

Radiocontrol F



Floor Heating Controller

Radio control system for floor heating

Radiocontrol F

The Radiocontrol F radio control system for controlling floor heating systems in individual rooms consists of a microprocessor-controlled central unit and an appropriate number of room transmitters. No cables are required between the room transmitters and central unit.

Key features

- > **Floor heating control without expensive cabling**
- > **Flexible positioning of room transmitters**
- > **Simple installation**
- > **Room transmitter and central unit with and without digital timer**
- > **High transmission security through 868 Mhz radio frequency**
- > **High control accuracy through fuzzy control with PWM**
- > **Removable cover for timer setting**
- > **Backlit display**
- > **8-channel operation with field-strength indication and child safety**



Technical description

Room transmitter without timer

Room transmitter designs come with or without operating mode switches. They are electronic fuzzy controllers with integrated sensors.

The temperature range can be adjusted between 5°C and 30°C.

The room transmitter version with operating mode switch enables you to select day, set-back or automatic mode, or to switch off. In automatic mode, a time-dependent room temperature reduction (approx. 4 K) is activated by a timer integrated into the central unit.

Room transmitter with digital timer

The room transmitter with digital timer offers 4-key menu operation. The display shows actual room temperature, time, and operating conditions. There is a built-in real-time clock with automatic summer/winter time settings that can be programmed for weekly or daily schedules. Three time programs can be preset and changed if desired.

The temperature range can be set between 5°C and 32°C.

Through the self-learning heating curve the set temperature is reached at the selected time.

Central unit

The following versions are available:

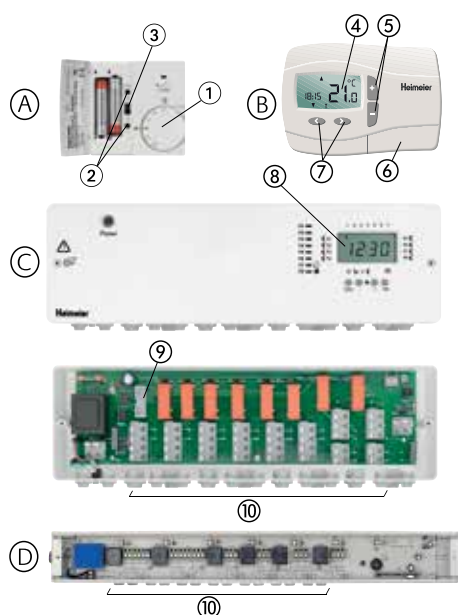
- with 6 output channels
- with 8 output channels and timer.

The cover over the timer can be removed for setting the timer. The display is backlit during mains operation and includes field-strength display and child protection.

The integrated antenna in the central unit receives the radio signals from the room transmitters. Thermal actuators can be connected to the output channels. The room transmitters can be assigned to one or, in the case of the version featuring 8 output channels, several output channels. An LED is assigned to each output channel to act as an operational status indicator.

Construction

Radiocontrol F



1. Setting adjuster
2. Button for initial operation or party function
3. Heating/cooling changeover switch
4. Display for room transmitter timer
5. Up/down key for setting
6. Battery compartment
7. Key for operating mode etc.
8. Display for 8-channel timer
9. Connection for cover with timer
10. Connecting terminals for output channels

- A. Room transmitter with operating mode switch
 B. Room transmitter with digital timer
 C. 8-channel central unit with timer
 D. 6-channel central unit

Application

The Radiocontrol F system is used in conjunction with two-point actuators (e.g. EMOTec or EMO T) mounted on a heating circuit manifold, for the purpose of controlling individual room temperatures in floor, wall or ceiling-based heating or cooling systems. It is particularly suitable for upgrading existing floor heating systems, but it is also usable in new buildings because of its flexibly positionable room transmitters and central control unit. With Radiocontrol F the system can be controlled without the need for complex and time-consuming cabling or drilling work. For buildings in which centrally controlled temperature reduction of the overall heating system is not possible or is limited because of varying utilisation periods, the following possibilities are available:

