KATRONIC

Ultrasonic Flowmeter
*KAT*flow 110

- **Ultrasonic flowmeter in IP 66 wall mounted enclosure**
- **Easy to install clamp-on sensors with no process interruption**
- **Non-invasive flow measurement of liquids, no pipeline disturbance, no pressure loss**
- **Suitable for all commonly used pipe materials with pipe diameters from 10 mm to 2.5 m (1/2" to 100")**

Description

The ***KAT*flow** range of non-invasive flowmeters utilises ultrasonic technology for the accurate flow measurement of liquids in full pipes.

The field mounted flow transmitter can be configured via the keypad without any additional programming devices and is available as single channel unit.

The measurement of flow is based on the principle that sound waves are influenced by a flowing medium.

Measurements are made by penetrating the pipe with ultrasound and subsequently time differences, frequency variations and phase shifts of the ultrasonic signals are evaluated. This measuring technique has no effect on the flowing liquid. There is no pressure loss in the pipe and no wear on components of the measuring device.

The ultrasonic sensors are clamped onto the outside of the pipe, thus eliminating the need to dismantle the pipework and interrupt the process. The ***KAT*flow 110** can be applied to any type of standard pipe carrying clean or dirty liquids.

Advantages

- Low installation effort and costs
- Measurement is independent of fluid conductivity and pressure
- No pressure loss, no possibility of leakage
- Retrospective installation for existing plants possible
- No cutting of pipes necessary, no interruption of process, no plant shut down
- No additional fittings for maintenance required
- Hygienic measurement, no risk of contamination, suitable for ultra clean liquids
- No contact with medium, no risk of corrosion when used with aggressive media
- Cost advantages when used with large diameter pipes, high pressure systems, etc.
- Low stocking costs, nearly all pipe sizes are covered with only 2 types of sensors

Specification

General

Measuring principle	:	Ultrasonic time difference correlation principle
Flow velocity range	:	0.01 ... 25 m/s
Resolution	:	0.025 cm/s
Repeatibility	:	0.15 % of measured value ± 0.01 m/s
Accuracy	:	*Volume flow* ± 1 ... 3 % of measured value depending on application, ± 0.5 % of measured value with process calibration *Flow velocity* ± 0.5 % of measured value
Turn down ratio	:	1/100
Gaseous and solid content of medium	:	< 10 % of volume

Flow transmitter

Enclosure	:	Wall mounted housing
Degree of protection	:	IP 66 according EN 60529
Operating temperature	:	-10 ... 60 °C (14 ... 140 °F)
Housing material	:	Aluminium, powder coated
Flow channels	:	1
Power supply	:	100 ... 240 V AC or 18 ... 36 V DC, specials upon request
Display	:	2 x 16 digit LCD, dot matrix, backlit
Dimensions	:	H 140 x W 190 x D 70 mm without cable glands
Weight	:	Approx. 1.5 kg
Power consumption	:	< 10 W
Signal damping	:	0 ... 100 s, adjustable

Flow transmitter (cont.)

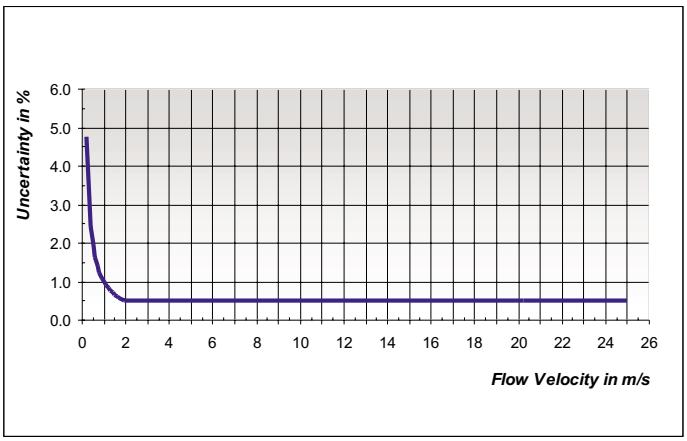
Response time : 1 s
Measuring cycle : 100 ... 1000 Hz, single channel
Operating languages : Selectable between Danish, English, German, French, Dutch, Norwegian, Polish, Czech, Turkish, Spanish

