FLEXIM

Portable, quick and reliable

FLUXUS® F/G601 and F/G608

Portable ultrasonic clamp-on gas and liquid flow meters

Accurate

Flexible

Quick

Rugged

Ergonomic

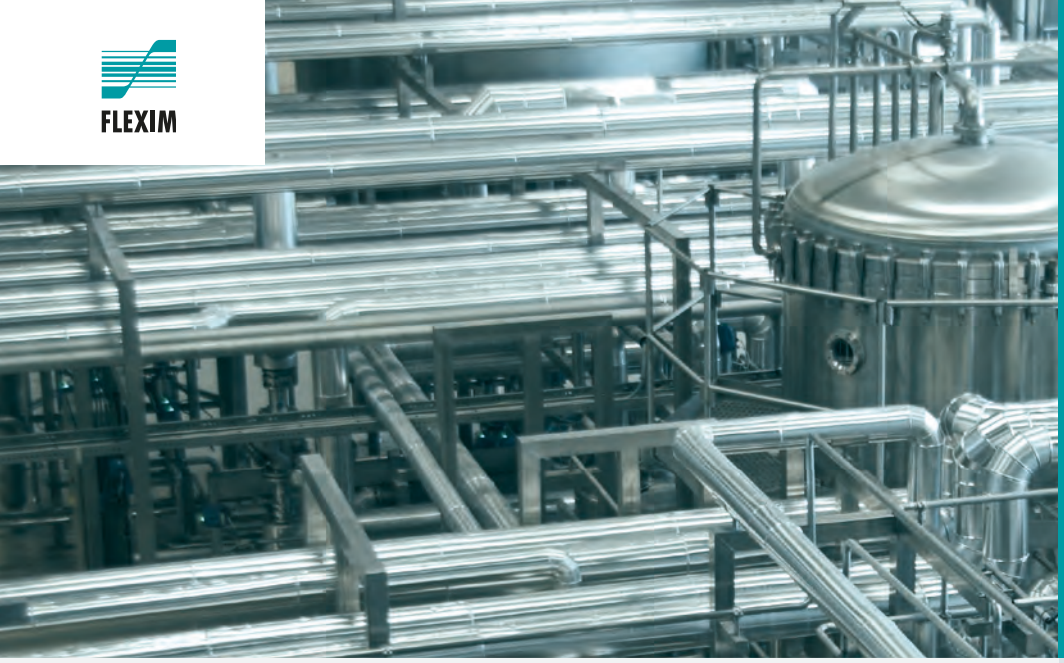
When measuring matters

FLUXUS® F/G60X

Mobile flow measurement without compromises

The benefits are evident...

- → **Unrivalled accuracy** even at very low as well as high flow rates due to matched transducer pairs and innovative signal processing
- → **Reliable measurement** even in difficult conditions such as high solid contents or wet gas
- → **High zero point stability** and insensitivity in regard to pipe wall noise and wrong transducer positioning
- → **Maximum flexibility** for the measurement of virtually any liquid and gaseous media
- → **Quick measurement;** reliable results in no more than 5 minutes
- → **Rugged housing and ergonomic design** optimized for daily usage in harsh industrial environments and hazardous areas
- → **Long-life marathon battery;** comprehensive energy management with display of remaining capacity

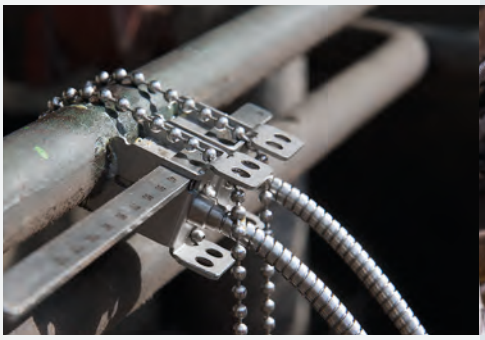


The flexible meter

The portable flow meters FLUXUS® F/G601 and FLUXUS® F/G608 measure the flow of liquids and gases non-intrusively by employing the proven transit-time correlation method. Special ultrasonic transducers are simply clamped onto the outside of the pipe and are never in direct contact with the medium flowing inside. No cutting into the pipe or process interruption is required for installation.