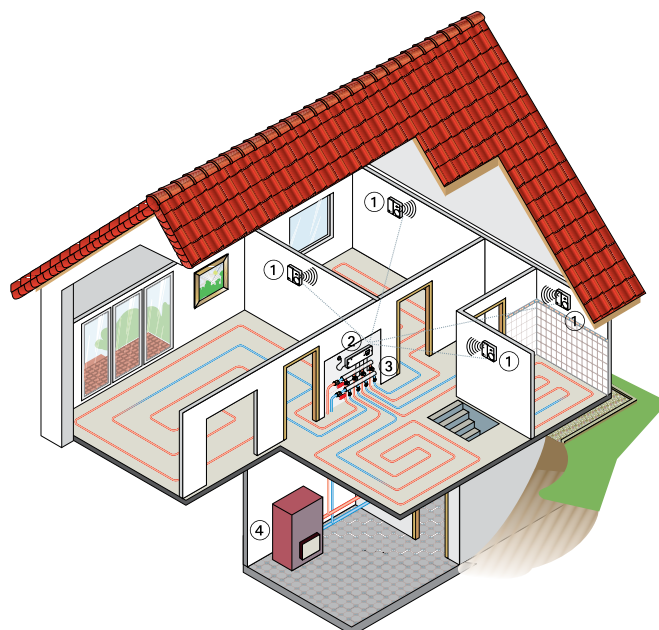
Central time-dependent individual room control by the central unit with a digital 8-channel weekly timer.

Decentralised dependent individual room control by the room transmitter with a digital timer.

An output channel can be used to control a pump. Another output channel can be used for the heating control.

Planning information: Avoid shielding by metal objects, mirrors, thermal insulation glazing, shielding plaster, etc.

Sample application



1. Room transmitter
2. Central unit
3. Heating circuit manifold with actuators, e.g. EMOTec or EMO T
4. Boiler

Function

The room transmitter compares the measured room air temperature (x_i) with the set value (x_s). If the room air temperature (x_i) is less than the set value (x_s), the room transmitter issues a demand for heat. If the set value is exceeded, the heat demand is cancelled.

The corresponding signal is sent to the receiver in the central unit via radio transmission (868 MHz).

Room transmitters with operating mode selector and digital timer can also be changed over to a two-point output signal. For room transmitters with digital timer, the room temperature is maintained between 7 °C and 32 °C at the preset times.

The central unit converts the signals from the room transmitters into fuzzy output signals by means of pulse-width modulation (PWM). These signals are then transmitted to the thermal actuators via switched relay outputs.

The central units allow the use of 230 V no-current closed (NC) or no-current open (NO) thermal actuators. One channel can be used for pump control.

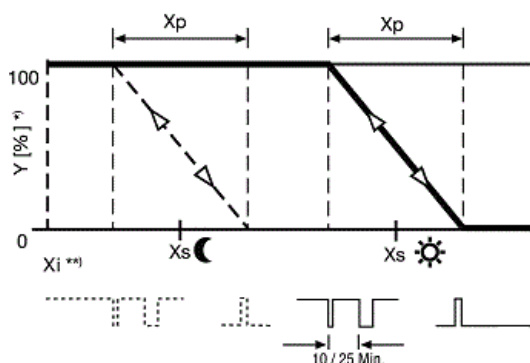
The 6-channel central unit allows NC and NO actuator models to be used at the same time. 24 V actuators can also be used in conjunction with an external transformer.

If radio transmission fails to initiate, the LED for the relevant output channel on the central unit flashes. If it is absent for longer than 10 seconds, an audible signal will be emitted (this can be switched off). In the case of the central unit with integrated 8-channel timer, the room temperature is allowed to fall by approx 4 K at specified times. The room transmitter with an operating mode switch can be internally adjusted for a reduction of 2 K. A total of 6 factory programmed time profiles are available. All profiles can be changed individually.

