

Installation and operation guide

READy Concentrator

Warning!

Read instructions before installation



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1 Symbols used in this document



Warning

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



Caution

Indicates a hazardous situation which, if not avoided, could result in moderate injury, damage the product, or lead to loss of data.

Notice

Indicates a hazardous situation which, if not avoided, may seriously impact operations.

2 Product introduction

READY Concentrator is a data collector that collects Wireless M-Bus signals from smart energy and water meters or sensors and transmits data to READY Manager via Ethernet or an optional GSM modem. Depending on the installation and chosen solution, READY Concentrator has a reach of 500 m to 2 km.

READY Concentrator is available in 3 different versions:



Stand-alone

Indoor installation

An easy installation for small applications.



Plastic cabinet

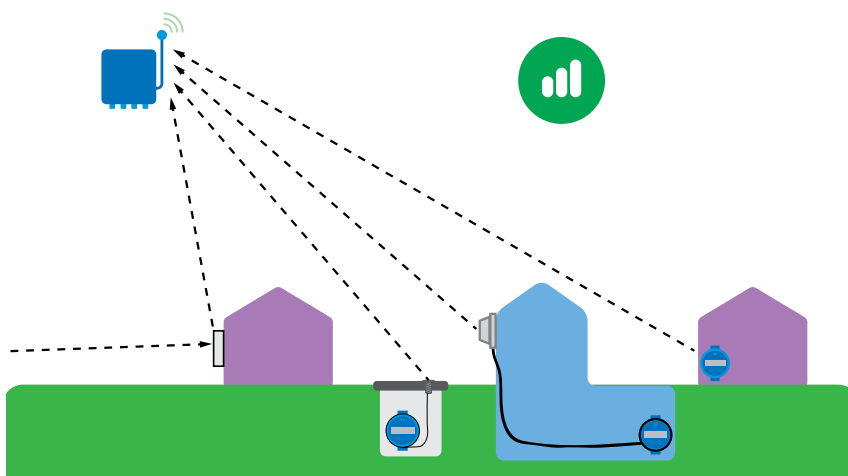
Built to resist the outdoor environment.



Steel cabinet












Installed outdoors in hard environments
with a built-in heater unit for freeze protection.
[For professional installers]

