kamstrup

Installation guide

READy 4G Bridge

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Contents

1 Symbols used in this document

Warning
Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.

Caution
Indicates a situation that, if not avoided, could result in damage to equipment, mild injury or loss of data.

Note
Important information, e.g. preconditions, or necessary steps before proceeding, etc.

2 Product introduction

Kamstrup READy 4G Bridge is a battery-powered data collector unit that reads wMbus data from smart energy meters, water meters and forwards the meter readings via a cellular 2G/4G connection. Depending on the application, READy 4G Bridge can collect data from up to 5 meters and is battery-powered for up to 8 years. Data from the meters is wirelessly collected by READy 4G Bridge and forwarded to the READy Manager platform from Kamstrup.

2.1 System overview

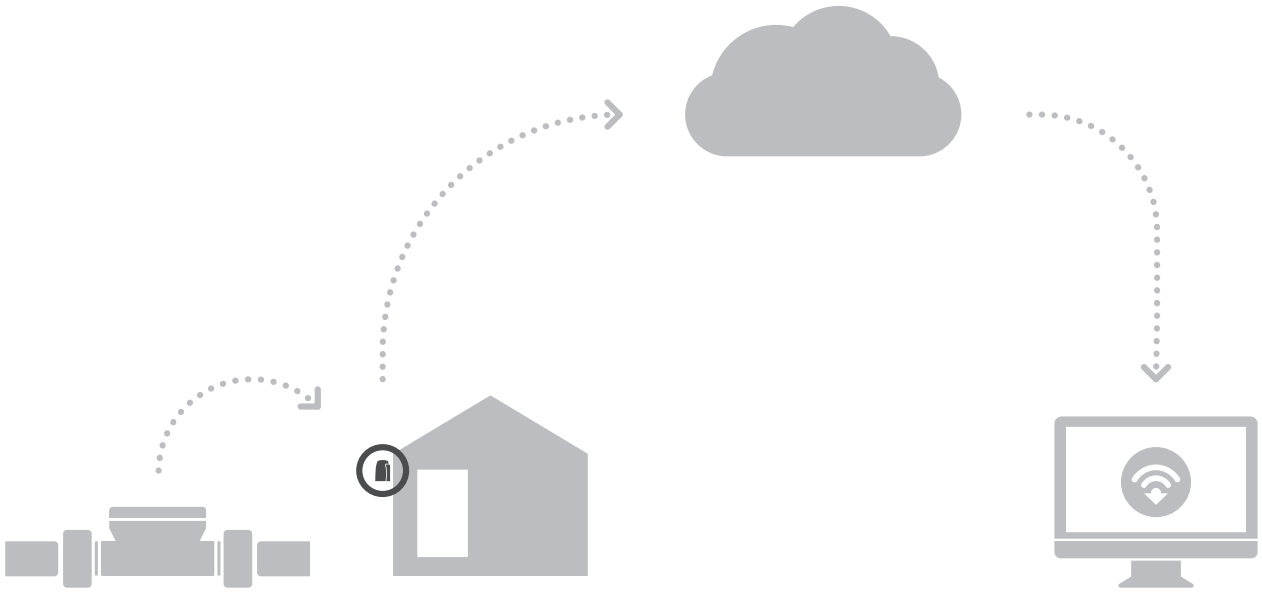


Figure 1 – READy 4G Bridge system drawing

2.2 Versions

READy 4G Bridge	Normal	Normal	Priority
Type number	669662010	669663010	669664010
Battery life	8 years	8 years	6 years
Data connectivity	Included	Included	Included
Data logging from meter	Hourly values transmitted at midnight (0:00)*	Hourly values transmitted in the morning (5:00)*	5-minute values*
Data transmission to READy Manager	Daily	Daily	Every 4 hours

*To obtain the best possible performance, follow the installation guidelines in section 4.2.

2.3 READy 4G Bridge overview

READy 4G Bridge consists of an enclosure, containing the electronics and the battery pack, and a protective shield in which the enclosure is installed. The shield protects the READy 4G Bridge unit from direct sunlight and makes flexible installation on walls or e.g. lamp posts possible.

Figure 2 – READy 4G Bridge

Figure 3 – READy 4G Bridge protective shield

The battery pack is located in the bottom part of READy 4G Bridge's enclosure together with a voltage controlling circuit. The top part of the READy 4G Bridge enclosure contains the electronics to control normal operation and the antennas.

2.4 Battery lifetime

READy 4G Bridge has voltage supplied internally from 4 lithium D-cell batteries and provides up to 8 years lifetime when used under normal conditions (i.e. reading hourly values from meters and transmitted to READy Manager once per day, and ambient temperature maintained between -35 °C to 55 °C).

Using READy 4G Bridge for priority data reduces the battery lifetime to 6 years as readings are performed more often and transmission frequency is increased.

2.5 Data security

READy 4G Bridge is part of the complete end-to-end data encryption in the READy Suite.

Data is AES 128bit end-to-end encrypted from the meter to READy Manager, and READy 4G Bridge can only forward data transparently. It does not contain the encryption keys of the meters, from which it is receiving data.

2.6 Data persistence

Data is stored in READy 4G Bridge for 30 days in case the cellular connection is lost.

When the cellular connection has been re-established, stored data will be forwarded to READy Manager.

3 Before you begin

3.1 Precautions

The contents of this guide and the quick guide included with the device must be followed at all times when installing, configuring or handling the device in general. If this manual is not followed, Kamstrup cannot be held accountable for any malfunctions or misuse of the product.

MULTICAL® 21 firmware must be newer or equal to G1 from Q3 2011.

READy 4G Bridge may only be installed by trained personnel.

Do not remove the product labels as they contain important information.

Do not disassemble the product as the IP68 sealing will be void.

Ensure that READy App and READy Manager are synchronized before proceeding to the installation of READy 4G Bridge. You will not be able to connect to READy 4G Bridge without synchronizing with READy Manager.

