katronic

Specialists in Ultrasonic Flow Measurement
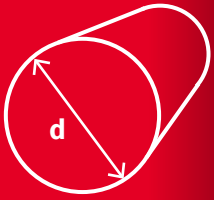
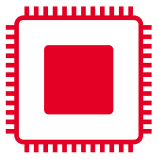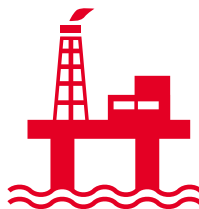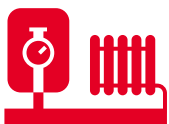|			
10 – 6 500 mm		Power Generation	Aircraft and Aerospace
	Measurement of Liquids and Gases		Portable and Fixed Installation
Semiconductor		Marine and Shipbuilding	Chemical and Petrochemical
	+250 °C and higher		Pharmaceutical
24 h		Oil and Gas	±25 m/s Flow Velocity
	Food and Drink		-50 °C and lower	Water and Wastewater
Building Services		ISO 9001 Certified Company	Manufacturing and Process

katronic

Providing reliable flow measurements to satisfied customers since 1996

Katronic's excellent reputation has been built on offering accurate and intuitive clamp-on flowmeters supplemented by market-leading customer service and technical support.

Our Mission Statement

To provide innovative products and services that staff can be proud of and customers can trust.
To foster relationships with customers, suppliers and colleagues that add benefit to all parties.
To offer levels of support and flexibility that exceed those of our competitors.
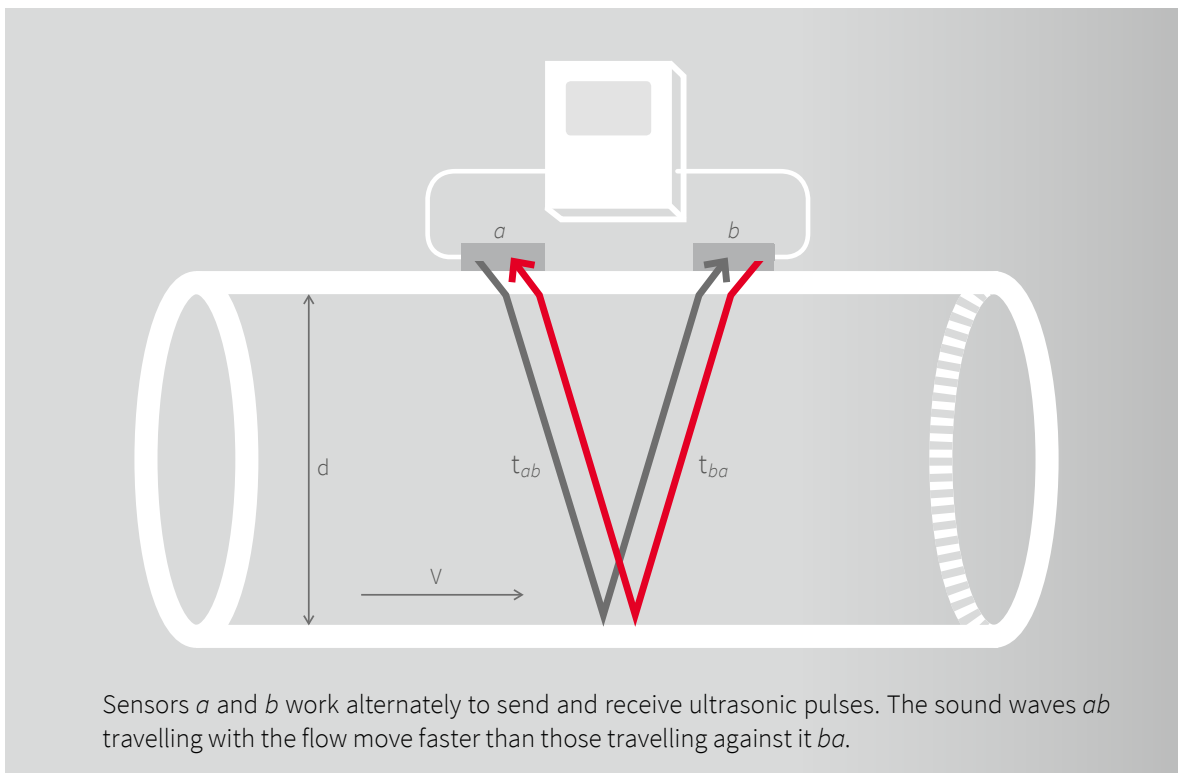
Katronic
Your Solution Starts With
Our Product

