CF2 Wireless Floor Heating Control System

- Heat Pumps
- Cooling
- Radiators

Application Sheet

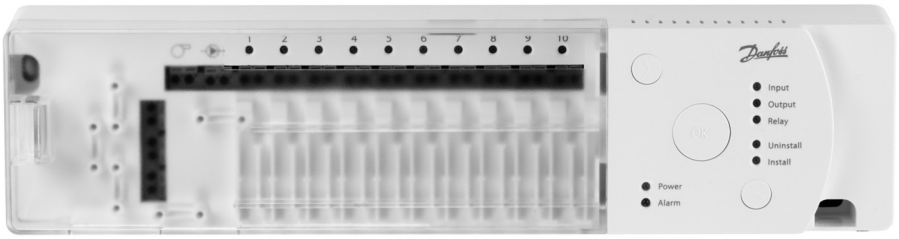
Introduction

The CF2 wireless floor heating control system with its unique functionality is a superior choice for controlling different floor heating applications. The CF2 system consists of Master Controllers with 5 and 10 outputs, four types of room thermostats, a repeater unit and a remote controller. All parts are based on advanced technology, which enables unique functional qualities.

Furthermore, the CF2 system is very easy to install, operate and service. With the CF2 system you can adjust the room temperature separately for each room and thus obtain optimal adjustment and energy savings of the entire floor heating system, as well as a very high level of comfort. This application sheet will show examples of different possibilities of using the CF2 system.

Controller equipment

Master Controller CF-MC (088U0200 - 0205)



- 10/5 short-circuit protected 24 V outputs.
- 2-way wireless transmission at 868.42 MHz.
- Relays for both pump control and boiler control.
- Input (On/Off) for heating/cooling.
- Input (On/Off) for global standby (set temp. 8° C).
- Regulation by ON/OFF or Pulse Width Modulation (PWM) principles.
- Automatic self diagnosis feature for easy failure identification (E03….).
- Pump and valve motion (3 and 14 days with no heat demand).
- External antenna and cable of 5 m.
- Master – Slave (3).

CF-RS Standard Room Thermostat (088U0210)

Setting range of 5 – 35° C by turning knob.

CF-RP Public Room Thermostat (088U0211)

Tamperproof, no direct access to settings.

CF-RD Display Room Thermostat (088U0212)

Displays either actual temperature or setting temperature.
Setting range of 5 – 35° C by turning push buttons.

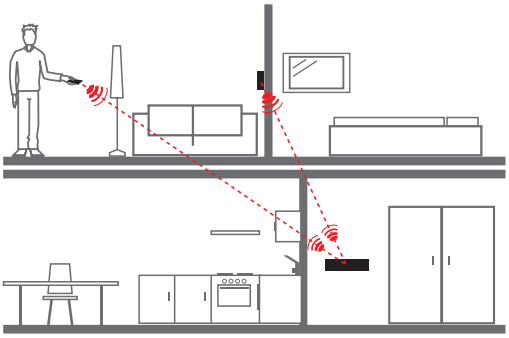
CF-RF InfraRed Floor Sensor Room Thermostat (088U0213)

Measures the floor surface temperature by InfraRed floor sensor.

Controller equipment, Accessories

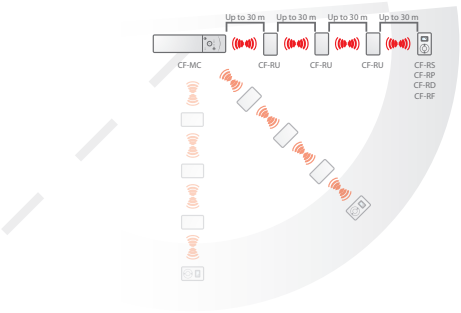
CF-RC Remote Controller (088U0220)

- Wireless connection to all CF2 components (up to 3 Master controllers).
- Temperature setback and holiday program.
- Reliable 2-way communication at 868.42 MHz.
- User friendly menu structure.
- Naming and central settings for all room thermostats.
- Individual setting of each output on Master Controller for either floor heating or radiator system (PWM).
- Alarm log and easy failure identification.
- Big display with back light.
- 2 x 1.5 V AA battery and 230 V supply.



CF-RU Repeater Unit (088U0230)

- Extends the wireless transmission range between the Master Controller and room thermostats, other Masters or to the Remote Controller.
- 230 V supply.
- Up to 3 Repeater Units installed in a chain between room thermostats and Master Controller.
- More parallel chains of Repeater Units from a Master Controller are possible.



