

Solution description

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**READY**

The modern and efficient solution for reading smart water, heat and cooling meters



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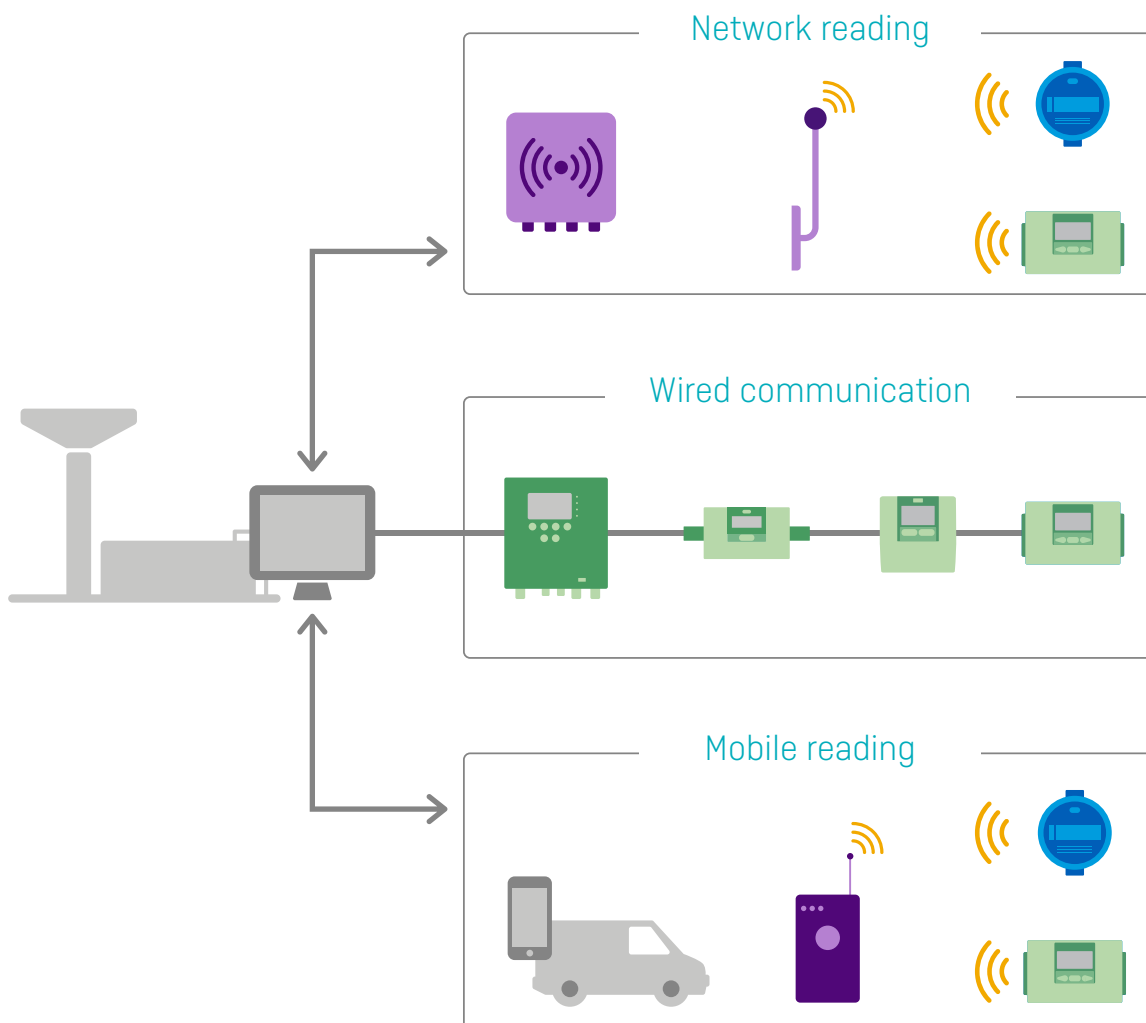


# More opportunities with READY

READY can be used for both mobile reading of meters and for direct reading from the utility.

READY is modular, and you can start with mobile reading, reading of wired M-Bus meters or direct reading via network. With the very easy configuration and setup, you can start out with mobile reading and upgrade to a network communication setup later. You may start using direct readings in segregated zones or in all zones at once. The READY flexibility allows for a progress towards direct reading matching your needs and requirements. An example could be: In areas with a high density of meters, you use direct readings. In rural areas, in areas where access is tough or in specific areas where consumption is of very high monitoring importance, you use mobile reading.

