FloorCon F 200 / F 300

Connecting blocks with adaptive hydronic balancing for surface heating systems

FloorCon F 200

FloorCon F 300

Control and connecting block for adaptive hydronic balancing and electrical wiring of surface heating and systems.

Adaptive hydronic balancing means that the FloorCon automatically carries out hydronic balancing, permanently monitors it and optimises it if necessary. Manual adjustment on the FloorCon or on the valve inserts of the heating circuit manifold is not necessary.

Furthermore, adaptive flow temperature control can be carried out with the Aktor VLT actuator available as an accessory, provided that the Regudis W-HTE dwelling station with flow temperature control module is used.

The wiring of the room thermostats with the heating circuits can be carried out centrally at the FloorCon. Up to 12 actuators and 8 room thermostats can be connected. In addition, further components such as a pump, a change-over contact, a safety temperature limiter or a dew point monitor can be connected.

In case of refurbishment, existing room thermostats can often be re-used. Existing heating circuit manifolds can also re-used as long as they are compatible with the Oventrop Aktor T actuator.

Functions

- Adaptive hydronic balancing
- Connection of up to 8 room thermostats to up to 12 heating circuits or actuators
- Subsequent, free heating circuit assignment of the room thermostats (FloorCon F 300)
- Up to two groups with own time programme
- Change-over for switching between heating and cooling mode can be connected
- Connection for pump, safety temperature limiter and dew point monitor
- Second potential-free 24 V contact
- Optional adaptive flow temperature control

Features

+ Adaptive hydronic balancing
+ Use of thermal actuators
+ Subsequent, free channel assignment for the FloorCon F 300

Product Details

FloorCon F 200

FloorCon F 300

Technical Data

	FloorCon F 200	FloorCon F 300
Operating voltage	230 V AC ±10 %, 50 Hz	
Fuse	T 2A L	
Control zones	Up to 8. One room thermostat is required per control zone	
Time-controlled temperature setback	A time-controlled temperature setback, e.g. night setback, can be implemented with room thermostats with integrated time switch or external time switches: • individually per control zone • for a group of up to 4 control zones or • for the whole system Optionally, it is always possible to control individual control zones individually.	
Number of heating circuits	12, each controllable with one actuator	
Maximum mounting	Zone 1 and 2: up to 2 actuators each Zone 3 to 7: 1 actuator each Zone 8: up to 3 actuators	Control zones can be freely combined with all 12 heating circuits
Connectable actuators	Aktor T 2P, 230 V AC, normally closed Item number: 1012415 – cable 1 m 1012435 – cable 1 m, with auxiliary switch 1012452 – cable 2 m 1012455 – cable 5 m 1012459 – cable 10 m	
Switch-on current per actuator	Max. 550 mA at 230 V	
Actuator connection geometry	Connection thread M 30 x 1.5; stroke ≥4 mm; lower stroke position ≤11.3 mm	
Rated surge voltage	4,000 V	
Protection class / Protection type	I / IP 20	
Pump/boiler control		
Switching capacity	1 A, 250 V AC	
Switch-on delay	2 minutes	
Follow-up time	5 minutes	
Pump protection function	Every 14 days for 7 minutes	
Mode of operation	Type 1.B / 1.Y	
Software class	A	

Ambient Conditions

Temperature range	0...50 °C
Air humidity	Max. 80 % r.h., non-condensing
Ball pressure test temperature	+85 °C
Contamination degree	2

Transport and Storage

Temperature range	-20...70 °C
Air humidity	Max. 80 % r.h., non-condensing
Particles	Store in a dry and dust-protected place
Mechanical influences	Protect from mechanical shock
Weather influences	Do not store outdoors and protect from sunlight
Chemical influences	Do not store with aggressive media

Functions

Adaptive hydronic balancing

The new FloorCon are equipped with the adaptive, i.e. automatic hydronic balancing function as standard. Adaptive hydronic balancing ensures that each heating circuit is only supplied with as much heating energy as is required. The correct setting is determined and stored automatically and continuously monitored and optimised by the FloorCon. Balancing is carried out individually for each heating circuit on the basis of the temperature spread measured in real time. The necessary values are stored in the FloorCon.