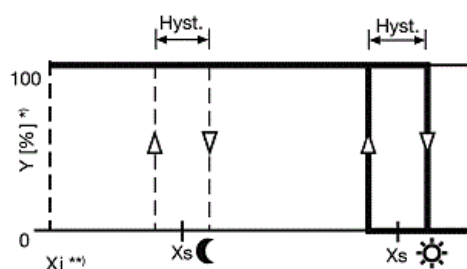
The Radiocontrol F-System can also be set for cooling control, see Technical Data. With the 8-Channel central unit, extra dew-point sensors, a Hygrostat, or a central temperature reduction control can be incorporated.

Function diagrams for operating mode 'Heating' with actuator in no-current closed design

with PWM (pulse-width modulation) output signal



with two-point output signal



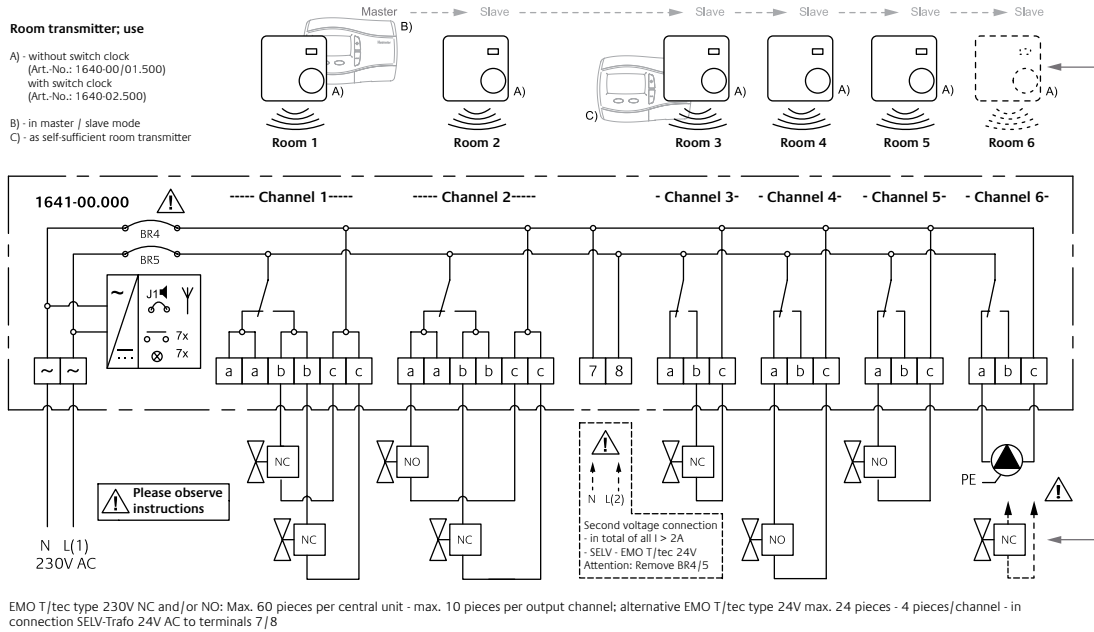
Progression of operation time (Key controller) in relation to temperature.