READY can be used for remote reading of water meters, heat and cooling meters, combined heat/cooling meters, electricity meters and Kamstrup pressure sensors.

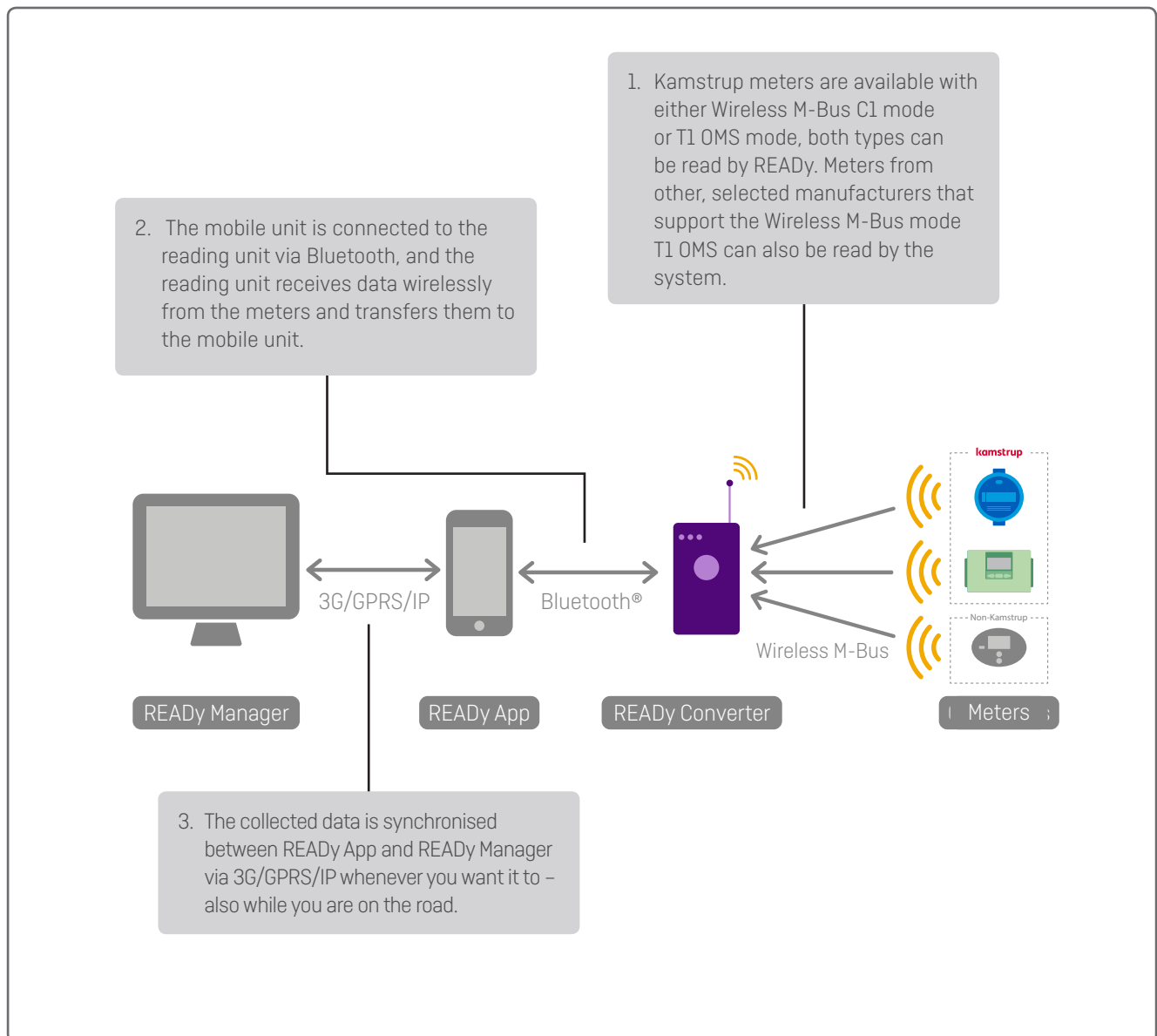


# Mobile reading

With mobile reading, the meters are read directly from the car by driving around in the supply area with an Android mobile unit (smartphone or tablet) and a reading unit (READY Converter). The collection of meter data takes place easily and intuitively via the app READY App.

When the reading is complete, the meter data is transferred easily to READY Manager which is a program on your PC that keeps track of and stores your meter data.

## Communication infrastructure for mobile reading



## How it works

READY App is intuitive and easy to use. Reading meters and synchronising data with READY Manager is a completely smooth process.

