

MAKING MODERN LIVING POSSIBLE



Installation Guide

Danfoss Link™ Central Controller



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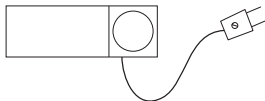
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1. Quick guide for installation

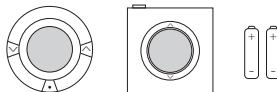
1

Install all mains powered devices first, and add to network



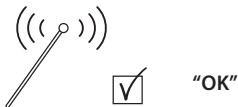
2

Create rooms and add battery operated devices one by one



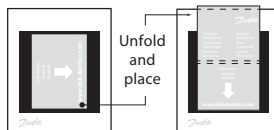
3

Perform the network test with the Danfoss Link™ CC in its final position



4

Place the hanger onto the Danfoss Link™ CC



Tips!

- The key can be used at any point during installation.
- Always look for the latest software version at www.link.danfoss.com before installation. See **chapter 6 Upgrading software version**.

2. Introduction



Danfoss Link™ is a programmable, wireless control system for heating systems in residential buildings (up to approximately 300 m²).

The central controlling unit is the Danfoss Link™ CC equipped with a colour touch screen, from which the entire installation can be controlled.

This installation guide contains all information about the Danfoss Link™ CC and how to get started. It guides through recommendations and considerations that must be taken into account when handling a wireless system - and it describes configuration of the system, to ensure a smooth and reliable system set-up.



Individual instructions, supplied with the service and room devices, contain information about connecting the respective device to the network. The instruction will also state if the device is considered a service or a room device.

3. Guidelines for installation

The signal strength is sufficient for most applications, however, wireless signals are weakened on the way from the Danfoss Link™ CC to the room devices and each building has different obstacles.

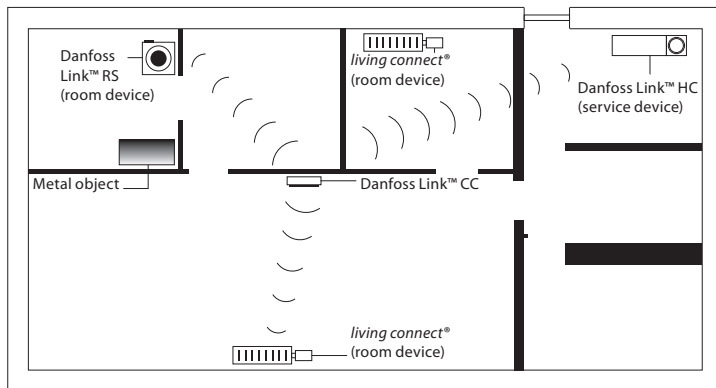
Ensure the best performance by keeping the following in mind for planning and installation:

- Max. 30m between devices in free space.
- Receiving devices should be placed on opposite or next wall as the transmitter, if possible.
- All metallic parts in the building construction can weaken wireless signals.
- Reinforced concrete walls and floors weaken the signal strength significantly, but almost all types of construction materials reduce the signal to some degree.
- Corners, which is a result of the design of the building, can weaken the wireless signals, due to either a longer distance or missing reflecting opportunities.

Note! *To get a good overview of the devices in each rooms, and their placement, Danfoss recommends that an installation plan is made before beginning the actual installation.*

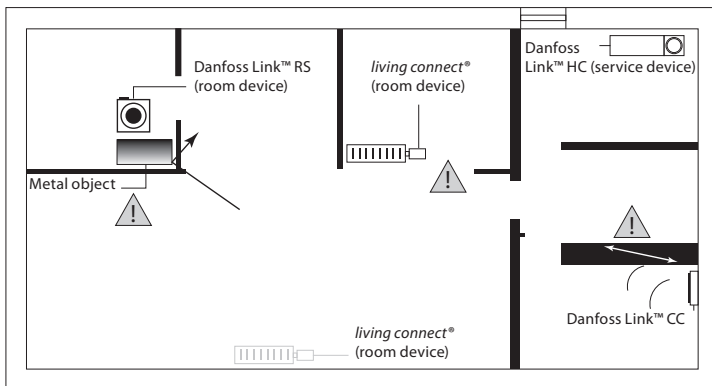
3.1. Correct installation plan

- ✓ No metal objects between the Danfoss Link™ CC and other wireless Danfoss units
- ✓ The Danfoss Link™ CC is installed as central as possible on the floor plan (max. 30m between devices in free space)
- ✓ Wireless signal through walls on shortest possible diagonal distance



3.2. Incorrect installation plan

- ⚠ Metal objects between the Danfoss Link™ CC and other wireless Danfoss units
- ⚠ Decentral installation of the Danfoss Link™ CC
- ⚠ Crossing walls diagonally



3.3. How and when to use repeater units

What is the purpose of a repeater unit ?

