

Energy metering | Diagnostics

# Genuine diagnostics give the knowledge to act

SonoSelect™ energy meter features genuine diagnostics with accurate traceability for fast error identification and correction.



## Diagnostics

reduces error  
handling and  
customer complaint  
costs.

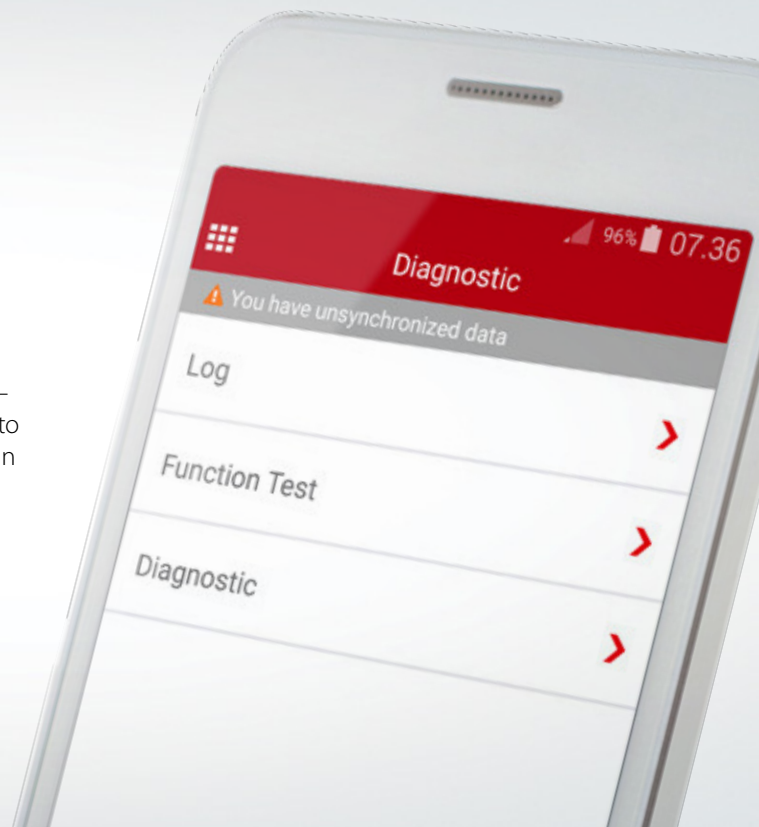


A new level of control

# Cutting edge diagnostic features

SonoSelect™ energy meters offer state-of-the-art diagnostic features – so far only known from process industry meters. Many systems claim to have “diagnostics” when this often means little more than displaying an error code. In contrast, SonoSelect™ features genuine diagnostics with accurate traceability and fast error identification and correction incl.:

- Explicit log function for extraction of errors and events
- Function test to ensure correct installation
- Energy meter diagnostic tool secures frequent confirmation of meter performance making service and maintenance easier



## Log function with overview of errors and events

This SonoApp™ function provides a quick and easy-to-read overview of errors and events containing:

- Change log with time stamp and change information
- Error log with time stamp and information. ID number for further elaboration

### Lowers costs thanks to:

- Less time spent on error identification



## Confirm correct installation in a single step

The function test can be run from the SonoApp™ in a single step and can confirm that there are no alarms and ensures that meter values are within acceptable limits.

### Saves costs by:

- Eliminating second-guessing and ensuring correct installation - even for inexperienced installers
- Reduces installation time thanks to fewer faulty installations and call-backs.

