TRD24 – Radio digital room unit Biofloor Connect

COMAP offers the Biofloor Connect control system as part of its Biofloor underfloor heating and cooling solution. Composed of a central radio control module (MR24), wireless digital room thermostats (TRD24) and actuators (ACTUONOFF) to control the circuits, it allows a perfect room by room temperature control.
The Biofloor Connect system, in combination with the 9000TP manifold range is eu.bac certified with a value of CA = 0,5K.

eu.bac european building automation controls association

Versions

Item code	Description
C421012001	Radio digital room unit Biofloor Connect
C421013001	Radio digital room unit +humidity sensor Biofloor Connect

Application

For control in residential and commercial buildings, with wireless, bi-directional data transmission.

Description

Room thermostat unit with bi-directional wireless transmission for heating/cooling

- Encoded data transmission over 868 MHz frequency
- NTC sensor
- Easy addressing, setting-up and monitoring with tactile buttons
- Large TFT LCD, black on grey, 32 × 38 mm
- Built-in and configurable time schedule
- Heating/cooling change-over request input Possibility to override scheduling and to access additional functions
- Possibility to configure the thermostat as secondary temperature sensor
- Possibility to connect external floor, room or outside air temperature sensor
- Modern design

Biofloor connect
COMAP

Download the Biofloor Connect application for free,
available for iPhone and Android

Technical description

Flat housing made of white (RAL9016) thermoplastic

- Temperature selection range 5…30 °C
- With settable frost-protection capability, factory default setting 8 °C
- Suitable for wall mounting and in-wall junction box
- Standard battery 2 × 1.5 V AAA

Setting range	5...30 °C
Perm. ambient temperature	0...55 °C
Perm. ambient humidity	5…80 % HR
Setting accuracy	±0,1 K
Sensor	NTC 10 kΩ
Weight	0,13 kg
Humidity accuracy	±3,5 % HR to 55 % HR, 23°C
Hysteresis (average)	> 3 % HR
Ingress protection	IP 20 (EN 60529)
Protection class	III (EN 60730)
Radio frequency	868,3 MHz
Transmission power	13 mW (self-adjusting)
Range [1)]	approx. 50 m
Data transmission	every 10 minutes
Power supply	2×AAA 1,5 V [2)]
CE conformity as per: R&TTE 1999/5/CE	EN 300220-1 EN 300220-3

[1)] In standard buildings or houses, depending on the ambient conditions, 40 m in buildings, 200...300 m in open areas (depending on obstructions and local sources of interference)
[2)] Supplied with the unit

CE conformity as per:

- Radio — EN 300220
- Immunity (R&TTE) — EN 301489-3
- Emission (R&TTE) — EN 300220-3

Accessories

SEXT24 External temperature sensor

Outside air temperature NTC sensor, 10 kΩ, in housing, -50…+90 °C, IP43, connected via two screw terminals.
Item Code: C422015001

SDEP24 Remote temperature sensor (1,5m cable)

Cable-type NTC sensor, 10 kΩ, 1.5 m, for floor or outside temperature, max. 70 °C
Item code: C422016001

SSOL24 Remote temperature sensor (3m cable)

Cable-type NTC sensor, 10 kΩ, 3 m, for floor or outside temperature, max. 70 °C
Item Code: C422017001

Operation

Main operation

- The TRD24 radio digital room unit is a component of the Biofloor Connect control system in combination with the MR24 bi-directional wireless controller. The room temperature is measured by a precision temperature sensor and compared with the current setpoint. Depending on the control offset and the control characteristic, the output is regulated on the wireless controller, thereby increasing or decreasing the heating/cooling in the room. Therefore, the required room temperature can be kept constant.
- Using the weekly schedule to select an individual temperature profile for each day ensures the optimal comfort level with minimal energy consumption.
    - There are three different time schedules stored in the controller.
    - Additional time schedules can be programmed for temperature requirements that differ from the default ones.
- The operating status of the system is shown on the display (LCD) with visual symbols and a numerical field.
- Programming mode is used to enter an individual temperature schedule that differs from the factory setting.
- Service mode is available for adapting the device to the installation. The following can be parameterized: control characteristic; setpoint limitation; operating modes; inputs and outputs of the central radio controller and their priorities; output logic (NC or NO) of the thermal actuators; parameters of the room units; local parameters for the radio digital room unit, such as cooling lock, bypass functions, master and central radio controller parameters; see the parameter list for more details.
- The radio digital room units and central radio controllers are configured ex works so that underfloor heating control is possible without any additional settings.
    - If a cooling command is entered on the controller via the C/O input, cooling control starts automatically. The 'cooling' symbol is displayed on the radio digital room unit.
    - Other applications, such as cooling via the master radio digital room unit and special function settings for hotels or public buildings, can be set by means of the service parameters.

