Data Sheet

Wireless regulation
for floor heating

![Danfoss]
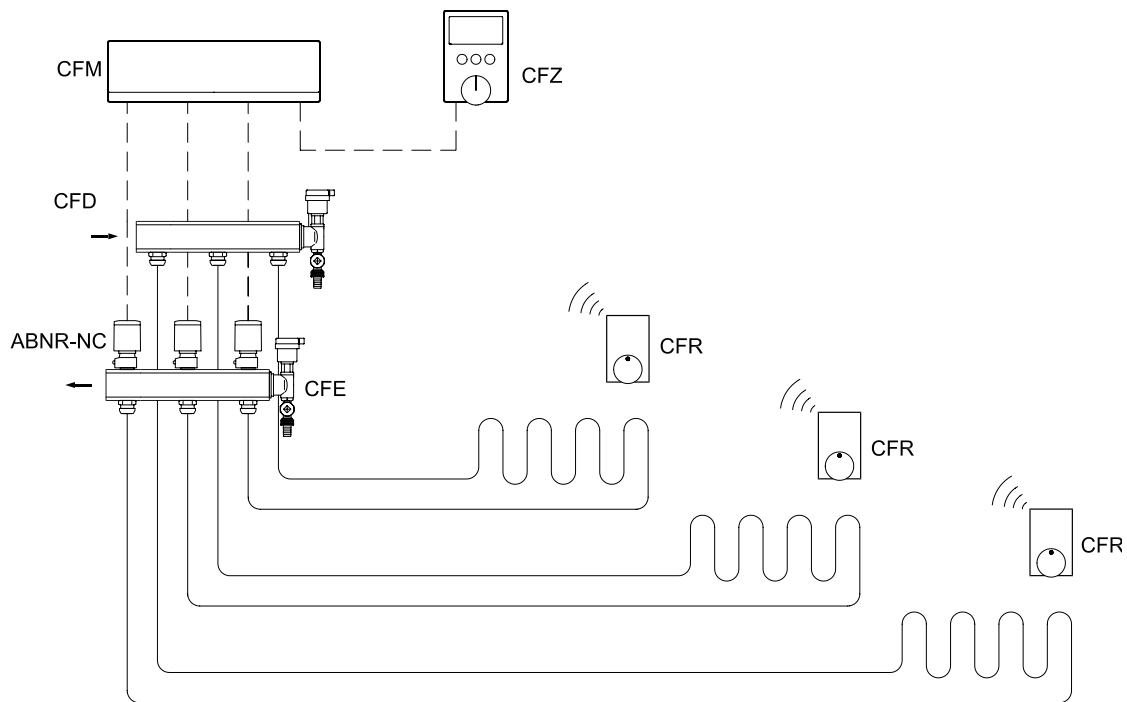
Data Sheet   **Floor heating system**

Design principle

CFM
CFZ
CFD
ABNR-NC
CFE
CFR
CFR
CFR

Contents

Application
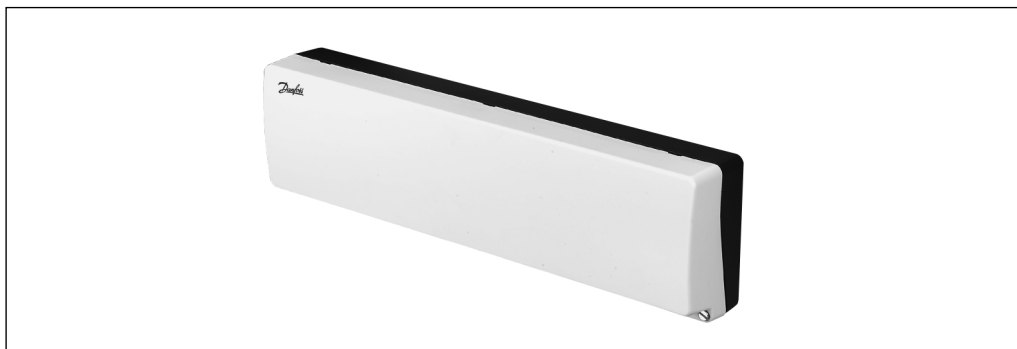
CFM is a regulator used for regulating the room temperature in houses with floor heating supplied via a manifold with a temperature actuator, type ABN-NC.

The regulator has 8 actuator outputs. In addition, one or two slave regulators, CFS, each with 8 outputs, can be integrated in the system, bringing the total number of outputs up to 24.

Units are connected to a standard wall output 230 V a.c./50 Hz without the use of a transformer.