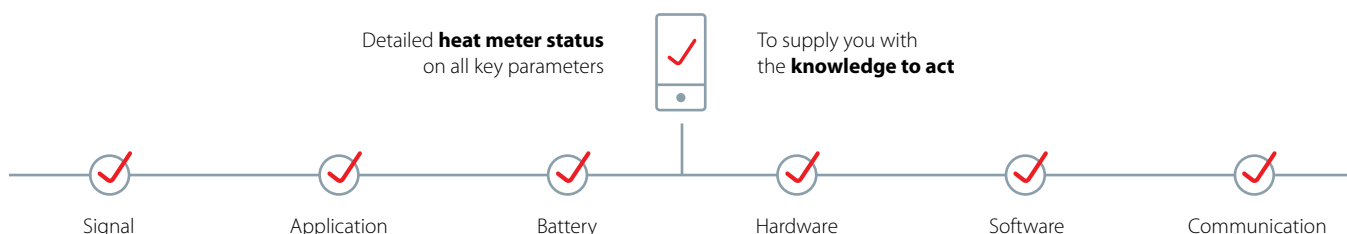


## Diagnostics for cost-efficient service and maintenance

Scheduled or manually triggered diagnostics generate detailed information on vital energy meter and application parameters: e.g. battery life status and potential for re-verification instead of replacement.

### Adding value thanks to:

- Less time spent on trial-and-error troubleshooting
- Eliminates the cost of unnecessary or untimely heat meter replacement
- Reduces costs related to customer complaints



## Advanced diagnostic functions

# The energy meter tools of tomorrow

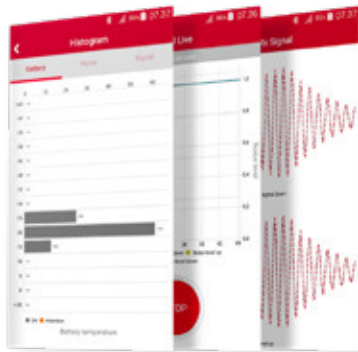
SonoApp™ advanced diagnostic functions help you identify problems related to key operational functions and potential external operational interference. If the unit needs servicing, it is easy to identify root causes using pinpoint error identification.

### Histogram

Following advanced information histograms provided: Battery environment showing seasonal variations in ambient temperature, Noise (EMI) influencing metering performance and ultrasonic signal strength measuring the water flow (e.g. air bobbles can be detected) - giving the user an insight into the meter's operational conditions.

### SNR Live

The signal to noise ratio function (SNR Live) provides entirely new insights. This function can address potential sources of noise in the installation. If, for example, EMI is disturbing the signal, the function can detect in real time whether any surrounding electrical equipment is causing the problem by turning it on and off.



- ✓ Customer value added
- ✓ Provides confidence and saves time
- ✓ Provides quick and targeted error correction
- ✓ Disputed information can be visualized to settle disagreements

**Less time spent on meter servicing** with an even higher degree of measurement confidence

## Rx Signal

All transducers are born with a unique 'fingerprint' (original Rx signal) showing initial performance. During production, this initial fingerprint is stored for future performance benchmarking.

The aim is to provide proof that a fingerprint match will result in successful re-verification.



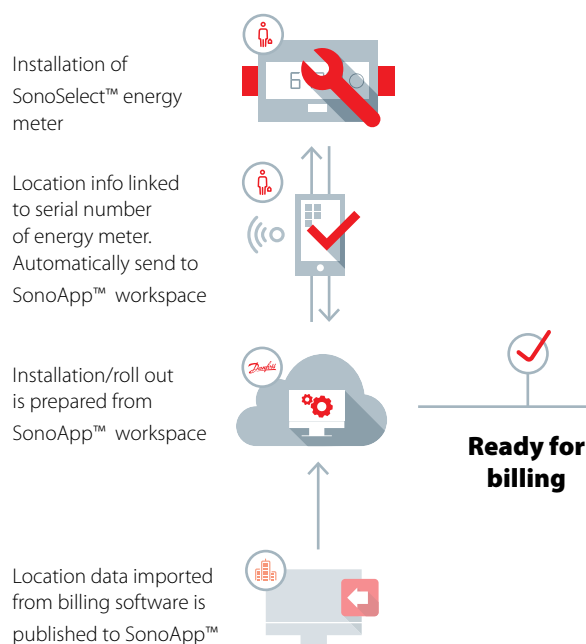
SonoApp™ workspace

# Intelligent access and data control

The SonoApp™ workspace ensures that data from each energy meter is properly handled, used and stored.

It creates the infrastructure needed by system owners. Enabling them to provide reliable installation, commissioning and servicing.