2.1 System overview

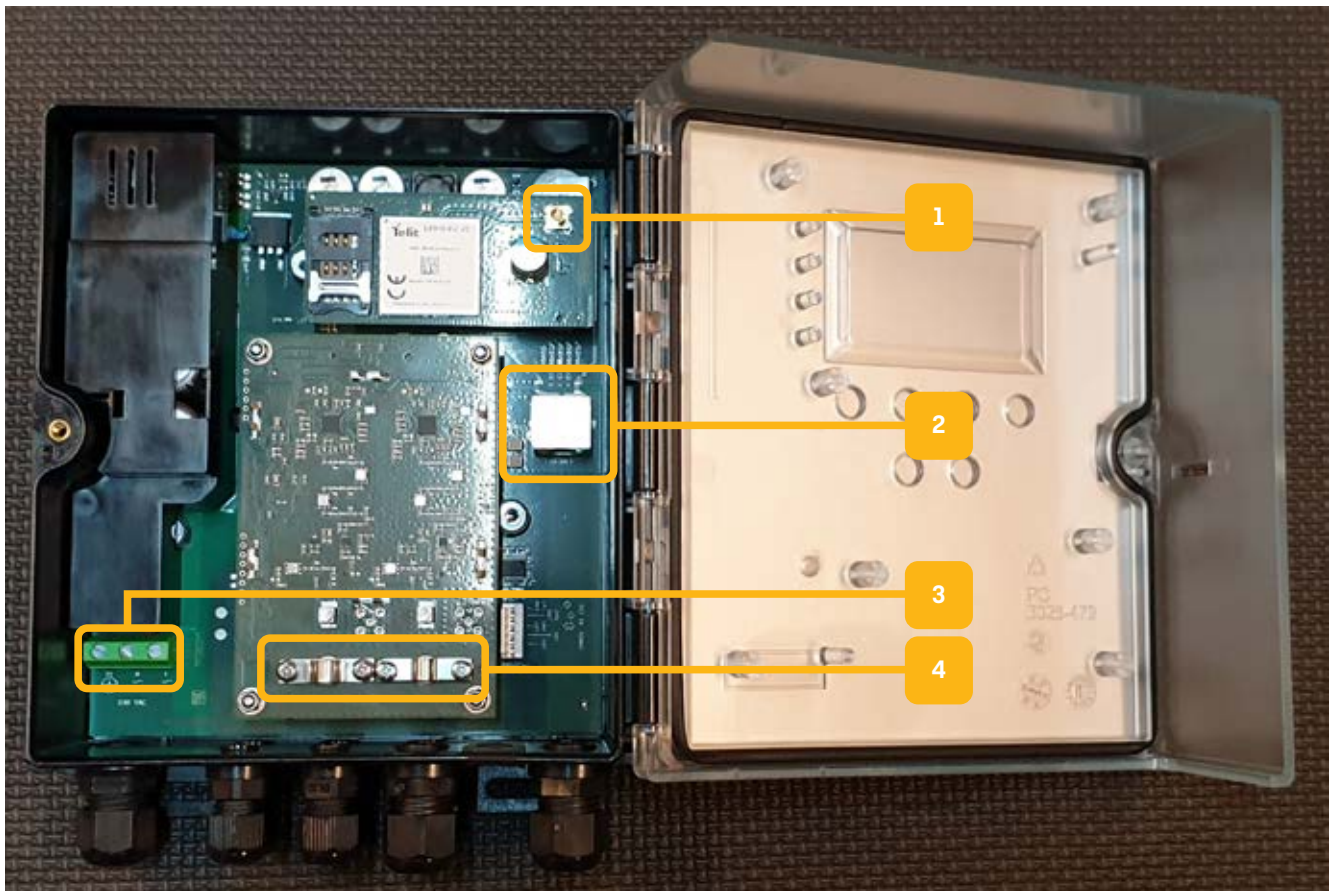


2.2 Solution overview

READy Concentrator is a complete solution consisting of concentrator, GSM antenna, Wireless M-Bus cables and antennas. More information on the different solution can be found in the READy Concentrator data sheet.

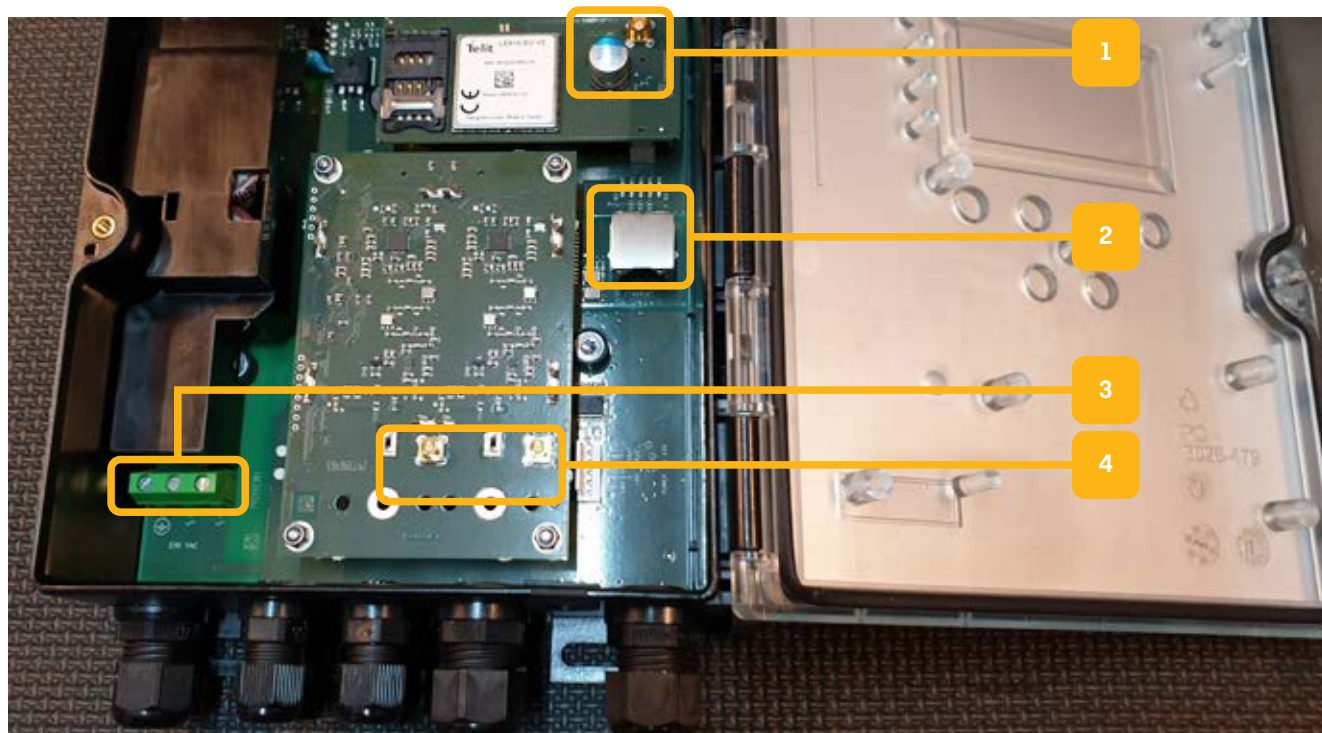
Concentrator variant	GSM antenna	RF cables	RF antennas
			