Engineering and fitting notes

- The unit should be fitted approx. 1.5 m above the floor, and protected from direct sunlight, draughts and sources of heat and cold.
- The room operating unit should be installed in a readily accessible location so that the temperature of the room can be easily set.

Serviceable life and replacement of batteries

- The serviceable life of the battery is approx. two years, though it depends on the transmission distance to the controller. The transmission strength is constantly adjusted to provide optimal power. This keeps the transmission output as low as possible.
- The batteries should be replaced as soon as the 'battery' symbol appears in the display.
    - If 'Batt' lights up in the display, the battery is so low that a signal cannot be sent to the controller.
- No settings are lost when the batteries are replaced. When installing batteries, ensure that batteries of the same type are used and that both of them are new. Do not mix old and new batteries.

Notes on the use of the TRD24 with humidity sensor

- In general, humidity sensors are subject to increased ageing if they are used in very contaminated air or aggressive gases. The sensor may start to drift prematurely under these conditions.
    - If the humidity sensor is used in very contaminated air, the warranty does not cover the replacement of the complete sensor.

Addressing the room operating units on the wireless controller

When the system is put into operation for the first time, the radio connection must be set up between the radio digital room unit and the central radio controller. Addressing is not lost when batteries are replaced.

1. After the desired channel (one or more) has been selected on the wireless controller, the 'OK' and 'Escape' buttons must be pressed for 5 s. 'Pair' appears briefly on the display, denoting that the connection between the thermostat and the controller has been established.
2. To test the connection, these two buttons can be pressed again for 5 s. During the 5 s, 'Pair' briefly lights up on the display, followed by 'Test', along with the relevant channel LED on the controller.
3. After the addressing, the time and date must be entered as follows: hours, minutes, year, month and day. The '+' and '-' buttons are used to change the values, and each step should be confirmed with the 'OK' button.

When the time has been entered in the first room operating unit, this time is forwarded to all room operating units in the system (master controller to slave controller).

- If the time has not been entered on the first addressed unit, it is queried on the next unit. If the 'OK' button is pressed for 10 s, the time and date can be called up and changed.
- An automatic summertime/wintertime change-over is stored. This can be deactivated in service mode using parameters.

Basic room unit modes

- **Sleep mode**: After the addressing, the device switches automatically to sleep mode after 10 s. The display shows the actual temperature, the radio transmission, the ECO symbol, the day and, if the battery is low, the battery symbol.
- **Wake up**: Pressing any button switches the device on, and the device obtains the current data from the wireless controller. The unit must be switched on before any entry, parameterisation or function change can be made.
- **Setpoint**: It can be set by pressing the '+' or '-' button again. After 5 s, or immediately after the 'OK' button is pressed, the selected setpoint is automatically sent to the wireless controller and saved there. After that, the actual temperature value is retrieved every 10 minutes.
- **Mode modification**: By pressing the 'Menu' button again, it is possible to switch between the frost protection mode (Off), ECO, normal operation or the time schedule. If the room operating unit is configured so that change-over between heating and cooling was programmed, these two modes are also available.
- **Display locking**: The button lock is activated by pressing the '+' and '-' buttons for 5 s. The 'button lock' symbol appears on the display, also in sleep mode. The lock is removed by pressing both buttons again for 5 s.
- **Parameters setting**: If the 'Menu' button is pressed again for 5 s, the display shows the first level of the parameter settings. If the 'Menu' button is briefly pressed again, the parameters up to P-SE, parameters of the service level, are shown.

