

ECB8HC-230

Wired Control Box for Underfloor Heating System with Heat/Cool feature, 230V



Quick Guide

Ver. 1.0
Release date: X 2025
Soft: v1.0



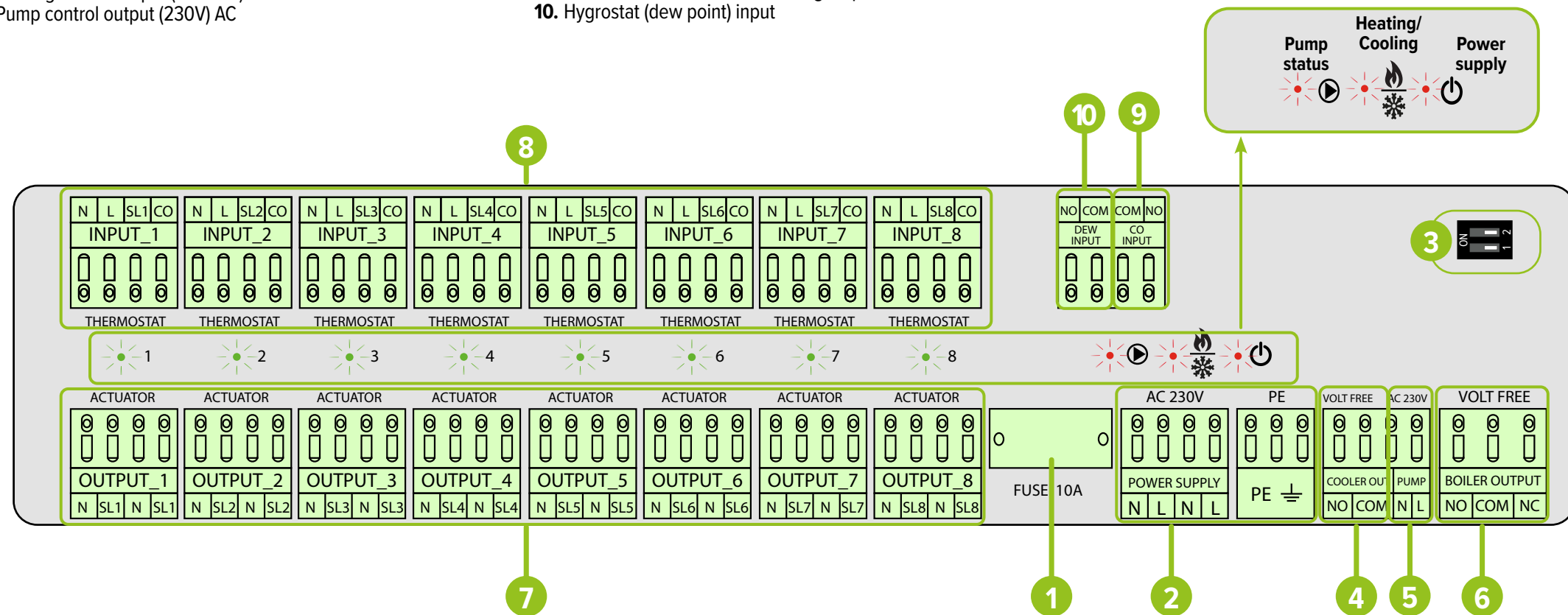
ENGO
CONTROLS

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Control Box description

1. Cartridge fuse 5 x 20 mm T10A
2. Power supply (230V AC)
3. Sliders for setting the pump and heat/cool source switch-off delay
4. Cooling device output (volt free)
5. Pump control output (230V) AC
6. Boiler control output (volt free)
7. Actuators output connections (230V AC)
8. Thermostats input connections
9. HEATING / COOLING mode change input
10. Hygostat (dew point) input