A repeater unit strengthens the wireless signal, when a satisfying connection can not be established between the Danfoss Link™ CC and other wireless Danfoss units.

When is a repeater unit needed ?

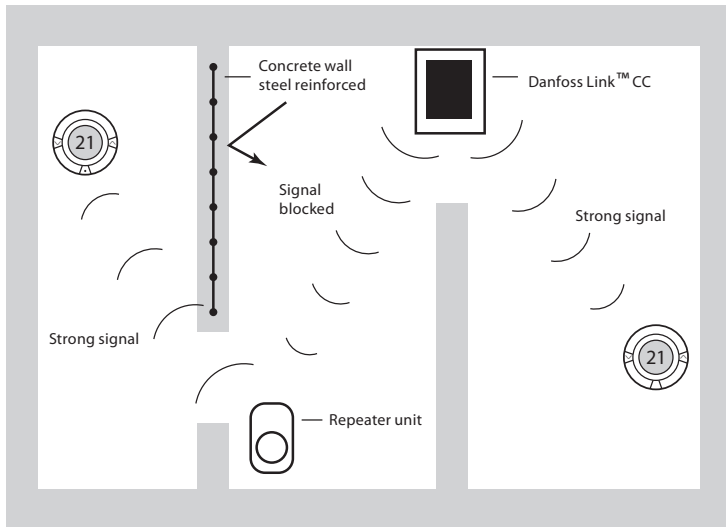
1. Complete the installation and perform a network test (see 4.9). If one or more devices fail, include a repeater unit (CF-RU) in the network, between the Danfoss Link™ CC and the device(s) that fail.
2. Alternatively, plan ahead. If “yes” is answered to one or more of the following questions, Danfoss recommends to include a repeater unit at the beginning of the installation (see 3.4):
 - Is internal walls or deck construction between floors made of steel reinforced concrete?
 - Is the distance between Danfoss Link™ CC and last device more than 20m and signal must pass more than 2 heavy walls (stone or non-reinforced concrete)?
 - Is the distance between Danfoss Link™ CC and last device more than 25m and signal must pass more than 2 light walls (gypsum/wood)?
 - Is the distance more than 30m in free line of sight?

A repeater unit (CF-RU) can be ordered on Danfoss code no. 088U0230.

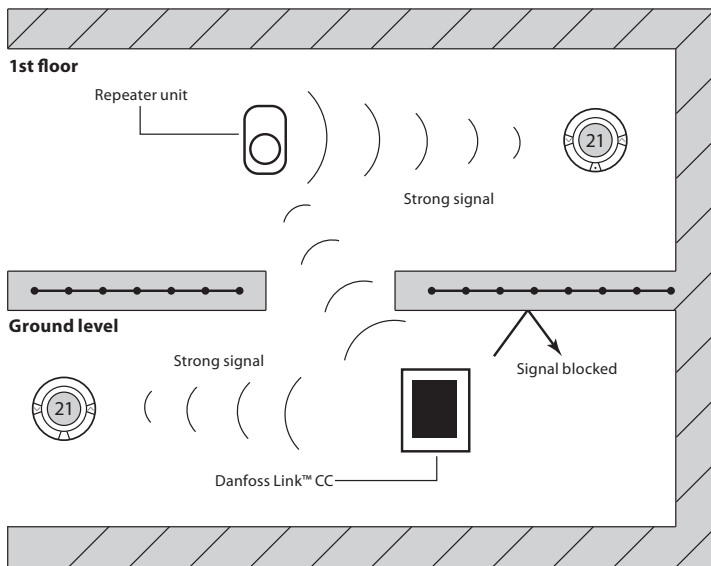
Note! *These are guidelines only, as many factors have influence on wireless communication.*

3.4. Where to place repeater units

Plan view, single floor building



Cross section view - building with more than one floor



4. Installation

Danfoss Link™ CC can be installed with either a PSU (in-wall power supply) or a NSU (net power supply).