Data is synchronised wirelessly between READY App and READY Manager by pressing the "Send/Receive" button in READY App.

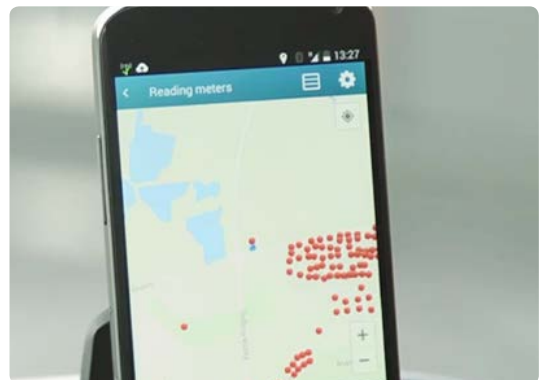
The reading of the meters can then be started by pressing "Read meters" in the start page of READY App.

With the addition of T1 OMS into READY Manager and READY App it is also possible to perform the following actions for non-Kamstrup meters that are T1 OMS compliant and verified by Kamstrup.



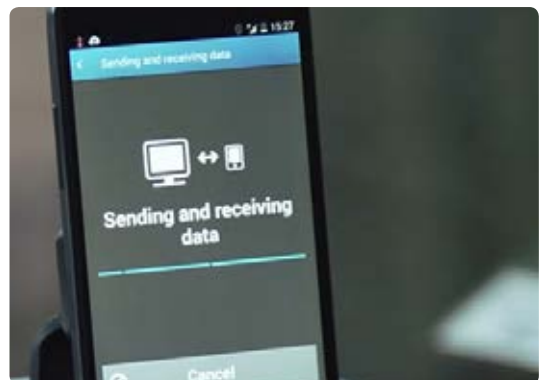
During the reading, an integrated Google Maps module (for China Baidu maps) in READY App shows the meters that have not yet been read making the reading very simple and efficient.

As soon as the meters are read, they disappear from the map which provides the operator with a clear picture of the remaining meters' positions. The map functions both as an indicator of the remaining meters and as navigation help during the reading. The reading continues during conversations, but can also be put on hold and continued later.



When the meters have been read, a single push on the button "Send/Receive" makes the data available in READY Manager.

This module ensures that the operator reading the meters can continue with other tasks without having to return to the office to transfer data.



## READY – Solution description

### Reading of logged data

In addition to reading meters, READY App can be used together with a Bluetooth®-connected optical eye for manual reading of the data logger of a water, heat or cooling meter.

When placing the optical eye on the infrared connection port of the meter, the data logger can be accessed from READY App. This makes READY App a very strong tool for entering into a dialogue with the consumer and for clarifying any questions and disputes.

Logger data that has been read with the optical eye can be made available in READY Manager by synchronising it in the same way as data read via a mobile unit.



The display of the daily consumption is a good tool for entering into a dialogue with consumers and for clarifying disputes.