To determine the temperatures, the supply connection at the heating circuit manifold and each return connection of the heating circuits are equipped with temperature sensors. The temperature sensors are attached to the pipes with stainless steel clamps. The cables are equipped with connectors that are plugged into the FloorCon at the corresponding heating circuit. The flow temperature sensor is included in the scope of delivery. Return temperature sensors must be ordered separately.

Manual adjustment of the heating circuits is thus unnecessary. Heating circuit manifolds equipped with FloorCon can therefore be used with simple valve inserts and do not require adjustable flow indicators or regulating inserts, as the heating circuits are adjusted by the actuators and on the basis of real measured values.

In cooling mode (change-over function, see below for description) no adaptive balancing is carried out. Instead, the values determined up to that point are used as the basis for balancing.

In the case of refurbishment, existing heating circuit manifolds can be re-used if the connection geometry of the valve inserts in the heating circuit manifolds is compatible with the Oventrop Aktor T actuators. See chapter “Further use of existing components” below.

Adaptive flow temperature control (optional)

In conjunction with an Aktor VLT actuator (optional accessory), adaptive flow temperature control can be implemented. No further sensors are required for this function.

The flow temperature is adjusted according to demand. For this purpose, the Aktor VLT is required, which replaces the fixed setpoint controller on the flow temperature control module of a Regudis W-HTE dwelling station. The Aktor VLT is wired into the FloorCon and controlled by it. The system recognises how the heat demand is developing based on various parameters and calculates the appropriate flow temperature with a specially developed algorithm. This temperature is continuously adjusted.

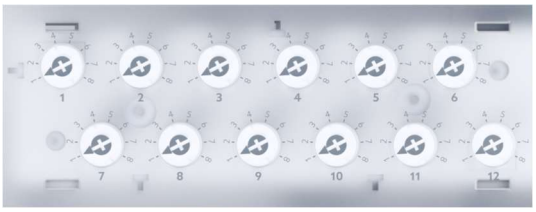
Wiring of room thermostats and actuators

The FloorCon allows the connection of up to twelve heating circuits and the control of up to eight room thermostats. One room thermostat controls one control zone. For connecting several heating circuits to one room thermostat, the FloorCon F 200 offers multiple connections, which are sufficient for most applications.

FIXED CHANNEL ASSIGNMENT FLOORCON F 200

Control zone	1		2		3	4	5	6	7	8		
Heating circuits	1	2	3	4	5	6	7	8	9	10	11	12

FREE CHANNEL ASSIGNMENT FLOORCON F 300



The FloorCon F 300 offers a completely free assignment of heating circuits to control zones. For this purpose, there is one rotary switch per heating circuit at the front of the unit, making a total of twelve. The rotary switch us used to assign one of the eight control zones to the heating circuit. In this way, free assignment can still be realised after wiring, for example for unusual heating circuit configurations. For example, all twelve heating circuits can be assigned to a single room thermostat. Is does not matter which connection the room thermostat is connected to, as this can be set on the unit and also changed later.

USE OF THERMAL ACTUATORS

The new FloorCon can be operated with the low-cost Oventrop Aktor T thermal actuator. Thanks to a pulse-width modulation (PWM) optimised for operation with the Aktor T, the actuator can approach any intermediate position.

This means that no special actuators are required for the FloorCon. The same actuators are used as before, for example Aktor T, 230 V AC, normally closed (item no. 1012415).

The pulse-width modulation of the Oventrop Aktor T allows the actuators to remain predominantly in intermediate positions during operation. In these positions, the actuators are less heavily stressed than in the fully closed or open position, which has a favourable effect on the service life of the actuators.