			
			

2.2.1 Stand-alone concentrator



1. Modem antenna connection
 2. LAN connection
 3. Power connection
 4. Antenna connections
- Stand-alone concentrator uses open ended cables

2.2.2 Plastic cabinet concentrator



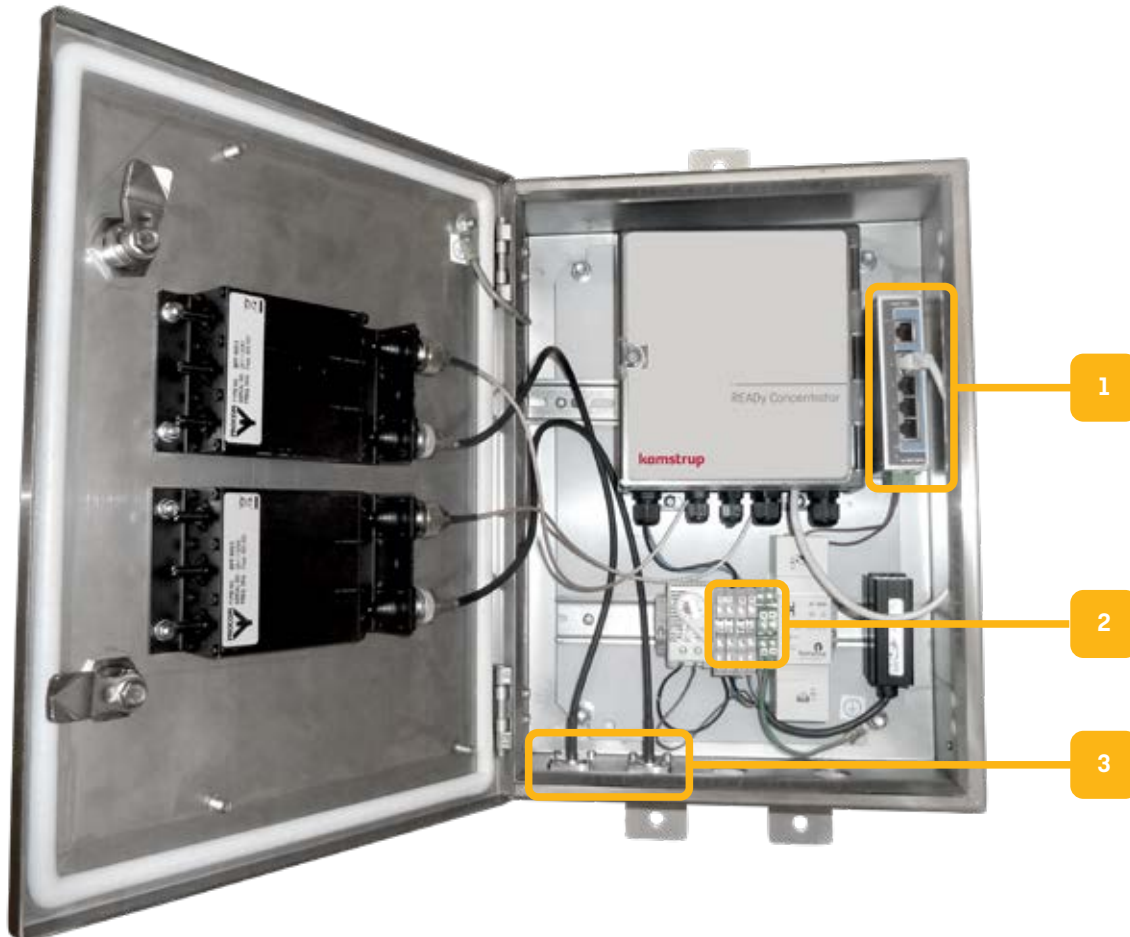
Plastic cabinet concentrator with MCX connector for the external filters.