Quantity and units of measurement
Volumetric flow rate : m^3/h, m^3/min, m^3/s, l/h, l/min, l/s, USgph (US gallons per hour), USgpm, USgps, bbl/d (barrels per day), bbl/min, bbl/s
Flow velocity : m/s, inch/s
Mass flow rate : g/s, t/h, kg/h, kg/min
Volume : m^3, l, gal (US gallons), bbl
Mass : g, kg, t

Communication
Serial interface : RS 485 optional

Process outputs : Galvanically isolated from main electronics
Current : 0/4 ... 20 mA active (R_{ext} < 500 Ω), 0.1 % of measued value ± 15 µA
Digital (pulse, status) : Totaliser value 0.01 ... 1000 / unit, width 80 ... 1000 ms, Open-Collector 24 V/4 mA

Uncertainty specification
***KA*Tflow-series Ultrasonic Flowmeters**

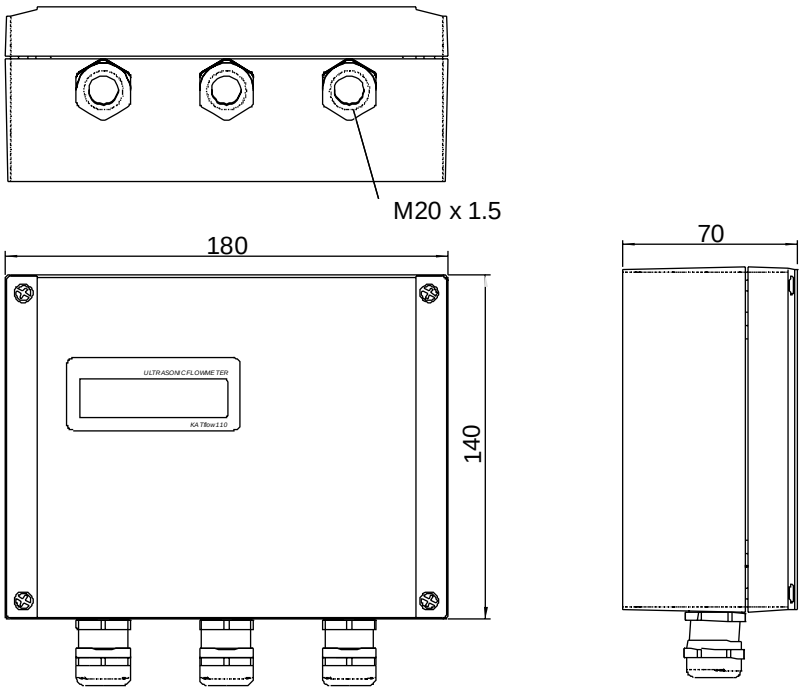


Clamp-on sensors

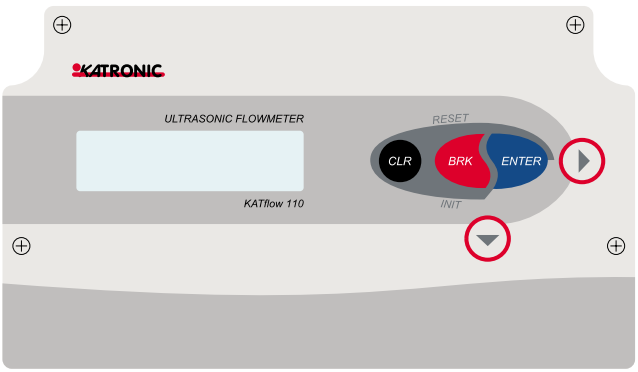
Large pipe transducers
Diameter range : 50 ... 2500 mm
Dimensions : 60 x 30 x 34 mm
Material : Stainless steel
Temperature range : -30 ... 70 °C (-22 ... 158 °F) or -30 ... 130 °C (-22 ... 266 °F), higher temperatures upon request
Degree of protection : IP 65 acc. EN 60529, IP 67 or 68 optional
Cable lengths : 10 m, 20 m, 50 m, special