Introduction

The ECB8HC-230 control box, powered by 230 V AC, is designed to manage underfloor heating and cooling systems in up to 8 zones. It allows quick connection of 230 V wired thermostats and NC-type thermal actuators (NC-type means they are closed when are not powered). The device includes a built-in pump control module and volt-free relay outputs for controlling the heat source (NO/COM/NC) and the cooling source (NO/COM). The HEATING / COOLING operating mode is switched via an external volt-free contact (CO INPUT), with the current mode indicated by LED lights – red for heating and blue for cooling. The DEW INPUT terminal is used to connect a dew point sensor or hygostat contact. When condensation is detected, it automatically disables the pump and cooling source to protect the system from moisture buildup. The control box also allows setting a relay switch-off delay (0 / 3 / 5 / 15 minutes) and is suitable for wall or DIN-rail mounting.

Product compliance

This product complies with the following EU Directives: 2014/30/EU, 2014/35/EU, 2014/53/EU, 2011/65/EU

Safety information

Use in accordance with national and EU regulations. Use the device only as intended, keeping it in a dry condition. The product is for indoor use only. Please read the entire manual, before installation or use.

Installation

Installation must be performed by a qualified person with appropriate electrical qualifications, in accordance with the standards and regulations in force in a given country and in the EU. The manufacturer is not responsible for non compliance with the instructions.

ATTENTION:
For the entire installation, there may be additional protection requirements, which the installer is responsible for.

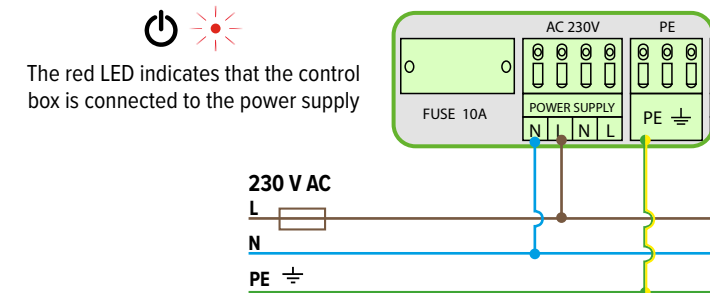
1. Fuse

ATTENTION: The fuse must be replaced only when the control box is disconnected from the 230 V AC mains supply.

The mains fuse is located under the housing cover (near the power terminals) and protects both the control box and the devices powered by it. Use slow-blow tubular fuses (5x20 mm), rated at 10 A.

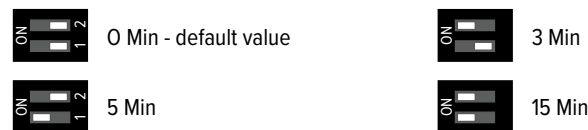
2. Power supply

The control box is designed to operate with a 230 V AC power supply. The installation must be a three-wire system, carried out in accordance with applicable regulations.



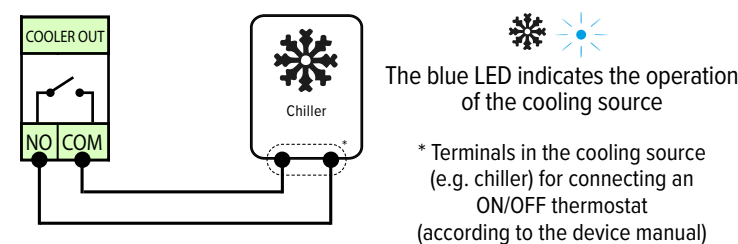
3. Heat/cool source and circulation pump switch-off delay

The delay time can be set to 0, 3, 5, or 15 minutes. The delay value is adjusted using the switch located in the upper-right corner of the control box. To select the desired delay, set the switches according to the diagrams shown below.