## Installation and parring workflow



## Company workspace (back-end)

SonoApp™ workspace is a customer space created by a Danfoss salesperson. It instantly provides full access to the SonoSelect™ functional platform.

Accessing the SonoApp™ workspace gives the customer control over which people or phones can access the system to modify meter setup.

### The SonoApp™ workspace ensures:

- Customer privacy (only approved people will have access to meter information)
- One place to control user access
- Smooth rollout
- Roles and responsibilities can easily change hands or be scaled

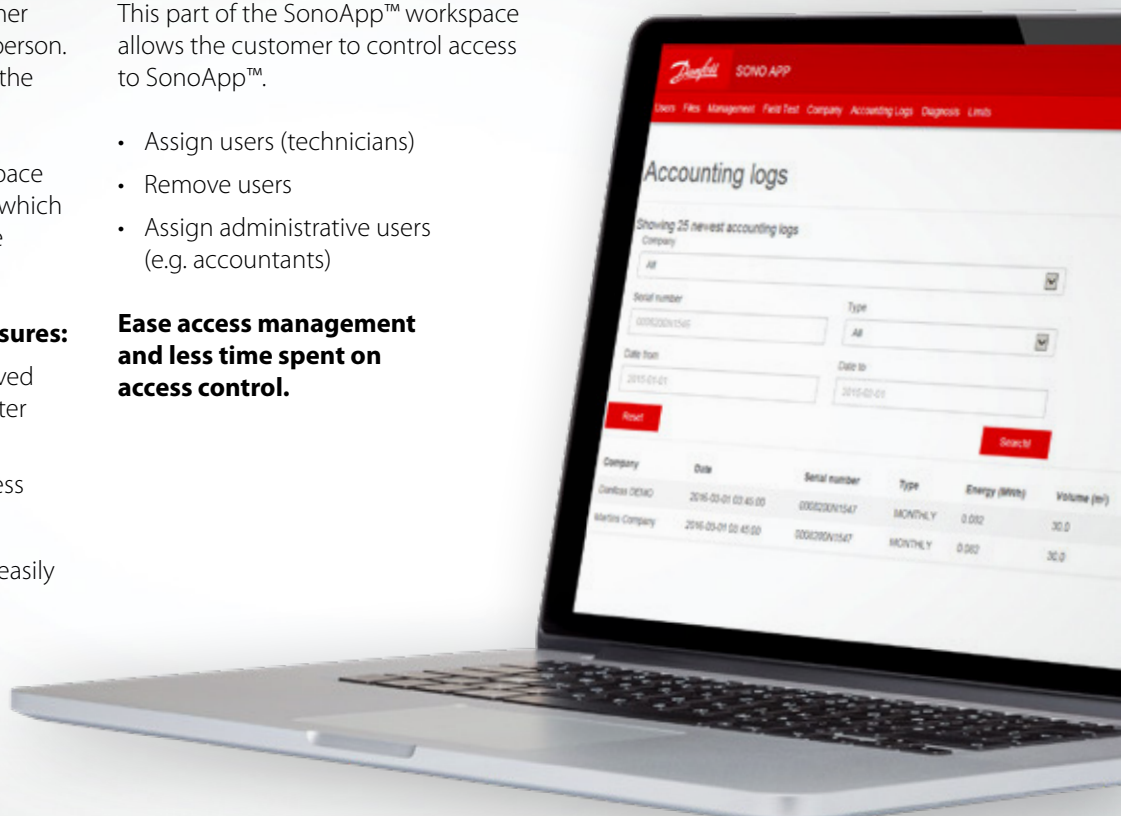
**Reduces data misuse and minimizes time spent on operational issues.**

## User access

This part of the SonoApp™ workspace allows the customer to control access to SonoApp™.