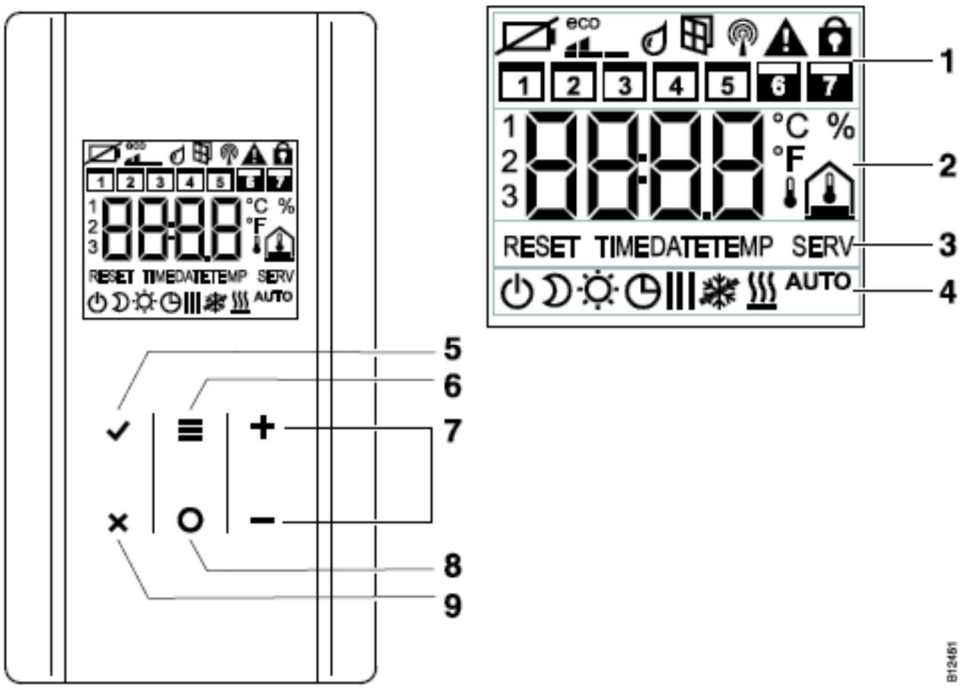
Time schedules

Three time schedules are made available on the radio digital room unit. They can be altered depending on the user requirements. Whenever a time schedule is altered, it is adopted by all the other room operating units that use the same profile.

- Time program I:
  - A profile for all days of the week; three switching points are available. Time program I includes only one profile; the profile is identical for every day.
- Time program II:
  - A profile for the working days of Monday to Friday and a profile for the weekend. Three switching points are available for all working days, and three additional switching points are available for the weekend.
- Time program III:
  - A profile for every day; three switching points are available for each day. With time program III, you can choose different profiles for each day.

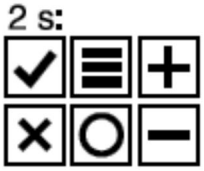
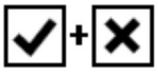
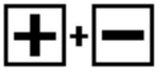
A switching point always consists of two temperature setpoint adjustments.
A time must be specified for each temperature setpoint adjustment.
For the first temperature setpoint adjustment, the time for the change from 'Reduced Mode' to 'Normal Mode' is set.
For the second temperature setpoint adjustment, the time for the switch from 'Normal Mode' to 'Reduced Mode' is set.

Overview of display and sensor buttons



1. General information such as battery status, energy-saving mode, alarms for dew point and window contacts, radio connection, general alarm, locking, weekdays for time schedule
2. Temperature setpoint and actual value, time, time program, indoor, outdoor and floor temperature
3. Auxiliary texts for parameterization
4. Operating modes
5. Confirm changed values, confirm selection
6. Activate menu mode, select menus and parameters
7. Change setpoints, time, date and other values; select the time schedule
8. Function button, can be set using parameter P-10
9. Cancel: leave current parameter or menu

The room unit allows you to set the following operating modes:

Sensor buttons	Description
2 s: 	Activate operation with any sensor button.
	Selection button Activate menu mode. Select operating mode. Possible operating modes: frost protection, reduced operation, normal operation, time schedule, heating or cooling Select parameter (menu mode).
	Change setpoint.
	Save value. Confirm selection.
10 s: 	Change time.
	Cancel.
5 s: 	Addressing. Test addressing.
5 s: 	Lock/unlock manual operation.
2 s: 	Select function or display directly Function: • Heating or cooling (party function) has priority over all other functions. Override is active for the time set here, between 1 hour and 9 hours. On the display, P appears in front of the actual value. Function/display: Depending on the setting selected for parameter P-10, pressing the sensor button executes one of the following functions: • Immediate change-over between heating and cooling, and display of room temperature. Immediate display of the floor temperature. • Immediate display of the outside air temperature. • Immediate display of the relative humidity (optional).
5 s: 	If a function other than the 'party function' is set using parameter P-10, this function still becomes active by pressing the sensor button for 5 seconds.