*) stroke

**) room temperature

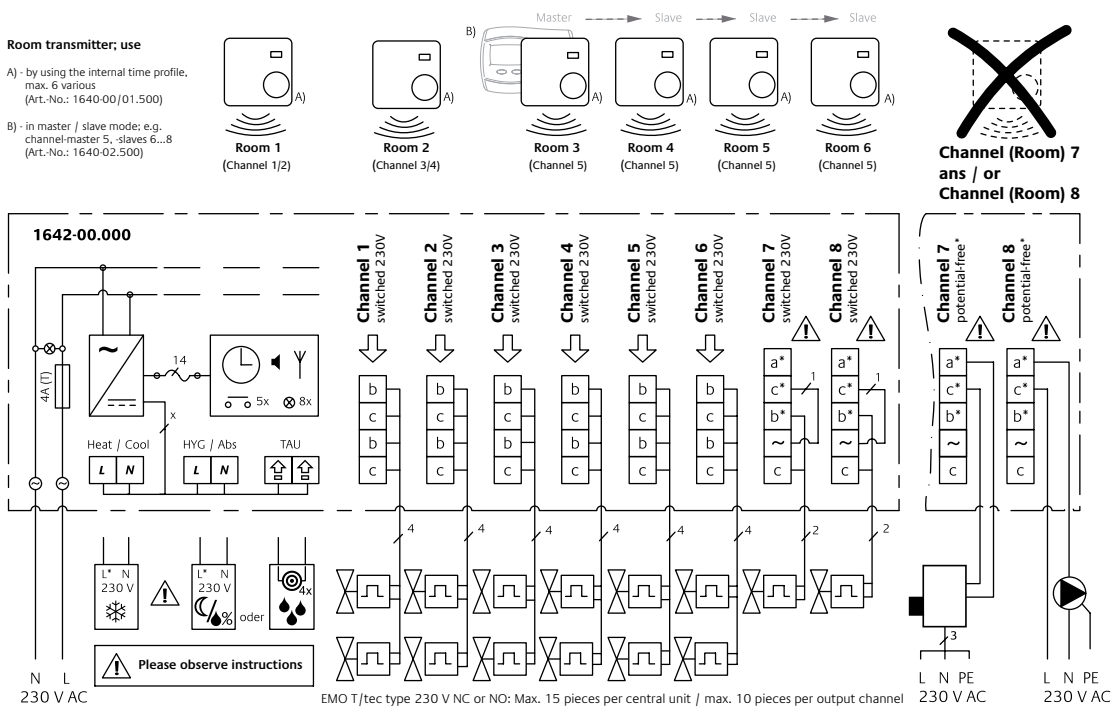
Connection diagrams

Radiocontrol F system with 6-channel central unit



Radiocontrol F / Central unit, 6-channel and EMO T/tec type 230V NC/NO, channel 6 with pump logic; alternative channel 6 with EMO

Radiocontrol F system with 8-channel central unit and timer



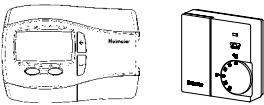
Radiocontrol F / Central unit, 8-channel with clock and actuator EMO T / EMOTec type 230 V NC or NO; alternative channel 7 with control output for oil- / gas-boiler and / or channel 8 with pump logic

Technical data

Room transmitter	with/without operating mode switch (OMS)	with digital timer
Battery, Type / Service life:	2 x Micro 1.5 V, AAA - Alkaline / about 3 years	2 x Mignon 1.5 V, AA - Alkaline / about 2 years
Transmission frequency, modulation / aerial:	868,95 MHz, frequency modulation / internal	868,95 MHz, frequency modulation / internal
- Range; Transmission interval	100 m free space or 1 Ceiling or 3 Walls; max every 10 min.	100 m free space or 1 Ceiling or 3 Walls; max every 10 min.
- Interference resistance; reference retention	Automatically-generated address with check process; after battery change	Automatically-generated address with check process; after battery change
Clock function (preset)	–	Real time with auto. S/W time changeover
- Time programme, screen / power reserve	–	7 Days 5:2 Days/ 24 hours, 1 min / captive
- Number Switching programs / times	–	3 preset (resettable), 2-4 or 6/Days
Temperature setting range:	5°C - 30°C (analogue, only for daily operation)	5°C - 32°C (digital, in 0.1 K - steps)
- set-back mode (OM heating)	by about -4 K (or -2 K, int. Jumper with Type OMS)	5°C - 32°C (digital)
- with OM cooling (increase)	by about -4 K (or -2 K, int. Jumper with Type OMS)	5°C - 32°C (digital)
Control behavior(Factory setting):	PWM, cycling time 10 min. (total in/out time)	PWM, cycling time 10 min. (total in/out time)
- Control behavior selectable	2-Point (int. Jumper), only with Type OMS	2-Point (selectable via menu)
Temperature sensor / Valve protection	NTC-Sensor, internal / switch on with Type OMS	NTC-Sensor, internal / switch off, variable
Operating modes:	Heating or Cooling (Cooling only Type OMS)	Heating or Cooling
- Operating mode switch	Day / Night / Automatic / Off (only Type OMS)	By key / LCD in menu
Indication:	Training mode, Battery low [LED red]	Temperature, time, battery and heating status
special function	Timer 1...15 Hours. (party function):	Optimum start, vacation / party timer
Protection type, class / permissible air humidity:	IP30 as in EN 60529, III (#) as in EN 60730 / max 93 %, non-condensing	IP30 as in EN 60529, III (#) as in EN 60730 / max 93 %, non-condensing
CE-Certification (NS,EMV / RF):	CE as in DIN EN 60730-1, 2...9 / EN 300 220-2, ETSI 301 489-3)	CE as in DIN EN 60730-1, 2...9 / EN 300 220-2, ETSI 301 489-3)
Storage / ambient temperature in operation:	-25°C to +70°C / -25°C to +40°C	-25°C to +70°C / -25°C to +40°C
Housing, colour, dimensions [mm]:	ABS, white (RAL9010), 75 x 75 x 29	ABS, white (RAL9010), 75 x 75 x 29
Fitting:	Wall-fixing or flush box	Wall-fixing or flush box