Ensure that you have a READy Converter with C2 capability. Type number: 669630010 or 669650010.

Your READy Manager license determines how often you can receive data from READy 4G Bridge.

When unpacking READy 4G Bridge, ensure that the following is included:

- 1 x READy 4G Bridge
- 1 x protective shield
- 2 x screws to secure READy 4G Bridge in the protective shield
- 3 x screws to install READy 4G Bridge on a wall
- 3 x plugs

4 Installation and configuration

4.1 Installation preconditions

Do not paint the protective shield as it can change the thermal influence on the electronics enclosure.

READy 4G Bridge is designed to operate between -35 °C to 55 °C. Using the device outside the intended operating temperature range may cause deterioration of lifetime or in worst case operating failure.

Always use the protective shield if the device is installed in direct sunlight.

Install READy 4G Bridge as close as possible, but at least 50 cm from the meters you intend to read data from.

If installing multiple READy 4G Bridge units, ensure minimum 1 m between the READy 4G Bridge units.

READy 4G Bridge must be installed in a vertical orientation (see Figure 4 - READy 4G Bridge orientation) to maintain optimal performance.

4.2 Installation location

READy 4G Bridge is intended to be installed in a vertical position, indoor and outdoor in residential, commercial, industrial environments either on public or private property. Check the regulations that may apply to the installation location. The device is intended to be installed either above ground on a wall or a lamp post. As READy 4G Bridge is IP68 rated, the device is resistant to harmful dust and can be submerged in water for some time without failures. Note that data reception may not be possible if READy 4G Bridge is submerged in water or placed under a pit lid.
Install READy 4G Bridge up high to allow free radiation around the built-in antenna.

4.2.1 Possible installation sites

Figure 4 – READy 4G Bridge orientation

4.2.1.1 Wall installation

READy 4G Bridge can be installed on a wall with the included plugs and screws. Follow the installation instruction found in section 4.3.1.1 “Installation steps with screws”.
A TX20 bit or screwdriver is needed for installation.

4.2.1.2 Pole installation

READy 4G Bridge can be installed on a pole, e.g. a lamp post, using stainless-steel clamps (not included, product number 6697 046 (100 units)). Follow the installation instructions found in section 4.3.2 “Installation steps with clamps”.
A TX20 and flathead bit or screwdriver is needed for installation.

4.2.1.3 Installation for priority data

To maintain a stable priority data reception from the meter to READy 4G Bridge, install READy 4G Bridge with line of sight to the meter, no more than 60 m away.
If READy 4G Bridge does not have line of sight to the meter, the distance between READy 4G Bridge and the meter should not exceed 20 m.

4.2.1.4 Installation for hourly data

Hourly data gives READy 4G Bridge much longer time to collect and log data from the meter. This installation scenario is less demanding than the installation for priority data with 5-minute values. This means that you can install READy 4G Bridge further away from the meter. Kamstrup advises you to check the signal quality in READy App during commissioning. If the signal bar is 1 or more, the installation is acceptable.

4.2.2 Lightning protection zones

Only install READy 4G Bridge within Lightning Protection Zone 0B (LPZ0B).

READy 4G Bridge must be installed inside lightning protection zone (LPZ) 0B, meaning that it must not be located in direct striking zones. Figure 5 and Figure 7 show examples where READy 4G Bridge is installed correctly on a wall and a pole.