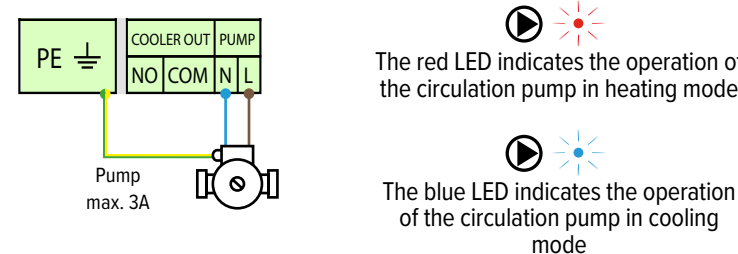
4. Cooling device output (PC chiller)

COOLER OUT – volt-free output (COM/NO) designed to control the cooling source. When a cooling demand is detected from any thermostat, the output contacts close after a 3-minute delay, allowing the chiller or heat pump to start. Deactivation occurs after the configured switch-off delay (see section 3) once no thermostat is requesting cooling. This output is active only in cooling mode.



5. Pump output (230 V AC)

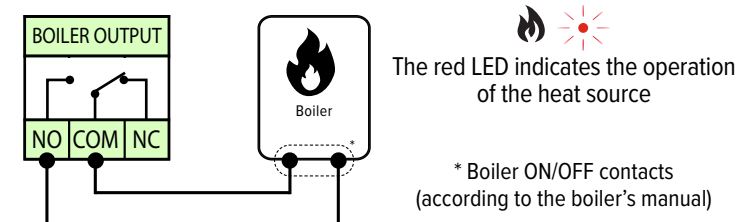
PUMP – 230 V AC output (max 3(1) A) for supplying the heating or cooling circulation pump. The pump starts 3 minutes after a heating/cooling demand is detected from any thermostat and switches off after the configured delay when there is no further demand for heat or cooling.



ATTENTION:
During operation, the circulation pump output carries 230 V AC!

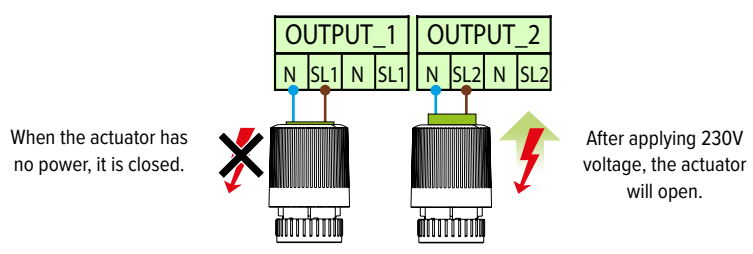
6. Boiler control output (volt free)

BOILER OUT – volt-free relay output (NO/COM/NC) for boiler control. When a heating demand is detected from any thermostat, the contacts close after a 3-minute delay, activating the boiler. Deactivation occurs after the configured switch-off delay (see section 3), starting from the moment when no thermostat is requesting heat. Typically, the COM–NO contacts are used.



