Danfoss

088U0221

Index

1. Functional Overview

1.1 Front (fig. 1)
① Display.
② Soft key 1.
③ Soft key 2.
④ Up/down selector.
⑤ Left/right selector.
⑥ Icon for system alarm.
⑦ Icon for communication with Master Controller.
⑧ Icon for switch to 230 V power supply.
⑨ Icon for low battery level.

1.2 Back (fig. 2)
① Back plate/docking station.
② Battery compartment.
③ Screw hole for wall mounting.
④ Screw and wall plug.
⑤ Transformer/power supply plug.

Note: CF-RC Remote Controller has a self-explanatory menu structure. All settings are easily carried out with the up/down and left/right selectors in combination with the soft keys. When the display back light is out, the first touch of a button only activates this light.

2. Installation

2.1 Preparations
• Install Remote Controller after you have installed all room thermostats.
• Remove the protection strip to connect the enclosed batteries.
• Carry out the assignment of Remote Controller to Master Controller within a distance of 1.5 m.
• When the display back light is out, the first touch of a button only activates this light.

2.2 Activate Install mode on Master Controller (fig. 3)
• Use the menu selection button ① to select *Install* mode. The install LED ② flashes.
• Activate *Install* mode by pressing OK ③. The install LED ② goes ON.

2.3 Activate Install mode on Remote Controller (fig. 1)
- When the batteries have been connected, follow the installation guide, beginning with the selection of language.
- After the installation process, set time and date by using the up/down selector ④ and the left/right selector ⑤. Confirm settings with OK.
- The installation process is concluded with the opportunity to name the rooms in which the room thermostats are placed. This makes access to and handling of the system very easy.
- In the **Name rooms** menu, activate the **Change** with soft key 2 (③) to change the default room names (e.g. from "MC1 Output 1.2" to "Living room"), and confirm with OK. You can also use the **Spell….** menu to create other names.
- When the installation is finished a start up screen with actual time and date will be shown in the display. The screen also shows actual temperature in the first room on the rooms list (to select another room for the start screen, see chapter 5.1.2).

Note: Keeping a button activated during settings will make the value change faster.

3. Transmission Test

3.1 Initiate a transmission test on Remote Controller
Menu → Setup → Link test: From the start-up screen, select **Link Test** to activate a test of the wireless transmission between Master Controller and Remote Controller. The status of the link test will be displayed right after the test has been carried through.

If the link test is not successful:
- Try to relocate Remote Controller in the room.
- Or install a CF-RU Repeater Unit, and place it between Master Controller and Remote Controller.

Note: The link test may take a few minutes, depending on the size of the system.

4. Mounting

4.1 Remote Controller has been installed (fig. 2)

When Remote Controller has been installed to Master Controller (see chapter 2), it can be mounted on the wall by means of the back plate/docking station ①. This makes it possible to connect Remote Controller to a 230 V power supply with the included transformer/power supply plug ⑤. When not in the docking station, Remote Controller is powered by two AA Alkaline 1.5 V batteries.

• Before you place the back plate/docking station on the wall, verify the transmission to Master Controller from the desired location by carrying out a link test (see chapter 3).
• Mount the back plate/docking station on the wall with the screws and wall plugs ④.
• Connect the docking station to a 230 V power supply outlet by means of the transformer/power supply plug ⑤.
• Place Remote Controller in the docking station ①.

Note: To extend the transmission range of the CF2⁺ system, up to three Repeater Units can be installed in a chain (see fig. 4).

5. Menus

5.1 Rooms

Menu → Rooms: Activate the *Rooms* menu to access a list of all rooms in the system.

5.1.1 Select room

Menu → Rooms → Select room: From the *Rooms* menu, select the desired room. The screen displays information about settings and actual temperatures:

⊕ Indicates that this room is included in an ongoing time program (see chapter 5.2).

✎ Indicates that the room thermostat is running low on battery.

⚠ Indicates that the value set on the room thermostat is beyond the max./min. limitations set by Remote Controller.

▲ Indicates that the set temperature is above the actual temperature.

▼ Indicates that the set temperature is below the actual temperature.

5.1.2 Options
Menu → Rooms → Options: From the *Rooms* menu, select *Options* to get access to the following room options:

- *Set temperature:* Set and lock set temperature for the room thermostat. Locking prevents adjustment of set temperature on the room thermostat.