Time-controlled temperature setback

A time-controlled temperature setback can be implemented at various levels:

1. For each control zone individually: the control zone must be equipped with a room thermostat with integrated time switch, for example the ClimaCon F 210 or F 310
2. Separately for group A and B:
    a. any control zone per group is equipped with a room thermostat with integrated time switch that controls the entire group, or
    b. the group is controlled by an external time switch
3. Collectively for all control zone:
    a. any control zone is equipped with a room thermostat with integrated time switch that controls all control zones simultaneously, or
    b. all control zones are collectively controlled by an external time switch

In any case, individual control zones can be controlled separately if desired.

Connection of components

In addition to room thermostats and actuators, other devices can be switched by the FloorCon.

PUMP / POTENTIAL-FREE CONTACT 1

The FloorCon has a 230 V AC potential-free contact for controlling a pump. The pump is switched off if there is no request from the room thermostats. This contact can also be used for other devices, but the following values must be observed:

- Switch-on delay: the contact is only switched on two minutes after request
- Follow-up time: the contact is only switched off five minutes after the end of the last request
- Protection function: the contact is switched on for seven minutes every 14 days

POTENTIAL-FREE CONTACT 2

A second 24 V DC potential-free contact switches in parallel to the pump and can be used, for example, by a controller to query the status of the connecting block (heating request from the room thermostats / off). This contact is normally closed and only opens after the follow-up time of the pump.

SAFETY TEMPERATURE LIMTER / DEW POINT MONITOR

The FloorCon features a connection for a safety temperature limiter and/or a dew point monitor with 230 V AC. If one of the monitors switches, the actuators are immediately de-energised and the pump is switched off due to the FloorCon internal logic. The follow-up time of the pump is set to 0.

If both a safety temperature limiter and a dew point monitor are used, they must be connected in series.

Further use of existing components

In the event of renovation or refurbishment, existing room thermostats and, in some cases, the heating circuit manifolds can continue to be used.

USE OF EXISTING ROOM THERMOSTATS

The FloorCon can be operated with existing room thermostats. This applies both to on/off devices, for example with bimetal switch, and to room thermostats with PWM output.

USE OF EXISTING HEATING CIRCUIT MANIFOLDS

Existing heating circuit manifolds can still be used if the connection geometry of the valve inserts in the heating circuit manifolds is compatible with Oventrop Aktor T actuators. If a heating circuit manifold is to be re-used and is not already equipped with Oventrop Aktor T actuators, it is mandatory to replace the actuators with Aktor T. The FloorCon is optimised for operation with the Aktor T, the function of the adaptive hydronic balancing is not guaranteed with third-party actuators.

CONNECTION DATA AKTOR T

Direction of operation	Connection thread	Stroke	Closing dimension	Voltage
Normally closed	M 30 x 1.5	min. 4 mm	11.8 mm	230 V AC

Change-over signal processing

If the heat generator has a change-over function between heating and cooling mode, the status (heating or cooling mode) is usually output via a contact. The FloorCon can process this signal. If the heat generator reports a change in status, the signal (230 V) is forwarded to the room thermostats. Modern room thermostats, for example the Oventrop ClimaCon F 100 or F 310 can process the signal and invert the request. This means they switch on the output as soon as the room temperature exceeds the setpoint value.

