

Application

Self-optimizing, weather-compensated flow temperature control and domestic hot water heating in max. two control circuits



The TROVIS 5433 Heating and District Heating Controller is used to control maximum two control circuits:

- Control of a primary heat exchanger or boiler with a secondary, non-mixing heating circuit and domestic hot water heating in the storage tank system or storage tank charging system
- Control of a weather-compensated heating circuit and a domestic hot water heating with two valves in the primary circuit.

Special features

- Direct access to the operating modes and essential parameters of the control loops using rotary switches
- Intuitive data retrieval and input by turning and pressing the pushbuttons
- 365-day clock with max. three time schedules and automatic summer time/winter time changeover; maximum three times-of-use per day (input in steps of 30 minutes)
- Room panels to adjust the operating mode and rated room temperature
- Demand-driven control via set point request of subsequent control circuits using 0 to 10 V. The primary circuit controls the maximum flow temperature required plus adjustable boost.
- System with instantaneous water heating can be configured using a hydraulic pressure switch.
- Heating characteristics either according to gradient or four points; variable limitation of the return flow temperature
- Optimization: calculation of the best possible activation and deactivation times of the heating (with and without room temperature sensor)
- Drying of jointless floor function with adjustable parameter settings
- Configuration data and parameters can be exchanged using a memory pen.
- Configuration and parameterization over TROVIS-VIEW software



Fig. 1 · TROVIS 5433 Heating and District Heating Controller

Inputs and outputs

- 7 inputs for Pt 1000 or PTC temperature sensors
- One 0 to 10 V input and one 0 to 10 V output to process or pass on the set point demand and outdoor temperature
- Three-step or on/off outputs configurable with PI control algorithm, system with instantaneous water heating configurable with PID control algorithm

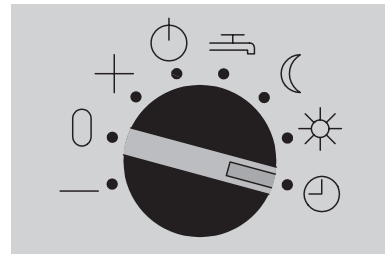
Operation

The TROVIS 5433 Heating and District Heating Controller is adapted to the specific plant by setting the appropriate system code number. To select the code number, refer to the system schematics described in the associated mounting and operating instructions. Additional sensors and/or functions which are not part of the plant's basic configuration may be selected by setting function blocks.

To access the appropriate levels, set the switch to position "COPA" and enter the key number. For experts, configuration levels used to set function blocks are indicated by "CO"; parameter levels are indicated by "PA". There is, for example, a clear distinction between the heating circuit level and the domestic hot water level.

Data is retrieved and entered at the controller using a rotary pushbutton. This process is facilitated by icons displayed on the LCD. Use the rotary switches to set the operating mode and essential parameters for each circuit (Fig. 2).

Operating modes



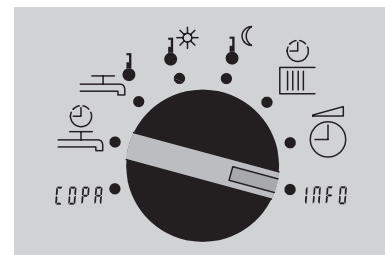
- ☰ Time-controlled operation
- ☀ Day mode (rated operation)
- ☾ Night mode (reduced operation)
- ☰ Domestic hot water operation only, heating circuit deactivated, frost protection only
- ⏻ No control operation, frost protection only

Manual operation:

- + Valve opens
- 0 Valve stationary
- Valve closes

Activate/deactivate pump by pressing and turning the pushbutton in "PU" level

Parameters



- 🕒 Controller clock:
Setting of time, date and year
- 🕒 Times-of-use for heating
- ☾ Night set point
- ☀ Day set point
- ☰ Domestic hot water temperature set point
- 🕒 Times-of-use for DHW circulation pump

Fig. 2 · Switch positions and their meaning

Technical data

| | |
|-------------------------|--|
| Inputs | 7 inputs for Pt 1000 or PTC temperature sensors, Input at terminal 14 alternatively for storage tank thermostat; 1 input for room panel/potentiometer 1 input for demand/outdoor temperature 0 to 10 V, $R_i = 20 \text{ k}\Omega$ (demand: 0 to 10 V corresponding to 0 to 120 °C flow temperature) (outdoor temperature: 0 to 10 V corresponding to -40 to 50 °C outdoor temperature) |
| Outputs* | Three-step signal/ on/off signal at terminals 23/24: Load 20 to 250 V AC, 0.5 A (triac outputs with varistor suppression) Three-step/ on/off signal at terminals 20/21: Load 230 V AC, 2 A (relay outputs with varistor suppression) 3 pump outputs: Load max. 230 V AC, 2 A (relay outputs with varistor suppression) 1 output for demand/outdoor temperature 0 to 10 V, load $> 2 \text{ k}\Omega$ |
| Operating voltage | 230 V AC (+10 %, -15 %), 48 to 62 Hz, max. 3 VA |
| Ambient temperature | Operation: 0 to 50 °C Storage and transport: -10 °C to 60 °C |
| Relative humidity | Normal, no dew formation |
| Degree of protection | IP 40 according to EN 60529 |
| Class of protection | I according to EN 50178 |
| Degree of contamination | 2 according to EN 50178 |
| Overvoltage category | II according to EN 50178 |
| Noise immunity | According to EN 61000-6-1 |
| Noise emission | According to EN 61000-6-3 |
| Weight | Approx. 0.6 kg |

* In systems with one control circuit, up to 4 pump outputs are available.

