ENGINEERING
TOMORROW

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 heat & cooling meters and monitoring solutions.

sono.danfoss.com

Secondary side metering

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 in primarily residential buildings. Its high measuring accuray and reliability makes it suitable for both tap water and district energy application measurements. The meter offers a new level of installation and commissioning simplicity by using SonoApp™ and meets all national certification requirements.

Main product benefits

- Top of class meter accuracy ensures valid billing of heating, cooling and domestic hot water
- Best in class battery lifetime (up to 17 years) or 230V mains powered – lowers replacement frequency
- Upgradable and robust meter – lowers spendings for meter replacements
- Open communication protocols/interfaces increases flexibility
- Self diagnostics and high accuray

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 | 5-130°C / PN25
Types	Compact meter (heat, cool, combined)
Approvals	MID class II B+D (heating) | TS (DK) | PTB (DE) | BEV (AT) | METAS (CH) (cooling)
Flow sensor cable length	1.5m (approved for up to 3.0m)
Temp. sensor cable length	1.5m (approved for up to 10.0m)
Configuration options	Supply / Return | Energy units | Communication settings (radio, Mbus, pulses)
Power	3.6V battery* or 230V mains powered
Modular	1 slot for communication modules
Communication	2x wired M-Bus | Wireless M-Bus (OMS) | 2x Pulse in-/output
Data logging	4 years and supports daily logs
Tools	Configurable via SonoApp™
Calculator	Separable and IP class 65

*) up to 16+1 year lifetime, no transport restrictions

Secondary side metering

SonoSafe™ 10

Mainstream ultrasonic meter for heating applications

Meter offerings

The ultrasonic meter SonoSafe™ is a compact and reliable meter offering basic features and functions. It can be installed in several heating applications within residential buildings and comes with all national certification requirements.

As SonoSelect™ it is manufactured in accordance with TS16949 automotive standards.

Main product benefits

- MID class II compliant – makes the meter fulfill basic market requirements
- Upgradable and robust meter – lowers spendings for meter replacements
- Open communication protocols/interfaces increases flexibility

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
Types	Compact meter (heat)
Approvals	MID class II B+D (heating)
Flow sensor cable length	0.5m (approved for up to 3.0m)
Temp. sensor cable length	0.5m (approved for up to 10.0m)
Configuration options	Communication settings (radio, Mbus, pulses)
Power	3.6V battery* or 230V mains powered
Modular	1 slot for communication modules
Communication	2x wired M-Bus | Wireless M-Bus (OMS) | 2x Pulse in-/output
Data logging	4 years and supports daily logs
Tools	Configurable via SonoApp™
Calculator	Separable and IP class 54

*) up to 11 years of lifetime, no transport restrictions

Primary side metering

SonoMeter™ 30

Ultrasonic meter for demanding applications

Meter offerings

SonoMeter™ 30 is a compact ultrasonic meter for measuring both heat and cooling consumption at the entrance of the building or within district energy networks. It can be configured for both supply and return and offers up to 11 years of battery lifetime.

The meter is MID Class II B+D certified.

Main product benefits

- Multiple communication options available, e.g. for building automation purposes
- Comes with pulse in-/output as standard
- High dynamic range (1:250) improves measurement accuracy even on low flow rates
- Mains power with battery back-up secures no data loss even if power is lost
- Can be used in glycol applications (not MID certified)

Target **applications**

1-2 FAMILY HOUSES

MULTI-FAMILY HOUSES

COMMERCIAL

DISTRICT ENERGY NETWORKS

Technical **data**

Size | Flow	DN15 – DN100 | Qp 0.6-60 m³/h
Temperature | Pressure	5-130°C | PN16/25
Types	Compact meter (heat, cool and combined)
Approvals	MID class II B+D (heating)
Flow sensor cable length	1.5m | 2.0m | 3.0m | 5.0m
Temp. sensor cable length	1.5m standard (replacable and approved for up to 10.0m)
Configuration options	Pulse input/output values | Tariffs | Display parameters | Archive logs | MBus settings | Set dates
Power	Battery AA-cell 3.6 VDC | Mains unit: 230 V AC | 24 VAC
Modular	1 slot for communication modules
Communication	Wired and Wireless M-Bus | Pulse in-/output | RS 485 Modbus
Data logging	3 years and supports daily logs
Calculator	Separable and IP class 65

Primary side metering

SonoSensor™ 30

Individual flow sensor for most common applications

Meter offerings

SonoSensor™ 30 is an ultrasonic flow sensor designed for heating, cooling or combined heating/cooling applications in medium sized local and district energy systems. Combined with the InfoCal™ 9 energy calculator it offers normal compact meter functionalities for medium sized hydronic applications.

The sensor is MID Class II certified.