FLUXUS® offers maximum flexibility:

- For virtually any pipe material and media, regardless of the conductivity and pressure level
- Wide application range: two pairs of transducers are sufficient to cover the most common pipe diameters in industrial applications
- The broad transducer range enables flow measurement at pipes sizes from 6 mm to 6500 mm with pipe wall temperatures from -190 °C up to +600 °C and beyond as well as within hazardous areas (ATEX / IECEx and FM certified).
- Highly reliable measurements even at high solid contents or wet gas
- Ideal measurement solution for the determination of a building's or plant's thermal energy consumption and total energy efficiency
- Energy efficient battery management allowing for more than 17 hrs. of remote measurement



Fit for purpose

Reliable measurement in less than 5 minutes

Selection of the measuring point

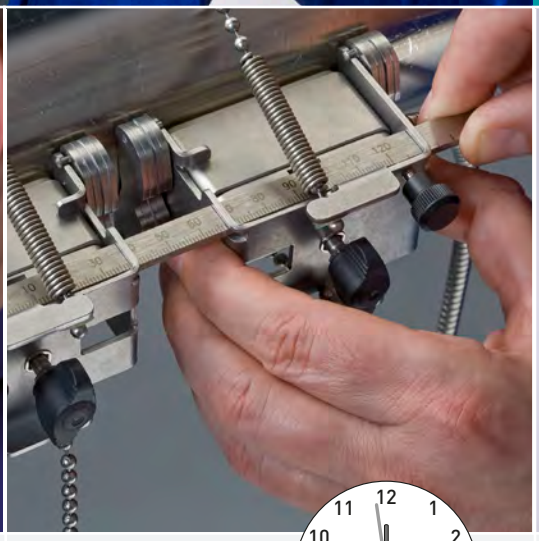
→ Select a suitable measuring point.

Measurement of the wall thickness

→ Simply select the pipe material from the list and measure the wall thickness with the included probe.

Connection of the transducers

→ Automatic transducer detection and calibration in the device offer maximum safety and ease of use.



Input of the parameters

→ Easy selection of pipe and fluid from the integrated list; input of the pipe dimensions.

Mounting of the transducers

→ Apply coupling agent; mount the transducers on the sides of the pipe; set and fix the displayed transducer distance.

Starting of the measurement

→ The measured values are shown in the display immediately after the ENTER button has been pressed.

Made for users by users

The features at a glance

Rugged and ergonomic design

- compact and easy to handle
- carbon fibre reinforced housing and steel armored cables designed for industrial usage
- water and dust-tight; resistant against oil, many liquids, and dirt
- multi-functional carrying and set-up handle
- low weight
- QuickFix system for fast mounting in positions where a free hand for carrying is unavailable (e.g. for measurements at great heights)
- ATEX / IECEx and FM certified for usage in hazardous areas

Highly accurate and reliable

- extensive media database of liquids and gases
- proven FLUXUS® electronics, sophisticated transducer matching and automatic compensation of changing ambient temperatures (according to ANSI/ASME MFC 5.1-2011 recommendations) assure an unrivalled zero point stability and no measurement drift
- calibration of transducers and transmitters (traceable to national standards)
- high operational safety in case of media with a high percentage of gas and solids or wet gas
- high accuracy even in non-ideal conditions due to innovative signal processing algorithms, e.g. for the correction of pipe wall echoes and transducer positioning errors

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Cutting edge functionalities

- integrated measurement of the pipe wall thickness
- automatic loading of calibration data and transducer identification prevents parameterisation errors, speeds up the set-up and ensures a precise measurement
- portable thermal energy measurement (ideal for energy audits, optimisation of heating systems, energy consumption measurements, etc.)