The room temperature and the required temperature are transmitted through a wireless system to the floor heating regulator. The system is very easy to install, as all room thermostats are wireless.

The system is modular by design, which means that it can be used with or without a zone regulator.

Bus connections are delivered ready for use and with a standard connector.

Functions

Frost protection temperature of min 6°C.

The pump output is activated for 5 mins. if the pump has been "off" for 24 hours.

The actuator outputs are activated for 5 mins. if the output has been „off" for 24 hours.

The pump output can also be used for signalling heat requirements regarding other automatic controls, e.g. oil burners, solar heat installations or weather compensators.

Relay outputs are potential-free terminal switches.
An integral, acoustic fault alarm is available as an option.

The alarm output is used, e.g. for external alarm transmitters in a signal lamp.

An external antenna is used if the regulator is fitted in a metal casing.

Orders

Product	Type	Supply voltage	Regulation voltage	Actuator type/nos.	**Order no.**
Master regulator	CFM-230[1]	230 V a.c.	230 V a.c.	NC/ 8	**088H0001**
Master regulator	CFM-24[1]	230 V a.c.	24 V d.c.	NC/ 8	**088H0041**
Slave regulator	CFS-230[2]	230 V a.c.	230 V a.c.	NC/ 8	**088H0002**
Slave regulator	CFS-24[2]	230 V a.c.	24 V d.c.	NC/ 8	**088H0042**

1) Incl. installation cable 088H0092
2) Incl. bus cable 088H0051.

Options	Order no.
External antenna	**088H0093**
Bus cable* 1 m	**088H0051**
Bus cable* 5 m	**088H0055**
Installation cable	**088H0092**

* Bus cables are used for connecting master, slave and zone regulators.

|	
Fine fuses CFM/CFS 230	F4A
Fine fuses CFM/CFS 24	T1.25A and T0.5A
Bus cable	5x3,1mm 24 awg.
Connector	4p4c pds

These parts are available from electricity product wholesalers.

![Danfoss logo]

Data Sheet　　　Floor heating system

Data

Supply voltage	207-253 V a.c.
No. of outputs to actuators	8
Output signal	230 V a.c. or 24 V d.c.
Max. power per output (230 V a.c. vers.)	CFM: 6 W, CFS: 6 W (2 ABN)
Max. power per output (24 V d.c. vers.)	CFM: 6 W, CFS: 3 W (1 ABN)
Pump relay output	Max. contact load 230 V a.c. (2A)
Alarm output	Max. contact load 230 V a.c. (2A)
Bus connection to slave module	RS 485　　　Max. total length 100 m
Radio and TV interference dampening	I-ETS 300 200 (1993)
Ambient temperature	0-50°C
Transport temperature	-20°-60°C
Enclosure	IP 40
Mains cable	150 cm
Weight	24 V d.c.: 1.2 kg 230 V a.c.: 0.9 kg

