

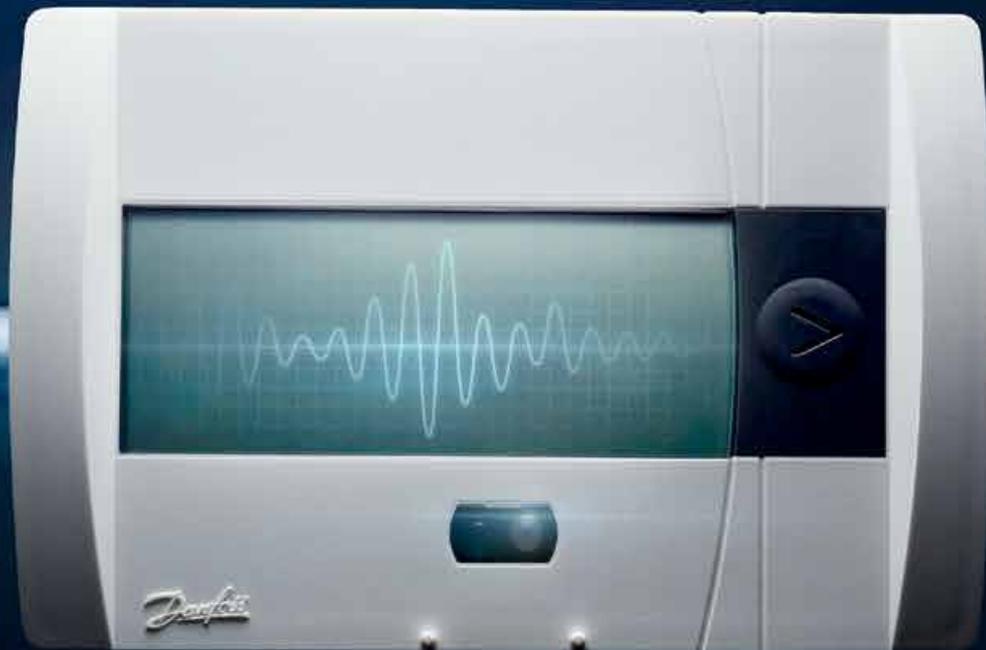
ENGINEERING  
TOMORROW

*Danfoss*

Energy metering | Ultrasonic technology

Precision and reliability  
through advanced  
**ultrasonic technology**

Advanced ultrasonic technology optimizes total cost of ownership.



**High**

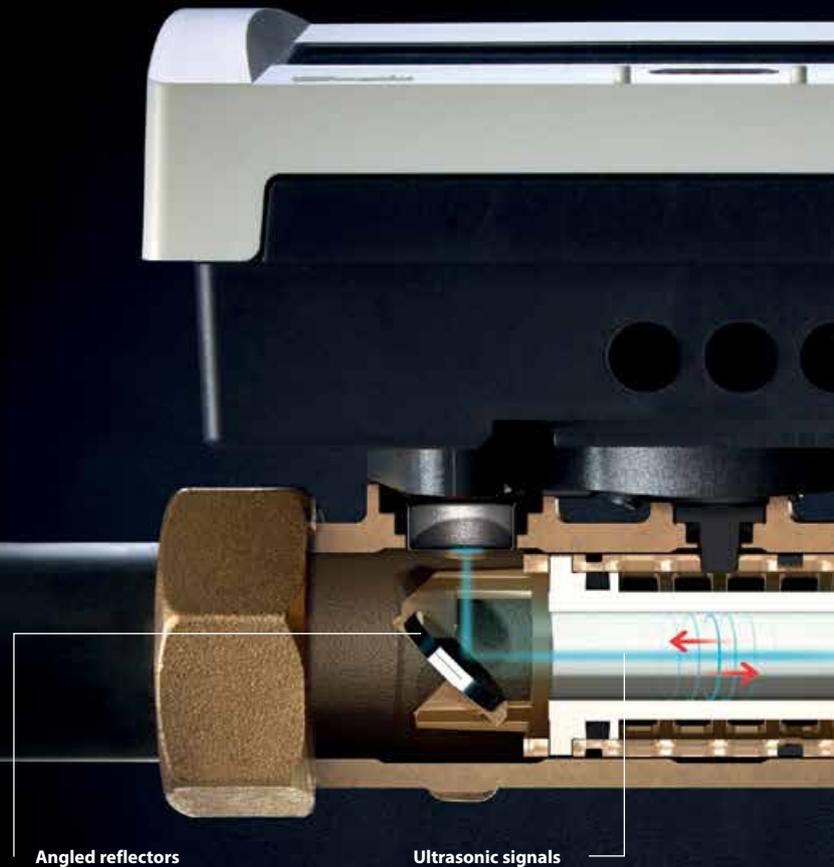
measurement  
accuracy ensures  
long operational life.

Precision and reliability

# Principle of ultrasonic metering

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

Flow volume can then be precisely calculated based on the internal diameter of the pipe.



**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 heat metering.

Ultrasonic vs. mechanical

## Advantages of ultrasonic technology

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

### Longer lifetime

Ultrasonic heat meters have no moving parts meaning that there is nothing to wear out - result: ultrasonic heat 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.