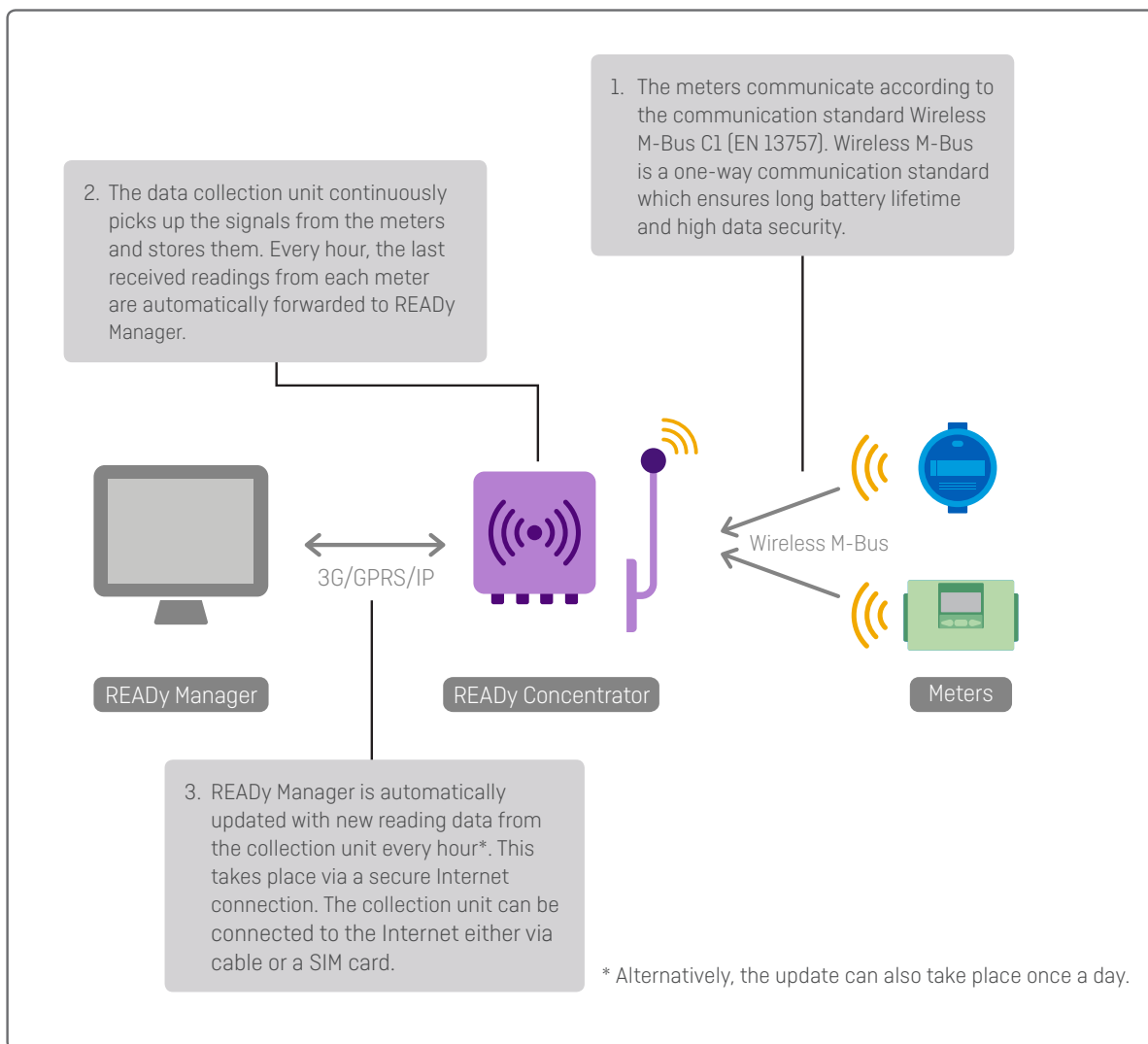
# Fully automated meter reading to you

By installing one or more fixed data collection units in a supply area, the meters can be read directly from the utility on a daily or hourly basis.

Fixed data collection units are also ideal for commercial buildings or industries where rewiring to meters is not possible.

## Communication infrastructure for network reading

A data collection unit consists of one or two antennas which pick up the signals from the meters via Wireless M-Bus. An antenna is connected via cables to a concentrator unit which, via GPRS or IP, sends data to READy Manager:



Note: T1 OMS Wireless M-Bus is not supported by Fixed network solutions.



## Installation

Normally, a data collection unit can read meters in a radius of 500 - 600 m. It is, however, also possible to achieve ranges of more than 3 km with special antennas placed, for instance, in chimneys, lattice towers or flag poles.

## Antennas

The antennas are installed as high as possible to pick up the signals from as many meters as possible. Typically, the antennas are installed on the roof of buildings in the area. Normally, an antenna can reach meters in a radius of 500 – 600 m. However, with special antennas placed in, for example, chimneys, it is possible to achieve ranges of 2 – 3 km.



## Concentrator

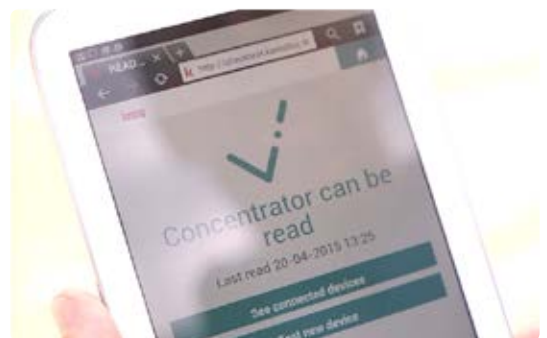
The concentrator is available in two versions: one for indoor mounting and one for outdoor mounting. The collection units only require connection to 230 volt and possibly also an IP connection. If IP is not available, the concentrator can be equipped with a GPRS modem and a SIM card for wireless transfer of data.



## Verification of the connection to the meters

As soon as the concentrator is connected to 230 volt and IP or equipped with a SIM card, it is possible to check which meters can be read by the concentrator via a mobile unit or a PC. This can be used in determining the optimal position for the data collection unit.