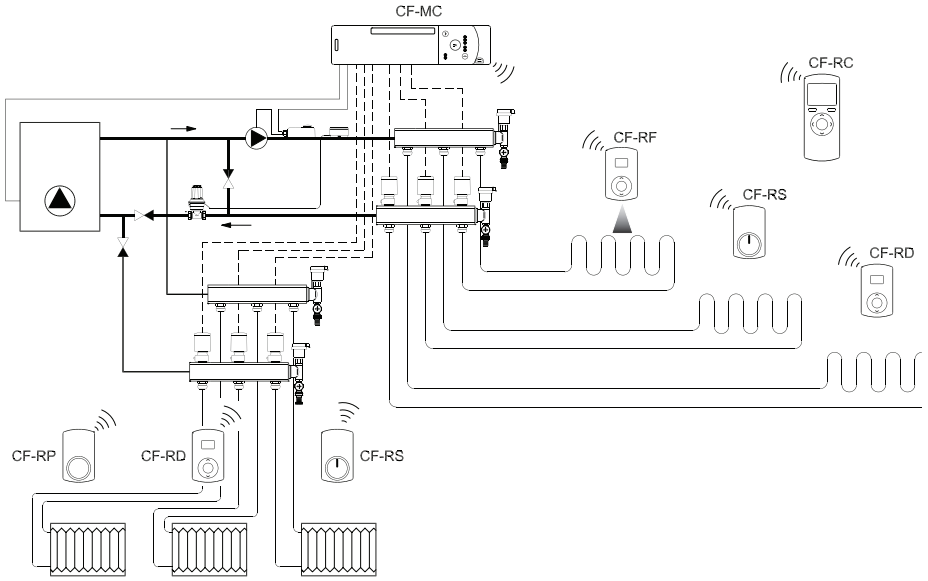
CF-EA External Antenna (088U0250)

- If the Master Controller is mounted in a metal cabinet/box - use External Antenna and place it outside the metal cabinet/box to ensure higher transmission certainty.
- External Antenna connected directly to Master Controller by cable.

Combined floor and radiator heating system

The CF2 system can operate applications with either floor heating or radiators.
With floor heating configuration of the master controller, you can choose between on/off or PWM (Pulse Width Modulation) regulation.
Choosing a radiator system automatically sets the regulation to PWM.

Even a mixed system with both floor and radiator heating in separate rooms can be selected by setting the outputs of the master controller individually for each room to either floor or radiator heating.



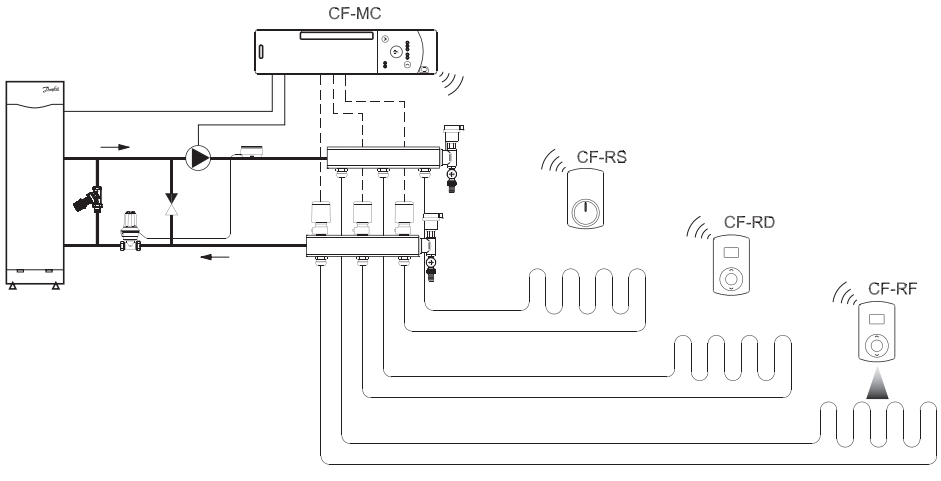
Heat pump and simple floor heating/cooling system

A rapidly developing application now and in the future is/will be heat pump in combination with floor heating/cooling system. It is an ideal solution for one family houses and for people, who are paying much attention to environmental issues like global climate conditions, energy savings and last - but not least - to superb comfort and indoors climate at home.

The DHP-C heat pump has a built-in passive cooling module. To activate this, an extension card must be connected. By connection of a 2-pole cable from the relays 253 and 254 on the extension card to the cooling/heating port on the CF2, we will get the heat pump to switch CF2 from heating to cooling mode, when the pump is going in passive cooling mode.