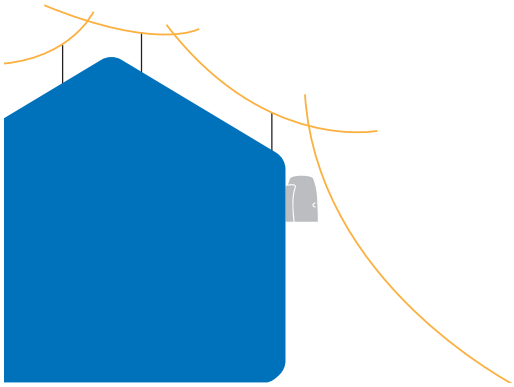


Figure 5 - LPZ0B correct house wall installation

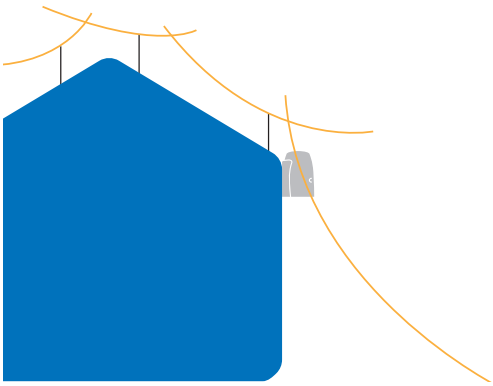


Figure 6 - LPZ0B wrong house wall installation

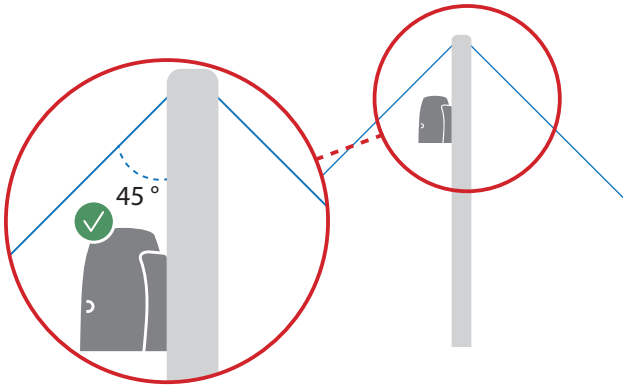


Figure 7 - LPZ0B correct pole installation

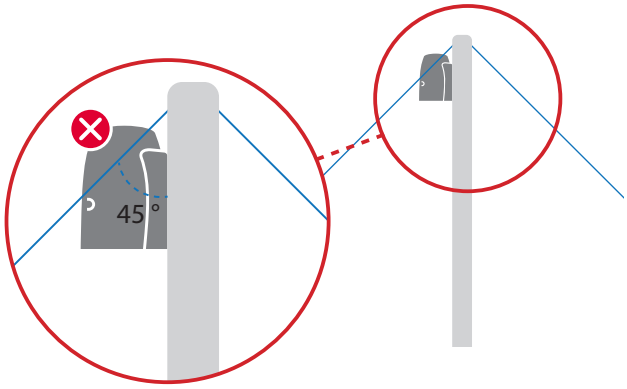


Figure 8 - LPZ0B wrong pole installation

4.3 Installation of READy 4G Bridge

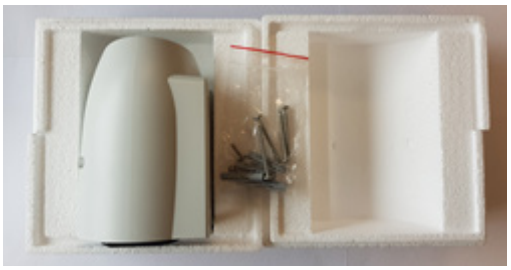
4.3.1 Preconditions

Required:

- 1 x READy 4G Bridge
- 1 x protective shield
- 2 x screws to secure READy 4G Bridge in the protective shield
- 3 x screws to install READy 4G Bridge on a wall
- 3 x plugs
- Optional stainless-steel clamps (not included)
- TX20 and flathead bit or screwdrivers

4.3.1.1 Installation steps with screws

Ensure that READy 4G Bridge can read the intended meters at/near the final installation site before proceeding. For configuration, see section 4.4.

1.	Open the packaging.	
2.	Remove READy 4G Bridge from the protective shield.	
3.	Drill the first (top) screw into the wall where READy 4G Bridge is to be installed. Using the keyhole mount on the back of the protective shield, mount the shield to the wall.	 
4.	Secure the installation by installing the bottom screws in the protective shield and make sure that the shield is securely fastened to the wall.	
5.	Insert READy 4G Bridge in the protective shield. Ensure that READy 4G Bridge slides all the way to the top of the protective shield by fitting the guiding rail in the protective shield in the opening of READy 4G Bridge.	

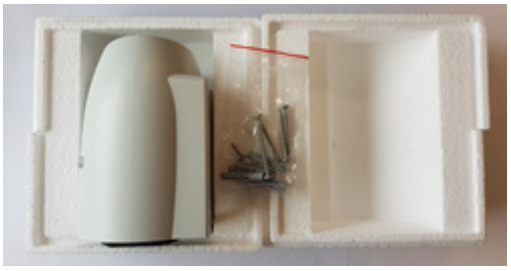
6.	To secure READy 4G Bridge in the protective shield, tighten the two screws on the front of the protective shield.	
7.	The physical installation is complete.	

4.3.2 Installation steps with clamps

Ensure that READy 4G Bridge can read the intended meters at/near the final installation site before proceeding. For configuration, see section 4.4.

Install the stainless-steal clamps in the protective shield before proceeding to the installation site.

Install READy 4G Bridge in the protective shield before proceeding to the installation site.

1.	Open the packaging.	
2.	Remove READy 4G Bridge from the protective shield.	

3.	Insert the stainless-steel clamp in the protective shield.	
4.	Insert READy 4G Bridge in the protective shield. Ensure that READy 4G Bridge slides all the way to the top of the protective shield by fitting the guiding rail in the protective shield in the opening of READy 4G Bridge.	
5.	To secure READy 4G Bridge in the protective shield, tighten the two screws on the front of the protective shield.	
6.	Secure the assembly to the installation site by tightening the clamps.	
7.	The installation is complete.	

4.4 Configuration of READy 4G Bridge

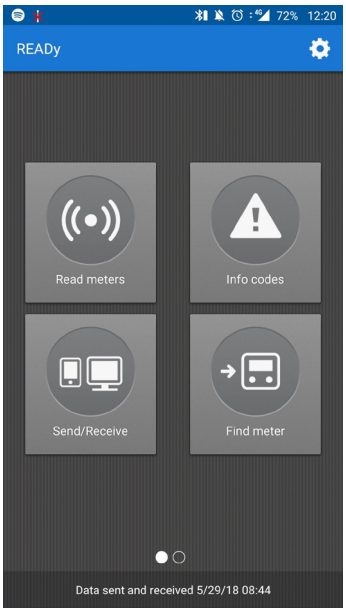
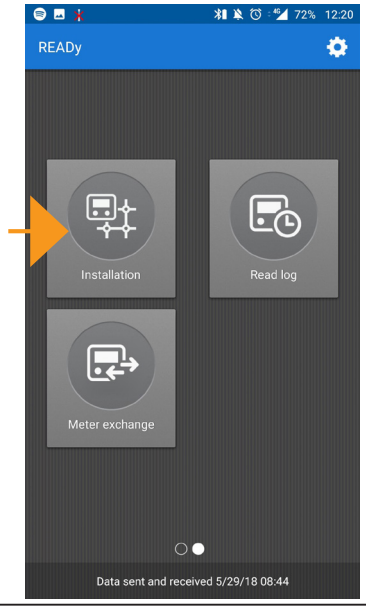
Ensure that READy App and READy Manager are synchronized before proceeding to the configuration of READy 4G Bridge. You will not be able to connect to READy 4G Bridge without synchronizing with READy Manager.