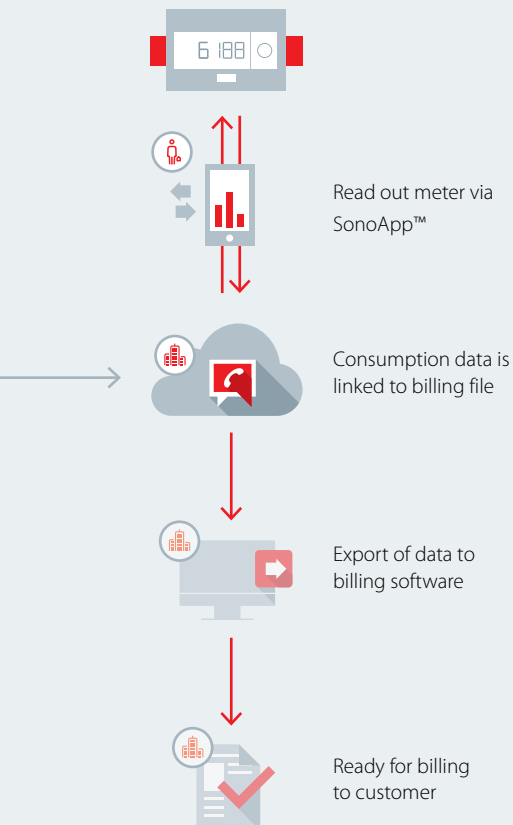
- Assign users (technicians)
- Remove users
- Assign administrative users (e.g. accountants)

**Ease access management and less time spent on access control.**





## Data read-out and billing workflow



### Workspace accounting log

## Easy readouts, without additional investments required

The SonoApp™ readout function makes it easy and costless to perform a reading even in challenging surroundings - just download the free SonoApp™, connect the SonoDongle™ and a readout is performed and sent to the workspace for export.

### Readings have never been easier:

- No paperwork required
- Simple submetering calculations done automatically
- No access/visibility limitations
- All free of charge

The back-end workspace gives access to data generated using SonoApp™ readout via the accounting log.

### User simplicity increased via:

- Consumption data for detailed billing purposes
- 24 monthly and 2-year logs including pulse values
- Search function

### Providing a simple and free management system for accumulating consumption data.

### Back-end files

## Ready for **billing**

The 'files' section of the SonoApp™ workspace allows the customer to import files with location information (addresses) from 3rd party billing software in Excel format. This is used to link the physical heat meter serial number to the location, supporting fast and efficient commissioning (SonoApp™ Paring function).

Paired heat meter data as well as SonoApp™ extracted meter readings are sent to the customer's billing software via the back-end.

### Customer advantages:

- Users (technicians with SonoApp™) can be assigned to files
- Progress can be monitored
- Files enriched with serial number information can be exported back to 3rd party billing software
- No need for additional software for roll out

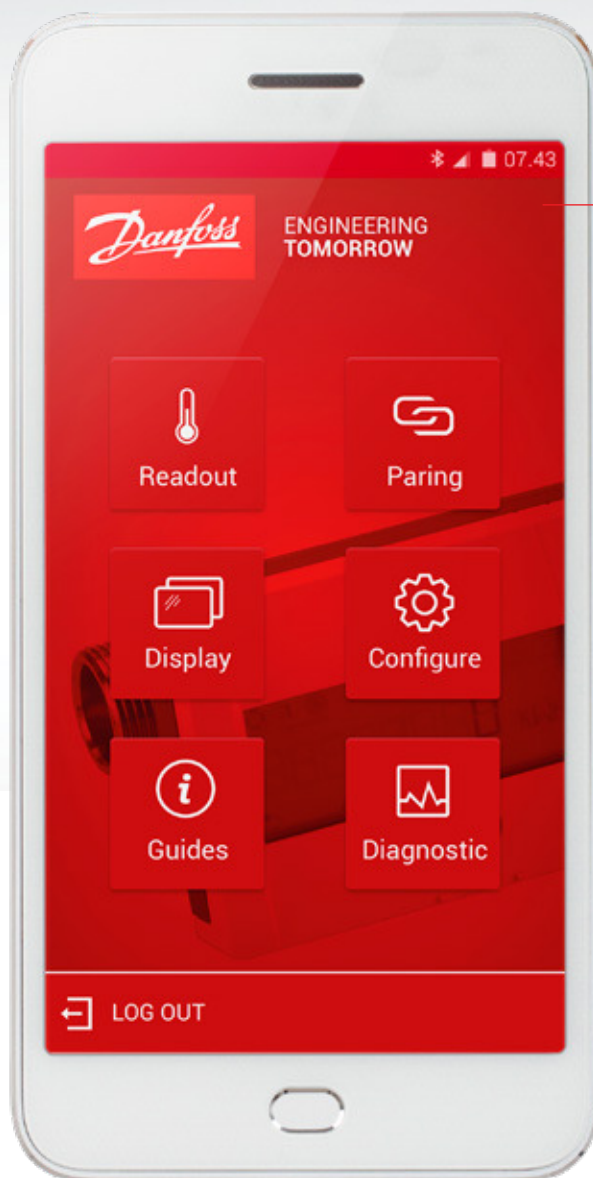
### Simplifies installation, commissioning and maintenance.

