Water

KATflow 100

Stationary Clamp-On ultrasonic flow meter

Small. Simple. Sturdy.

The KATflow 100 is a compact Clamp-on ultrasonic flow meter 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 3000 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

Accessories

- Optional blind transmitters supplied pre-configured or with external programming tool
- Available with special “P” transducers for simple applications
- Optional PT100 sensors or analogue temperature inputs for heat quantity measurement and temperature compensation

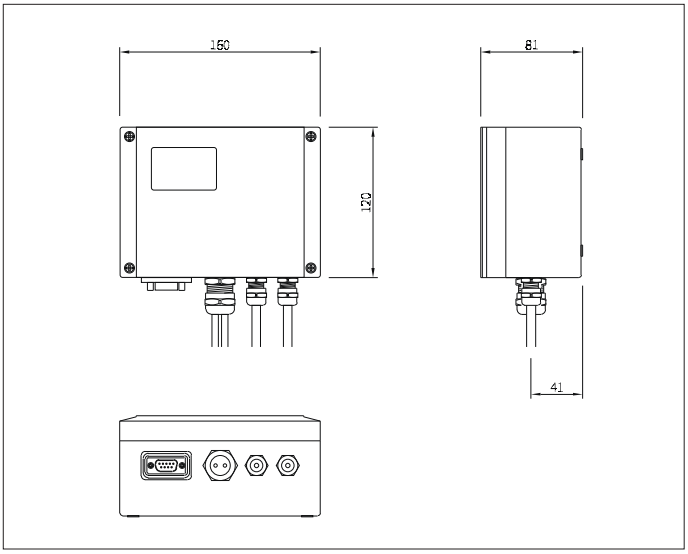
Applications

- Water and wastewater measurements
- Replacement of electromagnetic flow meters
- Monitoring and controlling of Heating, Ventilation and Air Conditioning (HVAC) systems
- Cost-effective solution for large scale projects
- Automated process control
- Shipping applications

Transmitter

Performance

Measurement principle	Ultrasonic transit-time difference
Flow velocity range	0.01 ... 25 m/s
Resolution	0.25 mm/s
Repeatability	0.15 % of measured value, ±0.015 m/s
Accuracy	Volume flow: ±1 ... 3 % of measured value depending on application ±0.5 % of measured value with process calibration Flow velocity (mean): ±0.5 % of measured value
Turn down ratio	1/100 (equivalent to 0.25 ... 25 m/s)
Measurement rate	100 Hz
Response time	1 s (standard), 90 ms (optional)
Damping of displayed value	0 ... 99 s (selectable by user)
Gaseous and solid content of liquid media	< 10 % of volume



KATflow 100 (dimensions in mm)

General

Enclosure type	Wall mounted, optional pipe stands and brackets available
Degree of protection	IP 66 according to EN 60529
Operating temperature	-10 ... +60 °C (+14 ... +140 °F)
Housing material	Die-cast aluminium
Measurement channels	1
Power supply	100 ... 240 V AC, 50/60 Hz 9 ... 36 V DC
Display	LCD graphic display, 128 x 64 dots, backlit
Dimensions	120 (h) x 160 (w) x 81 (d) mm (without cable glands)
Weight	Approx. 750 g
Power consumption	< 5 W
Operating languages	English, French, German, Dutch, Spanish, Italian, Russian, Czech, Turkish, Romanian (others on request)

Communication

Type	RS 232 (used for external programming and data transfer), USB cable (optional), RS 485 or Modbus RTU (optional)
Transmitted data	Measured and totalised value, parameter set and configuration, logged data

KATflow 100 with open enclosure

KATflow 100 in operation

Software KATdata+

Functionality	Download of measured values/parameter sets, graphical presentation, list format, export to third party software, online transfer of measured data
Operating systems	Windows 10, 8, 7, Vista, XP, NT, 2000, Linux

Quantity and units of measurement

Volumetric flow rate	m^3/h, m^3/min, m^3/s, l/h, l/min, l/s USgal/h (US gallons per hour), USgal/min, USgal/s bbl/d (barrels per day), bbl/h, bbl/min
Flow velocity	m/s, ft/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
Heat flow	W, kW, MW (with heat quantity measurement option)
Heat quantity	J, kJ, kW/h (with heat quantity measurement option)
Temperature	°C (with heat quantity measurement option)