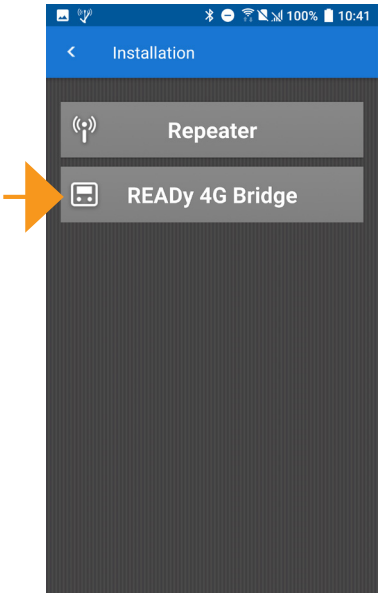
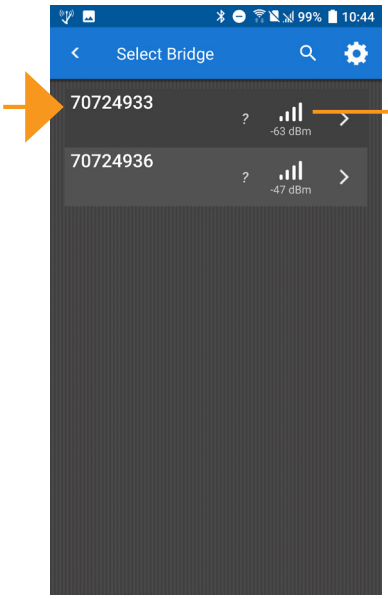
4.4.1 Preconditions

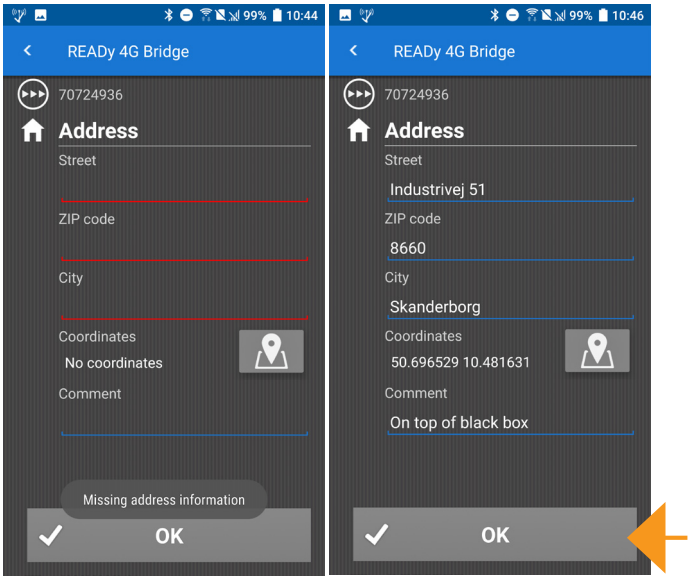
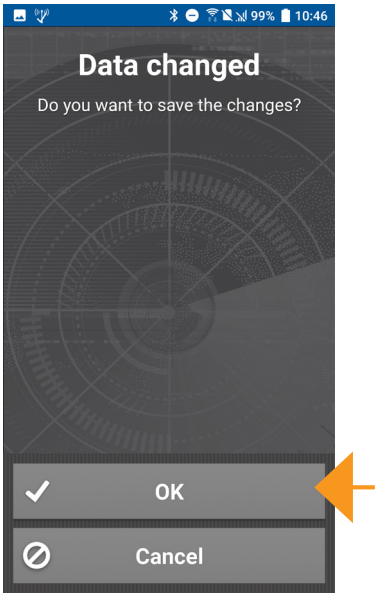
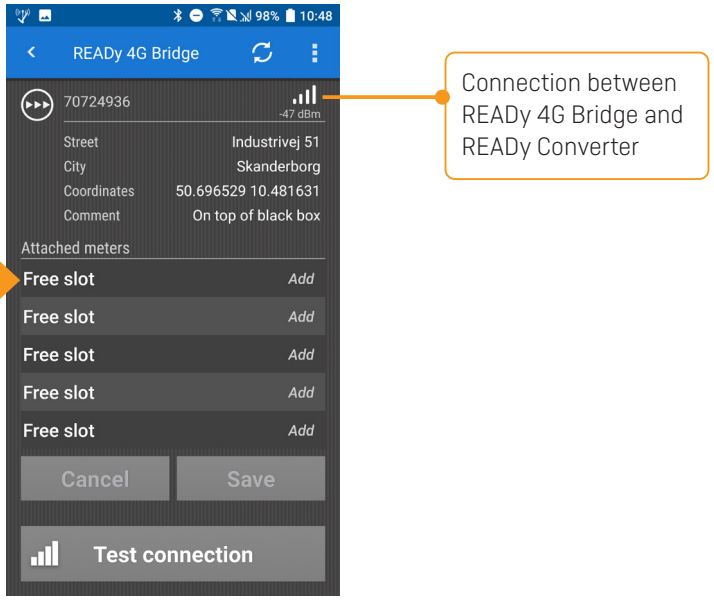
Required:

