



Clamp-on Ultrasonic Flowmeter EESIFLO 8000 Series

- Dual mode field transmitter
- 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 6.5 m (1/4" to 256")
- 2 flow channels standard, IP 66 housing
- Certified for hazardous areas Zone 1 & 2



Description

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

The field transmitter Eesiflo™ 8000 Series has been designed for permanent installations in potentially explosive atmospheres and for field applications with harsh environmental conditions. The opening of the enclosure is not required for instrument set-up and operation and without the necessity of a separate hand-held remote control or laptop computer.

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 Eesiflo™ 8000 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
- Transmitter and sensors can be located in hazardous areas Zone 1 and 2

Specification

General

Measuring principle	: Ultrasonic time difference correlation principle
Flow velocity range	: 0.01 ... 25 m/s
Resolution	: 0.025 cm/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 ± 0.5 % of measured value
Turn down ratio	: 1/200
Gaseous and solid content of medium	: < 10 % of volume

Flow transmitter

Enclosure	: Field transmitter housing
Degree of protection	: IP 66 according EN 60529
Operating temperature	: -10 ... 55 °C (14 ... 131 °F)
Housing material	: Aluminium, powder coated
Flow channels	: 2
Power supply	: 100 ... 240 V AC / 9 ... 18 V DC / 18 ... 36 V DC / 36 ... 72 V DC
Display	: 2 x 16 digit LCD, dot matrix, backlit, 2 x status LED
Keyboard	: 5 keys, external access via magnet
Dimensions	: W 140 x H 310 x D 260 mm (without cable glands and support)
Power consumption	: < 15 W
Signal damping	: 0 ... 60 s, user configurable
Response time	: 1 s, 70 ms optional
Measuring cycle	: 100 ... 1000 Hz, single channel
Calculation functions	: Average/difference/sum
Operating languages	: Selectable between Danish, English, German, French, Dutch, Norwegian, Polish, Czech, Turkish
Protection concept	: Flameproof (d), intrinsic safety (i), increased safety (e)
Certification code	: EEx id II T6, EEx ie II T6
Certification	: ATEX

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
Data	: Instantaneous measured value, parameter set and configuration

Software EESIDATA

Functionality	: Downloading of measured values/parameter set, graphical presentation, list format, export to third party software, on-line transfer of measured data
Operating systems	: Windows™ 3.11, 95, 98, NT, 2000, XP

Process outputs : Galvanically isolated from main electronics

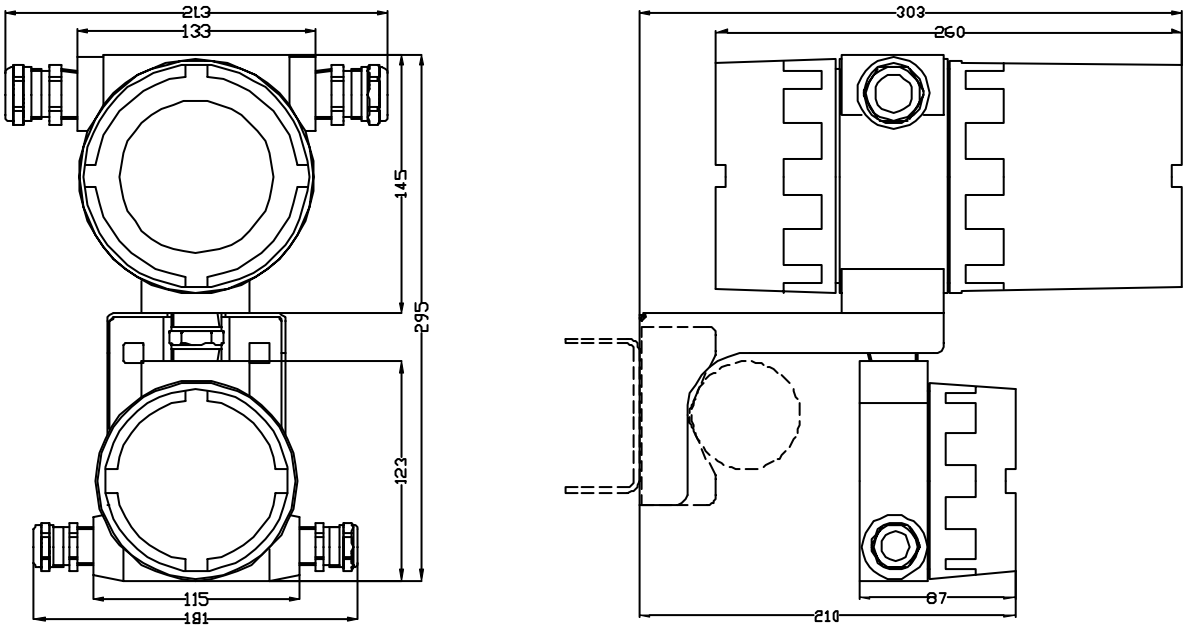
Current	: 2 x 0/4 ... 20 mA; active ($R_{ext} < 500 \Omega$)
Frequency	: 2 x 0 ... 1 kHz or 0 ... 10 kHz; (OC)
Digital (pulse, status)	: 2 x totaliser value 0.01 ... 1000 / unit; width 80 ... 1000 ms; (OC) OC = Open-Collector

Clamp-on sensors

Type Q4N-Ex, M4N-Ex (for use in hazardous areas Zone 1 and 2)

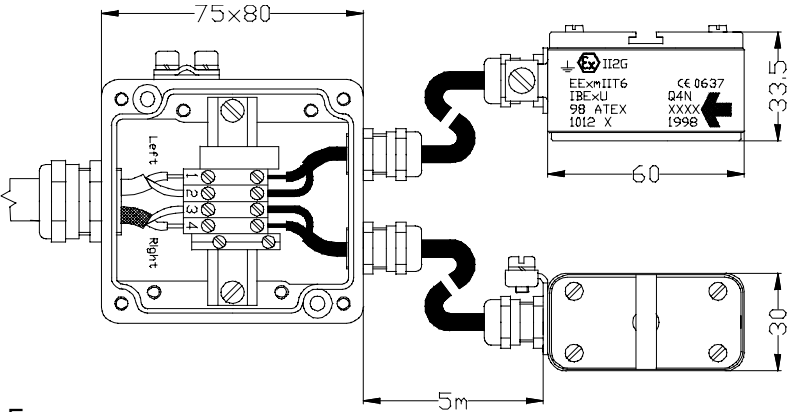
Rated (possible) diameter range	: <i>Type Q4N-Ex:</i> (10) 25 ... 400 (1000) mm <i>Type M4N-Ex:</i> (50) 100 ... 3000 mm
Dimensions	: 60 x 30 x 34 mm
Material	: Stainless steel
Temperature range	: -20 °C ... 120 °C
Degree of protection	: IP 66 acc. EN 60529, IP 68 optional
Protection concept	: Encapsulation
Certification code	: EEx m II T4 - T6
Certificate number	: IBExU 98 ATEX 1012 X

External dimensions



Flow transmitter Eesiflo™ 8000 Series

Transducer selection



Clamp-on sensors type Q4N/M4N-Ex-5-F_ _ _ _