THE TECHNOLOGY BEHIND THE MEASUREMENT

The KATflow non-invasive flowmeters work on the transit time principle. Ultrasonic pulses are sent and received from a pair of sensors and travel through the pipe wall and the medium. The technology can be applied to both liquids and gases using clamp-on transducers externally mounted on the surface of the pipe. The flowmeters can measure on pipes of all standard materials over a diameter range of 10 mm to 6 500 mm.

The key principle of the method is that sound waves travelling with the flow will move faster than those moving against. The subsequent difference in the transit time of these signals is measured precisely as it is proportional to the flow velocity of the medium and consequently the flow rate. The flowmeter then compensates for elements that could influence measurements such as flow profile, pipe material and changes in fluid in order to provide reliable results.

Clamp-on flowmeters can be used on media as varied as purified water or toxic chemical effluent, natural gas or air and offer the user many advantages over in-line measurement technologies. There is no need to cut the pipe, no shutdown to the system, no risk of leakage and consequently they provide considerable cost savings especially on large pipes. The reliable KATflow instruments have seen success in a vast array of applications from measurements on submarines, to installations on systems destined for use in space.

Sensors *a* and *b* work alternately to send and receive ultrasonic pulses. The sound waves *ab* travelling with the flow move faster than those travelling against it *ba*.

KATflow 200
Hand-Held Clamp-On Ultrasonic Flowmeter

The user-friendly design of the hand-held KATflow 200 sets the standard for ease of installation. The quality of the Katronic flowmeters is encapsulated by the robust and durable transducers which can be used in a wide variety of different environments and applications.

INNOVATIVE. INTUITIVE. INTELLIGENT.

The KATflow 200 is a fully portable instrument with a power which is belied by its small size. This lightweight flowmeter is incredibly easy to use and can be operated one-handed which makes it an ideal tool for use in confined spaces or when working at height. The KATflow 200 offers measurement performance normally associated with more complex and expensive devices and is complemented by the exceptional quality and robustness of the Katronic transducers.
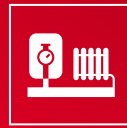
SPECIFICATION

· Pipe diameter range 10 mm to 6 500 mm
· Temperature range for sensors
  -30 °C to +250 °C (-22 °F to +482 °F)
· Weight 650 g
· Robust IP 65 enclosure with added
  rubber shock protector
· Selectable three-line LCD display
  and full keypad
· Battery life up to 24 hours with standard
  NiMH AA batteries for simple replacement

FEATURES

· Lightweight and tactile for easy
  one-handed use
· Stainless steel sensors, cable and connectors
  as standard
· Innovative installation wizard for quick
  and intuitive programming
· Full instrument diagnostics and
  scope function
· Large data logger and software for sampling
  and data transfer
· Optional pipe wall thickness gauge

APPLICATIONS

· Pump testing and inspection
· In-line flowmeter performance verification
· Leakage and blockage detection
· Clean in process system (CIP) testing
· Monitoring of hydraulic systems
· Clean room applications

KATflow 210
Integrated Clamp-On Ultrasonic Flowmeter

The durable design of the KATflow 210 makes it ideal for use in outdoor conditions and in areas with a high humidity. It also accommodates a much larger battery than the other portable flowmeters allowing for months of measurements.

