TECHNICAL DATASHEET

portable clamp-on-ultrasonic flowmeter
> EMD-Wave

DESCRIPTION

EMD Wave is the brand new universal clamp-on ultrasonic flowmeter for liquids in filled pipes. EMD Wave uses the highly accurate transit time method (time-of-flight) to measure the flow of liquids in pipes. Special advantage: The ultrasonic transducers are strapped to the outside of the pipe (clamp-on), cutting or drilling of the pipe is not necessary, pressure losses are not present.

EMD Wave SAVES TIME AND COST

Thanks to clamp-on technology, the ultrasonic transducers used can be installed in a matter of minutes. No need exists to cut or penetrate your pipes. This possibility, together with the elimination of process interruptions, means that EMD Wave devices are the key to optimizing operating costs.
The contactless measurement is virtually
EMD Wave clamp on technology works :

- 100% contact free with the liquid
- 100% wear and tear free
- 100% leackage save
- 100% hygenic
- 100% free of pressure loss

By this and by the fact, that EMD Wave includes datalogger and battery power, it is the ideal portable flowmeter.

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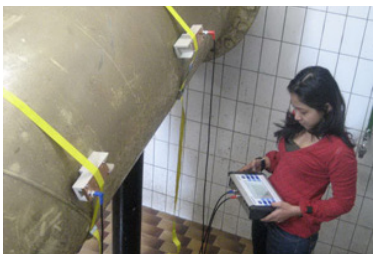
TECHNICAL SPECIFICATIONS

Allgemeines

Operation :	Intuitive via 8 main keys (Soft Keys), plain text display
Measuring range :	-30 ... +30 m/s
Signal damping :	0 ... 100 Sek.
Languages :	DE, EN, uvm...
Units :	Metric / US
Outputs :	2 x 4...20 mA 1 x Relais 1 x Micro-USB
Inputs :	2 x Pt100 temperature probes
Integ. Data Logger:	4 GB
Abgesp. Daten :	Meas.,diagn. data and totalizers
Data Format :	Text format, can be directly imported into all standard programs such as MS Office etc.
Memory Cycle :	Adjustable, 1 second to 24 hours
Meas. Channels :	1
Power Supply :	Integrated rechargeable battery and 100-240V AC wide range adapter
Batt. Operation :	aprox. 12 h
Protection Class:	IP54
Dimensions :	265 x 190 x 70 mm
Oper. temperature :	-20 ... +60 °C
Weight :	1,5 kg
Display :	QVGA (320x240), black and white, adjustable backlighting

Accurracy

Ø	Range	Deviation
10 ... 25 mm	2...30m/s	2,5% v.Mw.
	0...2 m/s	± 0,05 m/s
25 ... 50 mm	2...30m/s	1,5% v.Mw.
	0...2 m/s	± 0,03 m/s
50 ... 300 mm	2...30m/s	1% v.Mw.
	0...2 m/s	± 0,02 m/s
300 ... 6000 mm	1...30m/s	1% v.Mw.
	0...1 m/s	± 0,01 m/s
Reproducibility for the vast majority of applications is <0.2%		



A SINGLE DEVICE FOR MULTIPLE METERING APPLICATIONS

Broad Application Spectrum

Das EMD-Wave is compatible with the most common pipe sizes (DN10 - DN6000) and applications across all sectors. EMD-Wave is not only a flowmeter, but also includes an integrated heat quantity measuring function. Together with the optionally available clamp-on temperature and ultrasonic transducers, heat and cooling quantities can be recorded and documented with reliability and accuracy.

Power Stations
- Circulating water/service water
- District heating networks
- Pump protection

Water and wastewater management
- Sewage treatment plant inflow/effluent
- Drinking water networks, verification of water meters

Building Services Engineering
- Hot and cold water
- Cooling systems & air-conditioning units
- Hydraulic compensation

Chemicals and Petrochemicals
- Crude and light oil
- Industrial and waste water
- Aggressive and toxic media

Food and Beverage Industry
- Hygienic, reliable measurement of media
- Dosage measurements
- Cleaning solutions
- Water

Another advantage of the clamp-on ultrasonic flow metering: since the ultrasonic transducer does not come into contact with the medium, the measurement is:
- 100% contamination-free
- 100% hygienically safe

This is particularly interesting for quantity measurement of food and pharmaceutical products, and simplifies volume measurement of toxic or environmentally harmful liquids. Flow metering with the EMD-Wave means no additional sealing surfaces or dead volumes!

