

Energy metering | Product overview

# All it takes to **measure, collect and analyze** energy consumption in **heating and cooling applications**

Discover the full range of ultrasonic heating & cooling meters and data readout solutions.



# SonoSafe™ 10

Mainstream ultrasonic meter for heating applications

## Meter offerings

The ultrasonic meter SonoSafe™ is a compact and reliable meter for residential applications. The meter offers a new level of installation and commissioning simplicity by using SonoApp. It is also manufactured in accordance with ISO/TS16949 (IATF) automotive standards ensuring highest manufacturing quality.

## Main product benefits

- Open communication protocols/interfaces enable easy data access and system integration
- Best-in-class battery lifetime (up to 16 years) or 230V mains powered - lowers replacement frequency
- Configuration via SonoApp (change supply/return, energy units etc.) and modular construction (exchangeable communication modules) increases installation flexibility
- Extensive alarms (including tamper and reverse flow detection) ensure instantaneous fault detection
- Advanced diagnostics (remaining battery lifetime, transducer signal quality) allow preventive maintenance and troubleshooting



## Target applications



1-2 FAMILY HOUSES



MULTI-FAMILY HOUSES



COMMERCIAL



DISTRICT ENERGY NETWORKS

## Technical data

Size   Flow	DN15 – DN32   Qp 0.6 - 6.0 m³/h
Temperature   Pressure	5-95°C   PN16
Application	Heating
Approvals	MID class II B+D (heating)
Power supply	Battery AA-cell 3.6 VDC   Mains unit: 230 VAC
Modular	1 slot for communication module
Communication	2x wired M-Bus   Wireless M-Bus (OMS)   2x Pulse in-/output
Data logging	Daily, monthly and yearly values
Tools	Configurable via SonoApp
IP protection	IP65 calculator and IP65 flow sensor



# SonoSelect™ 10

High-end ultrasonic energy meter for heating and cooling

## Meter offerings

SonoSelect™ is a compact ultrasonic meter for measuring energy consumption in heating, cooling and combined heating/cooling applications designed primarily for use in residential buildings. High flow measuring frequency (two times per second), robust housing and transducer design make it an excellent choice for flat stations with instantaneous hot water preparation.

## Main product benefits

- Top of class meter accuracy ensures valid billing of heating, cooling and instantaneous hot water preparation
- Versions with higher pressure (PN25) and temperature rating (130°C) are a good match also for primary side installations and high rise buildings
- High IP rating of flow part (IP68) and calculator part (IP65) prevent condensation problems in cooling applications



## Target applications



1-2 FAMILY HOUSES



MULTI-FAMILY HOUSES



COMMERCIAL



DISTRICT ENERGY NETWORKS

## Technical data

Size   Flow	DN15 – DN32   Qp 0.6 - 6.0 m³/h
Temperature / Pressure	5-95°C   5-130°C / PN25
Application	Heating, cooling, combined
Approvals	MID class II B+D (heating)   TS (DK)   PTB (DE)   BEV (AT)   METAS (CH) (cooling)
Power supply	Battery AA-cell 3.6 VDC   Mains unit: 230 VAC
Modular	1 slot for communication module
Communication	2x wired M-Bus   Wireless M-Bus (OMS)   2x Pulse in-/output
Data logging	Daily, monthly and yearly values
Tools	Configurable via SonoApp
IP protection	IP65 calculator and IP68 flow sensor