ROUGH. ROBUST. REMOTE.

The KATflow 210 is a portable flowmeter designed for situations which require a reliable flow measurement regardless of the conditions in which it needs to be operated. With its advanced battery technology and durable waterproof housing the instrument is intended for long-term installation in remote areas where access to power is limited and exposure to the worst of elements is likely. This device has been further enhanced by the inclusion of a specially manufactured IP 68 version of the K1N stainless steel transducers which increases shock protection and ensures this ruggedised package provides the perfect balance of reliability, robustness and autonomy.

SPECIFICATION

· Pipe diameter range 50 mm to 2 500 mm
· Temperature range for sensors
  -30 °C to +130 °C (-22 °F to +266 °F)
· Rugged integrated IP 67 portable design
· Selectable three-line LCD display and full keypad
· Weight 6 kg
· Standard operation up to 100 days, longer in power
  saving modes

FEATURES

· Three different measurement modes to maximise
  battery life
· IP 68 stainless steel sensors, cable and connectors
  as standard
· Process output options including current,
  open-collector, relay
· Large data logger and software for sampling and
  data transfer
· Integrated pipe wall thickness gauge available
· Optional wireless data transmission

APPLICATIONS

· Long-term leakage surveys
· Metering in pits, wells and areas where flooding is likely
· In-line flowmeter inspection verification
· Metering of pipes in exposed locations
· Temporary replacement of conventional
  in-line flowmeters
· Monitoring of irrigation systems

KATflow 230
Flexible Clamp-On Ultrasonic Flowmeter

The multifunctional KATflow 230 is supplied with the robust N-type sensors as standard. The meter can be specified to include two clamp-on temperature sensors to create a portable heat measurement package.

POWERFUL. PRACTICAL. PORTABLE.

The KATflow 230 is easily portable but incorporates an advanced specification for situations which require comprehensive measurement features coupled with easy operation. The flowmeter has two measurement channels, which allow it to monitor two pipes simultaneously or to improve accuracy in non-ideal conditions. The KATflow 230 can also be supplied with a variety of options to meet the most diverse application requirements.

SPECIFICATION

· Pipe diameter range 10 mm to 6 500 mm
· Temperature range for sensors
  -30 °C to +250 °C (-22 °F to +482 °F)
· Robust IP 65 aluminium enclosure
· Selectable three-line LCD display and full keypad
· Battery life up to 24 hours with easily replaceable
  battery cartridge
· Measurement of two flows simultaneously

FEATURES

· Dual flow monitoring with sum, average,
  difference and maximum calculations
· PT100 inputs for heat quantity (thermal energy)
  measurement
· Process output options including current,
  open-collector, relay
· Large data logger and software for sampling
  and data transfer
· Stainless steel sensors, cable and connectors
  as standard
· Optional pipe wall thickness gauge

APPLICATIONS

· Heating, Ventilation and Air Conditioning
  (HVAC) measurements
· Large pipe measurement with two sensor
  pairs in 'X' configuration
· Temporary replacement of conventional
  in-line flowmeters
· Building surveys on large facilities
· Efficiency monitoring of heat exchangers
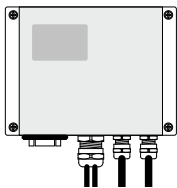· Clean in process system (CIP) testing

KATflow 100
Standard Clamp-On Ultrasonic Flow Transmitter

The KATflow 100 can be operated with either the L-type or P-type transducers to suit both application and budget. The new K1P sensors are the most cost-effective and can be used from 50 mm to 600 mm.

SMALL. SIMPLE. STURDY.

The KATflow 100 is a compact clamp-on ultrasonic flow transmitter with a robust and practical design for permanent installation and flow measurement on single pipes. The instrument offers a cost-effective option owing to its simplified specification and the availability of a range of transducer types. The varied functionality and simple operation of the KATflow 100 make it the perfect product for large projects and customer specific solutions.