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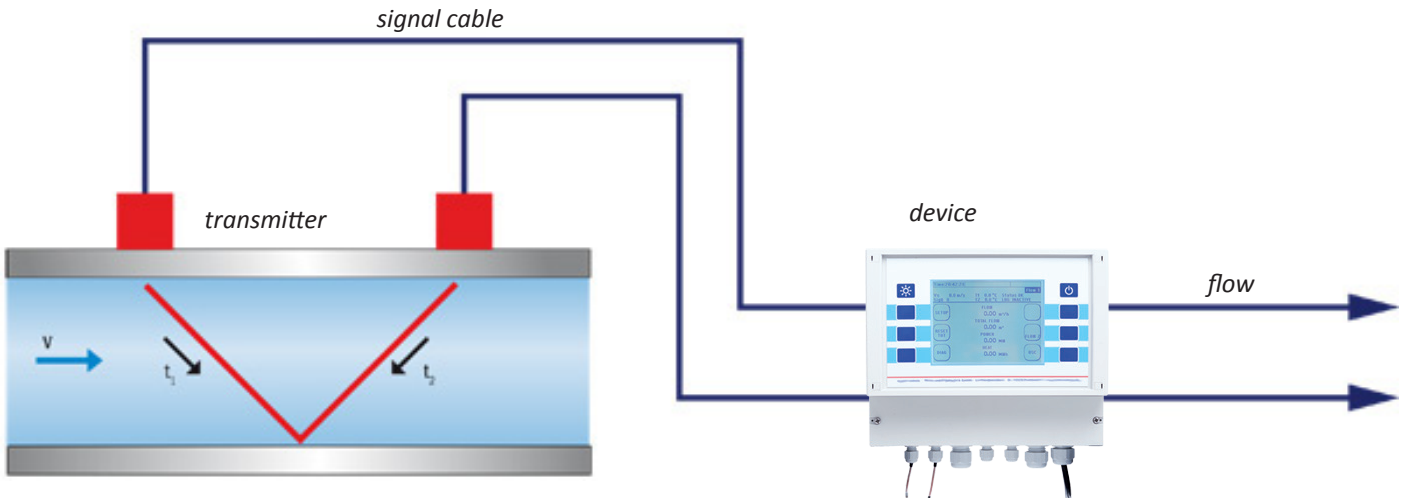
PRECISE AND RELIABLE FLOW MEASUREMENT

EMD-Wave flowmeters operate according to the high-precision ultrasonic transit time difference method. Here, two ultrasonic transducers are mounted externally on the pipe and connected to the processing electronics. The ultrasonic transducers operate alternately as transmitters and receivers and transmit ultrasonic signals to one another, whereby the respective signal transit times of the outgoing and return signal (t1, t2) are measured. The EMD-Wave measures the transit time difference of the ultrasonic signals t1 and t2 that run with and against the direction of flow. These signals are accelerated (t1) or delayed (t2) by the flow of medium. The resulting difference in the two signal transit times is proportional to the flow velocity and, together with the pipe geometry, is used to precisely calculate the flow. The use of multiple processors working in parallel means that EMD-Wave achieves an extremely high measurement rate. Signal processing takes place in high-performance DSPs which are extremely precise and operate at very high resolution. This enables the device to achieve internal resolution of under 0.001 m/s flow velocity. And since the transit time measurement is purely digital, the measurement electronics are virtually drift and calibration-free. In this method, the flow rate is measured many times over, or typically from 50-150 times per second. The high number of measurements – as well as the use of the most modern digital signal processing – makes the EMD-Wave highly reliable even under extremely dynamic, challenging processing conditions.