7. Actuators output connections (230V AC)

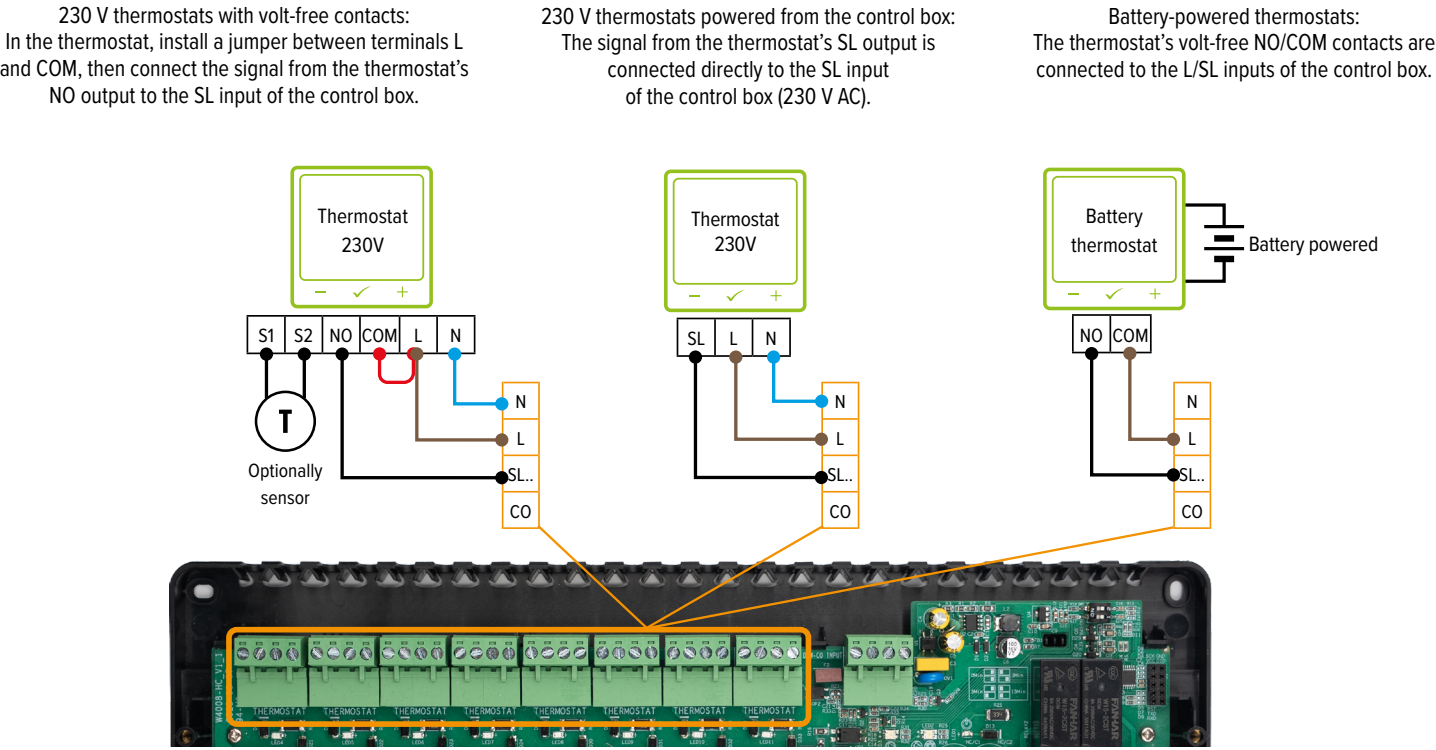
Actuators wires should be plugged into the pluggable terminal blocks of the respective zones. Maximum current load for each zone is designed to handle up to 6 actuators with a power of 2W each. With more actuators in one zone, an additional relay should be used to make sure that actuators output will be not overloaded.



ATTENTION:
During operation, the actuator outputs carry 230 V AC!

8A. Connection of thermostats

Operating principle:
The SL input in the control box controls the activation of individual zones.
The CO terminal of the thermostat (if present) is not used and should not be connected to the control box.



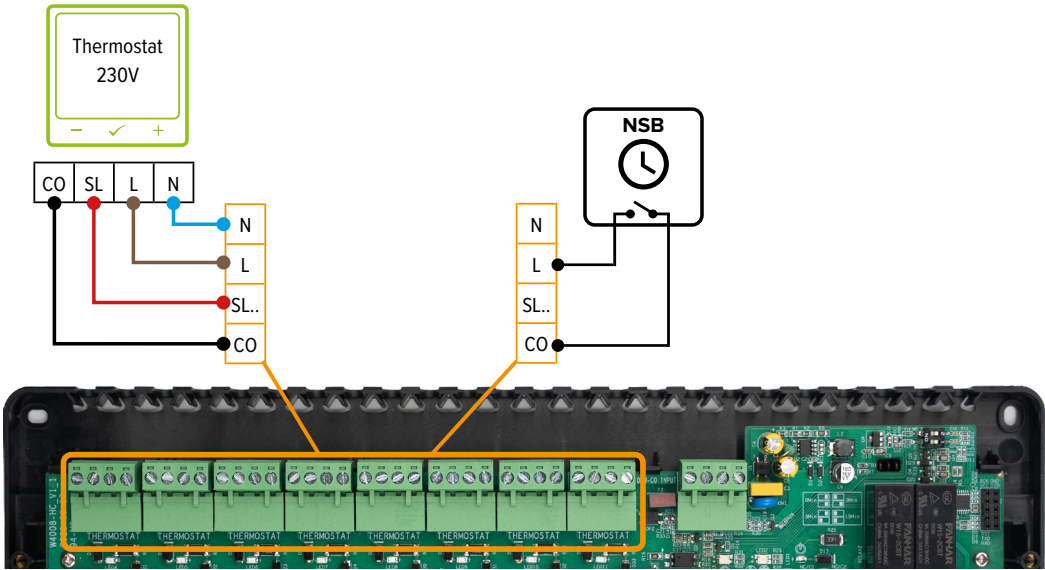
8B. Connection of thermostats with NSB (Night Setback) function