Wiring

Dimensions

Data Sheet   Room thermostat, type CFR
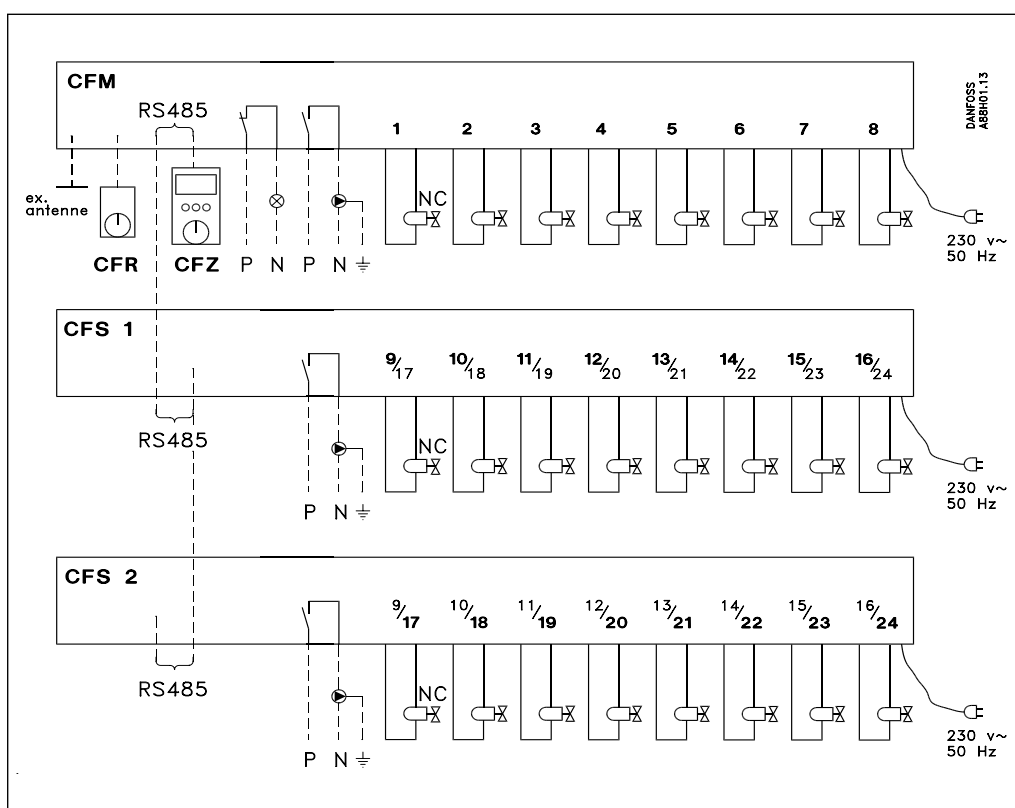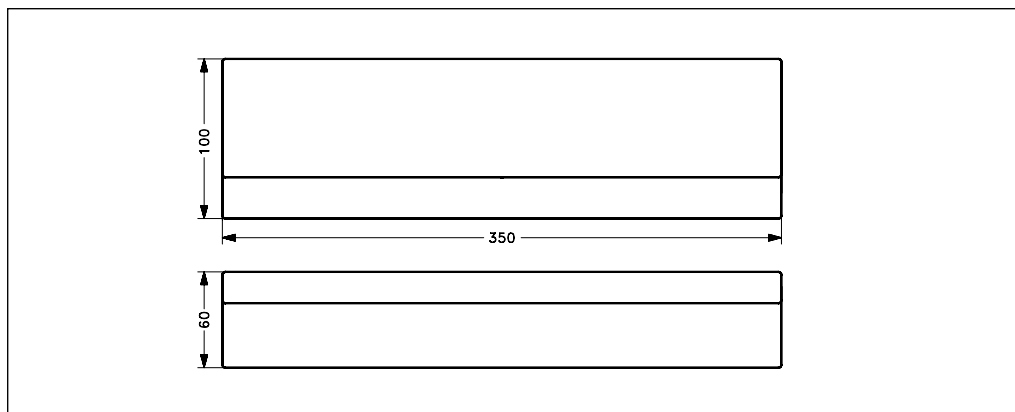
Application

Room thermostat CFR is used for room temperature regulation in connection with floor heating regulator CFM.

CFR keeps the temperature constant by transmitting the required and present room temperature to the floor heating regulator, which adjusts the amount of water sent to the floor heating hoses.

CFR function switch:
- constant comfort temperature
- constant energy-saving temperature
- clock function in relation to time programming via zone regulator CFZ.

Ordering

Product	Type	Description	Temperature range	Order no.
Room thermostat	CFR	Suppl. incl. batteries	5-35°C	**088H0203**

Accessory   2x AA Alkaline batteries 1.5 V

Data

Supply voltage	Batteries, 2x AA Alkaline 1,5V
Battery life	approx. 5 years
Transmission frequency	433.92 MHz
Transmission power	<10 mW
Range	approx. 30 metres
Temperature setting range	5-35°C
Bus connection for installation	RS 232
Radio and TV interference dampening	I-ETS 300 200 (1993)
Ambient temperature	0-50°C
Transport temperature	-20°-60°C
Enclosure	IP 21
Weight	130 g

Temperature setting

The setting range for the room thermostat is 5-35°C.
This range can be given min. and max. values by means of 2 lock-rings placed in the setting button.

Transmission interval:
When the room temperature deviates more than 0.15 K from the setting – although min. every 10 minutes.

Dimensions

Data Sheet	Floor heating system
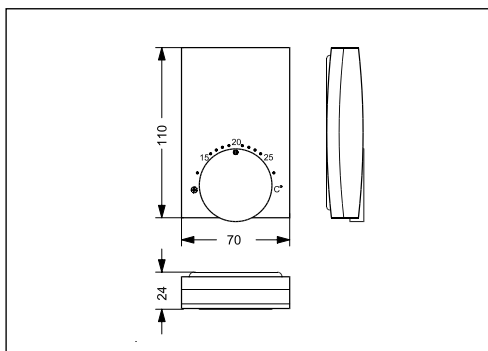
Installation and withdrawal

When a room thermostat is to be installed, it must be connected to the installation cable for the floor heating regulator.