1. Modem antenna connection
2. LAN connection
3. Power connection
4. Filter connections

2.2.3 Steel cabinet concentrator

The steel cabinet concentrator unit is similar to the plastic cabinet concentrator unit.

As an addition to the plastic cabinet, the steel cabinet contains a heat element to handle low temperatures and a switch to connect more cabinets. The filters are the same model as the plastic cabinet enclosure.



1. Ethernet switch
2. Power connection
3. Antenna connections

2.3 Data security

READY Concentrator is part of the complete end-to-end data encryption in the READY Suite.

Data is AES 128 bit end-to-end encrypted from the meter to READY Manager, and READY Mini Concentrator can only forward data transparently. More information about data security can be found in Kamstrup's Security Architecture document 58115822 and GDPR compliance document 58115823, if required.

2.4 Data transmission and info codes

READY Concentrator forwards data in accordance with your READY Manager subscription. Your READY Manager subscription may include:

1. Daily values - data delivered once a day.
2. Hourly values - data delivered every hour.
3. Priority data - specific meters data delivered every 5 minutes.

3 Before you begin

3.1 Precautions



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



The product may only be installed by trained personnel.



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



Read the Kamstrup Wireless M-Bus radio network installation guide (document number: 55122152) before installation.

When preparing for an installation, ensure you have the following ready:

1. READy Concentrator, with/without modem
2. Mounting equipment fitting the location
3. Radio antennas
4. Antenna cables
5. Power for READy Concentrator
6. A SIM card data subscription (if modem is used)

3.2 SIM card and data subscription

If you have purchased a modem with READy Concentrator, a SIM card with an active subscription is required to send data. A data subscription of at least 350 Mb/month is recommended under normal operation.

When disposing of/decommissioning the product, remember to cancel the data subscription associated with the SIM card.

3.2.1 Configuration

The SIM card requires the following configuration:

- APN = Internet
- No PIN code

If the SIM card is not PIN code free, you can remove the PIN code from the SIM card by using your phone:

1. Insert the SIM card in your phone
2. Go to settings and security to deactivate the SIM PIN code
3. Reboot the phone to check that the SIM card does not ask for a PIN code

3.2.2 Disposal or decommissioning

When disposing of/decommissioning the product, remember to cancel the data subscription associated with the SIM card.

4 READY Concentrator installation

4.1 Precautions



Warning

Ensure that the power is disconnected before operating inside READY Concentrator.



Caution

READY Concentrator is designed to operate between -40 °C to 70 °C. Using the device outside the intended operating temperature may cause deterioration of lifetime or in worst case operating failure.



Caution

READY Concentrator stand-alone is designed for indoor installation only.



Caution

READY Concentrator in a plastic or steel cabinet has an IP44 rating, please install it accordingly.



Caution

If you have purchased a GSM modem for READY Concentrator, please install it and insert the SIM card before you power on the device.



Caution

Ensure that the lid on READY Concentrator and the plastic/steel cabinet is properly closed. If not properly closed, the enclosure class will be compromised.

Notice

If you have purchased READY Concentrator with a GSM modem, ensure to remove the SIM PIN code before installing the SIM card in the device.

4.1.1 READY Concentrator installation locations

READY Concentrator is intended to be installed indoors and outdoors in residential, commercial, industrial environments either on public or private property. Consider aspects as reflection and absorption of radio signals when installing the Wireless M-Bus and GSM antennas of READY Concentrator.

4.1.2 Installation steps



Warning

The power cable must be installed by an electrician or trained personnel with the right qualification.



Warning

Electrical hazard – risk of electric shock.



Warning

Make sure that there is no power supply connected when connecting the power cables.



Warning

Working on a live electric installation is not recommended.



Notice

For installation with plastic or steel cabinet, use the Wireless M-Bus antennas that run through the cavity filters.

4.1.3 Modem or cable for internet


There are two options for connecting READY Concentrator to the internet:
 A modem internally in READY Concentrator or an Ethernet cable from secondary source.

Modem

<p>Insert the SIM card in the modem or the Ethernet cable connected to a router with internet connection. Remember to lock the SIM card holder when the SIM card has been inserted.</p>	
<p>Install the GSM antenna if applicable.</p>	

Ethernet cable

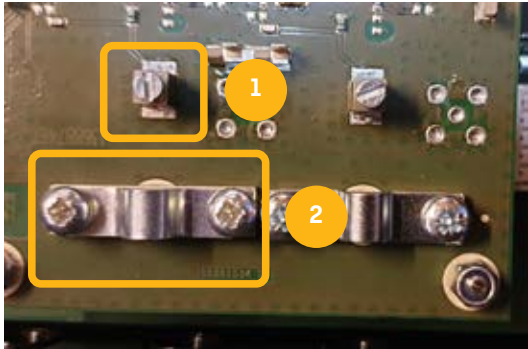

Notice If you use the Ethernet connection, you must remove the GSM modem.

