FLEXIM

Portable, quick and reliable

FLUXUS® F601

Clamp-on ultrasonic flow meter

Reliable flow measurement
in less than 5 minutes.
Wide application range.
14 hours of autonomous
battery operation.

- Accurate
- Flexible
- Quick
- Sturdy
- Weatherproof
- Ergonomic

**Measure from outside
what's flowing inside**

www.flexim.com

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1990-2010
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FLUXUS® F601

Portable flow measurement without compromise

The benefits are evident...

- → **reliable measurement** even under the most extreme conditions thanks to the new HybridTrek mode
- → **high accuracy** thanks to dual µP technology with digital signal processing and to powerful correction algorithms
- → **maximum flexibility** - broad range of applications
- → **quick measurement;** reliable results in less than 5 minutes
- → **Industrially hardened design** for use in the most demanding environments
- → **ergonomic design;** optimized for daily use on-site
- → **extended-life battery;** comprehensive power management utility including display of remaining capacity

The flexible meter

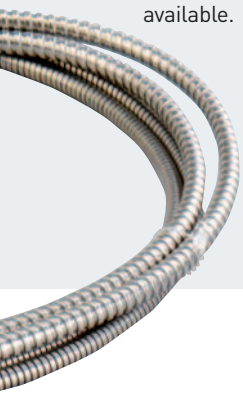
FLUXUS® F601 measures the flow of liquids using FLEXIM's proven transit-time correlation technique. Special ultrasonic transducers are simply clamped onto the outside of the pipe and never come in direct contact with the liquid. No cutting into the pipe or process interruption is required for installation.

FLUXUS® F601 offers maximum flexibility:

- for virtually any pipe material and any fluid, regardless of its conductivity
- independent of line pressure
- wide application range: two pairs of transducer are sufficient to cover the most common pipe diameters in industrial applications
- the transducers' wide range of applicability makes flow measurement possible on 0.25 inch tubing as well as on 20 foot penstocks and from –40° F to 752° F. Transducers certified for use in hazardous areas (ATEX and FM) are available.

FLUXUS® F601 is more than just an upgrade to the FLUXUS® ADM 6725, an instrument which has proven itself in thousands of applications. The numerous improvements implemented were derived from years of application practice. Even sturdier than its predecessor, F601 is ideally suited for the harshest environmental conditions. Its ergonomic design offers simple handling and maximum ease of use.

FLUXUS® F601 measures even longer, with even greater accuracy.
The new battery allows for up to 14 hours of autonomous measurement. New algorithms such as the correction of pipe wall echoes and transducer positioning errors ensure reliable and accurate measurement even in the most demanding application conditions.



Fit for purpose

Reliable measurement in less than 5 minutes

Selection of the measuring point

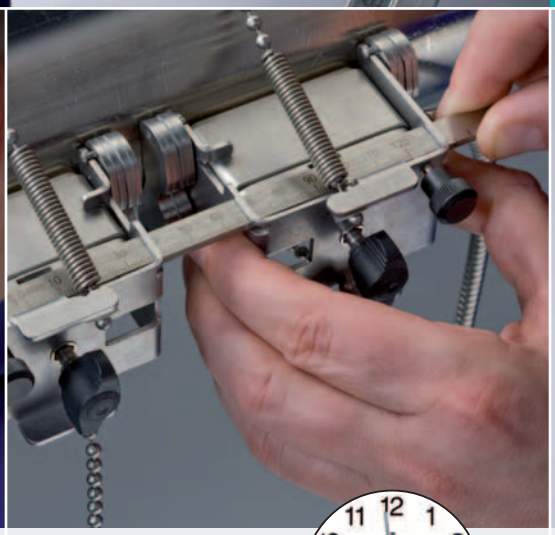
→ Select a suitable measuring point.

Measurement of the wall thickness

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

Connection of the transducers

→ Automatic transducer detection and calibration (no zero required) minimizes installation uncertainty and maximizes ease of use.



Input of the parameters

→ Select pipe material and fluid from the integrated list; input the pipe dimensions as requested.

