – Pulse output (phase-shifted) – Relay output – Current input (4–20 mA) – Status input

Cross section – Prosonic Flow G



Sensor

Nominal diameters	<ul style="list-style-type: none"> 1-path version: DN 25 (1") 2-path version: DN 50 to 300 (2 to 12") 	
Process connections	Flanges: EN, ASME	
Min./max. flow	0.5 to 9426 m ³ /h (17.7 to 332 890 ft ³ /h)	
Max. flow velocity	Up to 50 m/s (164 ft/s)	
Process pressure	2 to 100 bar (29 to 1450 psi)	
Process temperature	-50 to +150 °C (-58 to +302 °F)	
Degree of protection	IP66/67 (Type 4X enclosure)	
Max. measured error	Volume flow: Standard: ±1.0% o.r. at 3 to 40 m/s (9.84 to 131.2 ft/s) Option: ±0.5% o.r. at 3 to 40 m/s (9.84 to 131.2 ft/s)	Temperature: $\pm 0.35\text{ °C} \pm (0.002 \cdot T)\text{ °C}$ $(\pm 0.63\text{ °F} \pm 0.0011 \cdot [T - 32]\text{ °F})$ Pressure: ±0.5% o.r. Sound velocity: ±0.2% o.r.
Turndown	Over 133:1	
Materials	<ul style="list-style-type: none"> Sensor housing: aluminum, stainless steel die-cast (CF3M) Measuring tube: stainless steel 1.4408/1.4409 (CF3M) 	<ul style="list-style-type: none"> Process connections, temperature and pressure sensor: stainless steel 1.4404 (316, 316L) Ultrasonic transducer: stainless steel (316, 316L), titanium Grade 2
Pressure loss	No pressure loss	
Approvals	<ul style="list-style-type: none"> ATEX, IECEx, cCSAus SIL PED, CRN 	<ul style="list-style-type: none"> NACE MR0175/MR0103 Radio approval OIML R137, AGA 9

The Prosonic Flow G 300/500 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 **CE** and the  mark.

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