Easy operation

- fast set-up due to automatic loading of transducer data
- intuitive user interface
- high-contrast, easy-to-read display with backlight

Excellent battery management

- precise display of remaining capacity
- more than 17 hours of remote measurement with lithium-ion batteries
- no self-discharge, no memory effect

Sturdy case

- extremely sturdy case; may even be used as a step
- intuitive stowing and finding of all components
- watertight (IP67)
- offers protection in humid and dirty environments

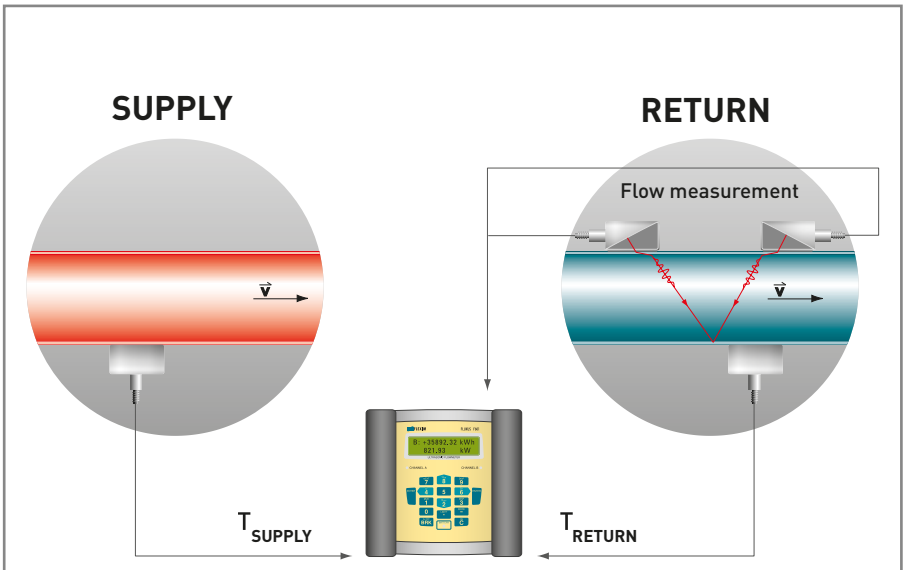
Focusing on energy efficiency

Portable thermal energy and compressed air measurement

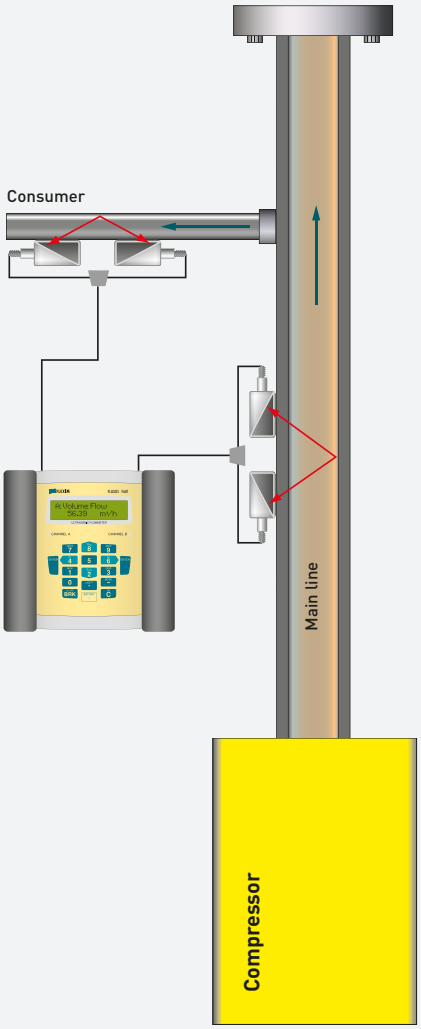
Balancing energy usage is usually of utmost importance, e.g. for the heat delivery from central heating plants to the end user, for the cold supply in a building's cooling systems or for heat transfer flows in industrial processes.