Process inputs (galvanically isolated)

Temperature	PT100 (Clamp-On sensors), three- or four-wire circuit, measurement range: -30 ... +250 °C (-22 ... +482 °F), resolution: 0.1 K, accuracy: ±0.2 K
Current	0/4 ... 20 mA active or 0/4 ... 20 mA passive, U = 30 V, R_i = 50 Ω, accuracy: 0.1 % of measured value

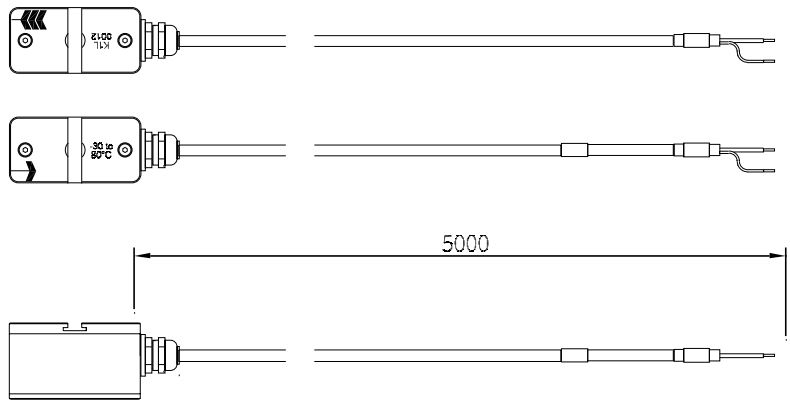
Process outputs (galvanically isolated)

Current	0/4 ... 20 mA active/passive (R_{Load} < 500 Ω), 16 bit resolution, U = 30 V, accuracy: 0.1 %
Digital open-collector	Value: 0.01 ... 1000/unit, width: 1 ... 990 ms, U = 24 V, I_{max} = 4 mA
Digital relay	2 x Form A SPST (NO and NC), U = 48 V, I_{max} = 250 mA
Voltage	0 ... 10 V, R_{Load} = 1000 Ω
Frequency	2 Hz ... 10 kHz, 24 V/4 mA
HART* compatible	0/4 ... 20 mA, 24 V DC, R_{GND} = 220 Ω

Transducers

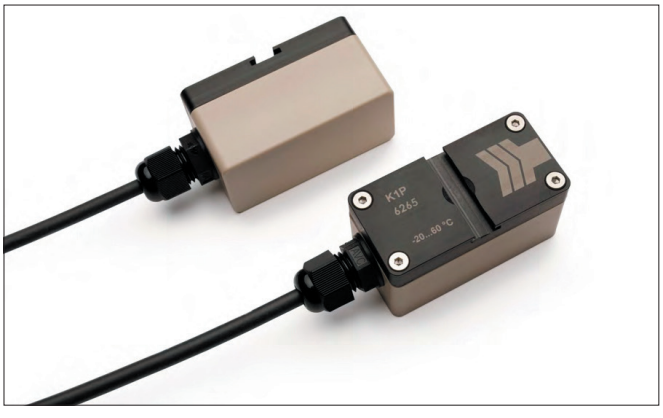
K1P, K1L

Pipe diameter range	50 ... 500 mm for type K1P 50 ... 3000 mm for type K1L
Dimensions of sensor heads	Type K1P: 40 (h) x 30 (w) x 30 (d) mm Type K1L: 60 (h) x 30 (w) x 35 (d) mm
Material of sensor heads	Type K1P: Plastic Type K1PL: Stainless steel
Material of cable conduits	Type K1P/L: PVC
Temperature range	Type K1P: -20 ... +50 °C (-4 ... +122 °F) Type K1L: -30 ... +80 °C (-22 ... +176 °F)
Degree of protection	IP 66 according to EN 60529 (I P 67 and IP 68 on request)
Standard cable lengths	Type K1P/L: 5.0 m