- *Set Min/Max:* Set and lock minimum and maximum temperatures for the room thermostat. Locking prevents adjustment beyond these limits on the room thermostat.

- *Change room name:* Change room names by means of a list of possible room names or you can use the *Spell.....* menu to key in other names.

- *Set floor Min/Max:* Set and lock minimum and maximum floor surface temperatures *(option only available with the CF-RF Room Thermostat with infrared floor sensor).*

- *Setback:* Override the next or ongoing setback period *(option only available if setback program is activated, see chapter 5.2.2).*

- *Cooling:* Disable cooling function for the room *(option only available when Master Controller is in cooling mode).*

- *Heating/cooling → Set mode:* Select heating/ cooling mode to *Auto*, *Heating* or *Cooling* *(option only available when 3- or 4-pipe heating/cooling is enabled).*

- *Heating/cooling → Setting locked:* Select heating/cooling mode to be *Locked* or *Unlocked* *(option only available when 3- or 4-pipe heating/cooling is enabled).*

5.2 Program
Menu → Program: From the start-up screen, activate the *Program* menu to view time programming options.

5.2.1 Period program
Menu → Program → Period program → Create program: From the *Program* menu, select *Period program → Create program* to set room temperature for all room thermostats during e.g. a holiday. Use the up/down and left/right selectors (fig. 1-④/⑤) to set start date, end date and temperature for the program. Confirm each setting with OK. The created program is diplayed. Press *Yes* to activate the program.

Create program	
Start date : 23. Dec	
End date : 1. Jan	
Temperature : 15.0°C	
Activate?	
Yes	No

5.2.2 Setback program

Menu → Program → Setback program → Program setback: From the *Program* menu, se-
lect *Setback program → Program setback* to divide rooms in (up to) six zones with (up to)
three different programs for reduced room temperature at different times during the day.

Add rooms to a zone: Select a zone to see the rooms attached to the zone.
Select *Options → Add room* to add new rooms to the zone (as default, all rooms are as-
signed to Zone 1).
To move a room to a different zone, just allocate it to the desired zone.
Example: Kitchen is moved from Zone 1 to Zone 3.

```
┌─────────────────────────────────────┐
│          Zone 3 - Add room           │
│  Kitchen (1)                         │
│  Bath room (1)                       │
│  Living room (2)                     │
│                                      │
│                                      │
│    Yes                        No     │
└─────────────────────────────────────┘
```

Create programs for a zone: Select *Options → Program 1/2/3* to create a setback pro-
gram. Confirm with *OK* to activate the week calendar.

```
┌─────────────────────────────────────┐
│             Program 1                │
│                                      │
│  Select days                         │
│                    ∧                 │
│     +       M   T   W                │
│     -    S               T   F   S   │
│                    ∨                 │
│    Ok                      Cancel    │
└─────────────────────────────────────┘
```

Use up/down and left/right selectors (fig. 1- ④/⑤) to select days for this program by
moving them above the horizontal line. Confirm with *Ok* to select time for the setback
program.

```
┌─────────────────────────────────────┐
│             Program 1                │
│                                      │
│  Select time                         │
│          ▬▬▬          ▬▬▬▬▬          │
│   00    06    12    18    24         │
│              <06:00>                 │
│    Ok                      Cancel    │
└─────────────────────────────────────┘
```

Select time for the setback program by defining the time periods with **normal room temperature**, indicated by the black bars above the time line (the periods outside the black bars are the setback periods with **reduced room temperature**).
Set start and end times by means of the left/right selector and by toggling between them using the up/down selector (fig. 1- ④/⑤).

Note: A period with normal room temperature is removed by setting start and end to the same time. The period is recreated by means of the up/down and left/right selectors.

Confirm with *Ok* to activate an overview of the created program (the days selected in the program are indicated by bold letters).

```
                    Program 1
              S   M   T   W   T   F   S

             ▬▬▬         ▬▬▬▬▬▬
         00      06      12      18      24
                     Activate?
          Ok                         Cancel
```

Activate the program with *Ok*.

Cancel program
A created program can be deleted with the *Cancel Program* menu leading to the overview illustrated above.