Operating principle:
The SL input in the control box is responsible for activating the zone.
The NSB (Night Setback) function allows automatic reduction of the thermostat's setpoint temperature during nighttime hours or periods of absence.
Applying 230 V to the CO input of the thermostat (configured as NSB) activates the setback mode – the thermostat automatically lowers the setpoint temperature by the programmed NSB value.

Connection principle:
The 230 V thermostat is powered from the control box (L and N terminals).
The signal from the thermostat's SL (230 V) output is connected to the SL input of the control box.

NSB control:
The signal from the control box's CO (230 V) output is connected to the thermostat's CO input (configured as NSB).

NSB activation in the control box:
A time programmer is connected to one of the zones — to terminals L and CO.
When the programmer is switched on, 230 V appears on the CO terminal, which sends the NSB signal (230 V) to all CO terminals in the control box zones.
Upon receiving this signal, the thermostat enters the night setback mode.



8C. Connection of a 230 V thermostat with HEATING / COOLING function

Operating principle:
The control box works with thermostats that support switching between heating and cooling modes. The operating mode of the control box is changed via the CO INPUT (NO-COM) terminal, which functions as a Change Over input. This input is volt-free (NO-COM) – only contact closure or opening is allowed; 230 V must not be applied.

Closing the contacts on the CO INPUT switches the control box to cooling mode. In this mode, 230 V appears on the CO terminals of each zone – the heating source is deactivated, and the cooling source is activated. At the same time, the 230 V signal from the control box CO output is sent to the thermostat's CO input (configured as Heat/Cool), switching the thermostat to cooling mode.

Connection principle:
230 V thermostat with voltage output SL
→ connect to the SL input of the control box.

CO output from the control box
→ connect to the CO input of the thermostat (input configured as Heat/Cool).

External volt-free contact (Change Over)
→ connect to the CO INPUT (NO-COM) of the control box.

The external Change Over contact switches the control box between heating (HEAT) and cooling (COOL) modes. Closing the contact activates cooling mode, while opening it restores heating mode.