Description of parameters

Changing and confirming the operation for parameters

- The first parameter is displayed by touching the 'Menu' button for 5 s
- Briefly touching the 'Menu' button switches from one parameter to the next
- Touching the 'OK' button causes the selected parameter to be ready for changing
- The parameter is changed using the '+' or '-' button; several important parameters also need to be confirmed with 'yes' or 'no'
- Touching the 'OK' button causes the changed parameter to be confirmed
- Touching the 'Escape' button causes the unit to be switched to a lower level and the change to be communicated on the wireless controller

Parameter used		Factory setting
P-01	Adjust the standby display: actual value or time	Room temperature
P-02	Specify the setpoint for the minimum floor temperature	15 °C
P-03	Specify the limitation of the setpoint temperature	30 °C / 5 °C
P-04	Change the time schedule	-
P-05	Reset the time program to the factory setting	-
P-06	Specify the display for standby mode (max. battery-saving mode)	On
P-07	Activate or deactivate button tone	On
P-08	ID number of the wireless room operating unit	-
P-09	ID number of the wireless controller	-
P-10	Set the parameter for the function of the sensor button 	0
P-11	Specify the limitation of the setpoint humidity (optional with room operating units with integrated humidity sensor)	65 % / 55 %

P-SE Service parameters

The service parameters are protected by a password (set at 1-2-3-4 at the factory).

- Parameter P-SE comes after parameter P-11. If the 'OK' button is pressed, the code is queried.
- Each number must be confirmed by pressing 'OK'.

The first service parameter is P-20. If you press the 'OK' button, you are taken to the P-20 parameter list. Pressing the 'Escape' button takes you out of the P-20 parameter list and straight to the next parameter list, P-30.
See the description for making changes in each parameter list.

General parameters		Factory setting
P-SE	Access only with service code (factory setting '1-2-3-4')	–
P-21	Display the software version of the wireless room operating unit	–
P-22	Display the software version of the wireless controller	–
P-23	Display the current status of the wireless controller and the I/O box	–
P-24	Reset the parameters to the factory setting	–

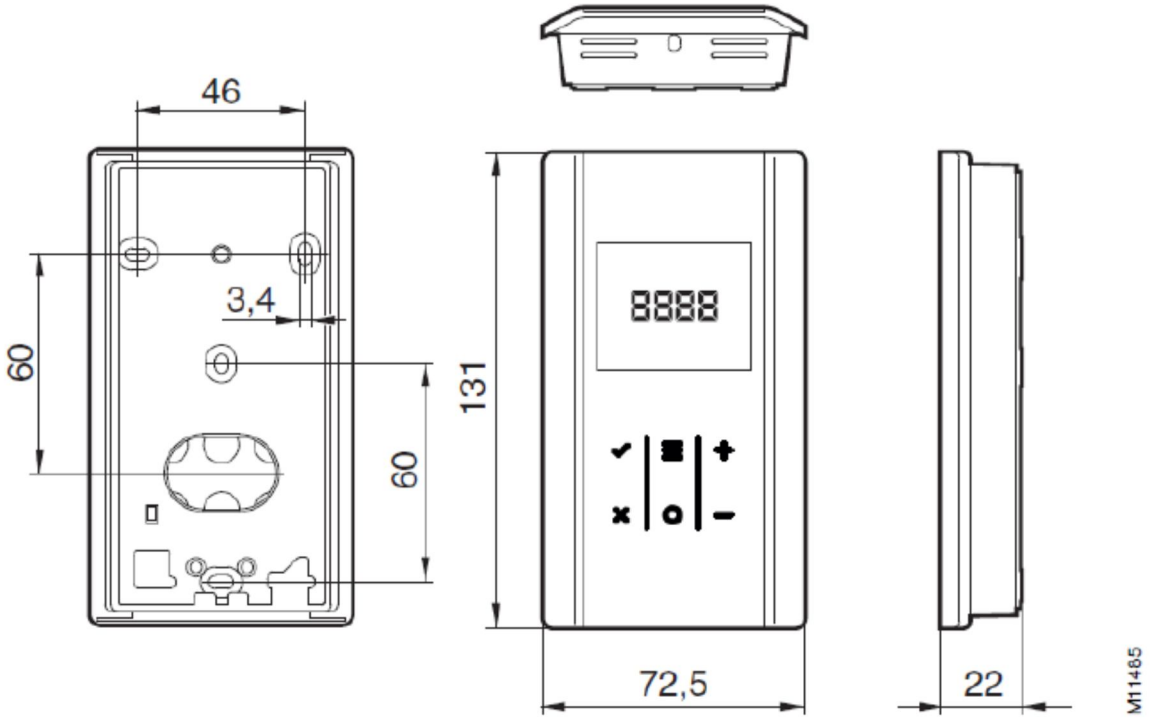
Parameters for all room operating units		Factory setting
P-31	Specify the increment for the setpoint temperature	0: 0,5 K
P-32	Specify the temperature for the frost-protection facility	8.0 °C
P-33	Specify the temperature unit	0: °C
P-34	Specify the value for the dead zone for heating/cooling change-over	0: 2 K
P-35	Change the service code for the service menu	1234
P-36	Change the access code for public buildings	1234
P-37	Activate or deactivate the 'summertime/wintertime' function	0: deactivated