SPECIFICATION

· Pipe diameter range 10 mm to 3 000 mm
· Temperature range for sensors
  -30 °C to +80 °C (-22 °F to +176 °F)
· Weight 750 g
· Robust IP 66 aluminium enclosure
· Sturdy unit with LCD display and five-key keypad
· Wall or pipe mounted

FEATURES

· Low cost of ownership
· Process outputs including RS 485,
  Modbus RTU and HART* compatible output
· PT100 inputs for heat quantity (thermal energy)
  measurement
· Bi-directional measurement with
  totaliser function
· Innovative installation wizard for quick
  and intuitive programming
· Configuration can be changed to suit
  customer requirements

APPLICATIONS

· Water and wastewater measurements
· Replacement of electromagnetic flowmeters
· Monitoring and controlling of HVAC systems
· Cost-effective solution for large scale projects
· Automated process control
· Shipping applications

* HART® is a registered trademark of the
 *HART Communication Foundation*

KATflow 150
Advanced Clamp-On Ultrasonic Flowmeter

The wall mounted KATflow 150 offers practical and simple operation with its attractive housing, lockable polycarbonate cover and stainless steel transducers. The metallic mounting rail ensures ease of sensor installation as well as absolute accuracy of sensor alignment.

FAST. FLEXIBLE. FUNCTIONAL.
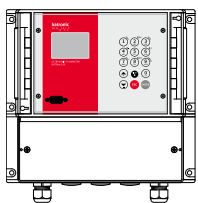
The KATflow 150 is the premier product for flexibility and performance, providing the user with a comprehensive specification and a list of configuration options. The practical modular design and the wide variety of different transducer types available ensure this instrument is suitable for everything from simple water flow measurements to energy flow monitoring, automated process control and product recognition applications.
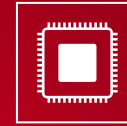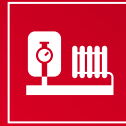
SPECIFICATION

· Pipe diameter range 10 mm to 6 500 mm
· Temperature range for sensors
  -30 °C to +250 °C (-22 °F to +482 °F),
  higher temperatures available on request
· Lockable and sturdy IP 66 polycarbonate
  flowmeter enclosure
· Selectable three-line LCD display and full keypad
· Up to ten different input or output slots available
· Measurement of two flows simultaneously

FEATURES

· Dual flow monitoring with sum, average,
  difference and maximum calculations
· Process output options including current,
  open-collector, relay
· Communication options RS 485, Modbus RTU,
  Profibus PA and HART* compatible output
· Current inputs for temperature, pressure
  and density compensation
· Large data logger and software for sampling
  and data transfer
· Optional heat quantity (thermal energy)
  measurement functionality

APPLICATIONS

· Heating, Ventilation and Air Conditioning
  (HVAC) measurements
· Large pipe measurement with two
  sensor pairs in 'X' configuration
· Product recognition and interface
  detection systems
· Measurements with Ex-certified
  transducers
· Effluent and wastewater measurements
· Automated process control

* HART® is a registered trademark of the
 *HART Communication Foundation*

KATflow 170
Explosion-Proof Clamp-On Ultrasonic Flowmeter

The KATflow 170 is available as both an epoxy-coated aluminium version and in stainless steel and is matched with IP 68 transducers for optimum robustness. The instruments are programmed using a magnetic pen for ease of use and maximum security.

RUGGED. RESISTANT. RELIABLE.
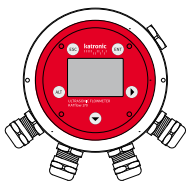
For applications where harsh environmental conditions demand a more rugged instrument, the KATflow 170 provides a corrosion-resistant option as part of a fully ex-certified package. The flowmeter is intended for permanent operation in Zone 1 and 2 hazardous areas and is an economical choice for a variety of metering applications. The KATflow 170 demonstrates that even the most complex technical requirements can be met with straightforward solutions.