*Note: In the **Options** menu, the created programs (1-3) will be indicated by more distinct capitals.*
*Note: If you want to override a setback period in a room, you can do so with the **Override setback** function in the **Options** menu for each room (see chapter 5.1.1).*

Setback temperature
In the *Setback program* (see chapter 5.2.2), activate the *Setback temperature* menu to set the room temperature reduction from 1 to 10°C during setback periods.
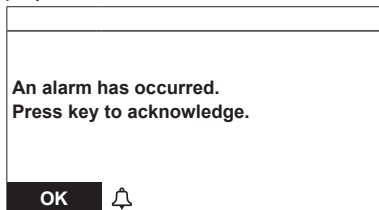
5.3 Setup

Menu → Setup: From the start-up screen, activate the *Setup* menu to get access to a variety of information and setting possibilities for Remote Controller as well as the entire CF2⁺ system. As some of the setting possibilities in the Setup menu can affect the configuration of the CF2⁺ system, and thus also the functionality of the entire application in general, they should be handled with caution.

- *Languages:* Choose another language than the one selected during the installation process (see chapter 2).

- *Date and time:* Provides access to setting of the date and time. Furthermore, this menu includes settings for and activation of the summertime program. This enables you to configure at what day, week and month the summertime begins and ends.

- *Alarm:* Switch the alarm buzzer of CF-MC Master Controller On/Off. The buzz only occurs in case of an alarm, also indicated by the red alarm LED on Master Controller (see fig. 3-④). The *Alarm log* provides specific information about the error causing the alarm and the time for its registration by the system. This *Alarm log* saves the latest alarms for later access and easy system failure identification.

- *Start-up screen:* Choose which room temperature shall be displayed on the start-up screen.

- *Service:* Configure all the outputs of Master Controller for either a floor or radiator heating system (regulation according to PWM (Pulse Width Modulation) principle). A mixed system with floor and radiator heating in separate rooms can be selected by setting the outputs of Master Controller individually for each room to either floor or radiator heating (see chapter 6).

- *Contrast:* Adjust the contrast of Remote Controller display.

- *Link test:* Activate a test of the wireless transmission between Master Controller and Remote Controller (see chapter 3).

- *Identify Master Controller:* Identify a specific Master Controller in a system of up to three Master Controllers. When this function is activated, the Master Controller, you wish to identify, will flash all the output LEDs from 1 to 10 and back again several times for easy identification *(option only available for systems with more Master Controllers).*

5.4 Alarms

If an error occurs in the CF2+ system, it is indicated by Master Controller and directly on the Remote Controller display:

```
┌─────────────────────────────┐
│                             │
│                             │
│  An alarm has occurred.     │
│  Press key to acknowledge.  │
│                             │
│                             │
│   ▐ OK ▌   🔔               │
└─────────────────────────────┘
```
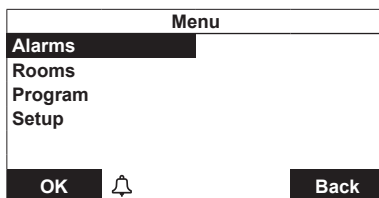
When the alarm is acknowledged with OK, the Master Controller buzzer will go off (if set to Sound On, see chapter 5.3), and the CF2+ system will switch to *Alarm status* as indicated on the start-up screen:

```
┌─────────────────────────────┐
│ 16:14           Tue. 26. July 05 │
│                             │
│           Kitchen           │
│           20.0°C            │
│           Status            │
│           Alarm             │
│                             │
│   ▐ Menu ▌   🔔             │
└─────────────────────────────┘
```

This indication of *Alarm* on Remote Controller and the indication on Master Controller will continue until the error that caused the alarm has been fixed.

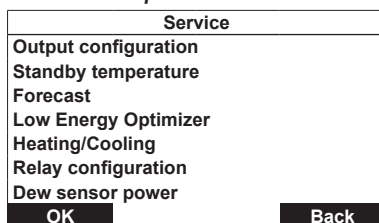An *Alarms* menu will be present at the top of the *Menu* list, activated from the start-up screen:

```
┌─────────────────────────────┐
│           Menu              │
│ ▐Alarms                   ▌ │
│  Rooms                      │
│  Program                    │
│  Setup                      │
│                             │
│   ▐ OK ▌  🔔      ▐ Back ▌  │
└─────────────────────────────┘
```

Activating the *Alarms* menu with OK provides access to an *Alarm status* with a description of the error causing the alarm. Select the *Alarm log* to get specific information about the error causing the alarm and the time for its registration by the system.