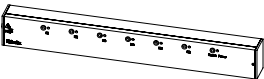
Central unit	6-channel	8-channel, with timer
Operating voltage / frequency:	230 V AC (+10% / -15%), 50/60 Hz	230 V AC (+10% / -15%), 50/60 Hz
- power consumption / fuse	3 VA / external	4 VA / fine-wire fuse internal, 4A lag
- network connection / length	Plug-in ready (EUROplug leads 2 x 0.75 mm ²), min 75 cm	Plug-in ready (EUROplug leads 2 x 0.75 mm ²), min 75 cm
Receiving frequency / Antenna:	868.95 MHz, coded for assigned room transmitter / internal	868.95 MHz, coded for assigned room transmitter / internal
- Reference retention; behaviour with interference	unlimited; channel emergency mode and opto-acoustic alarm in event of controller failure	unlimited; channel emergency mode and opto-acoustic alarm in event of controller failure
Number / Function - keyboard:	7 / Start-up, Test; Special function	5 / Start-up, Test; Special function
Number / Function - LEDs:	7 / Channel status, Test; Special function; Network	9 / Channel status, Test; Special function; Network
Number of output channels:	max 6 Channels (= Room transmitter)	Max 8 Channels (= Room transmitter)
- with pump connected	max 5 (Channel 1 to 5; Channel 6 for Pump)	Max 7 (Channel 1 to 7; Channel 8 for Pump)
- and with heating control connected	-	Max 6 (K.1 - 6; K.7=Heating; K.8=Pump)
- 1 Room transmitter for multiple Channels	No (but central unit can be cascaded)	Yes (=multiple heating circuits per room transmitter)
Relay - output channels:	Channel 1 - 6: Changeover contact	Channel 1-6: closing contact, Channel 7-8: Changeover contact
- Switching voltage, current (Σ - current)	max 250 V AC, max 6(2) A (Σ I \leq 10(2) A)	230 V AC, max 4(2) A (Σ I \leq 4(2) A)
Indication of Σ I (permissible total current)	with Σ I > 2 A: 230 V on KI.7/8 supply	Type fine-wire fuse noted with exchange
- Number Actuator Type EMO T/tec	Total 60.; max 10. per channel	Total 15; max 10 per channel
- Channel heating, without in / out delay	-	Changeover contact, pot free; max 250 V AC / 4(2) A
- Channel pump, with in / out delay	Changeover contact; max 250 V AC / 6(2) A	Changeover contact, pot free; max 250 V AC / 4(2) A
Indication to connect pump / heating	With cascading see instructions	ext. 230 V used for Heating / Pump
Timer (function only with OMS Heating):	-	preset 8-Channel real-time clock
- Time profile, preset, resettable	-	6, div. use; all freely settable
- switching distance / accuracy	-	Time base 10 min. / about +/- 2 s. per day
- switching S/W time / power reserve	-	automatic / about 4 years (int battery)
- Programming, stopped / display	-	Remove cover (int battery) / backlit
Special function:	Activation by terminal assignment or channel or timer keys	Activation by terminal assignment or channel or timer keys
- Select function type EMO T/tec	Types NC and/or NO can be used	only Type NC or NO can be used
- EMO T/tec: Type 24V (SELV-transformer necessary)	Total 24; max 4 per Channel	-
- changeover of operating mode Cooling	by special key-sequence activation	Changeover - terminals (external 230 V)
Option with cooling function	-	Single spaces can be excepted
- Connection - dew-point monitoring	-	ext dew-point sensor(s) or Hygrostat
- Connection - central set-back function	-	ext 230 V, eg telephone relay, timer
- holiday function, can be activated	-	Set-back temperature for max 200 days
- Valve, pump protection connectible	-	Factory setting = off; on: daily 10:00
Type and class of protection / permissible humidity:	IP40 as in EN 60529, II (Q-Z) as EN 60730 / max 95 %, non-condensing	IP40 as in EN 60529, II (Q-Z) as in EN 60730 / max 95 %, non-condensing
CE-Certification (NS and EMV):	CE as in DIN EN 60730-1	CE as in DIN EN 60730-1
Ambient and storage temperatures:	0 °C to +50 °C in operation, -20 °C to +60 °C	0 °C to +50 °C in operation, -20 °C to +60 °C
Housing, colour / weight:	Hard PVC, cream-white RAL9001 / about 530 g	ABS, white as in RAL9016 / about 850 g
Dimensions (with top rail):	450 mm x 57 mm x 52 mm	310 mm x 90 mm x 65 mm
Fitting:	Wall mounting of top rail (enclosed) in heating-circuit manifold; any mounting position	Wall mounting of top rail (enclosed) in heating-circuit manifold; any mounting position