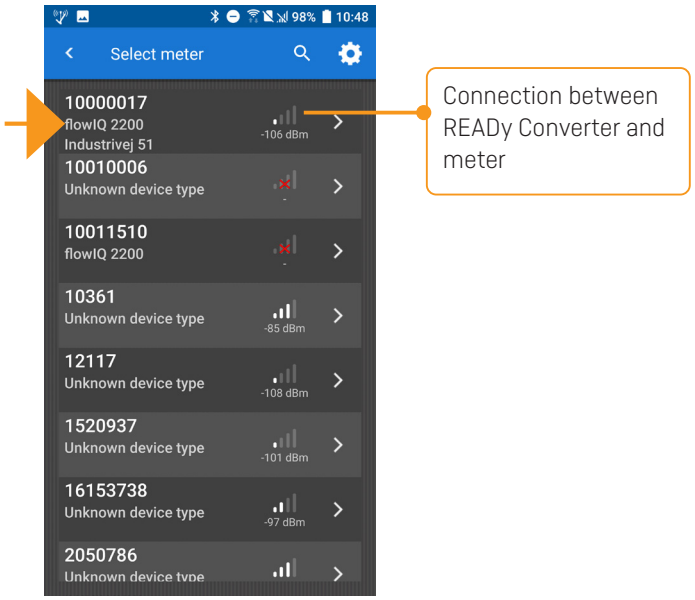
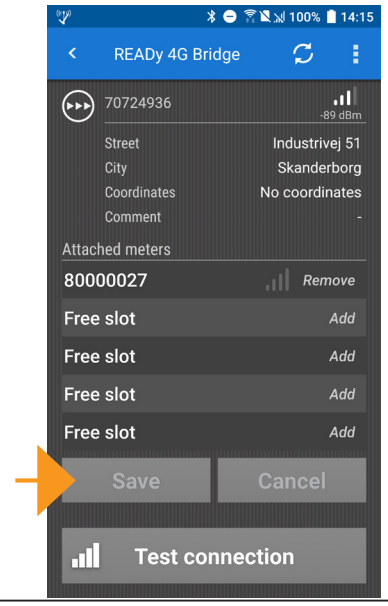
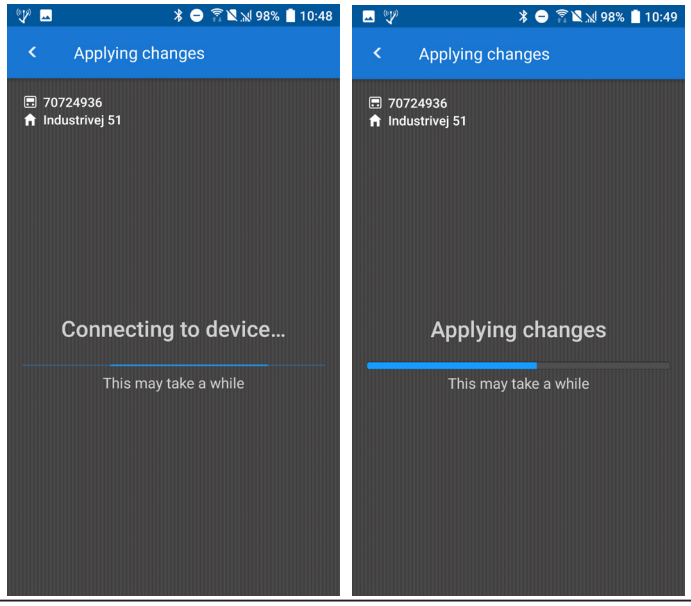
- READy 4G Bridge
- Android mobile device with READy App installed
- READy Converter with C2 capability:
  - Type number 66963**3**0010 or 66965**5**0010

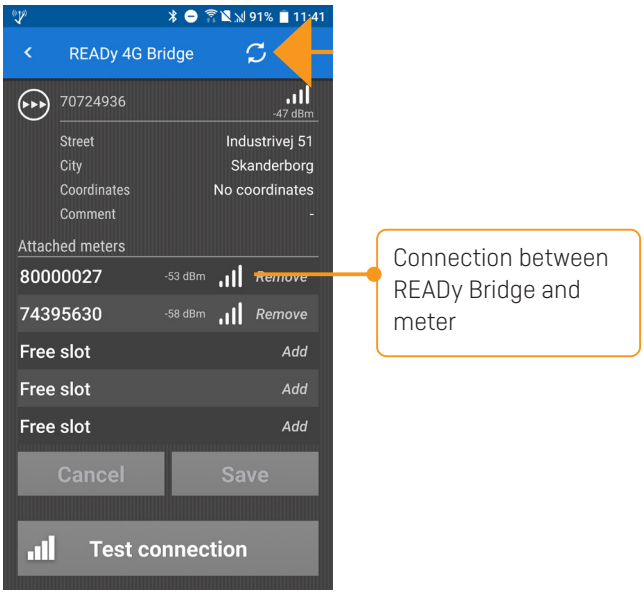
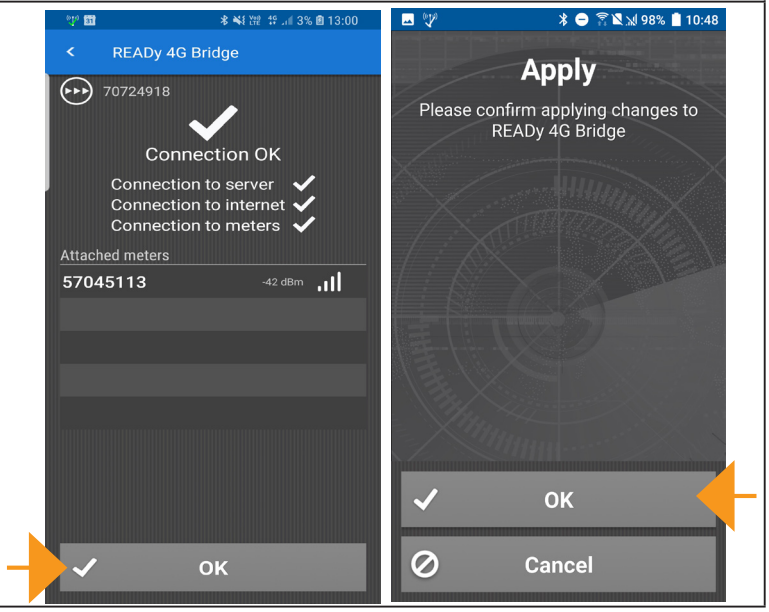
4.4.2 Configuration steps

1.	Sync READy Manager and READy App before proceeding to step 2.	
2. 3.	Turn on READy Converter. Open READy App.	
4.	Go to the menu item **Installation**.	

5.	Connect to READy Converter.	
6.	Choose **READy 4G Bridge**.	
	Connect to your READy 4G Bridge, identified by serial number (the serial number is located on the READy 4G Bridge product label).	