Do not install in bathrooms



Avoid direct sunlight to Danfoss Link™ CC

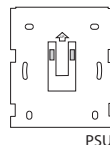


Install in height of 140-170 cm



Installing Danfoss Link™ CC with In-Wall PSU

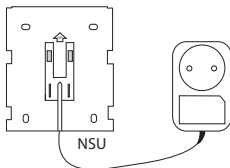
- Hold the PSU over the wall box and mark up the 4 screw holes.
Make sure the top is level.
- Drill holes and put fitting plugs in.
- Connect the PSU according to the connection diagram on the back side.
- Mount the PSU with the 4 screws.



PSU

Installing Danfoss Link™ CC with NSU

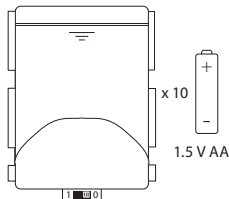
- Hold the mounting plate on the wall and mark up the 4 screw holes. Make sure the top is level.
- Drill holes and put fitting plugs in.
- Mount the mounting plate with the 4 screws.
Do not mount the Danfoss Link™ CC yet!
- Connect the NSU to a power outlet.



4.1. Adding devices to the system

When adding devices to the Danfoss Link™ system, the distance between the Danfoss Link™ CC and the device must not exceed 1.5m. To accomplish this Danfoss Link™ Battery Supply Unit (BSU) is offered as an installation tool.

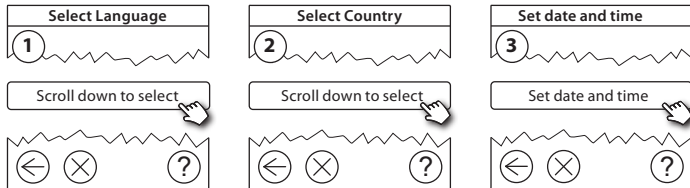
1. Slide off the lid and add batteries.
2. Slide the lid back on and attach the Danfoss Link™ BSU battery pack onto the back of the Danfoss Link™ CC. When ready to do the commissioning, turn the switch located on the Danfoss Link™ BSU to the ON position.



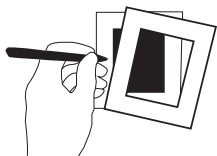
Danfoss Link™ CC will now start up. This takes approximately 30 seconds.

A battery pack (BSU) can be ordered on Danfoss code no. 014G0262.

4.2. Connecting power, setting country, language and date/time

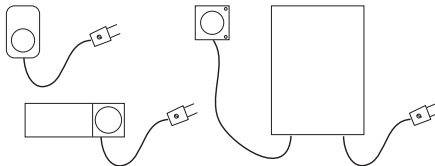


4.3. Starting up the installation menu



- Remove the front cover of the Danfoss Link™ CC by gently pulling it off, pull near the edges of the cover.
- Press the **SETUP** pin for 3 seconds to enter the service area.

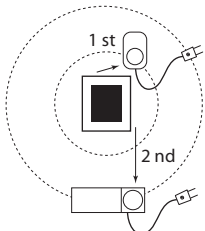
4.4. Mounting mains powered devices



Power-up all mains powered devices first, and any repeater units that might be needed.

Note!

- If Danfoss Link™ HC is used, connect all actuators (TWA), before mains powering the unit.
- ON/OFF relays are only visible in the end-user menu.



- Pair devices to Danfoss Link™ CC.
- Start with the device closest to the Danfoss Link™ CC, and move outwards.

4.5. Adding service devices



Always add dedicated repeater units first!

Danfoss Link™ CC supports many different types of service devices which functions as both simple ON/OFF devices for other electrically equipment, repeater units and controllers for hydronic systems, and other sub-systems.

Service Options

1

Rooms and Devices

Rooms and Devices

2

Add Service Device

Add Service Device

3

Begin Registration

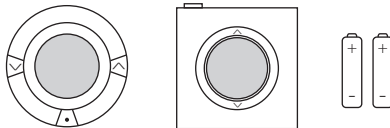
Edit Device Name

4

Enter/edit Device Name

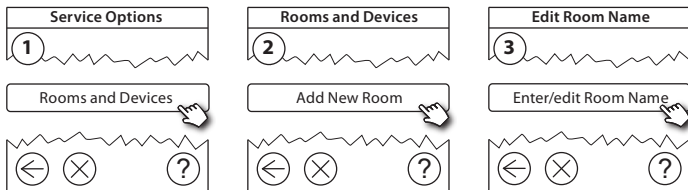
4.6. Mounting battery operated room devices

Create rooms and add the battery operated room devices to the assigned rooms. This can be done in any order.