Likewise, it is possible to test if an individual meter has established contact with the relevant concentrator – just by entering the meter's serial number on a mobile-friendly website. Thus, revisits to the consumers' homes can be avoided as it can be determined during the installation if the meter can be read.

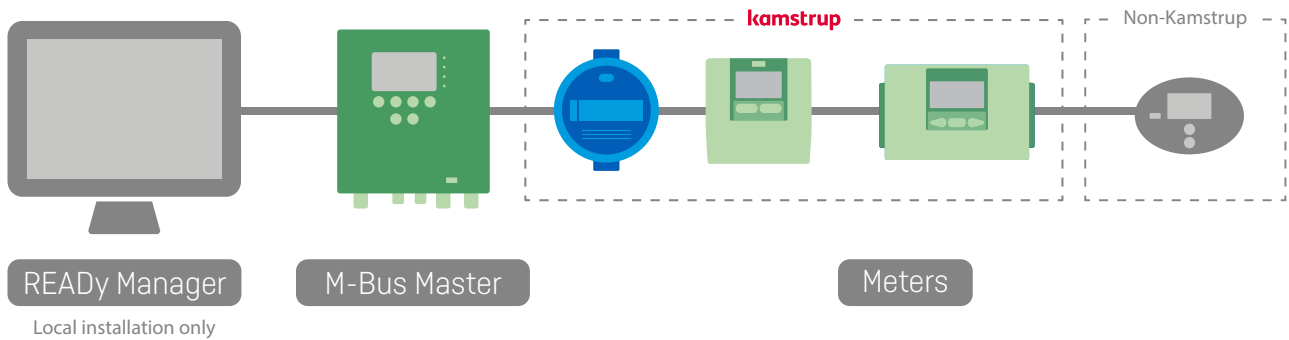


The contact between meter and concentrator can be verified quickly on a mobile-friendly website.

# Wired meter readings with READY Manager

Existing and new meters with wired M-Bus embedded can be read out by READY Manager via direct wired communication.

A wired communication for both Kamstrup and Non-Kamstrup meters is very useful in applications such as high-rise buildings, shopping malls, other commercial buildings, service buildings, etc. where wireless networks are challenged by concrete and heavy traffic on publicly available frequencies. Wired communication will be completely free of disturbances and will ensure full meter readings in tough surroundings.



## M-Bus Master

M-Bus Master is designed for the connection of up to 250 meters with M-Bus interface. M-Bus Master can be used as a master, a transparent level converter or as a repeater.

The total number of meters in one M-Bus system can be up to 1250 meters. Kamstrup offers two different M-Bus Masters.

M-Bus Master connects directly to your local READY Manager installation or may be connected via IP or wirelessly (3G) via additional external equipment.

### MultiPort 250D

With display and interface for Kamstrup optical eye



### MultiPort 250L

Without display and interface for Kamstrup optical eye



# Log reading and remote configuration of meters with two-way communication

Meters with built-in two-way communication such as MULTICAL® 403 and MULTICAL® 603 can be configured remotely via READY App. This means that it is possible to update the meters with new settings from the street, completely without having to disturb the consumer and without logistic issues in relation to gaining access to the meter.

It is possible to configure parameters such as tariffs and data logging intervals as well as pulse inputs. Furthermore, the remote configuration can be used to change the information that the meter sends in the Wireless M-Bus data package. Meter settings can thus be adapted to changing needs for data and new invoicing concepts. In addition, the two-way technology enables remote reading of the meter's log. The logged data can be read from the street by using READY App. Thereby, meters with abnormal consumption patterns can be investigated further without the need for making an appointment and disturbing the consumer unnecessarily.



**MULTICAL® 403**



**MULTICAL® 603**



The two-way communication makes it possible to change the settings to read logs from meters from the street.



## READY Manager – handling and storage of meter data

The handling of meters and meter data takes place in READY Manager. READY Manager has a simple and logical user interface with a start page and icon-based navigation.

This makes the program very intuitive and easy to use. Information about the most basic modules can be found by clicking the help icon on the start page.

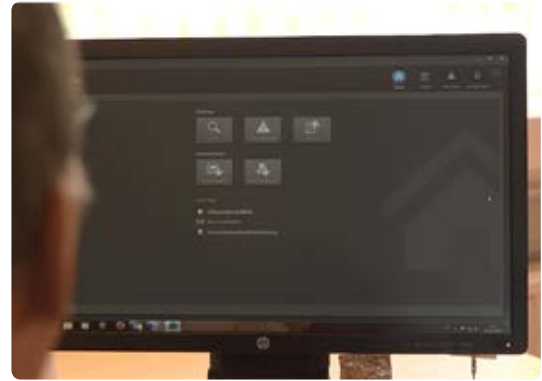
Both Kamstrup meters and some non-Kamstrup meters can be read via READY Converter and READY App in Drive By installations. A number of non-Kamstrup meters have been white listed for this purpose.