7.	Type in the installation address of READy 4G Bridge.	
8.	Save the changes.	
9.	You now select the devices from which READy 4G Bridge must read data, e.g. water meters. This will start a pairing process between the meters and READy 4G Bridge. Choose a “Free slot” from the list.	

10.	Choose the device that you want to pair with. Repeat steps 9 and 10 until you have chosen the meters that you want to connect to READy 4G Bridge (up to 2 or 5 meters, depending on version).	
11.	Press **Save** to save the configuration.	
12.	READy 4G Bridge is receiving the configuration from READy App and applying the meter pairing. This process may take some time, please wait.	

13. 14.	When READy 4G Bridge has received data from a paired device, it shows the signal strength between the meter and READy 4G Bridge. If no connection is shown, click the update button . Test the connections by pressing the **Test connection** button.	
15.	When you see checkmarks for all three items: Connection to server Connection to Internet Connection to meters press **OK** and the installation process can be finalized.	

5 Operation

5.1 Normal operation of READy 4G Bridge

When READy 4G Bridge is operating normally, the device will forward data from the paired devices to READy Manager with the chosen transmission scheme. READy 4G Bridge can at any time be reconfigured to forward data from other meters.

The transmission scheme depends on the version of your READy 4G Bridge.

In READy 4G Bridge with hourly values, the readings are collected every hour and sent to the READy Manager platform daily. 5 meters can be paired with READy 4G Bridge with hourly values.

In READy 4G Bridge with priority values, the readings are collected every 5 minutes and sent to the READy Manager platform every 4 hours. 2 meters can be paired with READy 4G Bridge with priority readings as more frequent logging is required. To get priority readings, the add-on module Priority meters is required in READy Manager.

5.2 Decommissioning

If the product is decommissioned for disposal, see section 7 “Storage”.

If the product is decommissioned for transport via air freight, see section 6.2 “Transport”.

5.2.1 Decommissioning steps

Follow the instructions in section 6.2.1 “Deactivation” before continuing with the steps below.

1. Delete READy 4G Bridge from READy Manager
2. Physically remove READy 4G Bridge from the installation site
3. If the product is decommissioned for disposal, follow the disposal instruction found in section 8 “Disposal”
4. The decommissioning is complete

5.3 Redeployment and configuration

Follow the instructions found in section 4 “Installation and configuration”.

6 Maintenance and support

READy 4G Bridge does not need regular maintenance and is designed for several years of usage.

For optimal performance, ensure that there is nothing in or near the protective shield that potentially can disturb the performance of the device.

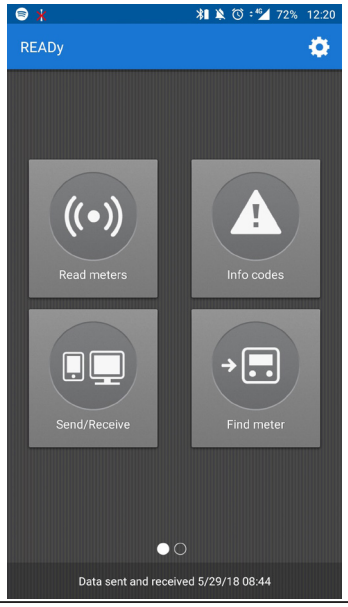
6.1 Replacing the READy 4G Bridge

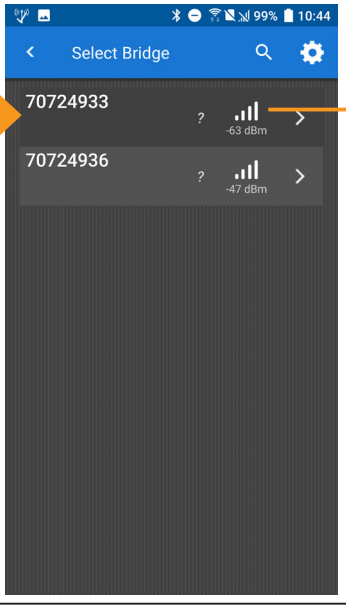
When the battery expires it must be replaced by a new READy 4G Bridge. Decommisioned READy 4G Bridges can be returned to Kamstrup for disposal. Follow the instructions in section 8 “Disposal”

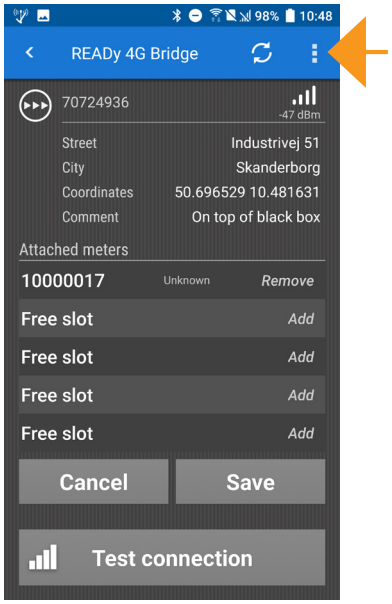
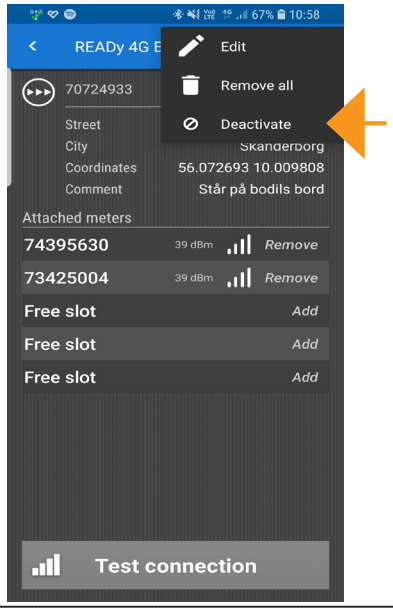
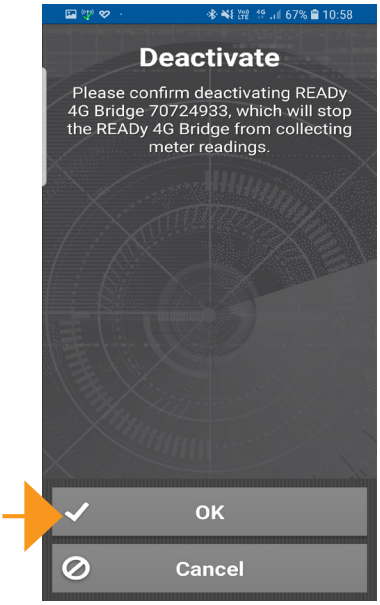
6.2 Transport