# SonoMeter™ 40

Ultrasonic meter for demanding applications

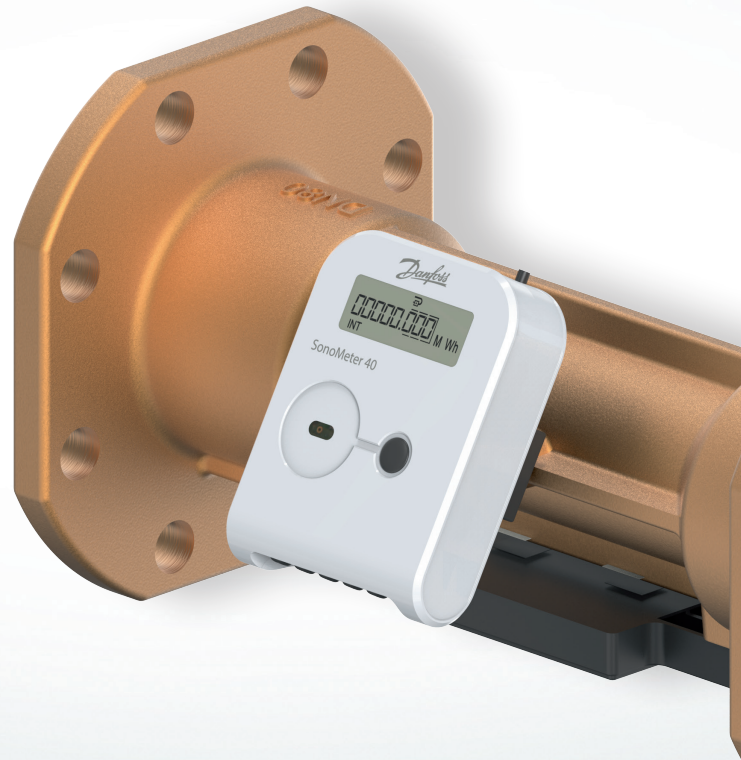
## Meter offerings

SonoMeter™ 40 is a compact ultrasonic meter for measuring the flow and thermal energy in heating and/or cooling applications within district energy networks, commercial and residential buildings.

The meter is MID class II B+D approved. It can be ordered for supply or return pipe installation and provides many different configuration options.

## Main product benefits

- Multiple communication options available (up to 3 communication interfaces can be used in parallel)
- Exchangeable temperature sensors, batteries, and communication module
- Mains power with battery back-up secures no data loss even if power is lost
- Battery lifetime (up to 15 years) or 24V/230V mains powered - lowers replacement frequency



## Target applications



1-2 FAMILY HOUSES



MULTI-FAMILY HOUSES



COMMERCIAL



DISTRICT ENERGY NETWORKS

## Technical data

Size   Flow	DN15 – DN100   Qp 0.6-60 m <sup>3</sup> /h
Temperature   Pressure	0.1-130°C   PN25
Application	Heating, combined heating and cooling
Approvals	MID class II B+D (heating) PTB (DE) (cooling)
Flow sensor cable length	1.2m   2.5m   5.0m   10.0m
Temp. sensor cable length	1.5m   3.0m   5.0m   10.0m
Configuration options	Pulse input/output values   Tariffs   Display parameters   Archive logs   M-Bus settings   Set dates
Power supply	Battery AA-cell 3.6 VDC   Mains unit: 230 VAC   24 VAC
Modular	1 slot for communication module
Communication	2x wired M-Bus   Wireless M-Bus (OMS)   2x Pulse in-/output   RS485 Modbus   RS485 BACnet   LoRa WAN
Data logging	Hourly, daily and monthly values
IP protection	IP65 calculator and IP68 flow part

# Sono 3500 CT™

Large size flow sensor for commercial applications

## Meter offerings

Sono 3500 CT™ is an ultrasonic flow sensor designed for heating, cooling or combined heat/cool applications in larger sized local and district energy systems. Combined with a type approved heating/cooling energy calculator (e.g. InfoCal™ 9) it offers energy metering capabilities in larger applications.

The sensor is MID Class II certified.

## Main product benefits

- Extremely robust solution suitable for applications with very high temperature, pressure and flow rate
- Covers heating, cooling and combined applications
- Measures flow in both directions with high measurement frequency (15 Hz)
- Compact or remote mounting
- No pressure drop



## Target applications



1-2 FAMILY HOUSES



MULTI-FAMILY HOUSES



COMMERCIAL



DISTRICT ENERGY NETWORKS

## Technical data

Size   Flow	DN100 – DN1200   Qp 120 - 18000 m <sup>3</sup> /h
Temperature   Pressure	Compact: 2-120°C / Remote: 2-200°C   PN16/25/40
Application	Heating, cooling, combined
Approvals	MID class II B+D (heating)
Flow sensor cable length (remote version)	5.0m   10.0m   20.0m   30.0m
Power supply	Mains unit: 230 VAC
Communication	2 Pulse outputs   4-20mA
IP protection	IP67



# InfoCal™ 9

Energy calculator for flow sensors in commercial applications

## Meter offerings

InfoCal™ 9 is an energy calculator, e.g., for combination with SONO 3500 CT™ flow meters. It is designed for heating, cooling or combined heat/cool applications in local and district energy systems. The calculator is MID Class II B+D certified and comes in either a 230 V AC mains power supply or battery powered version offering a 12 year battery lifetime.