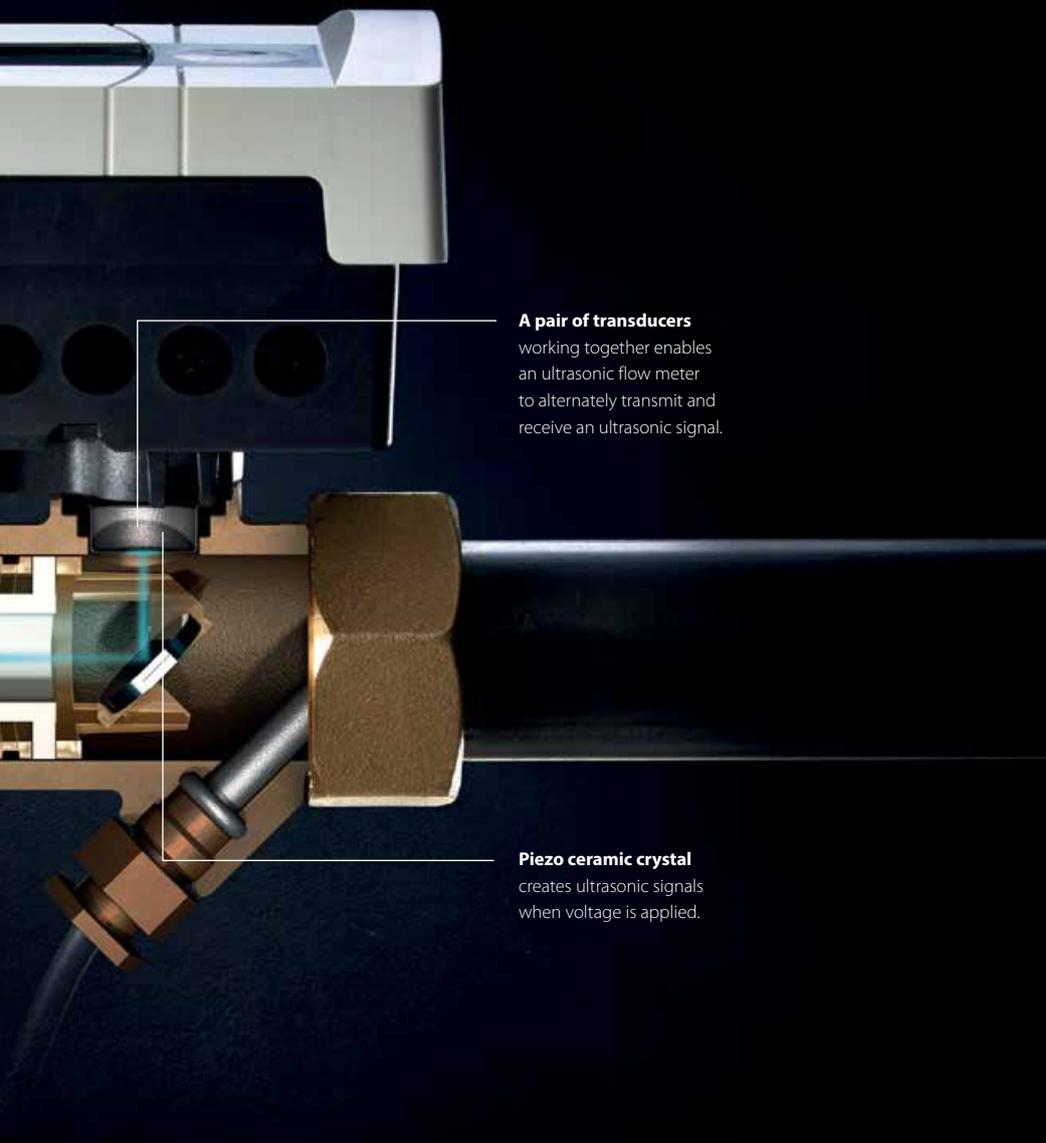
### Long battery life

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

### Rapid payback

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

**Ultrasonic heat meters improve accuracy and reduce total cost of ownership.**



**A pair of transducers**  
working together enables  
an ultrasonic flow meter  
to alternately transmit and  
receive an ultrasonic signal.

**Piezo ceramic crystal**  
creates ultrasonic signals  
when voltage is applied.

## SonoSelect™ Ultrasonic heat meter

The new SonoSelect™ heat meter from Danfoss sets a whole new standard in heat metering:

- Next generation ultrasonic heat meter
- Easy and flexible installation with no in-/outlet restrictions (MID supported)
- Continuous high-performance measurement
- Meter validation without dismantling the heat meter
- Best-in-class battery secures long operational life
- Can measure domestic hot water consumption
- Genuine diagnostics



## Benefits for everyone

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



### SYSTEM DESIGNER

- ✓ Best performing system
- ✓ Flexible installation
- ✓ Low pressure loss, high accuracy



### BUILDING OWNER

- ✓ Longer lifetime
- ✓ Short payback time
- ✓ Reduced maintenance and ownership costs



### END USER

- ✓ Reliable data
- ✓ Precise measurement
- ✓ Accurate billing

# Danfoss: pioneers in ultrasonic metering technology

Danfoss has many decades of experience in heating solutions and is a pioneer in the development of ultrasonic technology. Our R&D facility in Denmark has been developing and testing heat meters for over 40 years. Danfoss was among the first to apply ultrasound 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 heat metering and energy consumption reduction, you can rely on Danfoss expertise.



To learn more about SonoSelect™  
visit [sono.danfoss.com](http://sono.danfoss.com)

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