Mounting of the transducers

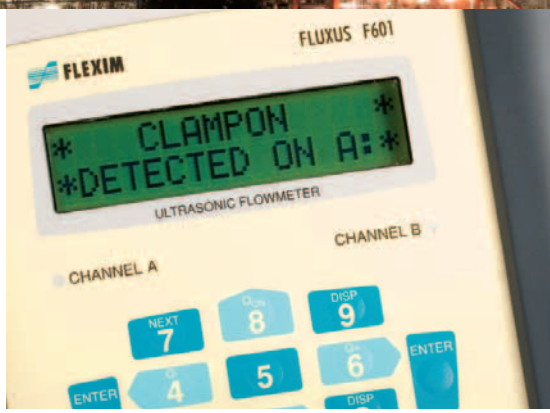
→ Apply coupling compound; mount the transducers onto of the pipe; set and fix the displayed transducer distance.

Starting of the measurement

→ Immediately after the ENTER button has been pressed, the measured values appear in the display.

Made for users by users

Features at a glance

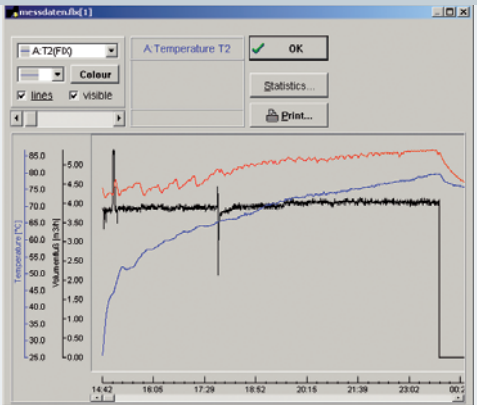


Practical housing

- compact and easy to handle
- designed for industrial use
- degree of protection NEMA 4X / IP65
- handles also protect the edges
- water and dust-tight; resistant against oil, many liquids, and dirt
- equally suitable for left and right-handed persons
- multi-functional carrying and set-up handle
- lightweight (<4.5 lbs)
- no-hands Quickfix pipe mounting system supports meter where hands-free operation is required, e.g. on scaffolds and other hard to reach locations

Cutting-edge features

- integrated pipe wall thickness measurement
- automatic transducer detection and reading of calibration data guards against operator error and provides unparalleled ease of use
- portable energy measurement option permits monitoring of energy flows and is ideal for energy audits, optimization of heating systems, logging of consumption, etc.
- HybridTrek mode provides greater operating margin for fluids with high percentages of particulates or entrained gases



Excellent battery management

- precise display of remaining capacity
- more than 14 hours of measurement with lithium-ion batteries
- no self-discharge, no memory effect

Improved performance

- extensive fluid and material database
- proven FLUXUS® electronics with DSP and dual µP, high sampling rate, adaptive signal processing
- increased accuracy in non-ideal conditions thanks to new algorithms, e.g. for the correction of pipe wall echoes and transducer positioning errors

A true hard case

- industrially hardened case; can be used as a step
- highly engineered storage facilities
- watertight (IP67/NEMA 6P)
- offers protection in humid and dirty environments

Easy operation

- automatic loading of calibration data and transducer identification prevents setup errors, simplifies installation and ensures precise measurement
- intuitive user interface
- high-contrast, easy-to-read display with backlight