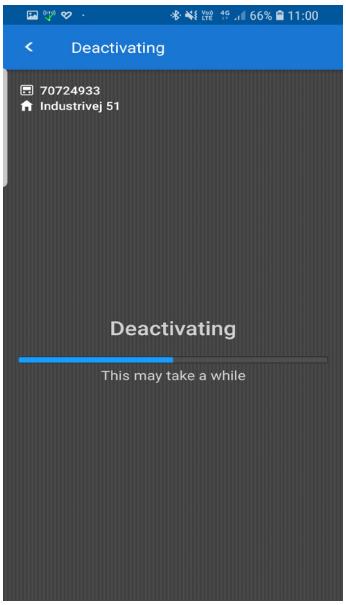
Ensure that READy 4G Bridge is deactivated when transported by air freight.

6.2.1 Deactivation

1. Turn on READy Converter. 2. Open READy App.	
3. Go to **installation**.	

4.	Connect to READy Converter.	
5.	Choose "READy 4G Bridge".	
6.	Connect to your READy 4G Bridge. Choose by serial number.	

7.	Press the settings menu in the top right corner (three vertical dots).	
8.	Choose **Deactivate**.	
9.	Press **OK**.	

10.	READy 4G Bridge is deactivating. It will no longer read meter data and the cellular radio is switched off. The unit can be transported by air freight, if needed.	

6.2.2 Activation

READy 4G Bridge is automatically activated when reconnected to READy App, see section 4.4 “Configuration of READy 4G Bridge”.

6.3 Firmware update

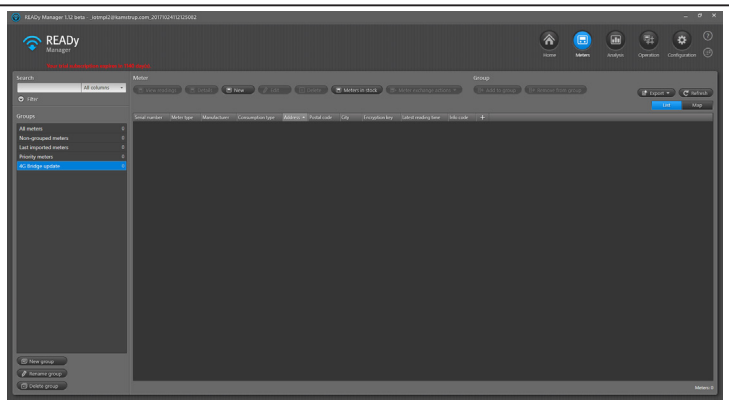
Updating the firmware of READy 4G Bridge is possible using an Android mobile device. The configuration of READy 4G Bridge is maintained during the update (e.g. location address, paired meters list).

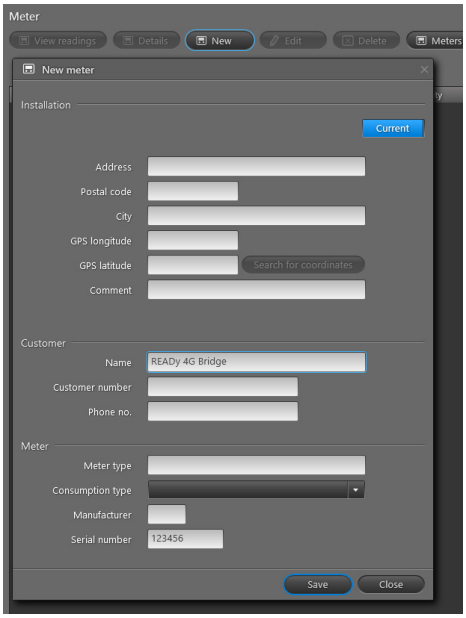
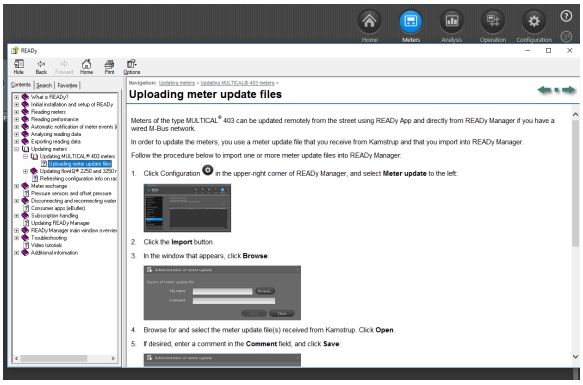
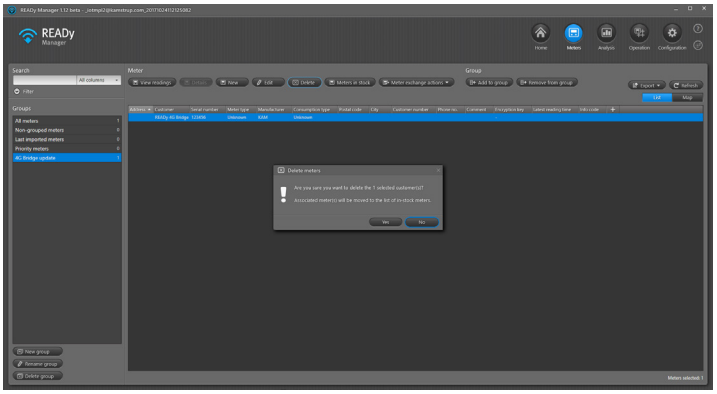
Only use firmware provided by Kamstrup A/S. Ensure to always have the latest firmware version. If in doubt, contact Kamstrup support.