## Main product benefits

- Covers a large range of sizes from DN15 to DN1200
- High frequency of input pulses for flow sensor up to 200 Hz
- Wide temperature range (0-160°C) increases the product usability



## Target applications



1-2 FAMILY HOUSES



MULTI-FAMILY HOUSES



COMMERCIAL



DISTRICT ENERGY NETWORKS

## Technical data

Temperature	0-160°C
Application	Heating, cooling, combined
Approvals	MID class II B+D (heating)
Temp. sensor cable length	2.0m   3.0m   5.0m   10.0m
Power supply	Battery D-cell 3.6V   Mains unit 230 VAC
Modular	1 slot for communication modules
Communication	Wired M-Bus   Wireless M-Bus (OMS)   2x Pulse outputs/inputs   RS 485 modbus RTU   2x 4-20mA
Data logging	Hourly, daily and monthly values
IP protection	IP65

# SonoCollect™ 111 & 112

## Smart metering data concentrators

### Product offerings

SonoCollect™ 111 and 112 are smart metering data concentrators for energy meter readout. They both come with a standardized wired and wireless M-Bus interface. The SonoCollect™ 111 can collect the data from up to 500 energy meters. SonoCollect™ 112 reads up to 80 energy meters, and it can have a built-in mobile network (2G, 3G, 4G) connectivity option. The extracted metering data can be communicated to the Cloud or other analyzing tools.

### Main product benefits

- Highly flexible and suitable for most customer requirements due to product versatility and flexibility
- Easy remote configuration and updating eliminates on-site service
- Reading of up to 500 energy meters lowers the required number of concentrators



## Communication options



WIRED



WIRELESS



WALK-BY



CLOUD

## Technical data

Installation	DIN rail
M-Bus Interface	Up to 500 unit loads, auto-scan, compliant to EN 13757
Wireless M-Bus Interface	AES encryption, compliant to OMS (868 MHz), auto-scan, Mode: S, T, C
Serial interface	Modbus RS-485, up to 250 kbps, two-wire
S0 pulse input	3 channels, IEC 62053-31
Ethernet interface	100 MB, RJ45, support of IPv6 and IPsec (VPN)
WAN interface	LTE (4G) module, optional, slot for Mini SIM
Communication protocols	Modbus TCP, BACnet/IP, MQTT
FTP transfer (push, pull)	CSV, XML
Encryption protocols	TLS, SSH, SSL, OpenVPN
Integrated web server	Yes
Memory for local data storage	4 GB
Firmware and Configuration	Directly or remote with integrated web server

# SonoRead™ 868

## Wireless Radio Receiver for meter reading

### Product offerings

SonoRead™ 868 is a portable Wireless M-Bus T1 and C1 transceiver (OMS) with Bluetooth interface. It reads all OMS standardized meters.

Connecting the meter readings with the SonoApp Workspace via the SonoApp creates a powerful mobile radio meter reading system. This mobile radio meter reading system will administrate known and unknown meters and encryption keys.

### Main product benefits

- Plug & play startup and easy to use  
– lowers time spend for configuration
- Universal reading of all types of meters and measurement types – increases usability and lowers need for component replacements



## Communication options



WIRED



WIRELESS



WALK-BY



CLOUD

## Technical data

Wireless M-bus frequency	868 MHz
Wireless M-bus interface	EN13757-4, Mode T1 and C1
Antenna (changeable)	External (SMA)
Communication interface	Bluetooth 2.1 class 2 (10.0m)
Dimensions without antenna	159 x 77 x 33 mm
Integrated battery type	Lithium ion
Operation time	20 hours (approximately)
IP protection class	IP64



# Global coverage

Danfoss energy meters are the preferred choice by decision makers all over the world. Here you can find a small collection of our project references. Is yours next?

## Energy meters in cooling applications



- Arabian Gate
- Dubai, United Arab Emirates
- Residential apartments
- 700 pcs. SonoSelect™



- Steyn City
- Johannesburg, South Africa
- Residential homes
- 127 pcs. SonoSelect™



- The podium tower
- Manila, Philippines
- Offices
- 252 pcs. SonoSelect™



- Axis Towers
- Muntinlupa City, Philippines
- Offices
- 76 sets Sono 3500CT™ / Infocal 9

## Energy meters in heating applications



- District heating utility
- Tianjin, China
- Residential buildings
- 52,000 pcs. SonoSelect™ / SonoSafe™



- District heating utility
- Qingdao, China
- Residential buildings
- 20,000 pcs. SonoSelect™ / SonoSafe™



- District heating utility
- Qinhuangdao, China
- Residential apartments
- 34,000 pcs. SonoSelect™ / SonoSafe™



- District heating utility
- Moscow, Russia
- Residential and commercial facilities
- 1,200 pcs. SonoSelect™ / SonoSafe™



- Belgrade Waterfront
- Belgrade, Serbia
- Residential and commercial buildings
- 2,000 pcs. SonoSafe™, 500 pcs. SonoMeter™ 30