SPECIFICATION

· Pipe diameter range 10 mm to 3 000 mm
· Temperature range for sensors
  -50 °C to +115 °C (-58 °F to +239 °F),
  higher temperatures available on request
· Robust IP 66 unit with LCD display and
  glass-fronted keypad
· Epoxy-coated aluminium or stainless steel
  enclosure
· Magnetic pen for safe and easy programming
· Measurement of two flows simultaneously

FEATURES

· Suitable for installation in hazardous areas
· Dual flow monitoring with sum, average,
  difference and maximum calculations
· IP 68 stainless steel sensors as standard
· Process output options including current,
  open-collector, relay
· Communication options RS 485, Modbus RTU,
  Profibus PA and HART* compatible output
· Ex-certified PT100 probe for temperature
  compensation

APPLICATIONS

· Produced water measurements
· Methanol and water injection systems
· Product recognition and interface
  detection systems
· Measurement of refined products
· Tanker unloading systems
· Oil blending skids

* HART® is a registered trademark of the
  HART Communication Foundation

KATflow 170
Gas Clamp-on Ultrasonic Flowmeter

The new gas measurement instruments are available both as fixed and portable solutions for safe and hazardous area use and can measure on all commonly used pipe materials.

MEASUREMENT FROM AMMONIA TO XENON

Katronic flowmeters are well established for liquid flow applications and can now be applied for the non-invasive measurement of gases. The new method not only provides measurements at high pressure gas flows but also down to atmospheric conditions even in steel pipes which was impossible until recently. This unique innovation is achieved through advances in sensor technology, powerful sophisticated electronics, adaptive filtering techniques and innovative signal processing algorithms using Digital Signal Processors (DSP's).

SPECIFICATION

· Pipe diameter range 25 mm to 1 500 mm
· Temperature range for safe area sensors
  -20 °C to +135 °C (-4 °F to 275 °F), for Ex-sensors
  -40 °C to +80 °C (-40 °F to +176 °F)
· Robust IP 66 unit with OLED display and glass-fronted keypad
· Pressure range 1 bar (absolute) to unlimited maximum
· Flow velocities 0.1 m/s to 75 m/s

APPLICATIONS

· Measurement on natural gas pipelines
· Natural gas storage installations
· Control of compressor stations
· Synthesised gas flow measurements
· Compressed air flow measurements

FEATURES

· Shear and Lamb Wave IP 68 stainless steel sensors
· Process output options including current, open-collector, relay
· Communication option Modbus RTU
· Inputs for temperature, pressure and gas compressibility factor available
· Web-based data evaluation, instrument setup via wired, wireless or GSM connection

MEDIA TYPES

Air, argon, carbon monoxide, ethane, ethylene, helium, hydrogen, natural gas, nitrogen, nitrous oxide, oxygen, process gas, propane, saturated steam, sour gas

Communication Types
Flowmeter Connectivity Explained

MEASUREMENT IS VALUABLE. DATA IS PRICELESS.

The KATflow range of products are designed to provide users not only with effective reliable flow measurement in a number of different scenarios but also with a variety of digital serial interfacing options specific to various industries. The table below illustrates an overview of the communication protocols that Katronic can offer and the instruments on which they are available.