In the registration field, the first vacant LED is lit. If OK is pressed, the room thermostat has now been registered. If the room thermostat is to be registered under another output, look for the other output by means of the +/- keys, then press OK. The thermostat has now been registered.

Withdrawal of a room thermostat is carried out by pressing OK for 5 secs. All LEDs will be lit. Now look for the room thermostat which is to be withdrawn by using the +/- keys, then press OK for 5 secs. The thermostat has now been withdrawn.
It is not necessary to have the installation cable in place while withdrawing a thermostat.

Each room thermostat has a unique ID number, which prevents conflicts with other systems.

A single room thermostat is able to regulate several heating circuits, provided it is registered under several outputs in the master regulator.

Abb. 1

Abb. 2

Datasheet

Zone regulator, type CFZ
for time/zone control
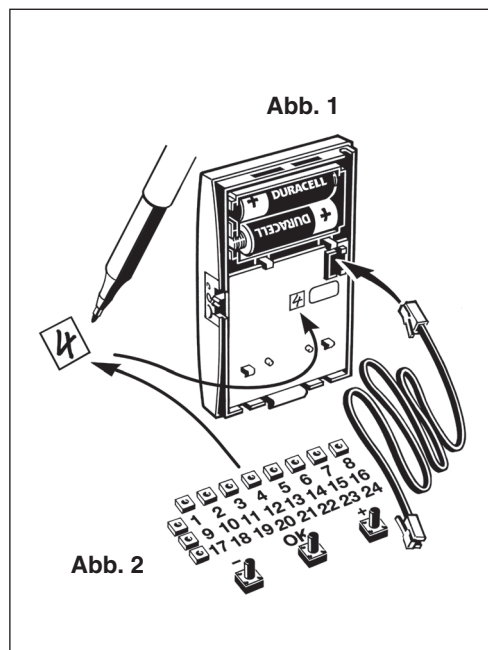
Application

The zone regulator is used for time and zone control of the floor heating system. The zone regulator may also be fitted subsequently.

The regulator is used to set the heat control main parameters:
- comfort temperature
- night setback
- holiday settings
- frost protection
- setting of clock and selection of display language

Factory settings:
Holiday temperature 15°C
Night setback 5°C
Frost temperature 6°C
Heating periods in zone 1: 7.30-9.00 a.m. and 3.00-10.00 p.m.
Zones 2-6 are not in use
English language selected

The zone regulator allows the user to divide a dwelling into as many as 6 heating zones. Heating zones are areas with the same requirements and heat consumption pattern.
See example of how a dwelling can be zoned on the following page.

Ordering

Product	Type	Description	Order no.
Zone regulator	CFZ	Incl. 5 m bus cable w/connector	**088H0004**

Data

Power supply	From floor heating regulator
Program backup (power failure)	Yes
Max. length of bus cable	100 m
Bus connection	RS 485
Ambient temperature	0-50°C
Transport temperature	-20°-60°C
Enclosure	IP 40
Weight	230 g

Dimensions

| **Data Sheet** | **Floor heating system** |
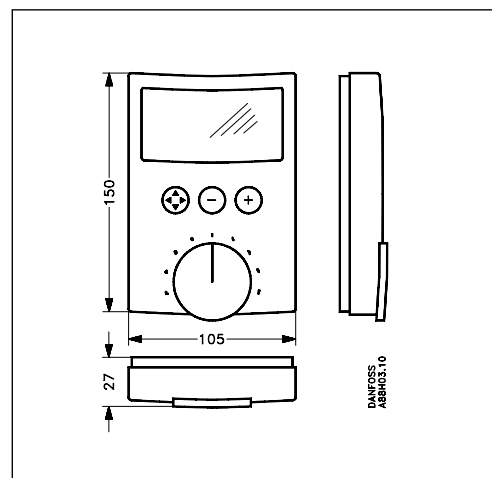
Zoning

Each room has a room thermostat that regulates the temperature. The room thermostats can be grouped into heating zones. A heating zone is one or several rooms with the same pattern of heating consumption.

A dwelling can be divided into a maximum of 6 heating zones.

This example illustrates a division into 4 zones:

Zone	Rooms	Heating periods	
1	1	Monday-Friday	3 p.m.-10 p.m.
		Saturday-Sunday	8 a.m.-10 p.m.
2	2,7,9,10,11	Monday-Sunday	4 p.m.-10 p.m.
3	3,8	Monday-Sunday	7 a.m.-8 p.m.
4	4,5,6	Monday-Friday	7.30 a.m.-9 a.m.
			3 p.m.-10 p.m.
		Saturday-Sunday	9 a.m.-10 p.m.