<p>Connect the Ethernet cable to the "ETHERNET" connection in READY Concentrator.</p>	
<p>The cable used must be able to withstand the environment within which it is installed.</p>	

4.1.4 Installation for hourly data

Hourly data gives READY Mini Concentrator 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 Mini Concentrator further away from the meter. Kamstrup advises you to check the signal quality of READY Mini Concentrator during commissioning on the installation website. If the signal bar is 1 or more, the installation is acceptable.

4.2 READy Concentrator stand-alone

<p>Install READy Concentrator stand-alone on the intended installation site. Use proper fastening material to ensure a sturdy installation.</p>	
<p>Install the antennas, see section 4.4 READy Concentrator antenna installations.</p>	
<p>Use the open end of the cable to connect to the internal connectors. Remove all insulation for 10 mm to expose the core. Remove further 25 mm of the outer insulation to expose the shielding. Insert the core into pos. 1 and tighten the screw. Ensure the core is not exposed to the shield. Place the cable in the clamp (pos. 2) and ensure a proper connection between the clamp and the shield.</p>	
<p>Install mains power 230 VAC.</p>	
<p>When all connections have been made, ensure proper connections before proceeding to 5.1 Start up.</p>	

4.3 READy plastic cabinet concentrator

The same principles apply to the READy steel cabinet concentrator.

Install READy Concentrator stand-alone on the intended installation site.

Use proper fastening material to ensure a sturdy installation.

Install the antennas, see section 4.4 READy Concentrator antenna installations.

Connect the antenna cables to the bottom of READy Concentrator, an N-connector.



Wrap the connections with cover tape to protect them against the environment and to keep them properly connected.

Install mains power 230 VAC.



When all connections have been made, ensure proper connections before proceeding to 5.1 Start up.

4.4 READY Concentrator antenna installations

4.4.1 Antenna installation locations

READY Concentrator antennas are intended to be installed indoors and outdoors in residential, commercial, industrial environments either on public or private property.

Antennas can be installed in chimneys, on gables, on rooftops and similar.

Install READY Concentrator antennas up high to allow free radiation. For further details, please see the Kamstrup Wireless M-Bus radio network guide.

- Use correct type of antenna for the purpose Omni or directional radiation
- If more antennas are used, they are installed:
 - with minimum 0.75 m to obstacles in all directions
 - with minimum 5 m to other antennas
 - above or below cellular installation (stay clear of other antennas)
- Mounted high
- Ensure free space, i.e. not shielded by a building, etc.
- Use the shortest possible RF cable for best performance.

4.4.2 Lightning protection zones



Warning

Only install READY Concentrator within Lightning Protection Zone OB (LPZOB).

The placement of the antenna is critical to avoid surge current in case of lightning strikes. Keep the antenna inside a 45° angle from the tip of the mast (you must keep the antennas in lightning zone OB).

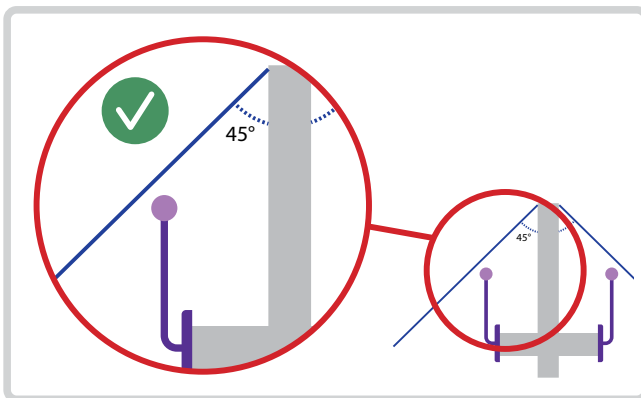


Figure 1 - Lightning zone OB, correct installation

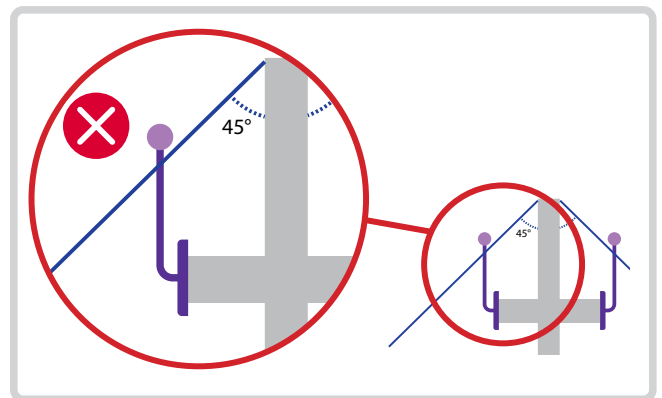


Figure 2 - Lightning zone OB, wrong installation

4.5 READy Concentrator cable installation



Follow the guidelines from the cable manufacturer for bending of the cable.