Electrical connection and installation

The controller consists of the controller housing containing the electronics and a separate terminal board for electrical connection. Two wires of max. 1.5 mm² can be connected to each terminal. The sensor connection lines must be installed separately from the lines carrying the operating voltage. For wall mounting, screw the terminal board to the wall. After wiring the controller, plug the connector housing onto the terminal board and fasten it with two screws. Two fastening elements for panel mounting are delivered with the controller.

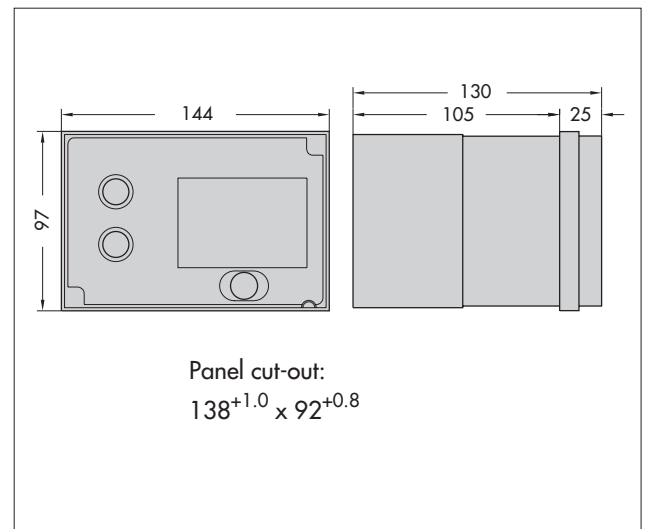
Ordering text

Heating and District Heating Controller TROVIS 5433

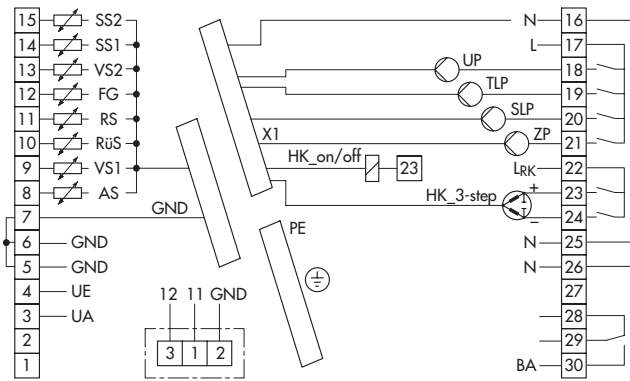
Accessories:

- Room panels
 - Type 5244** · PTC room sensor with room panel
 - Type 5257-5** · Pt 1000 sensor with room panel
- Memory pen-64 1400-9753
- TROVIS-VIEW Configuration and Operator Interface 6661-1003 for TROVIS 5433

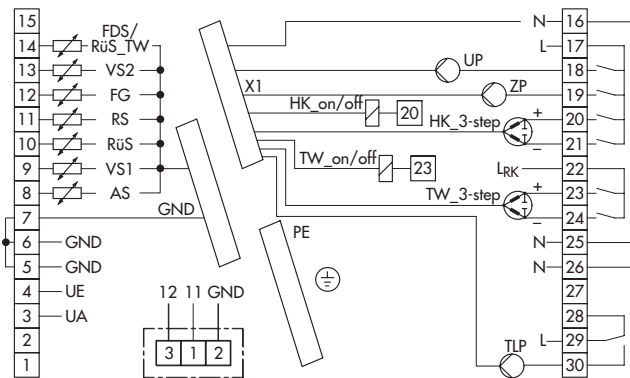
Dimensions in mm



Terminal assignment



Connection diagram for system code numbers 1 to 4



Connection diagram for system code number 5

| | | | |
|--------|------------------------------------|-----|---------------------------------------|
| AS | Outdoor sensor | HK | Heating circuit |
| FDS | Hydraulic pressure switch | LRK | Voltage supply for actuator |
| FG | Potentiometer | PE | Grounding conductor |
| RS | Room sensor | SLP | Storage tank charging pump |
| RüS | Return flow sensor | TLP | Heat exchanger charging pump |
| RüS_TW | Return flow sensor for DHW heating | TW | DHW heating |
| SS | Storage tank sensor | UA | Output for demand/outdoor temperature |
| VS | Flow sensor | UE | Input for demand/outdoor temperature |
| BA | Binary output | UP | Circulation pump (heating circuit) |
| GND | Ground | ZP | Circulation pump (DHW circuit) |

Fig. 3 · Terminal assignment of the TROVIS 5433 Heating and District Heating Controller

Specifications subject to change without notice.