CHANGE-OVER INVERSION

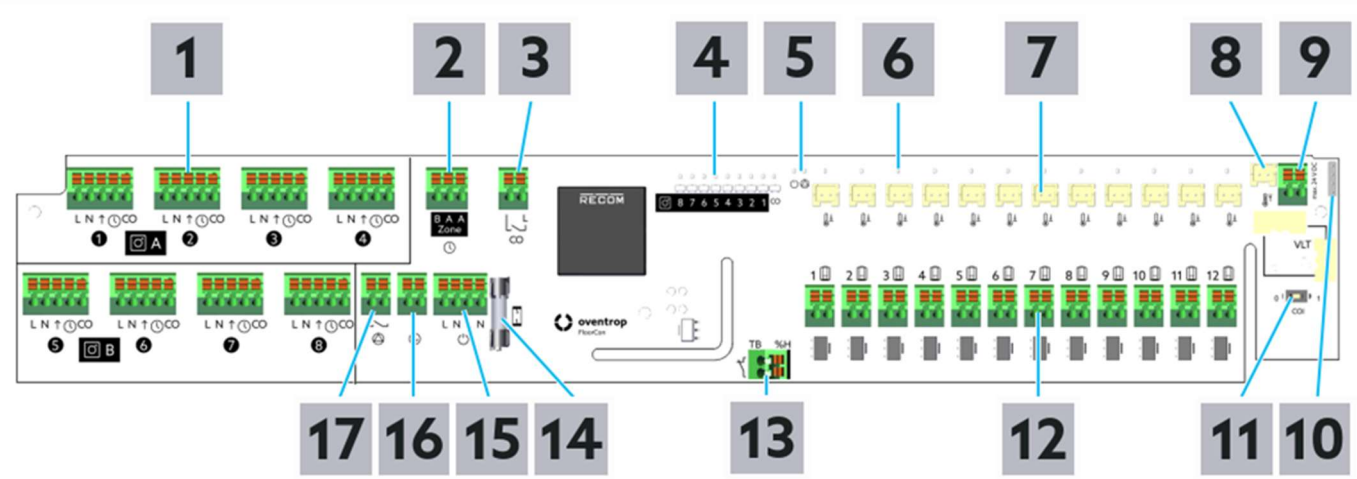
The FloorCon enables the use of room thermostats without change-over function in combination with heat pumps with change-over function. For this purpose, a microswitch on the main board of the FloorCon is switched over. This causes the switching signal of the room thermostats to be inverted by the FloorCon when the change-over contact on the FloorCon is closed. The output signal of the room thermostats is inverted and the direction of operation on the actuators is thus reversed:

- When the room thermostat requests heat, the associated heating circuit is closed
- If the room thermostat does not request heat, the heating circuit is opened

Housing and Main Board

All terminals and status indicators are located on the main board. Only the rotary switches for channel assignment on the FloorCon F 300 are located in the cover, accessible from the outside. The main board is in a plastic housing with cable ducts and strain reliefs. The cover is hooked onto the top of the housing and secured with a screw.

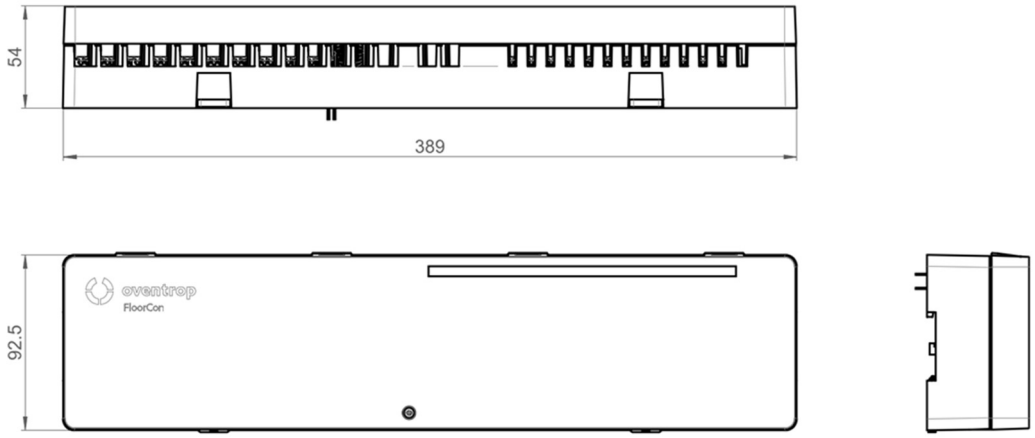
The FloorCon can optionally be installed on a DIN top-hat rail.