The cable must not be forced into place. If force is used to pull the cable, the cable can be damaged.

Notice

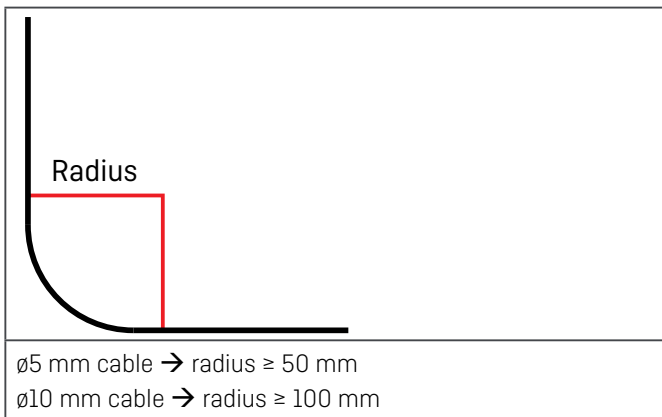
Use measured cable lengths where possible. In this way, the signal loss is reduced as much as possible.

If the cable is rolled up or bend, follow these guidelines:

10 x diameter of a 10 mm coaxial cable



Bending radius \geq 100 mm

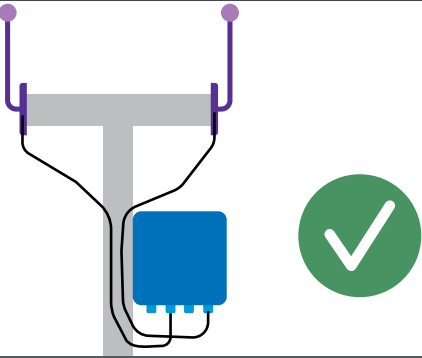
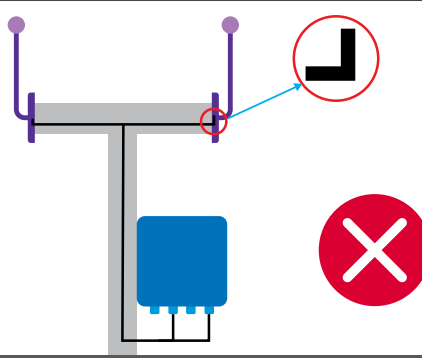
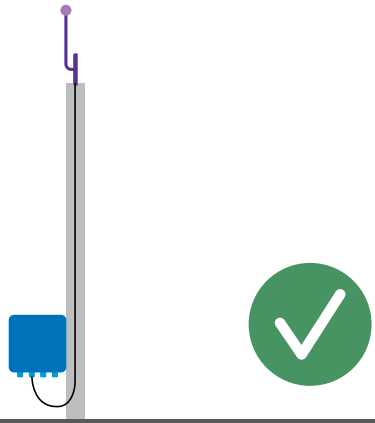
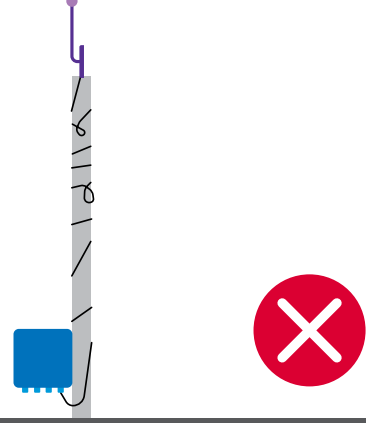
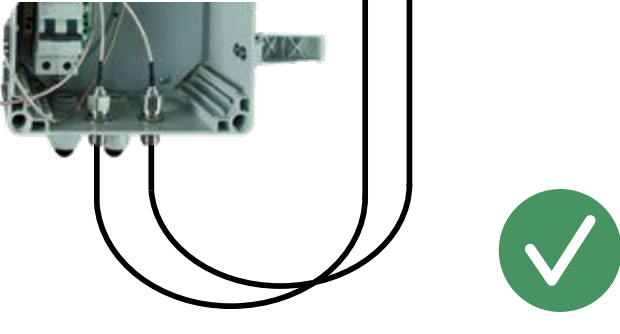
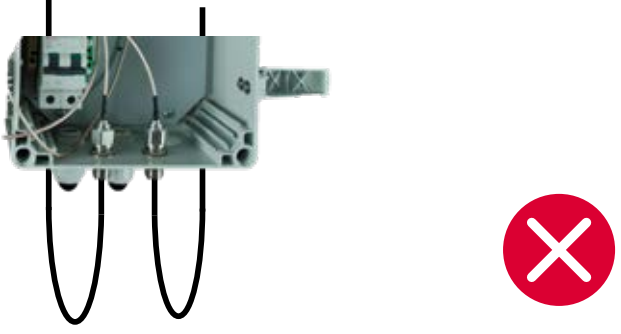