- Koza park
- Istanbul, Turkey
- Residential buildings
- 2,145 pcs. SonoSafe™



- 40 Leadenhall (Gotham City)
- London, United Kingdom
- Commercial buildings
- 400 pcs. SonoSelect, SonoMeter 30 and Sono 3500CT

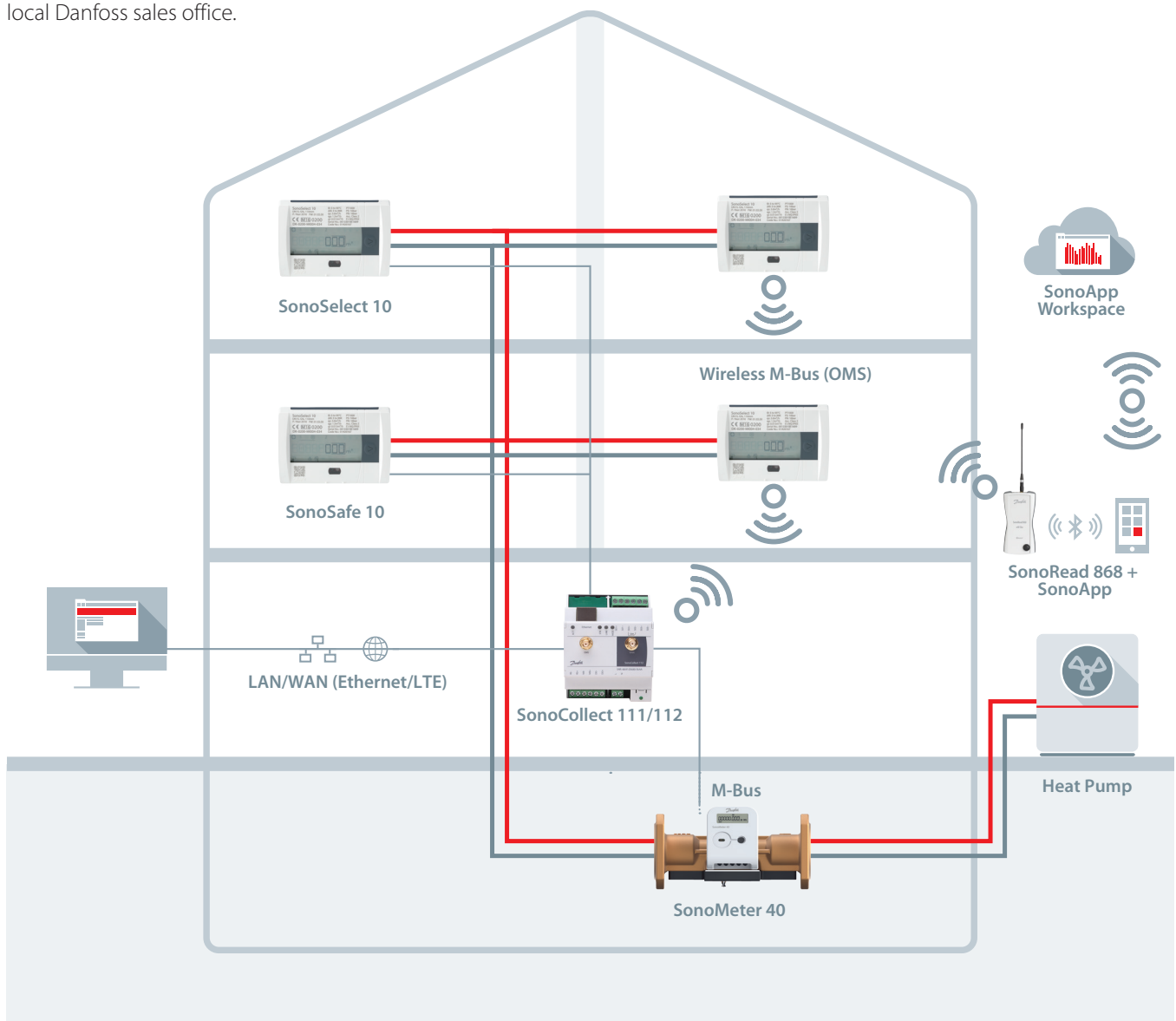


- Akademicheskij
- Ekaterinburg, Russia
- Residential apartments
- 2,500 pcs. SonoSafe™

# Danfoss Energy metering **solutions**

Danfoss offers full range of energy meters for district heating and cooling systems, used on primary or secondary side of installation.

Find out more about the products and solution on [sono.danfoss.com](http://sono.danfoss.com) or contact your local Danfoss sales office.



## Danfoss A/S

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