The *Alarm log* saves the latest alarms for later access and easy system failure identification. When no error is causing an alarm, you can access the *Alarm log* through the *Setup* menu (see chapter 5.3).

6. Service Menu

6.1 Service
Menu → Setup → Service: Activate *Setup → Service* to access a list service options.

Service
Output configuration
Standby temperature
Forecast
Low Energy Optimizer
Heating/Cooling
Relay configuration
Dew sensor power

OK	Back

6.1.1 Output configuration
Menu → Setup → Service → Output configuration: Activate *Output configuration* to configure the outputs for:
- *Floor:* the system is automatically set to PWM regulation.
- *Radiator:* the system is automatically set to PWM regulation.
- *Mixed:* floor and radiator heating can be selected individually for separate rooms. Activate *Mode rooms* to get a list of rooms and select type mode for each room.

6.1.2 Standby temperature
Menu → Setup → Service → Standby temperature: Activate *Standby temperature* to set a fixed room temperature (5-35°C) for all room thermostats, when the Global standby input is activated on Master Controller (see instruction for CF-MC Master Controller for installation details).

6.1.3 Forecast
Menu → Setup → Service → Forecast: Activate *Forecast* to enter the *Forecast* mode. Press *Change* to set the mode to:
- *Enabled (all):* all room thermostats in the system are set to *Forecast* mode.
- *Disabled (all):* all room thermostats in the system are disabled from *Forecast* mode.
- *Mixed: Forecast* mode can be activated for each room individually.

6.1.4 Low Energy Optimizer

Menu → Setup → Service → Low Energy Optimizer: Activate *Low Energy Optimizer* to enter Low Energy Optimizer mode. Press *Change* to set mode to *On* or *Off*. Confirm the setting with *Yes*.

Low Energy Optimizer	
Low Energy Optimizer	**On**
Heatpump min off time	**20**
Change	**Back**

6.1.4.1 Heatpump min off time

Menu → Setup → Service → Low Energy Optimizer → Heatpump min off time: Activate *Heatpump min off time* to configure the minimum time from the heatpump stops (signal 'No heat needed' to the pump) until the pump starts up again (signal 'Heat is needed' to the pump).
- *Heatpump min off time* can be set between 5 and 20 min. (default setting is 5 min.).

6.1.5 Heating/Cooling

Menu → Setup → Service → Heating/Cooling: Activate *Heating/Cooling* to configure automatic heating/cooling mode. Select *Change* to get following configuration options:
- *Not used:* Default setting.
- *2-pipe:* An alarm is reported, if 2-pipe configuration is selected for a system with no PT-1000 sensor connected to CF-MC 1.
- *3-pipe:* To select 3-pipe configuration, at least one CF-RD room thermostat must be connected to the system, and one CF-RD must be defined as Master Thermostat.
- *4-pipe:* To select 4-pipe configuration, at least one CF-RD room thermostat must be connected to the system, and one CF-RD must be defined as Master Thermostat.

Note: If a configuration option is not available for the current system, the option is displayed in grey.
*Note: CF-MC Master Controller has an input, which can be used as manual switch between heating and cooling. This input can only be enabled in **Not used** configuration mode.*

6.1.5.1 2-pipe

Menu → Setup → Service → Heating/Cooling → 2-pipe: Select *2-pipe* to configure automatic heating/cooling for a 2-pipe system.

Heating/Cooling	
Configuration	2-pipe
Change-over Low	22°C
Change-over High	26°C
Change	Back

Select *Change-over Low* or *Change-over High* to set change-over temperatures. Settings must be between 10 and 50°C with a min. difference of 4°C.

6.1.5.2 3-pipe (4-pipe)

Menu → Setup → Service → Heating/Cooling → 3-pipe (4-pipe): Select *3-pipe (4-pipe)* to configure automatic heating/cooling for a 3-pipe (4-pipe) system.

Heating/Cooling	
Configuration	3-pipe
Mode	Heating
Master room	Living room
Neutral zone	2K
Number of outputs	2
Change	Back

- *Mode:* Set the heating/cooling mode to *Auto*, *Heating* or *Cooling*.

- *Master room:* Select which room should be the Master room. Only rooms with a CF-RD room thermostat are listed and selectable.

- *Neutral zone:* Set the Neutral zone parameter to 2K or 4K.