Articles



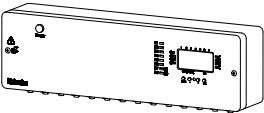
Room transmitter

Type	EAN	Article No
with digital timer, incl. battery	4024052763511	1640-02.500
without operating mode switch, incl. battery	4024052556915	1640-01.500
with operating mode switch, incl. battery	4024052556816	1640-00.500



6-channel central unit

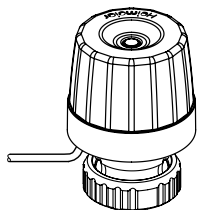
EAN	Article No
4024052557011	1641-00.000



8-channel central unit with timer

EAN	Article No
4024052557110	1642-00.000

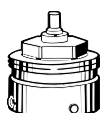
Accessories



EMOtec

Two-point thermal actuator for floor heating systems. With position indicator in NC version. Suitable for all HEIMEIER thermostatic valve bodies. For technical data, please refer to the EMOtec datasheet.

Type	EAN	Article No
230 V		
Currentless closed (NC)	4024052460359	1807-00.500
Currentless open (NO)	4024052490752	1809-00.500
24 V		
Currentless closed (NC)	4024052460458	1827-00.500
Currentless open (NO)	4024052491551	1829-00.500



Connecting to other brands

Adapter for mounting EMOtec or EMO T on valve bodies or heating circuit manifolds from other manufacturers. Threads M30x1.5 according to factory standard.

Manufacturer	EAN	Article No
Danfoss RA	4024052297016	9702-24.700
Danfoss RAV	4024052300112	9800-24.700
Danfoss RAVL	4024052295913	9700-24.700
Vaillant (Ø≈30 mm)	4024052296019	9700-27.700
TA (M28x1,5)	4024052336418	9701-28.700
Herz	4024052296316	9700-30.700
Markaryd	4024052296514	9700-41.700
Comap	4024052296712	9700-55.700
Oventrop (M30x1,0)	4024052428519	9700-10.700
Giacomini	4024052429714	9700-33.700
Ista	4024052511419	9700-36.700
Uponor (Velta)	4024052448111	9700-34.700
- Euro-/compact distributor or return valve 17		
Uponor (Velta)	4024052510917	9701-34.700
- Provario distributor		