READY Manager handles meter encryption keys to support the best security possible. Once your meter encryption keys have been installed, you can read data from your meters.

In the map view, you can see both Kamstrup meters and non-Kamstrup meters, and they are visually differentiated to provide a better overview.

Once meters have been read via READY App, data is synchronized to READY Manager and data is available for further actions.

READY Manager supports up to 100,000 metering points.



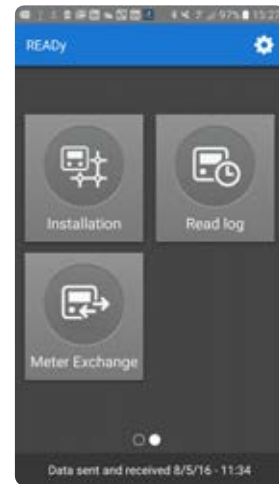
READY Manager has a simple and logical user interface, making it very intuitive.



## Meter exchange

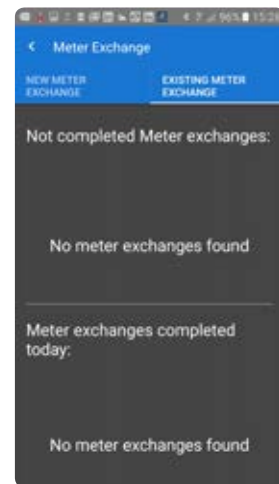
Many manual tiring processes are involved in the running maintenance of meters and the handling of meter exchanges.

The meter exchange feature in READY Manager and READY App simplifies the handling and maintenance of the meter exchange process which to a very high degree frees human resources to other tasks. In addition, the risk of manually caused errors is reduced to a virtual zero, which adds to the total efficiency of your utility.



### How it works

Exchanging a meter is a guided action that is generally performed via READY App, but it is also available in READY Manager. Once the meter is exchanged, READY App is synchronized with READY Manager where the historical data is stored. This flexibility leaves an option for you to perform meter exchange on-site or before the actual customer visit.

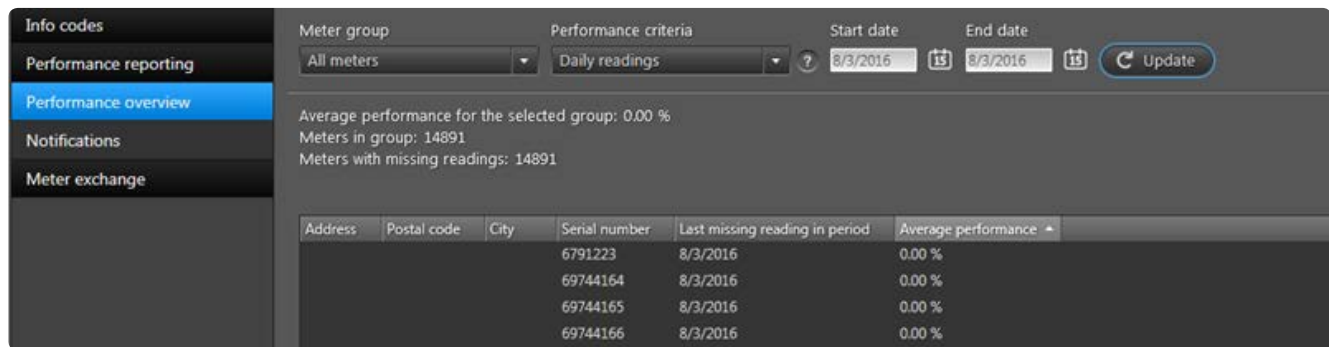


## Reading performance reporting and visualization

For remote reading networks, the demand for a very high performance is more and more evident. To have the right tool to validate and document the data collection success is therefore necessary. With the performance reading reporting and visualization module, it is hassle-free to get a network performance overview of meters selected.

You define what is good and what is bad performance. With a single setting of a parameter, you determine when meters are performing poorly.