No.	Designation	Component	Remarks
1-4 **5-8**	Room thermostat connection group A Room thermostat connection group B	Terminals, 8 x 5-pole	L, N, ↑ (control signal), ◷ (time control), CO (change-over)
2	External time switch connection	Terminal, 3-pole	External time switch for time-controlled temperature setback, separately for group A and B. If the same time profile is to apply for all control zones (group A and B), a bridge from A to B must be used
3	Change-over connection	Terminal, 2-pole	When the connection is closed, e.g. by a heat pump or a cooling unit, the FloorCon switches to cooling mode and the change-over signal is forwarded to the connected room thermostats
4	Room thermostat status	LEDs	LED on = Request from room thermostat
5	Status of power supply and connected components	LEDs	Indicator lights for change-over, pump and power supply • LED CO on = Change-over contact closed (cooling mode active) • LED power supply on = Voltage applied • LED power supply flashes = Flow temperature sensor error • LED pump on = Pump activated • LED pump flashes = Safety temperature limiter or dew point monitor has triggered
6	Status of actuator outputs	LEDs	• LED on = Actuator activated • LED flashes = Return temperature sensor
7	Return temperature sensor connection	Plug connection, 12x	1 x return temperature sensor per heating circuit return
8	Flow temperature sensor connection	Plug connection, 1x	1 x flow temperature sensor at system supply
9	Controller output connection	Terminal, 2-pole	Potential-free contact, 24 V DC
10	Aktor VLT connection	Plug connection, 4-pole and 5-pole	Adaptive flow temperature control (for Aktor VLT)
11	Change-over inversion (COI)	Microswitch	On (1, right position) = Actuator control is inverted when the change-over contact is closed, e.g. by a heat pump
12	Actuator connection	Terminals, 12 x 2-pole	Power supply (L, N) for the thermal actuators
13	Safety temperature limiter or dew point monitor connection	Terminal, 2-pole	230 V AC, the dew point monitor and safety temperature limiter interrupt the power supply to the actuators in the event of excess temperature or if the temperature falls below the dew point. If no safety device is connected to the terminal, the contact must be provided with a bridge on site.

No.	Designation	Component	Remarks
14	Fuse	Fuse holder	Holder for a T2L 250 V fuse
15	Power supply connection	Terminal, 4-pole	Outer conductor (L) and neutral conductor (N) FloorCon and pump
16	Earth conductor connection	Terminal, 2-pole	Earth conductor connection (PE) FloorCon and pump
17	Potential-free contact 230 V AC	Terminal, 2-pole	Potential-free contact, 230 V AC for switching the pump (pump logic) or for boiler control

Dimensions



Item Numbers

Article	Item no.
FloorCon F 200 connecting block with adaptive hydronic balancing, without channel assignment	1400984
FloorCon F 300 connecting block with adaptive hydronic balancing and subsequent, free channel assignment	1400985

SCOPE OF DELIVERY

- FloorCon connecting block
- Flow temperature sensor

NOT INCLUDED IN THE SCOPE OF DELIVERY

- Return temperature sensor. One temperature sensor is required per heating circuit, see chapter “Accessories” below.

Accessories

Aktor VLT actuator

		Suitable for	Item no.
	**Aktor VLT** Actuator for adaptive flow temperature control. Maximum temperature adjustable via rotary knob 20...50 °C. Used instead of the fixed setpoint controller on the flow temperature control module of Regudis W-HTE dwelling stations. Including cable set with plug connectors for connection to the FloorCon connecting block.	All FloorCon	1029085

Temperature sensor with stainless steel clamp for pipe fixing

		Cable length	Suitable for	Item no.
	**Flow temperature sensor** Spare part. One temperature sensor is included in the scope of delivery of the FloorCon.	2.1 m	All FloorCon	1029093
	Return temperature sensor One return temperature sensor is required per heating circuit, which must be ordered in addition to the FloorCon. Suitable for pipe Ø 12...20 mm	0.85 m for manifold cabinets	All FloorCon	1029094
		2.1 m for Regudis W-HTE	All FloorCon	10290

Safety temperature limiter

		Suitable for	Item no.
	Safety temperature limiter 230 V AC for limiting the maximum flow temperature of a surface heating. Adjustable from 20...90 °C	All FloorCon	1143000

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