4.7. Creating rooms

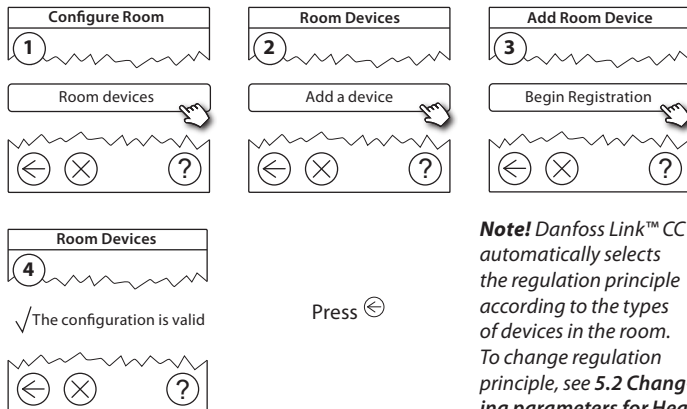
Danfoss recommends to create and add device(s) to one room in a single step, and thereafter move on to the next room.



Tip! A list of common room names is available here .

4.8. Adding room devices

A room device regulates temperature in the room where it is installed. All room devices must be configured, according to the previous installation plan, to ensure the signal path.



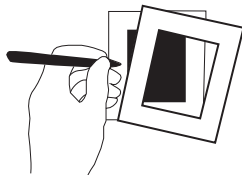
Note! Danfoss Link™ CC automatically selects the regulation principle according to the types of devices in the room. To change regulation principle, see 5.2 *Changing parameters for Heat Regulations*.

4.9. Performing a network test

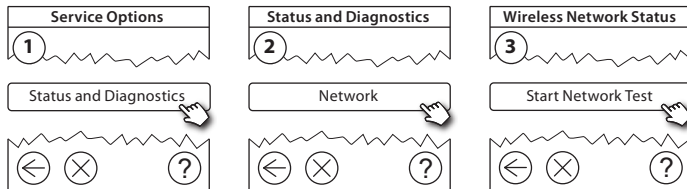
After finishing installation, perform a network test, to ensure that communication between all added devices and the Danfoss Link™ CC is stable.

Note! Do not perform the network test before the Danfoss Link™ CC is mounted in its final position and ensure that all living connects® are out of mounting mode, see instructions following the living connect®.

1. Turn off the battery pack.
2. Slide the Danfoss Link™ CC onto the previously installed mounting plate.
3. The Danfoss Link™ CC will now power-up.
4. Remove the front cover and press the **SETUP** pin for 3 seconds to enter the service area.



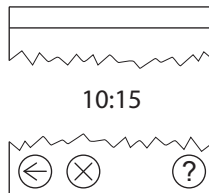
If there is uncertainty about the network performance, it is recommended to perform a network test before the installation is completed entirely.



At the end of the network test the Danfoss Link™ CC awaits for all battery operated devices to wake up and report. Follow the instructions given on the screen. If the network test is running smoothly, there will be no need for further interaction. If the network test is performing slow, the Danfoss Link™ CC guides through troubleshooting and gives useful tips for speeding up the process.

4.10. Finalising installation

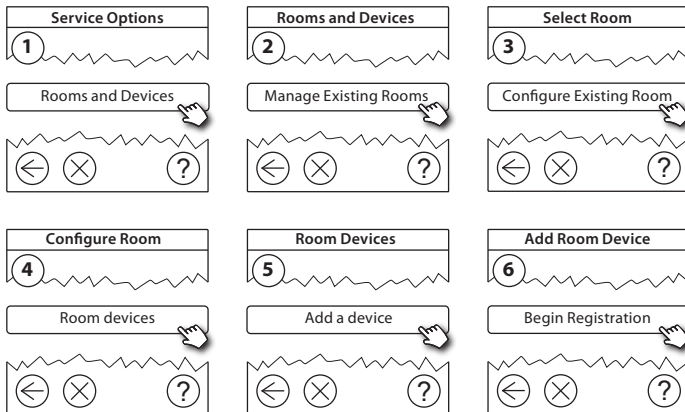
Press the **SETUP** pin to close the installation.