- *Number of outputs:* Set number of outputs to 0, 2 or 4 (options for 2 and 4 outputs are only selectable, if all 2/4 outputs are connected to actuators and not already in use). 4 outputs on Master Controller must be configured as outputs for 3- and 4-pipe systems (if the system contains more Master Controllers, all outputs must be from Master Controller 1).
  Outputs for 3- or 4-pipe systems are:
  - *Output 1:* Warm water supply (used in 3- and 4-pipe systems).
  - *Output 2:* Cooling water supply (used in 3- and 4-pipe systems).
  - *Output 3:* Warm water return (used in 4-pipe systems).
  - *Output 4:* Cooling water return (used in 4-pipe systems).

6.1.6 Relay configuration

Menu → Setup → Service → Relay configuration: Activate *Relay configuration* to get a list of connected relays.

Relay configuration	
MC1 Pump	MC1-Pump (delay)
MC2 Pump	MC2-Pump (delay)
MC3 Pump	MC3-Pump (delay)
Boiler	MC1-Boiler (no-delay)
Chiller	Wireless
Change	Back

Select a relay function and press *Change* to get a configuration menu.

MC1 Pump
None
MC1-Pump (delay)
MC-1 Pump (no delay)
Wireless (delay)
Wireless (no delay)
Change   Back

The following table list the relay options for different functions (*default value in **Italic***).

Function	Relay Option		Function	Relay Option
MC1 Pump	None		MC3 Pump	None
	MC1-Pump (delay)			*MC1-Pump (delay)*
	MC1-Pump (no delay)			MC1-Pump (no delay)
	Wireless (delay)			MC2-Pump (delay)
	Wireless (no delay)			MC3-Pump (no delay)
MC2 Pump	None			Wireless (delay)
	MC1-Pump (delay)			Wireless (no delay)
	MC1-Pump (no delay)		Boiler	None
	MC2-Pump (delay)			*MC1-Boiler (no delay)*
	MC2-Pump (no delay)			Wireless (no delay)
	Wireless (delay)		Chiller	*None*
	Wireless (no delay)			MC1-Pump
				Wireless

Note: If a relay is already selected for another function, it displays in grey and is not selectable.

6.1.7 Dew sensor power
Menu → Setup → Service → Dew sensor power: Activate *Dew sensor power* to configure a dew sensor to be powered by CF-MC Master Controller (only output 5 can be used). Status of output 5 is displayed:
- If output 5 is in use, Remote Controller tells you where.
- If nothing is installed on output 5, *Sensor not detected* is displayed.
- If a dew sensor is installed on output 5, the power status is displayed as *ON* or *OFF*. Select *Change* to change the power status.
- Confirm the changes with *Yes* or discard the changes with *No*.

7. Uninstallation

Resetting CF-RC Remote Controller (fig. 1)
- At the same time, activate the Soft key 1 ②, the soft key 2 ③ and the down selector ④.
- Remote Controller requests confirmation before resetting. Confirmation with *Yes* resets Remote Controller.
- Confirm reset with *Yes*. Remote Controller is now ready for installation to a Master Controller.

Note: Please see Master Controller instruction for further details.

8. Specifications

Cable length (power supply)	1.8 m
Transmission frequency	868.42 MHz
Transmission range in buildings (up to)	30 m
Number of Repeater Units in a chain (up to)	3
Transmission power	< 1 mW
Supply voltage	230 VAC
Ambient temperature	0-50°C
IP class	21

9. Troubleshooting

Error Indication	Possible Causes
Actuator/output (E03)	The output of Master Controller or the actuator connected to this output is short-circuited or disconnected.
Low temperature (E05)	The room temperature is below 5°C. Try to verify the function of the room thermostat by carrying out a link test.
Link to Master Controller (E12)	The room thermostat in the indicated room has lost the wireless connection to Master Controller.
Low bat. in Room T. (E13)	The battery level of the room Thermostat for the indicated room is low, and the batteries should be replaced.
Critical bat. in Room T. (E14)	The battery level of the Room thermostat for the indicated room is **critically** low. The batteries should be replaced as soon as possible.
Link between MCs (E24)	The indicated Master Controllers have lost their wireless connection.
✎	The battery level of Remote Controller is low, and the batteries should be replaced.