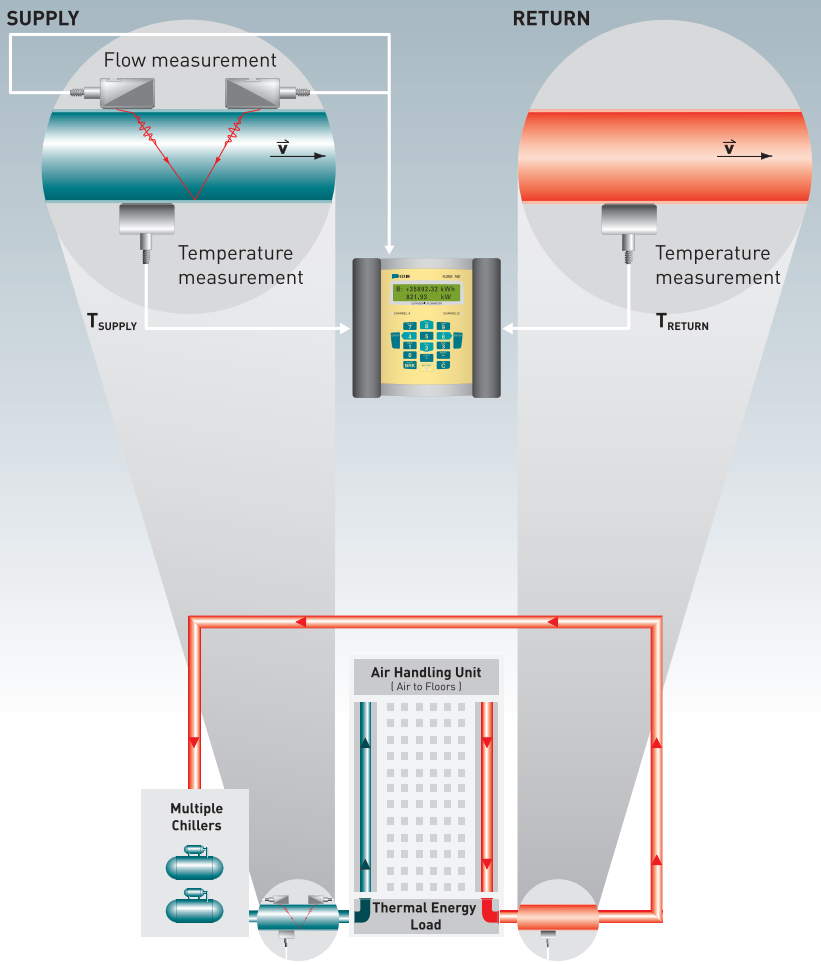
Focusing on energy

Portable energy measurement

In times of rising energy prices and environmental regulations, optimization of energy flow is a most crucial issue. Everywhere, controlling and balancing the flow of energy is of utmost importance for cost conscious users: for the heat delivery from central heating plants to end users, for coolant feed in buildings' cooling systems, for heat transfer flows in industrial processes, etc. In the Energy version, the **FLUXUS® F601** can record the energy flows in a system in a quick and straightforward way.

FLUXUS® F601 measures the instantaneous thermal output of a system, i.e. the flow of heat or cold. Thanks to an integrated totalizer, FLUXUS may also be used as an energy meter. An interface enables the easy transfer of measurement data to a PC for display and evaluation.
The gathered data can be used to draw an energy balance or to assist process monitoring and optimization.

FLUXUS® F601 meters the energy consumption of a system by determining the difference between the heat or cold flows entering and exiting it. For this, the supply and return temperatures as well as the volume flow through the heat exchange system are measured. FLUXUS uses these measured values to calculate the energy flow based on the heat transfer media's enthalpy curves stored in the internal memory.



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FLUXUS® F601

A meter for all applications

Applications

Unmatched in performance, the handy and versatile **FLUXUS® F601** is ideally suited for service and maintenance activities, for instance when commissioning systems, for the maintenance and inspection of permanently installed measuring instruments, for checking pumps or control valves, or as a temporary substitute for defective instruments.

General

- Service
- Replacement of defective meters
- Support of commissioning process and installation
- Performance and efficiency measurement
  - Evaluation and assessments
  - Capacity measurement of pumps
  - Monitoring of regulating valves

Food and beverage industry

- CIP and SIP optimization
- Consumption optimization

Chemical industry

- Portable flow controls at start-up and/or inspection of facilities
- Helpful tool for facility optimization
- Flow measurement of heat transfer media
- Detection of fouling processes in heat exchangers
- Evaluation of existing metering systems according to ISO

Water supply / wastewater services

- Leakage control
- Treatment dosing control
- Flow control in water supply networks

Heating, ventilating and air conditioning

- Measurement of inlet and outlet flows for service work and maintenance
- Measurement/invoicing of energy deliveries
- Pump preventative maintenance and checks
- Optimization of energy efficiency