Here, the radius is respected. However, a shorter cable should have been selected for this installation.



Here, the radius is not respected. This may result in increased losses in the cable.

4.5.1 Cable installation

	
<p>The cable is mounted with soft curves, but is still attached to the stand.</p>	<p>The cable is mounted with hard bends and fixed tightly to the stand.</p>
	
<p>The cable is mounted along the pole in a straight line with a soft curve to the collector.</p>	<p>The cable is wrapped around the pole.</p>
	
<p>Soft curves – correct radius.</p>	<p>Too small radius of cables.</p>

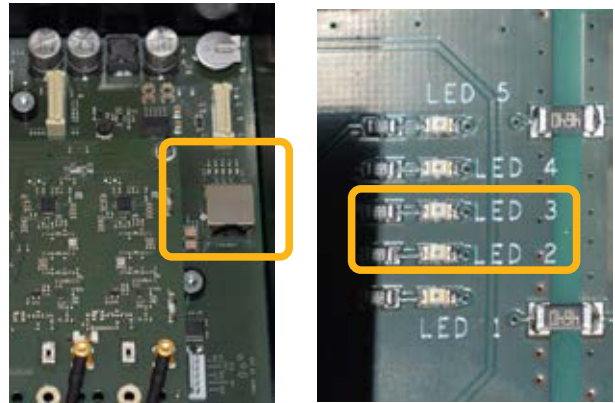
All connections must be covered with a weather protective tape to protect the connection from moisture and intrusion of dirt and the effects of vibrations.

5 Operation

5.1 Startup

When all connections have been finalized and properly protected, you are ready to power up READY Concentrator. Turn on power and inspect the status LEDs.

Ensure that LED 2 is blinking green and that LED 3 is lit solidly green. See explanation below.
If not, go to 9 Trouble shooting.



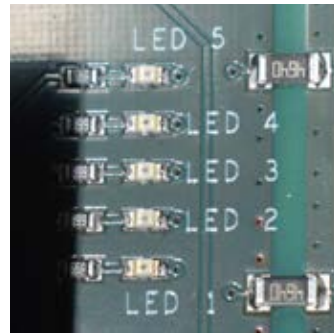
Close the lid on READY Concentrator and tighten the screw sufficiently.

Once connected to the internet, READY Concentrator automatically connects to your READY Manager as soon as the encryption key is imported from Encryption Key Service either automatically with your My Kamstrup login credentials or by manual import. Please refer to the READY Manager user guide for further details on importing encryption keys. It can take up to 15 minutes before READY Concentrator can be seen online in READY Manager.

5.2 LED behavior

When READY Concentrator is in operation, the LEDs can behave in the following ways:

LED	Color	Description
1	Red	Blinking: Problem with SIM card or GSM modem
2	Green	Blinking: Concentrator is active
3	Green	Concentrator is connected to Kamstrup
4	Red	Blinking: No Ethernet connection
5	Green	Toggles each time an M-Bus package is received
6		Not in use
1+4	Red	Solid: Out of order. Contact your nearest Kamstrup service center.



5.3 Meter data transmission

READY Concentrator will send data to your READY Manager according to the license you have purchased.

- With a READY license for daily values, READY Concentrator will forward daily values
- With a READY license for hourly values, READY Concentrator will forward hourly values
- If you have the Priority meters add-on for READY Manager, you can add the meters to the Priority meters group in READY Manager. READY Concentrator will forward meter data in intervals of as little as 5 minutes

READY Concentrator will automatically change its transmission scheme in case your READY license is changed or you add priority meters. It can take up to 24 hours before the change is recognized by READY Concentrator and the transmission scheme is updated.