### How it works – Performance overview



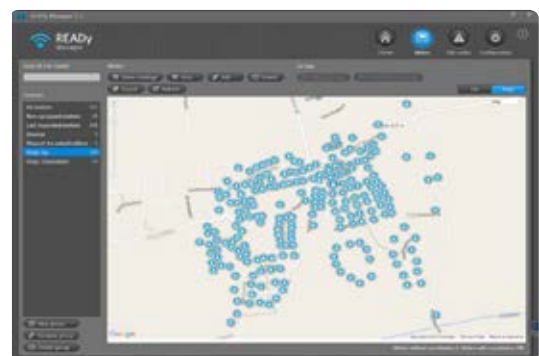
Meters that are available in READY Manager are listed for an easy overview. Each meter is shown within a user-defined interval, with its percentage of data messages received.

It is possible to create a report that shows the reading performance of a group of meters according to user-defined parameters. It is, for example, possible to retrieve a complete list of all poor-performing meters that are due to further investigation and optimization. If required, you may add comments to the generated report.

## See the meters on a map

The location of each meter is shown directly on a map in READY Manager to ensure the best overview of the installed meters. By clicking a meter on the map, further information about that meter is shown. The map is based on Google Earth (for China Baidu maps), and therefore, it is possible to use the Street View function to see comprehensive details about the installation sites.

Kamstrup meters are displayed in blue, red or green. Non-Kamstrup meters are displayed in orange.



## Alarms and other meter notifications

All meters with alarms and other meter notifications are shown in the overview menu "Info codes".

Here, alarms can be sorted quickly so that the newest and most important can easily be found. Consumers can individually define which alarms are relevant and can be notified quickly to limit expensive consequential damages.

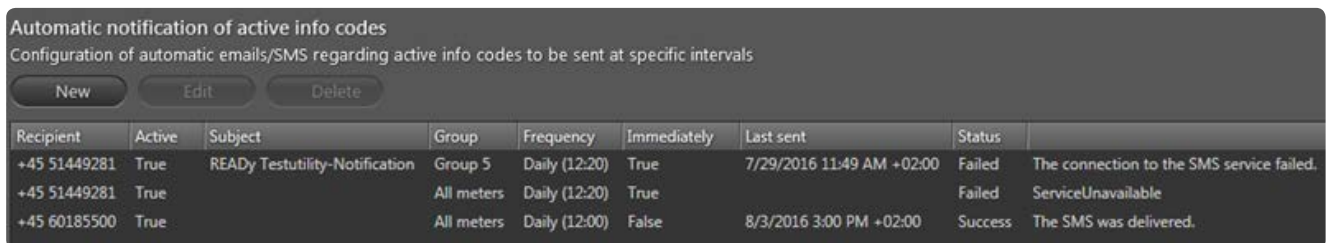
Once customers with active info codes have been located, it is easy to export the list of info codes if further customer interaction is needed. The export data is defined by the user which ensures flexibility.

To ease the overview, an icon representing the info codes is displayed in the meter overview window. This enables fast identification of customers with active info codes.



Immediately after the synchronisation, the read data is available in READY Manager. Alarms and other meter notifications are shown under "Info codes".

## System notification feature



In remote reading networks, it can be a big headache to follow occurring info codes and act accordingly. On the basis of customizable parameters, the Notification feature filters which info codes are relevant and which are not. The Notification feature forwards an info code by text message and/or email to a user-defined number of recipients. Forwarding settings determine if an info code is transmitted or not.

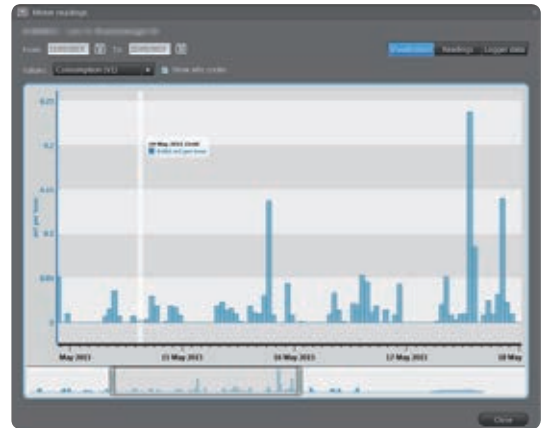
The Notification feature increases the occurrence of important info codes, to a large extent giving you full control of meter events.

# READY – Solution description

## Graphical presentation of data for analytical uses

READY Manager can visualise the consumption of individual meters in a bar chart over time. This eases troubleshooting and makes it easier to conclude and make decisions based on data. In the same chart, any info codes are also shown, making it possible to correlate consumption data and infocodes.

It is also possible to compare more meters in the same graphical chart. The comparison includes data from either pressure, district or consumption meters. By comparing pressure and flow in one section, it becomes possible to discover dimensioning errors, and it is possible to assess the need for pressure boosters or pressure reducing valves in parts of the network.