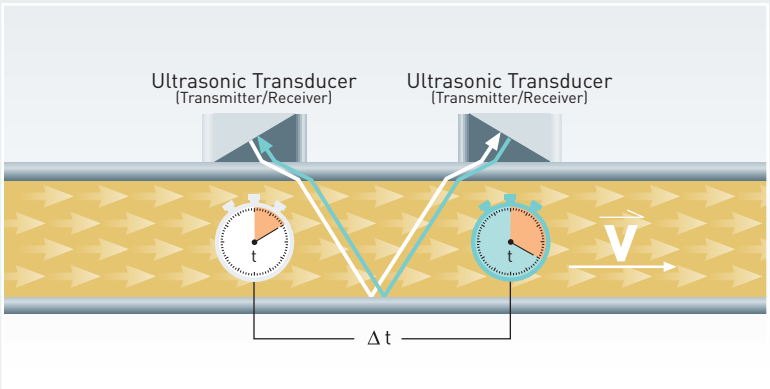
Facility management

- Optimization of heating and air conditioning systems in large building complexes and campuses
- Pump control
- Short-term replacement of defective wetted energy meters

Aeronautical industry

- Monitoring of hydraulic systems in airplanes
- Measurement of fuel or refrigerant flows

Technical data



FLUXUS® F601 is available in three versions: Standard, Energy, and Multifunctional. These versions are offered in various user I/O configurations (see below).
Transducers are available for a diameter range from 0.25 inch to 20 foot and for temperatures from –40° F to 752° F

Our application engineers will be happy to assist you in adapting our measurement systems to your specific needs.

Measuring principle
The Transit Time Difference Correlation Principle makes use of the fact that the time-of-flight of an ultrasonic signal is affected by the flow velocity of the carrier medium. Like a swimmer working his way across a flowing river, an ultrasonic signal travels slower upstream than downstream.
Our instrument works according to this transit-time principle: an ultrasonic pulse is sent downstream through the medium, another pulse is sent upstream. By measuring the transit time difference, the average flow velocity can be determined. The volume flow can then be calculated from the flow velocity and the pipe parameters.

General technical specifications

Transmitter:	**F601**
Quantities of measurement:	volume flow, mass flow, energy flow (optional), flow velocity
Operating time with battery:	>14 h
Operating temperature:	14° F to 140° F
Flow channels:	2
Degree of protection:	NEMA 4X / IP65 acc. to EN60529
Flow velocity:	(0.01 to 80) ft/s
Resolution:	0.0008 ft/s
Repeatability:	0.15 % of reading ± 0.03 ft/s
Accuracy*	
– with 7-point wet calibration:	1.2 % of reading ± 0.03 ft/s
– with field calibration:	0.5 % of reading ± 0.03 ft/s**
Inputs and outputs:	**Standard:** Outputs: 2 x current, 2 x binary **Energy:** Inputs: 2 x Pt 100/Pt1000; Outputs: 2 x current, 2 x binary **Multifunctional:** Inputs: 2 x Pt 100/Pt1000, 2 x current; Outputs: 4 x current, 2 x binary

* under reference conditions and with v > 0.5 ft/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.

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A short portrait

For over 15 years FLEXIM has been an active leader in many areas of process instrumentation in both national and international markets. In addition to non-invasive flow measurement systems, FLEXIM specializes in innovative online process analysis using ultrasonic technology and refractometry.

Year after year, the Berlin based company continues its substantial investment in research and development in order to maintain and further improve its position as an industry leader. As a result, our customers benefit greatly from our cutting edge patented technology.

Competent and professional associates in our sales offices and regional headquarters in Europe, North America, Asia and all over the world ensure the distribution of FLEXIM's proven technology and guarantee you qualified service.

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FLEXIM AMERICAS Corporation
Headquarters
250-V Executive Drive
Edgewood, NY 11717
Phone: (631) 492-23 00
Fax: (631) 492-21 17
Toll free: 1-888-852-7473
(North America only)
usinfo@flexim.com
www.flexim.com

FLEXIM Instruments Asia Pte Ltd
Singapore
Phone: +65 67 94 53 25
Fax: +65 68 62 28 36
asia@flexim.com

Shanghai, China
Phone: +86 (21) 649 575 20
shanghai@flexim.com

FLEXIM GmbH
Berlin, Germany
Tel. +49 30 93 66 76-60
Fax +49 30 93 66 76-80
info@flexim.de
www.flexim.com