Small pipe transducers
Diameter range : 10 ... 250 mm
Dimensions : 43 x 18 x 22 mm
Material : Stainless steel
Temperature range : -30 ... 70 °C (-22 ... 158 °F) or -30 ... 130 °C (-22 ... 266 °F), higher temperatures upon request
Degree of protection : IP 65 acc. EN 60529, IP 67 or 68 optional
Cable lengths : 10 m, 20 m, 50 m, special

Flow transmitter

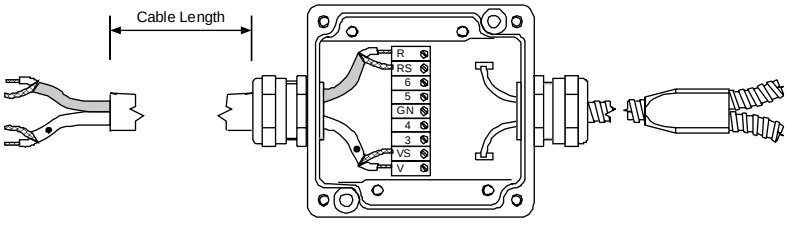


External dimensions
***KAT*flow 110**



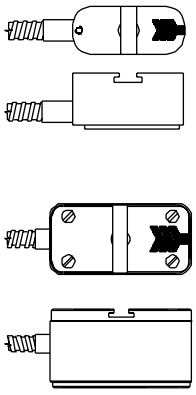
Front panel ***KAT*flow 110**

Clamp-on sensors



Junction Box

Small Pipe Diameter
Transducers



Large Pipe Diameter
Transducers

Order code	KF110 - x - x - x x x - x x x - x
Power supply:	
100 ... 240 V AC, 50/60 Hz	1
18 ... 36 V DC	2
Special	Z
Serial communication:	
Without	0
RS 485	1
Special	Z
Clamp-on transducers:	
Pipe diameter range	
10 ... 250 mm	1
50 ... 2500 mm	2
Process temperature	
-30 ... 70 °C	1
-30 ... 130 °C	2
Special	Z
Pipe mounting accessories	
No mounting accessories	0
Clamping set DN 10 ... DN 40	1
Metallic straps/clamps DN 40 ... 100	2
Metallic straps/clamps DN 100 ... 2500	3
Special	Z
Sensor cable length:	
10 m	010
20 m	020
50 m	050
Other (specify in m)	___
Options:	
None	0
With pipe mounting bracket	1
Special	Z

Ordering examples

KF110-2-1-213-010-0
Ultrasonic flowmeter ***KA*Tflow 110**, wall mounted enclosure IP 66, analogue output 0/4 ... 20 mA, 2 x digital outputs (OC, 24 V/4 mA), 18 ... 36 V DC power supply, serial interface RS 485, clamp-on transducers 50 ... 2500 mm, process temperature -30 ... 70 °C, with metallic straps/ clamps for DN 100 ... 2500, sensor cable length 10 m, no options

KF110-1-0-122-020-1
Ultrasonic flowmeter ***KA*Tflow 110**, wall mounted enclosure IP 66, analogue output 0/4 ... 20 mA, 2 x digital outputs (OC, 24 V/4 mA), 100 ... 240 V AC power supply, no serial interface, clamp-on transducers 10 ... 250 mm, process temperature -30 ... 130 °C, with metallic straps/clamps for DN 40 ... 100, sensor cable length 20 m, with pipe mounting bracket

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Issue: DS/KF110/V1.0E/0803