K1L transducers

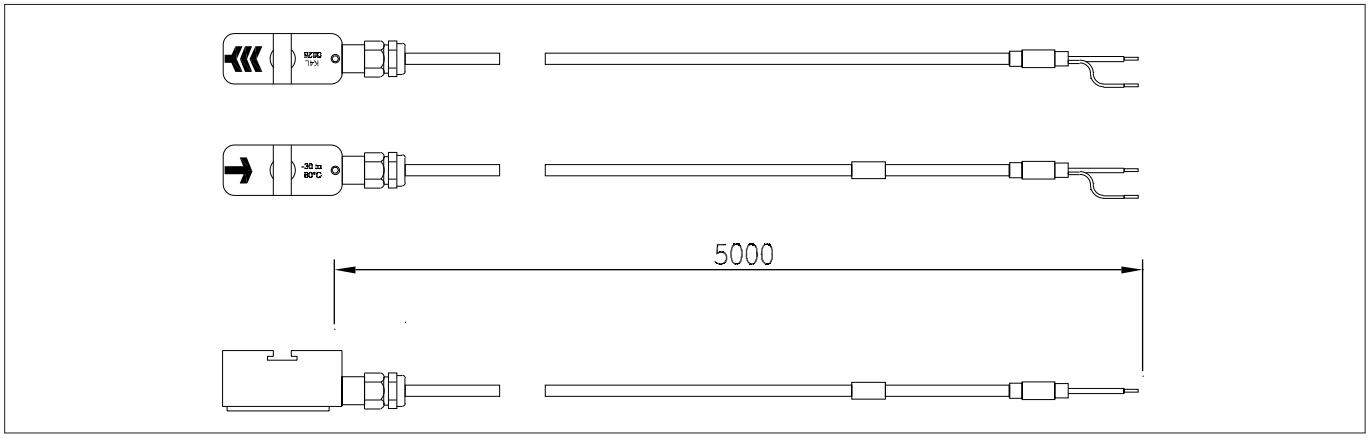
K1L transducers



K1P transducers

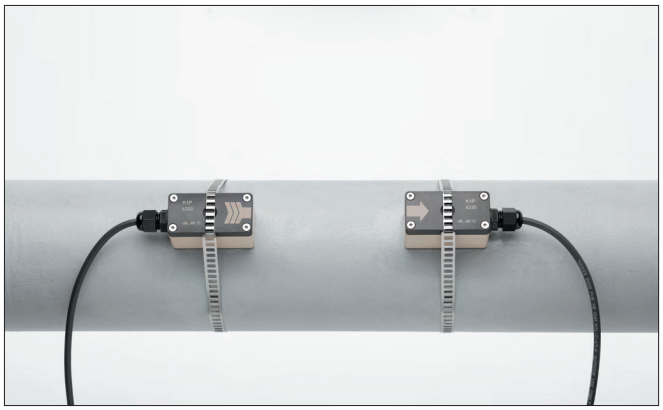
K4P, K4L

Pipe diameter range	50 ... 100 mm for type K4P 10 ... 250 mm for type K4L
Dimensions of sensor heads	Type K4P: 30 (h) x 30 (w) x 30 (d) mm Type K4L: 42 (h) x 18 (w) x 22 (d) mm
Material of sensor heads	Type K4P: Plastic Type K4L: Stainless steel
Material of cable conduits	Type K4P/L: PVC
Temperature range	Type K4P: -20 ... +50 °C (-4 ... +122 °F) Type K4L: -30 ... +80 °C (-22 ... +176 °F)
Degree of protection	IP 66 according to EN 60529 (I P 67 and IP 68 on request)
Standard cable lengths	Type K4P/L: 5.0 m



K4L transducers

K4L transducers



K1P transducers mounted using straps and clamps

Extension cable

Available lengths	5.0 ... 100 m
Cable type	Coaxial
Material of cable jacket	TPE
Operating temperature	-40 ... +80 °C (-40 ... +176 °F)
Minimum bend radius	67 mm

Cable connection

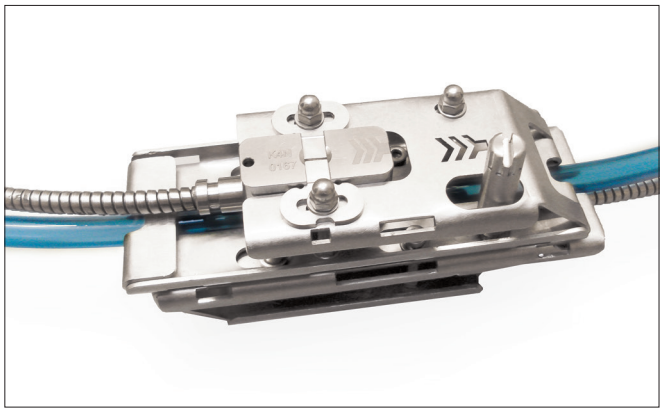
Connection types	Junction box
Termination into transmitter	Direct cable connection (terminal block)