In case of power outage or disconnections, READY Concentrator will automatically reconnect to READY Manager once the power and connection are reestablished. There is no need for any local reconfiguration.

5.4 Network configuration

READY Concentrator works out of the box if connected to a normal router or using the optional internal modem solution.

If you require information on managed network and router settings, please refer to the official Kamstrup READY Port Guide.

5.5 Meter data memory

If READY Concentrator loses connection to the internet, daily and hourly meter data is stored for 30 days or until the internet connection is reestablished.

Priority meter data is stored for the last hour.

6 Maintenance and support

READY Concentrator does not require any special maintenance.

However, it is advised to perform a visual inspection of the installation every year and/or if performance level drops consequently.

If a site visit is planned, it is recommended to check the installation visually and replace worn out or discolored cable ties as this might be a sign of fatigue.

During inspection:

- Check the connections. Are they still properly seated and tightened?
- Is the tape still intact over the connection?
- Are the cables intact or is the cap damaged?
- Are the cable ties worn out or still intact?

6.1 Transport

When unplugged, READY Concentrator is ready to be transported. If possible, use the standard packaging when transporting READY Concentrator.

6.2 Firmware updates

READY Concentrator supports firmware-over-the-air (FOTA) services and will automatically update its firmware if necessary. Firmware is pushed directly to the device from Kamstrup.

6.3 Kamstrup support

Hotline: +45 8993 1110

Email: supportdesk@kamstrup.com

Support site: <https://kamstrup.service-now.com>

Please have the following information ready when contacting support:

- Device serial number
- Last contact information

7 Decommissioning



If the product is decommissioned for disposal, please see section 13 Disposal.

7.1 Decommissioning steps

Remove the power before disconnecting and disassembling REAdy Concentrator.

Remove one item at the time and avoid damaging the equipment.

7.2 Redeployment and configurations

If REAdy Concentrator is redeployed, go to section 5.

8 Storage

REAdy Concentrator stand-alone

IP class: 20

Relative humidity: 5 – 85 %, non-condensing

Recommended storage temperature: -40 – +70 °C

Plastic cabinet/metal cabinet

IP class: 44 or better (depending on the installation)

Relative humidity: 5 – 85 %, non-condensing

Recommended storage temperature: -40 – +70 °C

9 Troubleshooting

9.1 LED explanation

LED	Color	Description
1	Red	Blinking: Problem with SIM card or GSM modem
2	Green	Blinking: Concentrator is active
3	Green	Concentrator is connected to Kamstrup
4	Red	Blinking: No Ethernet connection
5	Green	Toggles each time an M-Bus package is received
6		Not in use
1+4	Red	Solid: Out of function. Contact Kamstrup

Figure 3 - LED explanation

10 Accessories

RF antennas:

Description	Product number
Small omni antenna	6697032
Large omni antenna	6697037 (6697022, no bracket)
Panel outdoor	6697033
Panel indoor	6697034

Cables for REAdy Concentrator stand-alone (open ended):

Description	Product number
10 m	5000255
20 m	5000363

Cables for outdoor REAdy Concentrator:

Description	Product number
2 m	5000398
5 m	5000389
10 m	5000390
20 m	5000391

GSM options:

Description	Product number
GSM modem module	Contact Kamstrup
Modem antenna	6699448

11 Disposal



Dispose correctly of the product.

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.

11.1 Disposal by Kamstrup A/S

Kamstrup A/S accepts products 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.

11.2 The customer sends for disposal

The product must not be disassembled prior to dispatch, only the battery should always be dis-connected. Hand in the complete product for approved national/local disposal. Enclose a copy of this page to inform the recipient of the contents.

11.3 Disposal by the customer himself

Disassemble the product 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. Also, see table below. Any questions about environmental conditions should be sent to:

Kamstrup A/S

Att.: Miljø- og kvalitetsafd.

Fax.: +45 89 93 10 01

info@kamstrup.dk

Topic	Material information	Recommended disposal
Printed circuit board	Coppered epoxy laminate, components soldered on	PCB scrap for metal recovery
Plastic enclosure	PPS	Plastic recovery
Protective shield	PPS	Plastic recovery
Cables	Rubber, metal and copper	Copper/metal recovery
Plugs	Metal	Metal recovery
Antennas	Fiberglass and copper	Copper recovery, Electronic waste

Table 1 - Disposal table

Kamstrup A/S

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DK-8660 Skanderborg
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F: +45 89 93 10 01
info@kamstrup.com
kamstrup.com