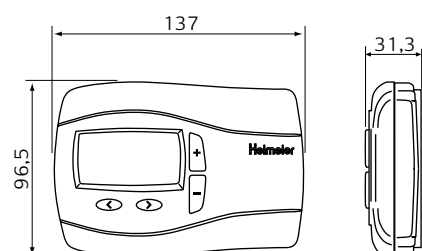
Distance plate

For installing the room thermostat onto UP boxes. White RAL 9010. 83 mm x 83 mm x 8 mm (W x H x D).

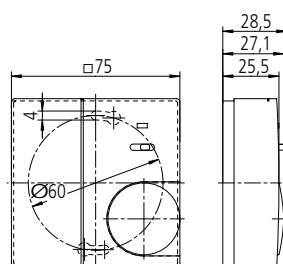
EAN	Article No
4024052408719	1936-00.433

Dimensions

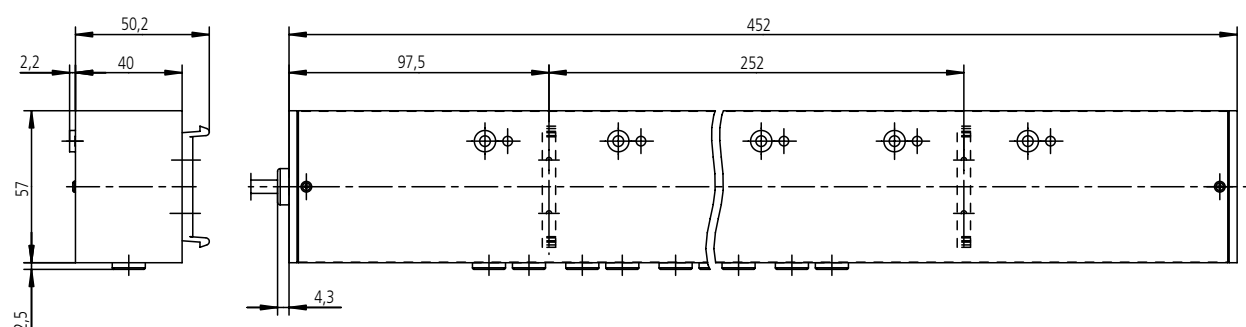
Room transmitter, with digital timer



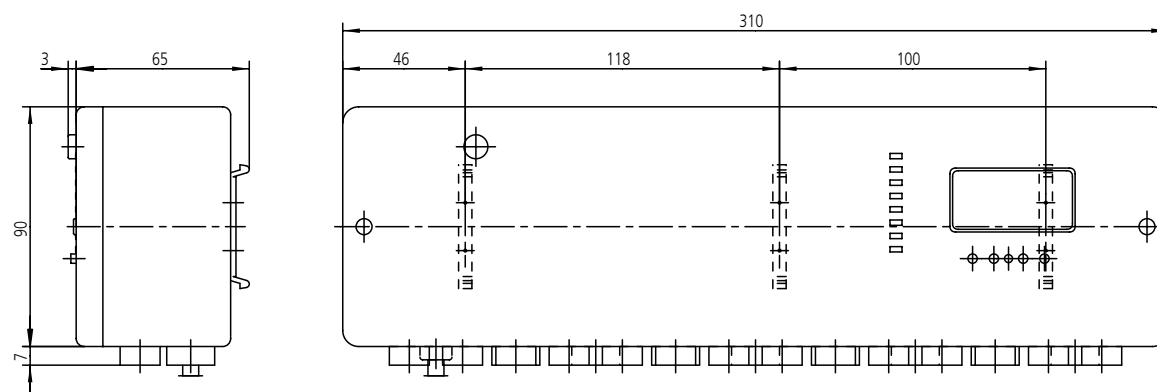
room transmitter, with and without operating mode switch



6-channel central unit



8-channel central unit with timer



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