The **FLUXUS® F601 Energy** or the **FLUXUS® G601 CA Energy** solutions are the ideal companions for establishing a traceable energy management system.

Highly flexible and multifunctional, these measurement solutions can be used for the temporary measurement of rather huge thermal energy streams in district heating, but also for the determination of diminute flows of cooling liquids at chiller units or the quantification analysis at compressed air networks.



FLUXUS® F601 Energy measures the thermal energy consumed by a system by determining the heat or cold flows entering and exiting it (difference method). For doing so, temperature measurements at the supply and return lines as well as the measurement of the volume flow through the system are required. FLUXUS® uses the measured values to calculate the thermal energy flow based on the heat transfer media's enthalpy curves stored in the internal memory.



FLUXUS® G601 CA Energy is not only capable of measuring the flow rate of liquids, but also thermal energy quantities and flow rates of industrial gases. Thus, the FLUXUS® G601 CA Energy has especially been designed for the non-intrusive flow measurement of compressed air.

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FLUXUS® F/G60X

A meter for all situations

Applications

Unmatched in performance, the handy and versatile FLUXUS® F/G60X is ideally suited for the service and maintenance activities in virtually any industrial environment, for instance when commissioning plants, during the maintenance and inspection of permanently installed meters, for checking of pumps or control valves, or as a temporary substitute for defective instruments.

Service

- Verification tasks or temporary replacement of defective meters
- Measurement support during the commissioning of plants
- Performance and efficiency measurement – also within the scope of DIN EN ISO 50001, e.g. during the:
  - Evaluation and assessments of energy audits
  - Pump performance controls
  - Monitoring of regulating valves

Chemical Industry

- Non-intrusive measurement at liquids or gas filled lines for process control and optimization (also in hazardous areas)
- Verification of existing flow measurement systems
- Measurement of heat transfer media (e.g. thermal oils at extreme temperatures)
- Flow measurement at cryogenic processes
- Verification of the degree of efficiency of a heat exchanger as well as heating and chiller plants
- Pump monitoring and compressed air balancing

Oil & Gas

- Measurement of operational and standard volume streams during exploration, processing, storage and transport of natural gas
- Measurement at hydrocarbon filled pipes within refineries and petrochemical plants (even at extreme temperatures up to 600 °C and beyond or as low as -190 °C at cryogenic (LNG) operations)

Water Supply / Wastewater Services

- Leak detection
- Verification of water meters
- Verification of flow rates within the water distribution network (also for wastewater with increased solid contents)
- Treatment dosage control
- Pump control

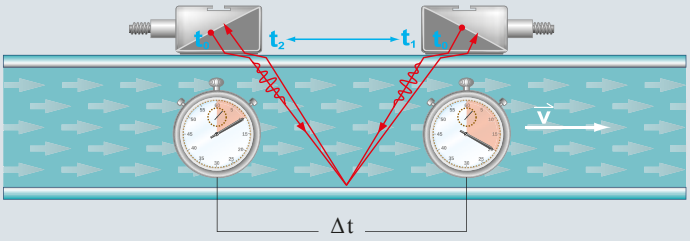
Producing Industry & Facility Management (HVAC)

- Optimization of heating and air conditioning systems in large building complexes
- Pump control
- Short-term replacement of defective wetted heat counters
- Compressed air balancing and leak detection

Pharmaceutical & Beverage Industries

- CIP- and SIP-Optimization tasks
- Consumption optimisation

Technical data



The portable FLUXUS® flow meters are available in various, application tailored, versions:
FLUXUS® F601 as the standard portable flow meter for measurement at liquid filled pipes, with the option **Energy** and **Multifunctional** for thermal energy measurements.
FLUXUS® G601 for the flow measurement at gas and liquid filled pipes and as combined measurement device, **FLUXUS® G601 CA Energy**, for the flow measurement of liquids and gases as well as thermal energy quantification and compressed air balancing.
As **FLUXUS® F608, G608 and G608 CA Energy**, our range of portable liquid and gas flow meters are also applicable for usage in hazardous areas (ATEX, IECEx Zone 2 and FM Class I, Div. 2 certified).