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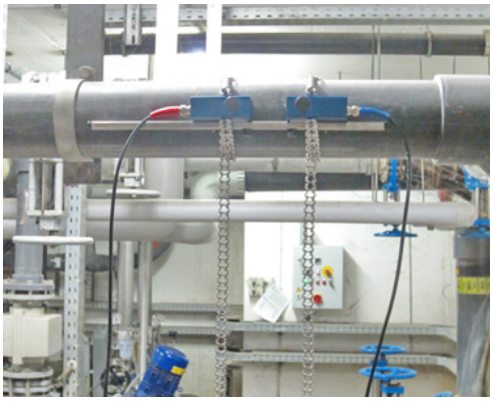
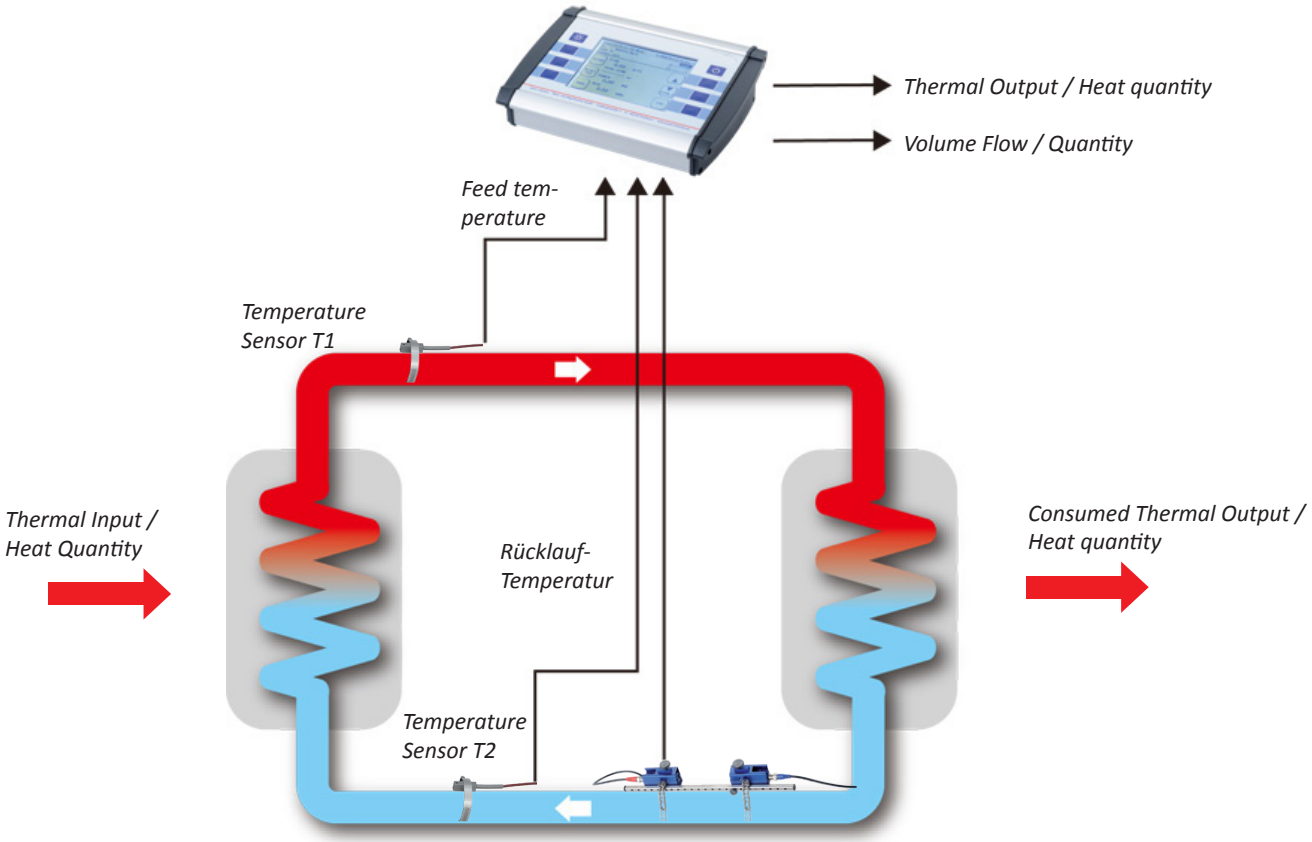
INTEGRATED HEAT QUANTITY MEASUREMENT

EMD-Wave is compatible with the most common pipe sizes (DN10 - DN6000) and cross-sector applications. EMD-Wave is not only a flowmeter, but also includes an integrated heat quantity measuring function. Together with the optionally available clamp-on temperature and ultrasonic transducers, heat and cooling quantities can be recorded and documented with reliability and accuracy. Rising energy prices and legal requirements regarding environmental protection and plant efficiency necessitate the ongoing optimization of energy flows. Whether monitoring the district heating networks that span from power stations to the consumer, process heat in the chemicals industry or in building services engineering – assessing the energy performance of heat flows is tremendously important in many application areas. The integrated thermal energy measuring function of the EMD-Wave enables rapid and convenient recording of heat flows. External, optionally available temperature sensors placed in the feed and return flow are used to measure the temperature difference. In parallel, EMD-Wave measures the volume flow and, from this, calculates the heat flow, taking into account the specific heat coefficient of the medium. The temperature sensors can be matched in pairs on the device in order to increase measurement accuracy. All this takes place without penetrating the piping system – temperature and flow sensors are simply clamped onto the pipe from the outside.



example



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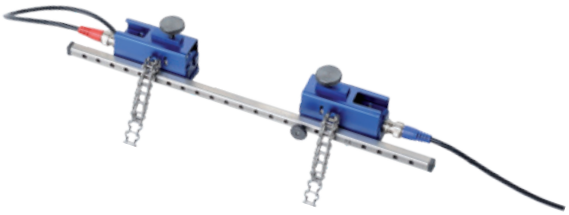
Clamp-On-Probes

Type	Temperature	diameter / mm
small diameter: ***EMPW-F20***	-40 ... +150°C	DN 10 ... DN 100
middle size diameter : ***EMPW-F10***	-40 ... +150°C	DN 32 ... DN 400
middle and big size diameter: ***EMPW-F05***	-40 ... +80°C	DN 200 ... DN 6000



also for rent

You want to rent the EMD-Wave?
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