

ENGINEERING TOMORROW

Energy metering | Ultrasonic technology

Precision and reliability through advanced ultrasonic technology

Advanced ultrasonic technology optimizes total cost of ownership.





accuracy ensures long operational life.

sono.danfoss.com

Precision and reliability **Principle** of ultrasonic metering

When water flows through the meter, an ultrasonic signal is simultaneously sent and received. The time difference between the signals is measured and used to calculate flow velocity.

The flow volume can then be precisely calculated based on the internal diameter of the meter.

Angled reflectors reflects ultrasonic signals.

Ultrasonic signals

make it possible to measure velocity of water and then calculate volume flow with the highest accuracy and most precise measurement in energy metering.

Ultrasonic vs. mechanical

Advantages of ultrasonic technology

Ultrasonic technology offers a number of distinct advantages compared with conventional mechanical energy metering solutions.

Longer lifetime

Ultrasonic energy meters have no moving parts meaning that there is nothing to wear out - result: ultrasonic energy meters maintain the same high level of accuracy permitting several re-verification and little to no maintenance during their lifetime.

Improved accuracy

Because of a higher measurement frequency, low pressure losses and a high dynamic range, ultrasonic meters provide more reliable data even with low flow rates or poor quality water.

Long battery life

Ultrasonic technology offers low power consumption. This enables ultrasonic energy meters to operate reliably for a longer period than mechanical meters.

Rapid payback

In recent years the cost of ultrasonic energy meters has come down, lowering the price difference between mechanical and ultrasonic meters and the payback time of your initial investment significantly.

Ultrasonic energy meters improve accuracy and reduce total cost of ownership.



Piezo ceramic crystal creates ultrasonic signals when voltage is applied.

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SonoSelect[™] Ultrasonic energy meter

The new SonoSelect[™] energy meter from Danfoss sets a whole new standard in energy metering:

- Next generation ultrasonic energy meter
- Easy and flexible installation with no in-/outlet restrictions (MID supported)
- Continuous high-performance
 measurement
- Meter validation without dismantling the meter
- Best-in-class battery or 230V mains powered secures long operational life
- Used in heating, cooling or combined heating+ cooling applications
- · Genuine diagnostics

Benefits for everyone

Ultrasonic technology gives value in all project stages from system designer to end user.







🛛 Reliable data

- <u>Ø Precise me</u>asurement
- \bigcirc Accurate billing

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Danfoss: pioneers in ultrasonic metering technology

Danfoss has decades of experience in energy meters and is a pioneer in the development of ultrasonic technology. Our R&D facility in Denmark has been developing and testing energy meters for over 40 years. Danfoss was among the first to apply ultrasound technology in this field.

We control all stages of product development, from transducer design to software. With our global sales and technical support networks, a presence in all major markets, short lead times and smooth logistics, we provide comprehensive service and support, wherever you are in the world.

When it comes to meeting the next generation of challenges in energy metering and energy consumption reduction, you can rely on Danfoss expertise.



To learn more about SonoSelect™ visit **sono.danfoss.com**

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