| Protocol	Physical Layer	Devices	Industries
Modbus RTU	RS 485	KATflow 100 KATflow 150 KATflow 170 KATflow 210 KATflow 230	Aircraft and Aerospace Building Services Chemical and Petrochemical Food and Drink Manufacturing and Process Marine and Shipbuilding Oil and Gas Pharmaceutical Power Generation Semiconductor Water and Wastewater
Modbus TCP/IP	Ethernet	KATflow 100 KATflow 150 KATflow 210 KATflow 230	Building Services Manufacturing and Process
LonWorks	Twisted Pair (Free Topology)	KATflow 100 KATflow 150	Building Services
BACnet	Ethernet	KATflow 100 KATflow 150	Building Services
M-Bus	Two-wire	KATflow 100 KATflow 150	Building Services
HART	Two-wire 4… 20 mA	KATflow 100 KATflow 150 KATflow 170	Process Automation
Profibus PA	Twisted Pair, IEC 61158-2	KATflow 150 KATflow 170	Process Automation
Profibus DP	Twisted Pair, RS 485	KATflow 100 KATflow 150	Factory Automation
Profinet	Ethernet	KATflow 100 KATflow 150	Factory Automation
Fieldbus Foundation	Twisted Pair, IEC 61158-2	KATflow 150 KATflow 170	Process Automation
Ethernet	Wired/Wireless Ethernet	KATflow 150	Building Services Factory Automation
Wireless	GSM/GPRS/3G	KATflow 150 KATflow 210	Oil and Gas Process Automation Water and Wastewater

# Transducer Types
Sensor Connection and Extension Explained

Sensor Image	Sensor Type (Frequency)	Pipe Diameter Range	Temperature Range	Sensor Termination	
	K4 (4 MHz)	10 … 250 mm	**L**ow temperature -30 … +80 °C (-22 …+176 °F)	Wires	
			Ex-rated -50 … +115 °C (-58 … +239 °F)	Wires	
			Normal temperature -30 … +130 °C (-22 … +266 °F)	SMB connectors	
				Amphenol connector	
				ODU connector	
			Extended temperature -30 … +250 °C (-22 … +482 °F)	SMB connectors	
				Amphenol connector	
				ODU connector	
	K1 (1 MHz)	50 … 600 mm	**P**lastic wedge -20 … +60 °C (-4 … +140 °F)	Wires	
		50 … 3 000 (6 500) mm	**L**ow temperature -30 … +80 °C (-22 … +176 °F)	Wires	
			Ex-rated -50 … +115 °C (-58 … +239 °F)	Wires	
			Normal temperature -30 … +130 °C (-22 … +266 °F)	SMB connectors	
				Amphenol connector	
				ODU connector	
			Extended temperature -30 … +250 °C (-22 … +482 °F)	SMB connectors	
				Amphenol connector	
				ODU connector	
		40 … 600 mm	**V**ery **H**igh **T**emperature -200 … +450 °C (+392 … +842 °F)	Wires	
	K0 (0.5 MHz)	(100) 200 … 6 500 mm	**L**ow temperature -30 … +80 °C (-22 … +176 °F)	Wires	
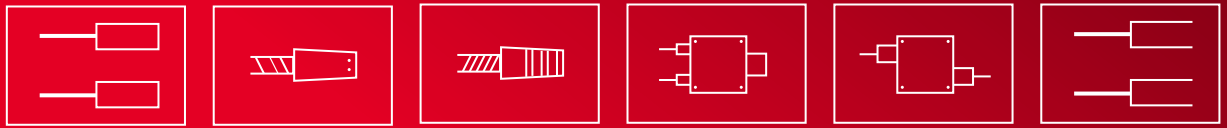
Sensor Cable Length	Flowmeter Type	Extension Type		Extension Cable	Extension Cable Length	Flowmeter Connection Type
10 m	Fixed	Junction box		12 mm OD	Max. 50 m	Direct (terminal block)
5 m	Fixed	Junction box		12 mm OD	Max. 50 m	Direct (terminal block)
2.5 m	Fixed	Junction box		12 mm OD	Max. 50 m	Direct (terminal block)
2.5 m	Fixed	Amphenol connector		8 mm OD	10 m, 20 m, 30 m	SMB connectors
2.5 m	Portable	ODU connector		6 mm OD	5 m, 10 m, 20 m	ODU connector
2.5 m	Fixed	Junction box		12 mm OD	Max. 50 m	Direct (terminal block)
2.5 m	Fixed	Amphenol connector		8 mm OD	10 m, 20 m, 30 m	SMB connectors
2.5 m	Portable	ODU connector		6 mm OD	5 m, 10 m, 20 m	ODU connector
10 m	Fixed	Junction box		12 mm OD	Max. 100 m	Direct (terminal block)
10 m	Fixed	Junction box		12 mm OD	Max. 100 m	Direct (terminal block)
5 m	Fixed	Junction box		12 mm OD	Max. 100 m	Direct (terminal block)
4 m	Fixed	Junction box		12 mm OD	Max. 100 m	Direct (terminal block)
4 m	Fixed	Amphenol connector		8 mm OD	10 m, 20 m, 30 m	SMB connectors
4 m	Portable	ODU connector		6 mm OD	5 m, 10 m, 20 m	ODU connector
4 m	Fixed	Junction box		12 mm OD	Max. 100 m	Direct (terminal block)
4 m	Fixed	Amphenol connector		8 mm OD	10 m, 20 m, 30 m	SMB connectors
4 m	Portable	ODU connector		6 mm OD	5 m, 10 m, 20 m	ODU connector
10 m	Fixed	Junction box		12 mm OD	Max. 50 m	Direct (terminal block)
10 m	Fixed	Junction box		12 mm OD	Max. 200 m	Direct (terminal block)