Transducer mounting accessories

General

Diameter range and mounting types	Clamping set (metal strap with screw), stainless steel: DN 10 ... 40 Metallic straps and clamps: DN 25 ... 100 Metallic straps and clamps: DN 100 ... 3000 Metallic mounting rail and straps (available on request): DN 50 ... 250 or DN 50 ... 3000
Mounting fixture for flexible hoses	Custom made mounting bracket, stainless steel (available on request)

Mounting fixture, rail and magnets

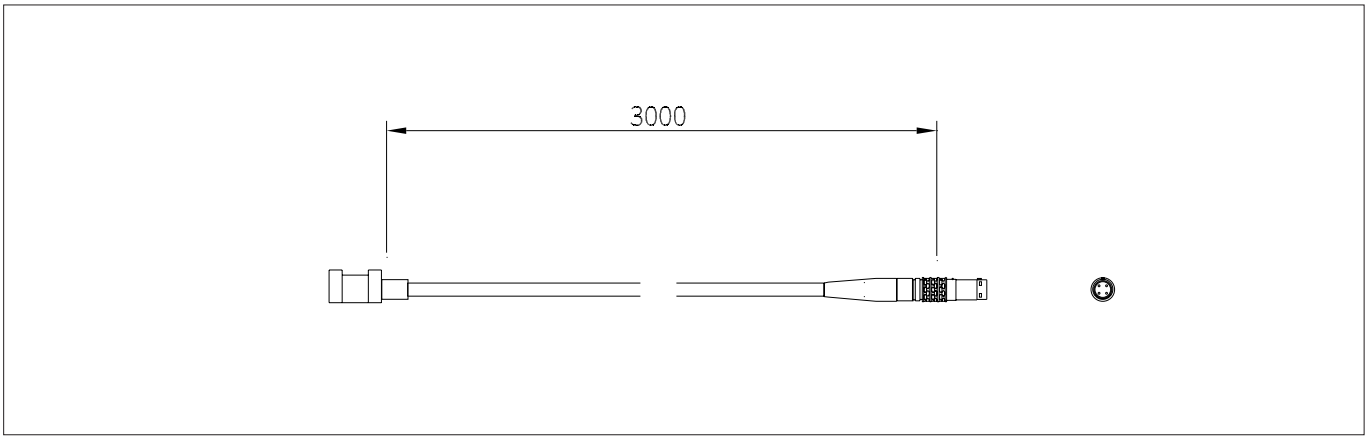


Example of mounting fixture for flexible hoses

PT100 Clamp-On sensors

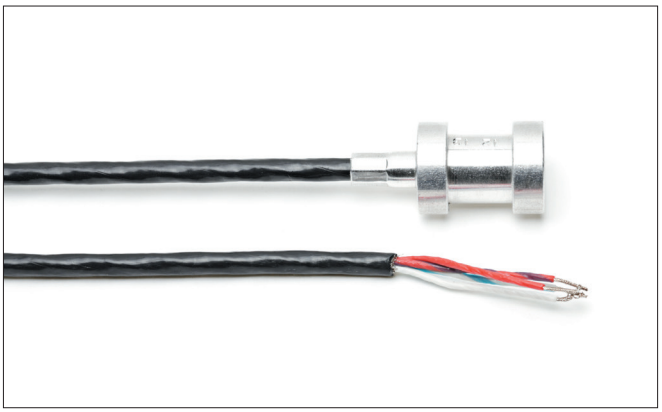
General

Type	PT100 (Clamp-On sensors)
Measurement range	-30 ... +250 °C (-22 ... +482 °F)
Circuits	4-wire
Accuracy T	± (0.15 °C + 2 x 10^{-3} x T [°C]), class A
Accuracy ΔT	⩽ 0.1 K (3 K < ΔT < 6 K) corresponding to EN 1434-1
Response time	50 s
Dimensions of sensor heads	20 (h) x 15 (w) x 15 (d) mm
Material of sensor heads	Aluminium
Material of cable jacket	PTFE
Cable length	3.0 m



PT100 transducer

PT100 transducer fixed to pipe



PT100 with wired cable connection

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