Fig. 1

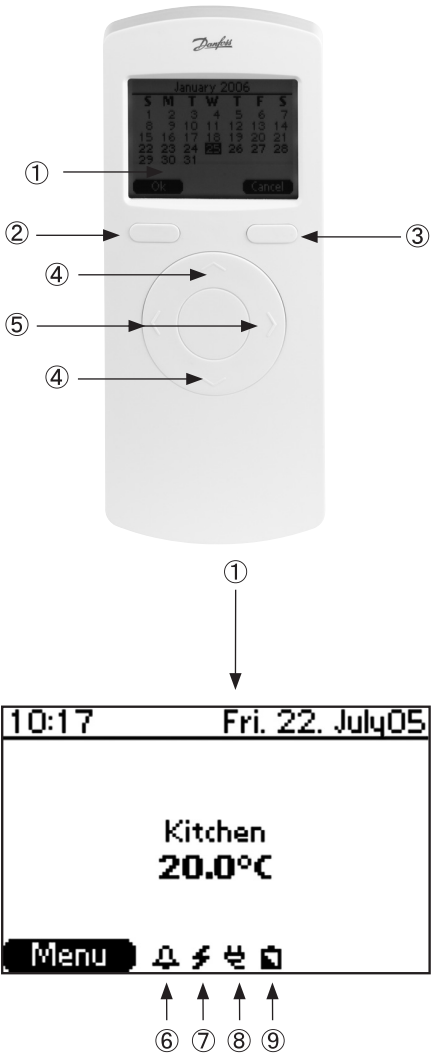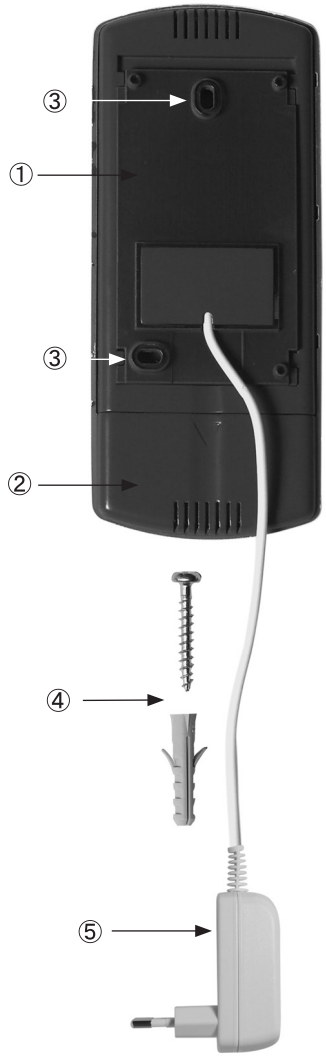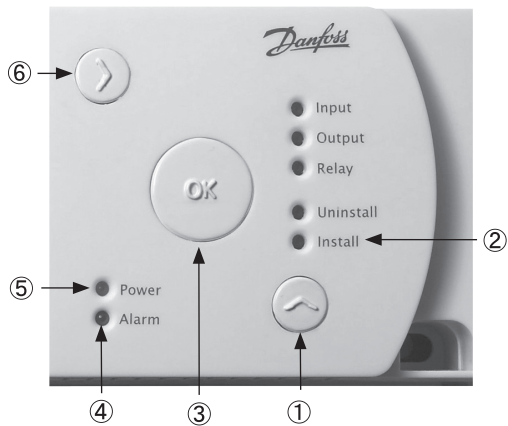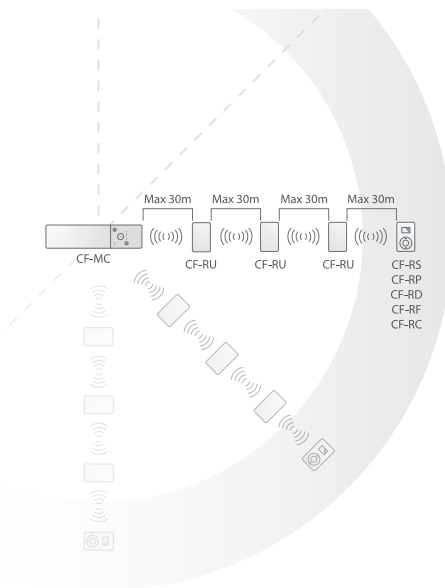**Fig. 2**

Fig. 3

Fig. 4

Wireless wellness by Danfoss

www.heating.danfoss.com