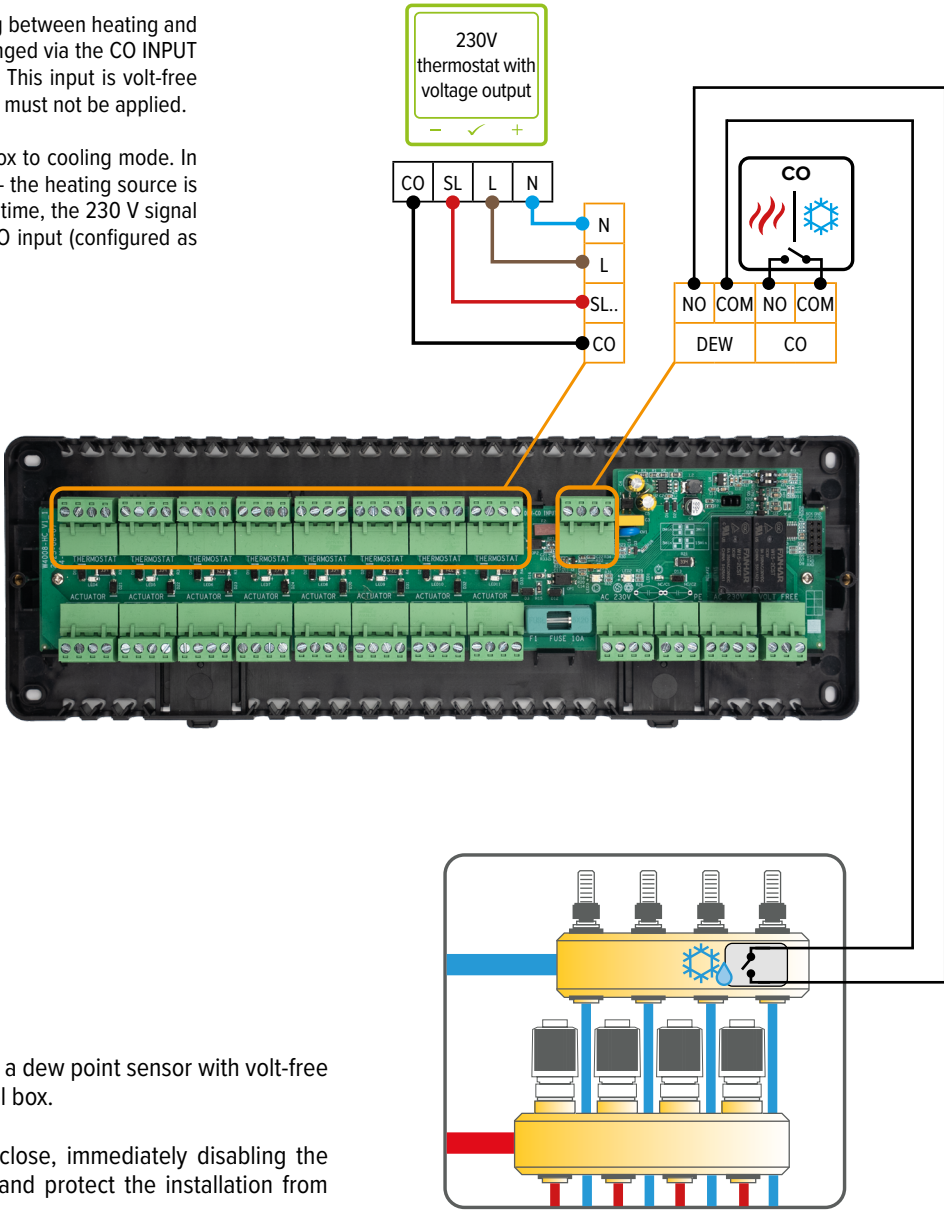
The Change Over signal can come from:
an external HEAT/COOL mode switch, or an automatic contact from a master system (e.g. heat/cool source controller, heat pump, or BMS system).

Hygostat (dew point sensor) input:
The underfloor cooling system should be equipped with a dew point sensor with volt-free NO contacts, connected to the DEW INPUT of the control box.

When condensation is detected, the sensor contacts close, immediately disabling the PUMP and COOLER OUT outputs to prevent damage and protect the installation from moisture.

The DEW INPUT is active only in cooling mode.

ATTENTION:
To use the control box function (heating/cooling mode switching), compatible thermostats such as ENGO E4 must be used.



Legend to wiring diagrams:

- Fuse
- L, N 230V AC power supply
- SL. Signal control contact 230V AC
- CO Mode change / NSB function terminal
- Timer terminal for Night Set Back temperature control – NSB (Night Set Back)
- Mode change terminal Heating / Cooling – CO (Change Over)
- Actuator

Technical data

Power supply	230V AC, 50 Hz
Max. Current	10A
Outputs	Pump 230V AC max 5(2) A Boiler NO/COM/NC Cooler NO/COM Actuators 230V AC max 2 A
Inputs	8 zones CO INPUT (Change Over) volt-free DEW INPUT (DEW point) volt-free
Actuator type	NC (normally closed)
Switch-off delay	0 / 3 / 5 / 15 min
Dimensions [mm]	330 x 110 x 36