Main product benefits

- Offers a 12 year battery lifetime lowering the replacement costs
- Measures volume every 1 sec. increases measurement accuracy
- Insensitive to dirt lowering the needs for replacing the sensor
- Low pressure loss

Target **applications**

1-2 FAMILY HOUSES

MULTI-FAMILY HOUSES

COMMERCIAL

DISTRICT ENERGY NETWORKS

Technical **data**

Size	DN15 – DN100 | Qp 0.6-60 m³/h
Temperature | Pressure	5-130°C | PN16/25
Types	Flow sensor (heat, cool)
Approvals	MID class II B+D (heating)
Flow sensor cable length	1.2m | 2.5m | 5.0m
Power	Battery AA-cell 3.6V | mains unit 24V AC | 230 V AC
Communication	Pulse output acc. to EN1434-2, type OD
Protection class	IP65 (IP67 upon request)

Sono 3500 CT™

Large size flow meter for commercial applications

Meter offerings

Sono 3500 CT™ is an ultrasonic flow meter 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

- For high and very high temperatures applications
- Remote version for very high temperature applications enhances the meter lifetime and lowers replacement costs
- No pressure loss reduces pump power and energy used for circulation

Target **applications**

1-2 FAMILY HOUSES

MULTI-FAMILY HOUSES

COMMERCIAL

DISTRICT ENERGY NETWORKS

Technical **data**

Size | Flow	DN100 – DN1200 | Qp 60 - 9000 m^3/h
Temperature | Pressure	Compact: 2-120°C / Remote: 2-200°C | PN16/25/40
Types	Flow meter (heat, cool and combined) Compact or remote version
Approvals	MID class II B+D (heating)
Flow sensor cable length (remote version)	5.0m | 10.0m | 20.0m | 30.0m
Flow measurement	Bi-directional
Power	115 / 230 V AC with 3.6V single backup battery | 3.6V battery with dual 3.6V backup battery
Communication	2 Pulse outputs
Optical interface	IRDA with Modbus RTU protocol
Protection class	IP67

Utility metering

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 or SonoSensor™ 30 flow sensors. 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 increases the product usability
- Up to 100.0m flow cable length

Target **applications**

1-2 FAMILY HOUSES

MULTI-FAMILY HOUSES

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Technical **data**

Size	DN15– DN1200*
Temperature	0-160°C
Types	Energy calculator (heat, cool or combined)
Approvals	MID class II B+D (heating)
Flow sensor cable length	Up to 100.0m (230 VAC) | 10.0m (battery supply)
Temp. sensor cable length	2.0m | 3.0m | 5.0m | 10.0m
Configuration options	Pulse outputs | Additional sensors for flow, pressure and temperature
Power	Battery D-cell 3.6V | Mains unit 230 V AC
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	36 months
Protection class	IP65

*) Corresponds available sizes of matching SonoSensor™ 30 and Sono 3500 CT™

SonoCollect™ 111 & 112
Smart metering data concentrators

Product offerings
SonoCollect™ 111 and 112 are smart metering data concentrators for energy meter reading. 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. For the SonoCollect™ 112 this is up to 80 energy meters, and it has a built-in GSM option. The extracted metering data is communicated to the Cloud or other analyzing tools via IP technology.

The wireless M-Bus is offering a new technology compliant to OMS making it possible to capture energy- and consumption data via open communication standards and high security levels. This makes it useful in all present and prospective infrastructures.

Main product benefits

- Highly flexible – reads non-proprietary standards eliminating complete meter replacements
- Easy remotely 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	OMS Compliant, AES encryption, auto-scan, Mode: S, T, C
Ethernet interface	100 MB, RJ45, support of IPv6 and IPsec (VPN)
GSM interface	Optional, external antenna via SMA-Connector, slot for Mini-SIM
WAN connection to server system (push)	TCP/HTTP connection (XML)
Encryption WAN (server communication)	TLS, SSH, SSL (server- and client-side certification), OpenVPN
E-Mail transmission (push)	XML data
FTP transfer (push, pull)	CSV data
Integrated web server	Yes
Memory for local data storage	4 GB
Firmware update	Directly or via WAN (Internet)
Configuration	Complete remote control via LAN or WAN (Internet)

Automatic Meter Reading

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 antenna (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)
Protection class	IP64

SonoEnergy™
Smart meter reading Cloud

Product offerings

SonoEnergy™ is a smart energy software offered as 'Software as a Service' (SaaS) platform for the overall integration of data, business processes and technologies. It collects measurements from SonoCollect™ or other data concentrators and communicates with 3rd party equipment, for reading out relevant information from the buildings and components in the field.

Consumption data supplied by SonoEnergy™ can be analyzed and ordered for further processes in other systems ex. billing solutions, energy advising solutions, optimization of grid, SCADA, BMS, etc.