An AVDO controller is placed in the supply line to ensure minimum circulation (to protect the compressor).

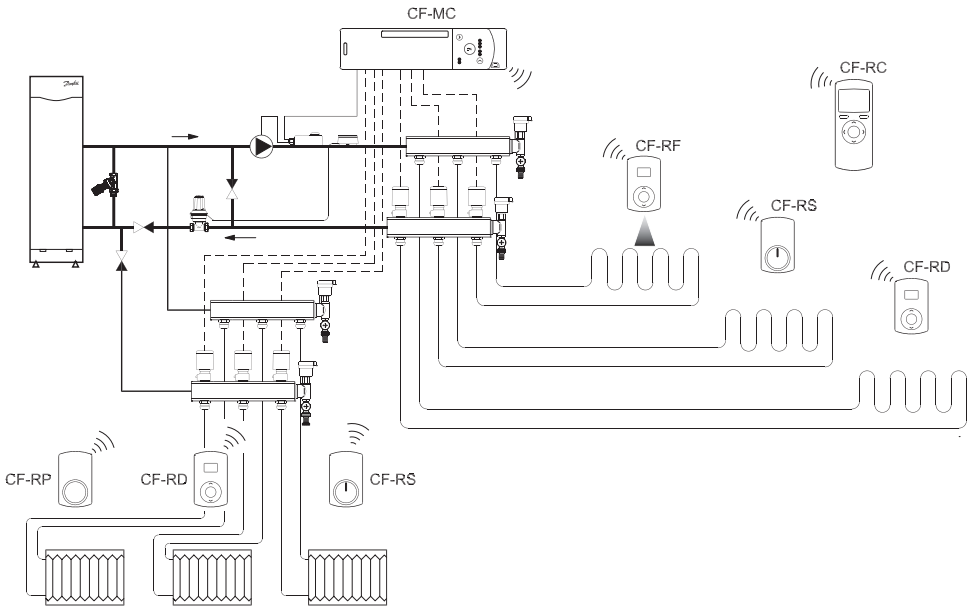
Supply temperature is often set to 19° C for two reasons:
- To avoid discomfort from feeling that the floor is too cold.
- To avoid condensation in rooms with high relative humidity.



Heat pump and combined floor/radiator heating system

In the past this type of application was limited, due to the COP, which is higher, when the inlet temperature is low (the efficiency of the radiator is low as well).

Now, in low energy buildings systems with lower supply temperature are still meeting the heat demand.

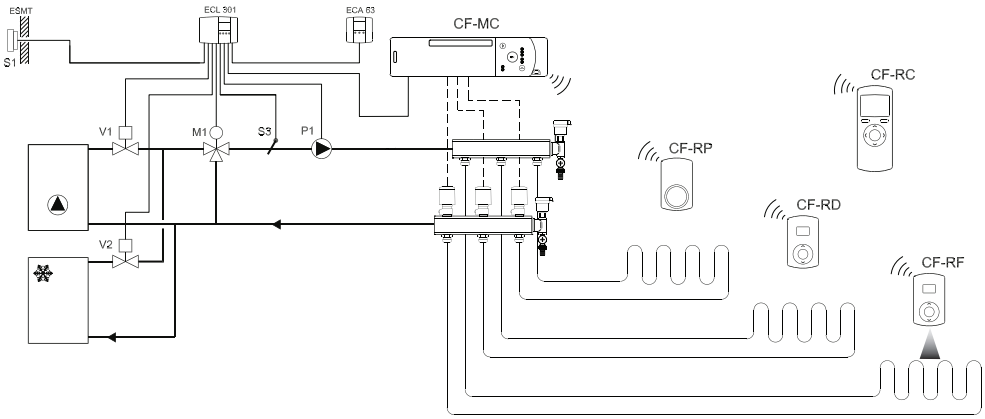


Heating/cooling applications with the boiler and chiller

The traditional application - adopted directly from commercial buildings - is a boiler/chiller combination.
This application is most common in public buildings, but it can also be used for floor heating/cooling application in small one family house.

Below a short description of the possibilities that exists today for interaction between the CF2 system and the ECL301 weather compensator with card L32.

The ECL 301 with L32 is targeted towards the below indicated types of applications with the possibility of either heating or cooling:



The valves V1 and V2 are for on/off actuators (TWA, ABV or AMZ 112 also available with switch for activating boiler or heat pump etc.) for supplying either heating (V1) or cooling (V2) to the mixing circuit (M1, S3 and P1). M1 could also be a 2-way valve in the return on the primary side.