Our application engineers will be happy to assist you for a precise adaptation of the measuring system to your requirements.

General technical specifications

Transmitter:	**F601 / F608 (Liquids)**	**G601 / G608 (Gases and Liquids)**
Quantities of measurement:	volume flow, mass flow, thermal energy flow (optional for liquids and gases), flow velocity	
Operating time with battery:	>17 hrs.	
Operating temperature:	-10 °C .... 60 °C	
Flow channels:	2	
Degree of protection:	IP65 acc. to EN60529, F608 and G608: ATEX (IECEx) Zone 2 and FM Class I, Div.2	
Flow velocity:	0.01 ... 25 m/s	0.01 ... 35 m/s
Inner pipe diameter:	6 mm ... 6500 mm	7 mm ... 1600 mm
Pipe wall temperature:	-40 °C ... +200 °C (-190 °C ... +600 °C)	-40 °C ... +80 °C
Repeatability:	± 0.15 % of reading ± 0.01 m/s	
Accuracy*		
- with extended calibration:	± 1.2 % of reading ± 0.01 m/s	± 1 ... 3 % of reading ± 0.01 m/s
- with field calibration:	± 0.5 % of reading ± 0.01 m/s**	± 0.5 % of reading ± 0.01 m/s **
Inputs and outputs:		
Standard Version: Inputs:	F601: - F608: -	G601: (Extended Standard: 2 x current) G608: -
Standard Version: Outputs:	F601: 2 x current, 2 x binary F608: 2 x current, 2 x binary	G601: 2 x current, 2 (1) x binary, (1 x frequency) G608: 2 x current, 2 x binary
Energy Version: Inputs:	F601: 2 (4) x temp. F608: 2 (4) x temp.	G601 CA Energy: 2 x temp., 2 x current G608 CA Energy: 4 x temp.
Energy Version: Outputs:	F601: 2 x current, 2 x binary F608: 2 x current, 2 x binary	G601 CA Energy: 2 x current, 2 x binary G608 CA Energy: 2 x current, 2 x binary
Multifunctional Version: Inputs:	F601: 2 x temp., 2 x current	G601: 1 x temp., 2 x current, 1 x voltage
Multifunctional Version: Outputs:	F601: 4 x current, 2 x binary	G601: 2 x current, 2 x binary, 1 x frequency

* under reference conditions and with v > 0.15 m/s; ** if reference uncertainty better than 0.2 %

Compact, competent...

... and complete

The complete measuring system and the required accessories fit into a sturdy protective transport case. The case's dimensions are in accordance with airline requirements for carry-on luggage.

Please see the price lists for details on the scope of delivery and the accessories. Special accessories are possible. Our application engineers will be pleased to advise you.

FLEXIM

In partnership

For more than twentyfive years, FLEXIM has led the way nationally and internationally for process instrumentation in many areas of industry. FLEXIM has repeatedly set standards as a technology leader and pioneer in the area of clamp-on ultrasonic flow measurement of liquids and gases. In addition to non-invasive flow measurement, innovative process analytical technologies using ultrasound or refractometry are within our portfolio of products.

Effective and forward-looking

We're not resting on our laurels. Every year, we invest generously in research and development to further strengthen our position as a technological leader. In addition to that, we maintain close contact with our customers. Innovative and reliable products that meet the requirements of end users are the result.

Customer service at FLEXIM

FLEXIM is not only a manufacturer of measuring instruments, but a provider of customer-driven solutions and services. As the user, you are at the centre of all our efforts. Our corporate philosophy is to provide you with the most suitable and highest quality measuring system for your measuring tasks and to be a reliable partner who can offer you the best possible support and service.

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