Flowmeter Types
Portable and Fixed Installation Flowmeters Explained
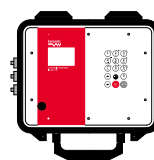
Unit	KATflow 200	KATflow 210	KATflow 230
Model type	Portable	Portable	Portable
Pipe diameter range	10 … 6 500 mm	50 … 2 500 mm	10 … 6 500 mm
Temperature range	-30 … +250 °C (-22 … +482 °F)	-30 … +133 °C (-22 … +266 °F)	-30 … +250 °C (-22 … +482 °F)
Measurement channels	1	1	1 or 2[1]
Flow velocity range	0.01 … 25 m/s	0.01 … 25 m/s	0.01 … 25 m/s
Accuracy of volume flow	±1 … 3 % of measured value ±0.5 % process calibrated	±1 … 3 % of measured value ±0.5 % process calibrated	±1 … 3 % of measured value ±0.5 % process calibrated
Accuracy range	0.25 … 25 m/s	0.25 … 25 m/s	0.25 … 25 m/s
Weight	650 g	6.0 kg	2.0 kg
Battery life	Up to 24 h	Up to 100 days with 3 cells	Up to 24 h
Power supply	4 x NiMH AA 2850 mAh 100 … 240 V AC (mains socket)[2]	1 to 3 LiFePo4 cells 12,8 Ah 100 … 240 V AC (mains socket)[2]	8 x NiMH AA 2850 mAh 100 … 240 V AC (mains socket)[2]
Display	LCD graphic display, 128 x 64 dots, backlit	LCD graphic display, 128 x 64 dots, backlit	LCD graphic display, 128 x 64 dots, backlit
Process inputs	No	0/4 … 20 mA	PT100 temperature[3], 0/4 … 20 mA
Process outputs	No	0/4 … 20 mA, pulse (OC), digital relay	0/4 … 20 mA, pulse (OC), digital relay
Communication[4]	RS 232, USB	USB	USB
Internal data logger	Yes	Yes	Yes
Wall thickness gauge	Yes	Yes	Yes
Energy metering	No	No	Yes[5]
Ex-approved version	No	No	No
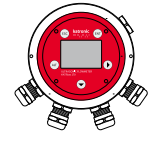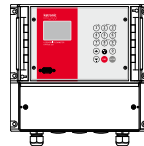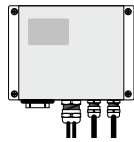
Unit	KATflow 100	KATflow 150	KATflow 170
Model type	Fixed installation	Fixed installation	Fixed installation
Pipe diameter range	10 … 3 000 mm	10 … 6 500 mm	10 … 3 000 mm
Temperature range	-30 … +80 °C (-22 … +176 °F)	-30 … +250 °C (-22 … +482 °F)	-50 … +115 °C (-58 … +239 °F)
Measurement channels	1	1 or 2[1]	1 or 2[1]
Flow velocity range	0.01 … 25 m/s	0.01 … 25 m/s	0.01 … 25 m/s
Accuracy of volume flow	±1 … 3 % of measured value ±0.5 % process calibrated	±1 … 3 % of measured value ±0.5 % process calibrated	±1 … 3 % of measured value ±0.5 % process calibrated
Accuracy range	0.25 … 25 m/s	0.25 … 25 m/s	0.25 … 25 m/s
Weight	750 g	2.3 kg	4.0 kg
Battery life	n/a	n/a	n/a
Power supply	100 … 240 V AC or 9 … 36 V DC	100 … 240 V AC or 9 … 36 V DC	100 … 240 V AC or 9 … 36 V DC
Display	LCD graphic display, 128 x 64 dots, backlit	LCD graphic display, 128 x 64 dots, backlit	LCD graphic display, 128 x 64 dots, backlit
Process inputs	PT100 temperature[3], 0/4 … 20 mA	PT100 temperature[3], 0/4 … 20 mA	PT100 temperature[3], 0/4 … 20 mA
Process outputs	0/4 … 20 mA, pulse (OC), digital relay, frequency, voltage, HART* compatible	0/4 … 20 mA, pulse (OC), digital relay, frequency, voltage, HART* compatible	0/4 … 20 mA, pulse (OC), digital relay, frequency, voltage, HART* compatible
Communication[4]	RS 232, Modbus RTU	RS 232, RS 485, Modbus RTU, Profibus PA	RS 232, Modbus RTU, Profibus PA
Internal data logger	Yes	Yes	Yes
Wall thickness gauge	n/a	n/a	n/a
Energy metering	Yes[5]	Yes[5]	Yes[5]
Ex-approved version	No	Yes	Yes