Do not update READy 4G Bridge unless instructed to by Kamstrup A/S.

READy 4G Bridge does not collect meter data during firmware update.

Firmware update of READy 4G Bridge is done in the same way as firmware update of a Kamstrup heat meter.

1.	Open READy Manager.	
2.	Go to the **Meters** view.	

3.	Press **New** and create a “dummy” meter with the **same serial number** as the READy 4G Bridge you want to perform a firmware update on.	
4.	Follow the instructions for firmware update of a meter, found under the help function in READy Manager by pressing the question mark symbol in the upper right corner.	
5.	When the firmware update is complete, delete the “dummy” meter from the **Meters** view. Be careful not to delete the 4G Bridge product itself, but only the dummy representation.	

6.4 Kamstrup support

Hotline: +45 8993 1110

Find contact information for your local support at www.kamstrup.com/get-in-touch

7 Storage

Do not store the device outside the nominal operation temperature range of -35 °C to 55 °C.

READy 4G Bridge is recommended to be stored within the following conditions:

- IP class 68
- Relative humidity of max 95 %, non-condensing
- Recommended storage temperature at +20 °C to +35 °C

8 Disposal

Dispose of the product correctly.

Kamstrup A/S holds an environmental certification according to ISO 14001, and as part of our environmental policy, we use materials that can be disposed in an environmentally sustainable manner to the greatest extent possible. Please ensure correct disposal of all parts of the device. The enclosure must be disassembled to dispose of the batteries, electronics and enclosure correctly.

8.1 Disposal by Kamstrup A/S

Kamstrup A/S accepts READy 4G Bridge units by the end of operation for environmentally correct disposal according to previous agreement. The disposal is free of charge to the customer, except for the cost of transportation to Kamstrup A/S.

8.2 The customer sends for disposal

READy 4G Bridge must not be disassembled prior to dispatch. However, please deactivate READy 4G Bridge to deactivate the radio prior to dispatch, see section 6.2.1 "Deactivation". Hand in the complete READy 4G Bridge for approved national/local disposal. Enclose a copy of the disposal section from this manual in order to inform the recipient of the contents.

8.3 Disposal by the customer

Disassemble READy 4G Bridge, as described below, and hand in the separate parts for approved destruction. Do not expose batteries to mechanical impact. Also avoid short-circuit of leading wires during transport. See table below.

Topic	Material information	Recommended disposal
Lithium cells (batteries)	Lithium-thionyl chloride	Approved deposit of lithium cells
Printed circuits	Coppered epoxy laminate, components soldered on	PCB scrap for metal recovery
Moisture-absorbent materials	98 % bentonite, 2 % quartz	Ordinary disposal
Enclosure	PPS	Plastic recovery
Protective shield	PPS	Plastic recovery
Packing	Packing environmental cardboard	Cardboard recycling (Resy)

Table 1 – Disposal table

Please send any questions you may have regarding environmental matters to:
Kamstrup A/S
Att.: Quality & Sustainability
info@kamstrup.dk

9 Troubleshooting

9.1 Installation

Q: Where should I install READy 4G Bridge?
As close to or in the vicinity of the meters that you intend to read data from. Note that a 50 cm safety distance to the meters shall be kept.

Q: READy 4G Bridge is not visible in READy App
Ensure that you have synchronized READy Manager and READy App.

Q: READy 4G Bridge did not successfully connect to the meter, what can I do?
Move READy 4G Bridge closer to the meter that you intend to read, it may be out of reach.
Ensure that the meter is sending data, i.e. its radio is enabled. See the instructions for the meter in question.
Test the connection in READy App again.

9.2 Operation

Q: I am not receiving data in READy Manager
The transmission interval from READy 4G Bridge is depending on configuration. Ensure that the correct configuration has been chosen at purchase.
Ensure that READy 4G Bridge is installed in an area with GSM signal by operators supported.
Ensure that READy 4G Bridge has been set up correctly, go through the configuration process again.

Q: How do I import READy 4G Bridge in READy Manager?
READy 4G Bridge is imported in READy Manager like any other READy infrastructure device by automatic import from Encryption Key Service on My Kamstrup.

Q: Can I change the transmission interval of READy 4G Bridge?
Unfortunately, that is not possible. READy 4G Bridge has the transmission scheme chosen at purchase through its entire lifetime.

Q: Can I change which meters READy 4G Bridge forwards data from?
Yes, simply go through the configuration in READy App again.

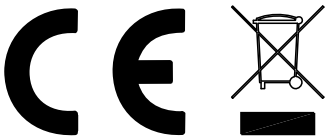
Q: Priority READy 4G Bridge only sends data once per day
You need the priority module in READy Manager if you do not have the Priority group.
Please remember to add the meters you want priority data from to the Priority group in READy Manager.

Q: I am only receiving daily values, but I have ordered a READy 4G Bridge with hourly values
Your READy Manager license determines how often you can receive data. If you have a license for daily values, you will only receive daily values and READy will discard the other readings.

9.3 Maintenance

Q: Do I have to update READy 4G Bridge?
It may become necessary to update the firmware of READy 4G Bridge if advised by Kamstrup. Please follow the instructions in this guide.

10 Markings



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Kamstrup A/S
Industrivej 28, Stilling
DK-8660 Skanderborg
T: +45 89 93 10 00
info@kamstrup.com
kamstrup.com