5. Modifying an existing installation

5.1. Adding devices to an existing room

Remove the front cover and press the **SETUP** pin for 3 seconds to enter the service area.



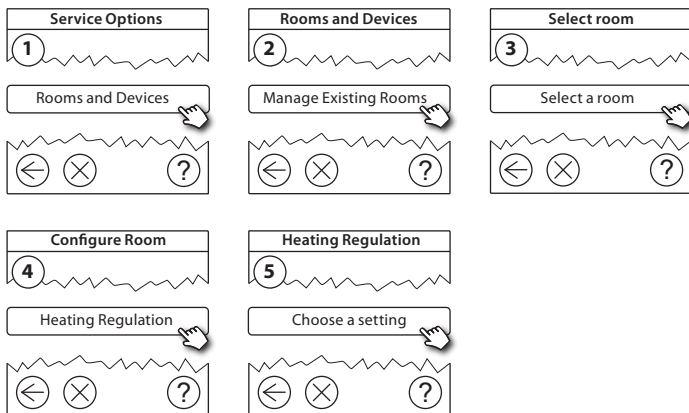
Continue until all new devices are added to the desired room.



Perform a network test after modifying the installation.

5.2. Changing parameters for Heat Regulations

Remove the front cover and press the **SETUP** pin for 3 seconds to enter the service area.



- **Forecasting method:** by activation of the forecast method, the system will automatically predict the heating start-up time necessary to reach the desired room temperature at desired time (all heat emitter types).
- **Maximum floor temperature:** the default setting is 35 °C (electrical floor heating).
- **Regulation type:** only in connection with electrical heating systems.

Note! Use pincode [0044] to change between the following regulation types:

Room sensor (regulates only by room temperature) - if only Danfoss Link™ RS is fitted (hydraulic floor heating) or Danfoss Link™ RS + Danfoss Link™ FT (electrical heating).

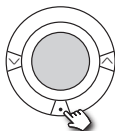
Floor sensor (regulates only by floor temperature) - if only Danfoss Link™ FT/S is fitted.

Combined room/floor (ensures min. floor temperature and regulates room temperature in parallel) - Danfoss Link™ RS + Danfoss Link™ FT/S is fitted.

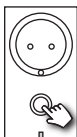
In case of hydraulic floor heating, be aware if a certain max. floor temperature is given by the floor manufacturer. This can be assured by fitting a thermostatically controlled mixing shunt.

5.3. Removing a room or service device from the network

Devices can be removed from the network by pressing and holding a button while switching the power on/off (see illustrations). Press the button for approx. 5 seconds after reconnecting the power.



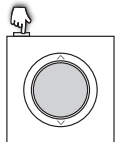
living connect®



Danfoss Link™ PR



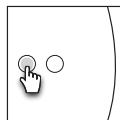
CF-RU



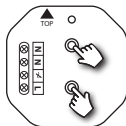
Danfoss Link™ RS



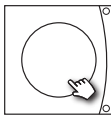
Danfoss Link™ HC



Danfoss Link™ BR

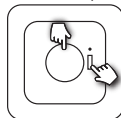


Danfoss Link™ HR



Danfoss CCM/DCM

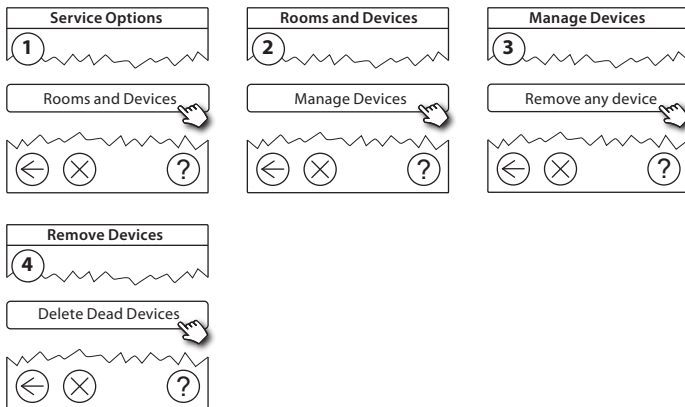
(To remove device)



(To power off)

Danfoss Link™ FT/S

Back-up method for removing a defective or missing device (only if/when previous method is not possible): Remove the front cover and press the **SETUP** pin for 3 seconds to enter the service area.