SonoApp™

# Advanced functionality with simple control

Advanced functionality has been moved from the product display to the SonoApp™, greatly simplifying commissioning and adjustment.

**All functions can be carried out in less than a minute.**



## Simple and intuitive configuration

### Supply/return configuration

The energy meter can be installed on either pipe and quickly reconfigured via the Supply/Return function of the SonoApp™. There is no need for the customer to buy a meter intended for mounting on a specific pipe.

### Unit of measurement configuration

Simple setting to the relevant unit of measurement for the customer's country or region. No need for specific codes or any other hardware.

### Setting date & time

Date and time are set via the relevant App function. These details will be automatically added to the customer's consumption overview.

### Setting accounting date

The default setting is 1st January, but users are free to set their own accounting dates.

### Firmware check

The approved firmware version is shown as part of the type approval. SonoApp™ features a check function to confirm approval conformity.

### Reset battery

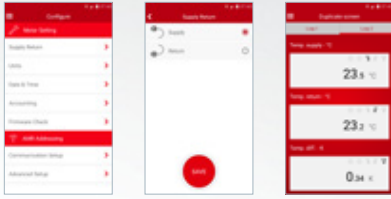
When the battery is removed, an error code is shown on the display. Resetting the battery requires just a few clicks in SonoApp™.

### Communication setup

Once the energy meter has been commissioned, customers have the option of installing a communication module inside the meter. This offers the flexibility of buying a cheaper unit initially and upgrading later, as required.

To adapt the meter for various applications SonoSelect™ features a slot for mounting communication modules. The communication module can quickly locate and link to third-party AMR systems.

**Reduces time spent on configuration and is easy to use.**



### Everything the installer needs, in one place

- Simple to use and easily accessible
- SonoApp™ can be used to set all advanced functionalities
- Always available and up-to-date



Installation guides are always at hand and always up-to-date

All user guides can be directly accessed via SonoApp™ so there is no need for technicians to carry paper manuals.

### Instant commissioning

SonoSelect™ begins counting immediately after installation, eliminating the need for a return site visit to commission the meter.

### Flexible diagnostics

Diagnostics can be enabled or disabled, as required. Error codes and the relevant explanation can be read directly in the display or via SonoApp™.

**Easy installation due to simple and direct access to relevant guides via SonoApp™.**



The display function provides useful extra benefits

The heat meter display can be viewed on SonoApp™, making it easy to read figures and navigate the menu, even in poor light or restricted access conditions.

**Easy access to the display readout saves time.**



# Next-generation energy metering from a **reliable** global partner

Danfoss has decades of experience in energy metering and has some of the world's most advanced R&D facilities. Constant optimization and continuous product improvement are your guarantee of creating win/win situations at all project stages.

The new SonoSelect™ brings cutting-edge ultrasonic technology to energy metering, providing measureable benefits for designers, contractors and operators. A lifetime of performance, easy accessibility via SonoApp™, and the knowledge provided by the genuine diagnostics reduce costs while reliable measurement data reassures end-users that they are being accurately billed.

Choosing Danfoss also means benefiting from a global sales and technical support network that ensures short lead times, efficient logistics and locally based after-sales service – 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.

## SonoSelect™ Ultrasonic energy meter

- 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 ensures long operational life
- Used in heating, cooling or combined heating + cooling applications
- Genuine diagnostics

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



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