1) For simultaneous measurement on two separate pipes or for measurement on one single pipe in a two-path sensor mounting configuration.
2) For charging of internal batteries and supply of flowmeter with power when connected to mains electricity socket.
3) + 5) For contactless measurement of thermal energy consumption, displayable units: W, kW, MW, J, kJ, MJ, BTU (on request).
4) Please see communication connectivity page for complete list of options.

* HART® is a registered trademark of the *HART Communication Foundation*

katronic

What Our Clients Say:

"I have been most impressed by both your equipment and your support service."
Chris Barlow - S. I. SEALY

"Thank you for the wonderful support and service I received off of you and your company. It's a great bit of kit."
Philip Guard – PCG CONSULTANCY SERVICES

"Superb Service!"
Peter Hartley –UK EXCHANGERS

"I was convinced by the intuitive usability, the competent service and above all the excellent measurement results."
Olaf Koberstein – TenneT TSO GmbH

Katronic Technologies Ltd.
Earls Court
Warwick Street
Coventry CV 5 6ET
United Kingdom

Tel.	+44 (0)2476 714 111
Fax	+44 (0)2476 715 446
E-mail	info@katronic.co.uk
Web	www.katronic.co.uk

Katronic AG & Co. KG
Gießerweg 5
38855 Wernigerode
Germany

Tel.	+49 (0)3943 239 900
Fax	+49 (0)3943 239 951
E-mail	info@katronic.de
Web	www.katronic.de

Katronic Instruments LLC
1531 Stuyvesant Avenue
Union, NJ 07083
USA

Tel.	+1 (0)908 688 6709
Fax	+1 (0)908 688 9040
E-mail	info@katronic.com
Web	www.katronic.com