In the mixing circuit the desired flow temperature in either heating or cooling mode is controlled by ECL301 by the use of flow sensor S3 and mixing valve M1. The flow temperature can be influenced by outdoor temperature (S1) and/or room temperature (could be done via the remote panel ECA63 with room and humidity sensor).
Combining the ECL 301 (L32) and the CF2-system not only offers the possibility of even better comfort through weather compensation and individual room temperature control. It also offers it at the lowest possible level of energy consumption and thus low expenses. Finally combining the ECL 301 and the CF2-system releases several applicational possibilities:

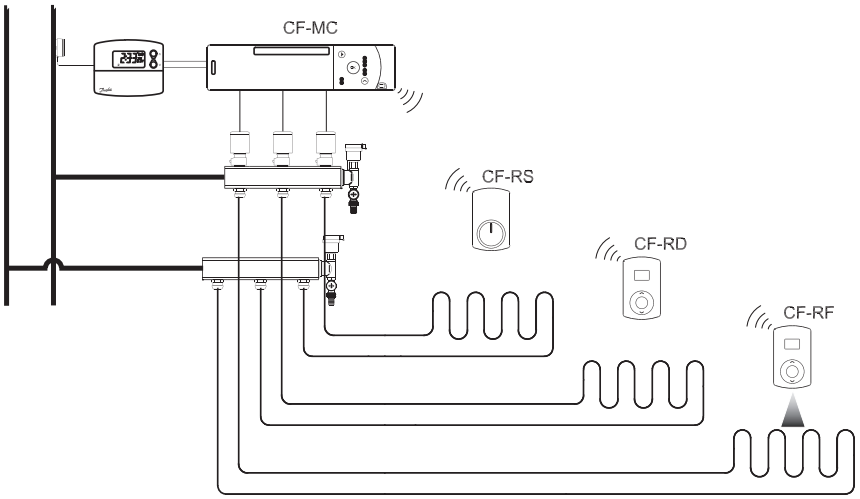
- **Mixing circuit pump (P1):** ECL 301 (L32) can activate the pump (P1) of the mixing circuit according to the flow demand of the floor heating system. To be able to do this the pump output of the CF-MC is simply connected to the input 16 and 21 of the ECL 301
- **Heating or cooling via relay R2 of ECL 301:** By removing the live wire (L) from connection 12 and afterwards connecting 11 and 12 to the heating/cooling input of the CF-MC, the relay R2 of the ECL 301 can control the switch between heating and cooling also of the CF2-system. The switch between heating and cooling mode can then be done according to outdoor and/or indoor temperature. In combination with the remote panel ECA63 it is also possible to control according to the dew point based on temperature and humidity level in the room where the ECA63 is placed.
- **Global standby via relay R3 of the ECL 301:** The third relay (R.3) is following the time program number 1 of the ECL 301. That means that the connection between 13 and 14 is closed when there is a period with "setback" in this program and the connection is open in a period of "comfort". By removing the live wire (L) from the connection 14 and then connecting 13 and 14 to the input for Global Standby of the CF-MC, this relay (R.3) of the ECL 301 can control the "standby periods" of the entire system. A period of setback or comfort programmed via the ECL 301 / ECA63 then automatically sets the status of the CF2-system accordingly (default temperature for Global Standby = 8 °C). This way the CF2-system will not try to supply any heat when none is required according to setback programming done via the ECL.

With the optional relay module ECA80 even more functionality can be added to the combination of the ECL 301 and the CF2 as this module offers a 4. and a 5. relay.
Relay 4 can be controlled by the second time program of the ECL 301 or it can follow relay 2. It can thus be used to activate a chilling unit or simply to indicate "cooling" mode.
Relay 5 can be activated according to values of the outdoor temperature (S1) and thus used for controlling a heat pump etc. Finally it can also be controlled by the humidity measured by the remote panel ECA63 and thus able to activate a dehumidifier etc.

2-pipe change-over systems with TP5000A

- Change-over cool to heat at pipe temperature > 30°C (adjustment possible).
- Change-over heat to cool at pipe temperature < 30°C.

Please note: The TP5000A is designed as a programmable domestic room thermostat with remote sensor, and the max. temperature readable is only 40° C.
Control and output will stay in correct state (even if the water temperature is above 40° C) until the temperature drops below the set point, for example 30° C, and then the relay will switch to the cooling mode on the CF2.



3- or 4-pipe heat/cool systems with RET230 HC-1

- The RET is used as master room thermostat.
- Adjustable neutral zone 2K / 4K.
- A potential free relay is needed between CU and the RET thermostat.