Parameters for individual room operating units		Factory setting
P-41	Compensate for the influence of the wall temperature for the wireless room operating unit	0 K
P-42	Compensate for the floor temperature	0
P-43	Specify the maximum value for the floor temperature	35 °C
P-44	Specify the setback temperature for the 'Eco' function	3 K
P-45	Activate or deactivate the cooling lock and/or bypass, e.g. for a heat pump	0
P-46	Activate or deactivate the 'Make common use of a setpoint within a zone' function	0: deactivated
P-47	Activate the lock for public buildings or hotels	0: deactivated
P-48	Activate or deactivate the master function for a wireless room operating unit	0: deactivated
P-49	Specify the function of the external temperature sensor. An optional external temperature sensor must be connected to the wireless room operating unit	0

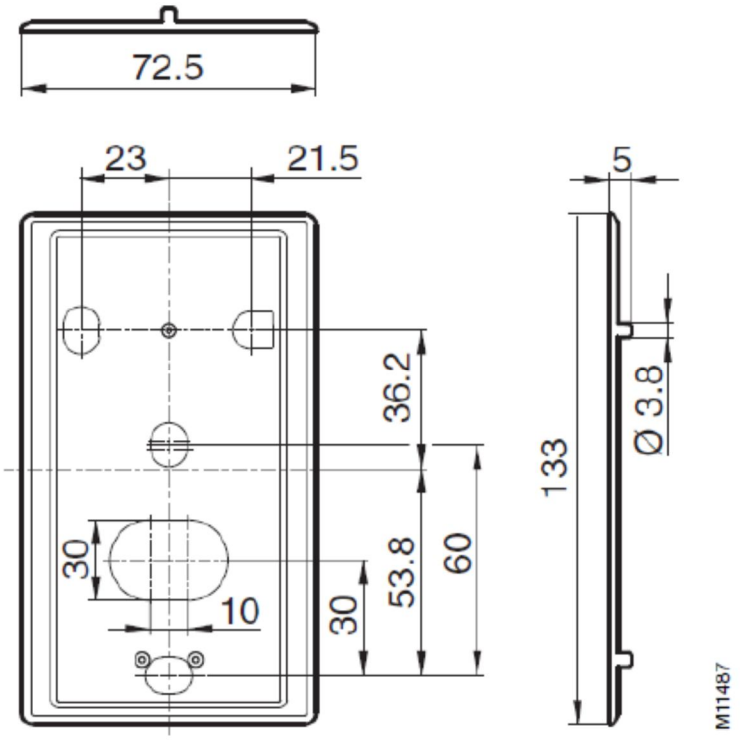
Parameters that are specific to the installation and the topology		Factory setting
P-51	Set priorities for the 'heating/cooling' change-over and for the 'heating/cooling' output or burner control	0
P-52	Activate or deactivate the 'Optimized time program' function	0: deactivated
P-53	Set the type of communication between wireless controllers (options: radio or bus)	0

Control parameters		Factory setting
P-61	Configure ECO or N/R input	0
P-62	Configure c/o in or temp. limit input	2
P-63	Select 'local' pump activation or activation through the 'master wireless controller' (only for communication between wireless controllers)	0
P-64	Select function NC or NO for thermal actuators	0: NC
P-65	Select control algorithm	0: ON/OFF
P-66	Activate the 'Optimized actuator control' function	0: deactivated
P-67	Select the initial controlled floor heating	0: deactivated

Dimension drawing



Cover plate



Outside-temperature sensor