To replace a device, while retaining all settings for that device, use the function **Replace any device** and follow the instructions given on the screen. By using this function, all settings for that particular device, are transferred to the new unit.

5.4. Factory reset of Danfoss Link™ CC



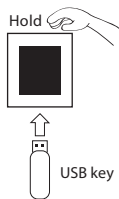
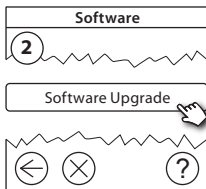
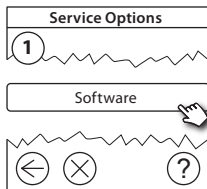
Danfoss Link™ CC can be reset to factory settings, when all devices are removed from the network.

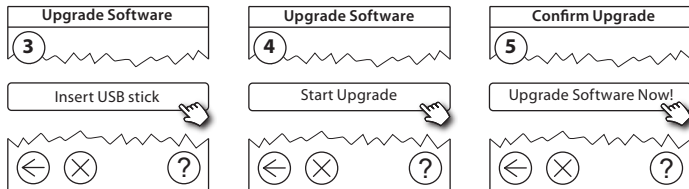
Remove the front cover and press and hold the reset button, on the right side of the Danfoss Link™ CC, until the controller gives an audible signal. All rooms are now deleted and the Danfoss Link™ CC is reset to factory settings.

6. Upgrading software version

Danfoss Link™ software is upgradable. New software versions are published on www.link.danfoss.com.

1. Download the software upgrade to a USB key, and insert the USB key in the USB port.
2. Remove the front cover and press the **SETUP** pin for 3 seconds to enter the service area.

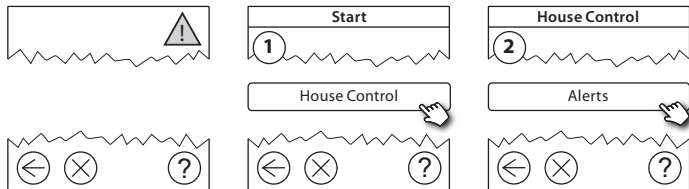




7. Warnings



If a warning or an alert occurs, a yellow alert icon will be shown on the standby screen. Follow the procedure to find more information.



7.1. Alert Icons

	Battery warning
	Critical battery level
	Low battery level
	Device not responding
	Too many dead devices
	Heating turned off in a room

	Min. floor temperature limit
	Tamper proof / Restrictions enabled
	Manual operation
	Icon for floor temperature
	Icon for room temperature
	Icon for TRV

8. Technical specifications and approvals

Danfoss Link™ CC	
Operating voltage	15 V DC $\pm 10\%$
Standby power consumption	Max. 2 W
Screen	3.5" TFT color w. touch
Ambient temperature	-10 to +40 °C
Storage temperature	-20 to +65 °C
Ball pressure test temperature	75 °C
Pollution degree	2 (domestic use)
Transmission frequency	868.42 MHz
Transmission range in normal buildings	Up to 30 m
Max. number of repeaters in a chain	3
Transmission power	Max. 1 mW
Software class	A
IP class	21
Dimensions	125 mm x 107 mm x 25 mm
Weight	179 g

Danfoss Link™ PSU (In-Wall)	
Operation voltage	100-250 V AC 50/60 Hz
Recommended protection fuse	Max. 16 A
Output voltage	15 V DC $\pm 10\%$
Standby power consumption	Max. 0.15 W
Max. load	10 W
Cable specifications	Recommended 1.5 mm ² , max. 2 x 2.5 mm ²

Danfoss Link™ NSU (Net Adapter)	
Operation voltage	100-240 V AC 50/60 Hz
Recommended protection fuse	Max. 16 A
Output voltage	15 VDC $\pm 10\%$
Standby power consumption	Max. 0.3 W
Cable length	2.5 m
Max. load	7 W

Danfoss Link™ BSU (Battery Supply Unit)

Output voltage	15 V DC $\pm 10\%$
Number of batteries	10 x AA (not included)

Danfoss Link™ CC is tested for safety and EMC requirements as specified in EN60730-1 and EN60730-2-9.

9. Disposal instructions





Danfoss A/S
Indoor Climate Solutions

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