Main product benefits

- Supports multiple meter reading technologies – lowers needs for component replacements
- Storage and processing of various data streams such as power, water, heat, pressure, temperature, etc. in one system
- Enables the provision of entire service concepts or single end-customer products in the area of smart metering and energy management

Communication options

WIRED

WIRELESS

WALK-BY

CLOUD

Technical **data**

Automatic monthly basic readout
Automatic advanced readout as often as necessary
Import installations from SonoApp™
Export to billing pre-defined format (.csv and .xml)
User rights management
Integrated map view for meters and data concentrators
Individual user dashboard view for monitoring
Graphics of messurements in meter details
Grouping and sub-grouping possibilities
E-mail or SMS notification on events and alarms
Analysis of data
Handling different business processes
Unlimited logging per meter

Project references

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 facilities
- 52,000 pcs. SonoSelect™ / SonoSafe™

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

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

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

- Binko Yapi
- Konya, Turkey
- Residential apartments
- 750 pc. SonoSelect™

- Koza park
- Istanbul, Turkey
- Residential apartments
- 2,145 pc. SonoSafe™

- Officium
- Ankara, Turkey
- Offices and shopping centre
- 120 pc. SonoSelect™ / SonoSafe™ / SonoMeter™ 30

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

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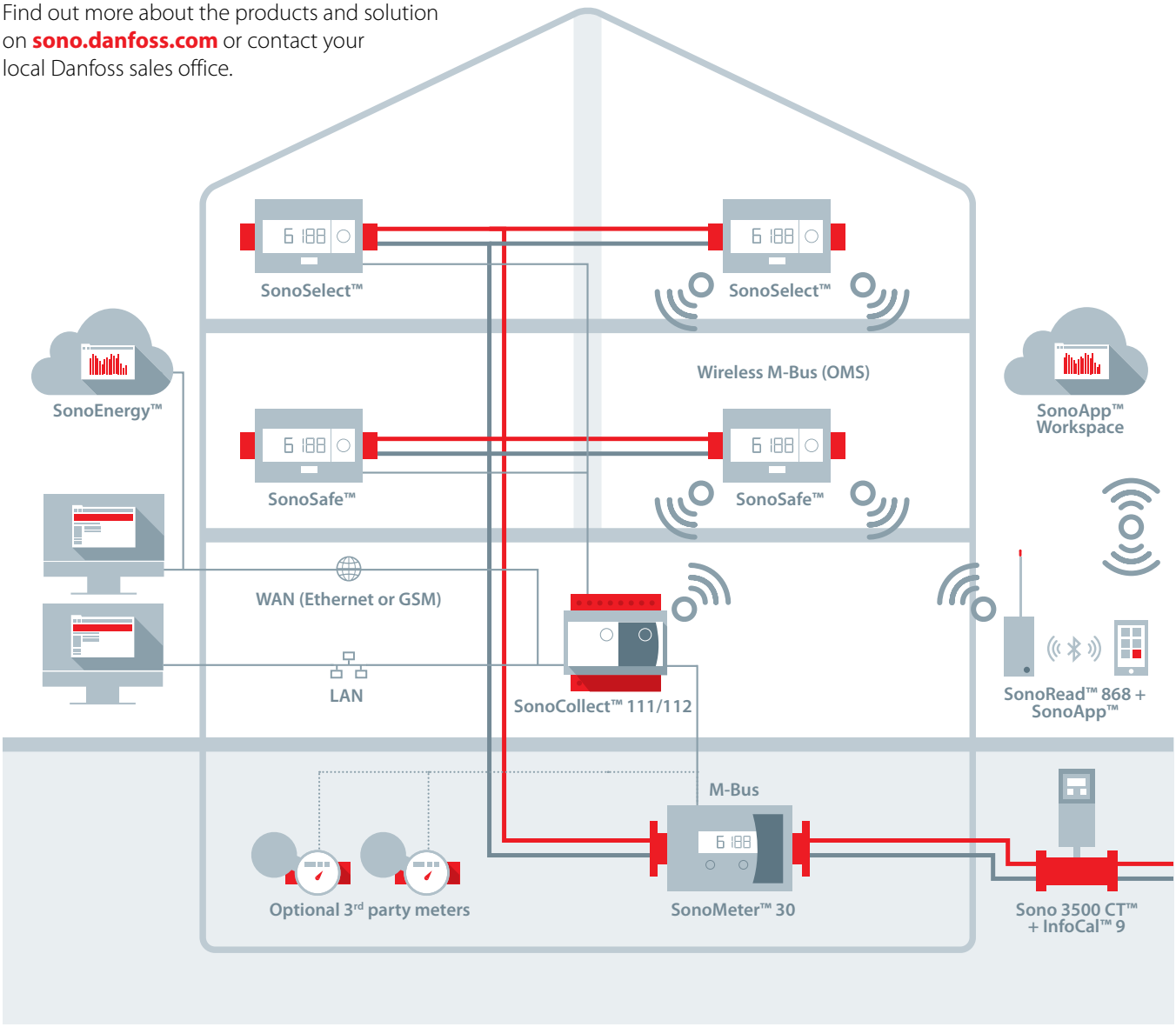
Danfoss Energy metering **solutions**

Danfoss offers a range of high quality energy metering products to measure, store and analyze heat and cooling consumption in buildings. With the Danfoss Energy Meter reading options the registered data can be accessed and managed from any place, creating wins at all project stages.

Find out more about the products and solution on **sono.danfoss.com** or contact your local Danfoss sales office.



Danfoss A/S
Heating Segment • heating.danfoss.com • +45 7488 2222 • E-Mail: heating@danfoss.com

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