## Water loss analysis for Fixed Networks

In READY Manager, the Water loss analysis feature can regularly keep you updated on water loss.

The water loss is calculated by selecting first a meter or a group of meters as district meters for a given area and then selecting the group of consumption meters in the area that are supplied from that or those district meters. The module then shows the daily difference between the total volumes of the district and consumption meters respectively as a graph over a specified period of time. As electronically read data is used, the analysis can be made with accurately time-stamped readings.

This feature applies for Fixed Network readings only.

If the district meter is not read electronically, you can enter the pumped volume manually.



## Priority meters

If you have established direct reading in a network, you quickly discover the benefit of receiving data from the meters frequently. In some cases, it may be desirable to receive data with very short reading intervals. For this purpose, READY Manager offers the functionality Priority meters which enables you to read up to 50 meters in 5 minute intervals.

The short reading interval provides you with a far more varied picture when you need to troubleshoot certain parts of the network. The module is also very useful in relation to pressure monitoring. With a reading interval of 5 minutes, pressure differences as a result of the flow in parts of the network can be mapped and the pressure optimised.

### Priority meters and Kamstrup PressureSensor

With priority meters and Kamstrup PressureSensor, it is possible to verify hydraulic pressure losses throughout the distribution network. Pressure information provides you with details about the distribution pumping and knowledge about the pressure losses in your distribution network. This can guide you when creating new distribution networks or expanding a network.



## Electricity meters

With fixed networks, wireless M-Bus and walk-by/drive-by meter reading, it is possible to read electricity meters. The electricity meter supported in READY Manager is Kamstrup OMNIPOWER®.

Data available in READY Manager: A+; A-; P+, P-.



## Export of data

To simplify the integration with billing systems, READY Manager makes it possible to export data in flexible export formats. It is possible to generate most formats by selecting the data to export, the order and the separator.

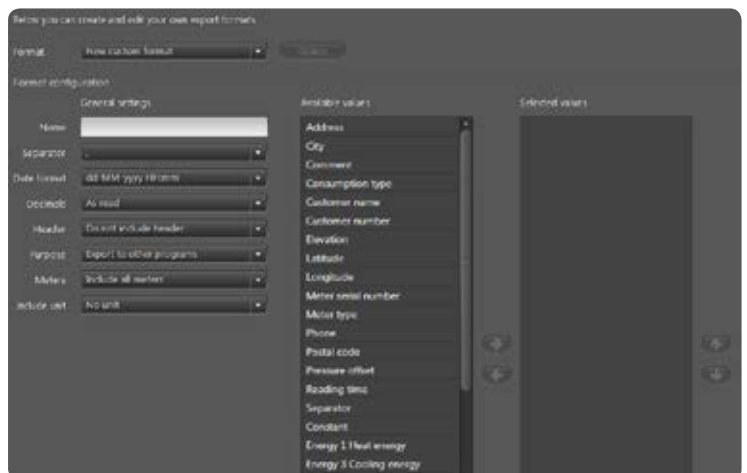
Data can be either exported ad hoc or by creating an automatic job which exports data to a selected place in certain intervals. Alternatively, you can set up READY Manager to automatically send out the read data via email in certain intervals.

Billing systems may require fixed width formats. This is solved with the flexible custom export function that supports both dynamic and fixed export widths together with a long list of data variables that can be exported.

Once the meter reading is received by READY Manager, the data can be exported to other programs for further usage.

Non-Kamstrup metering data is exportable in the same way as Kamstrup metering data. Note that T1 OMS data read from a non-Kamstrup meter, or meters that have been manually read, do not have the same amount of data variables as a Kamstrup heat/cooling or water meter.

For data exports, it is possible to enable the data interpolation feature, which is a tool for digitally enhancing the data quality by filling in missing values using advanced algorithms. Note that this feature requires a Fixed Network solution.



## Data security

To ensure a very high degree of data security, the data communication from each Kamstrup wireless M-Bus meter is encrypted with an individual AES 128-bit encryption. This means that consumption data from the meter can only be decrypted by the associated READY Manager and by the mobile units authorised by READY Manager.

Encryption keys are automatically loaded into READY Manager via direct connection to My Kamstrup which ensures you that you receive the correct keys – in this way, new meters are automatically available in READY Manager, shortly after having purchased them from Kamstrup. Furthermore, meter and reading data are stored safely at Kamstrup via our hosting solution. We have ISO 27001 certification within IT security.





Think forward

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