

# Automation System TROVIS 5400

## Ventilation Controller TROVIS 5477



Continuous-action ventilation controller  
designed for wall or panel mounting  
(front frame dimensions 144 mm x 96 mm)

### Application

Ranging from simple control of ventilation to cascade control of a temperature and humidity control loop including heating coil, heat recovery unit, cooling coil and humidifier



The TROVIS 5477 Ventilation Controller can be used in ten different types of systems (see Table "System functions and application").

Using the TROVIS 5477 Ventilation Controller, room ventilation systems can be operated with either the control of the supply air, exhaust air or room air. Cascade control of either the exhaust air or the room air is also selectable. In these modes, the heating coil can optionally be operated with a heat recovery unit, a cooling coil, or both a heat recovery unit and a cooling coil in sequence.

Separate temperature control of mixed air is possible for systems provided with a mixed air chamber.

In addition to temperature control, humidity control is also possible by an additional output for connecting a humidifier.

The TROVIS 5477 Ventilation Controller can be configured and parameterized via PC. The data entered is subsequently downloaded to the controller by means of a special memory module.

### Special features

- Analog input 0 to 10 V for air quality sensor
- Two-speed fans with separate time schedule, control also possible via the air quality, room temperature or humidity
- Variable air volume control can be configured
- Analog output 0 to 10 V for requesting the externally required signal
- Return air flow temperature of the heating coil can be limited
- Simple entry of configuration and parameter data via symbols (pictograms)
- Code number protects against unauthorized alteration of data
- Connection of a memory module for PC
- Connection to Modbus is possible
- RS 485 interface (for communication via a four-wire bus) or RS 232 for communication via a modem



Fig. 1 · TROVIS 5477 Ventilation Controller

## Inputs and outputs

The TROVIS 5477 Ventilation Controller is equipped with 12 inputs which can be optionally configured as sensor inputs or as binary inputs. The required inputs are determined in accordance with the system code number; e.g., three binary inputs for the functions "feedback of fan operation", "system on/off" and "frost protection". Pt 100 and PTC or Pt 100 and Pt 1000 sensors can be connected. Two inputs are also suitable for remote adjustment. Inputs not assigned to a certain system code number can, for example, optionally be used to connect temperature sensors which are prompted by a control system. These, however, are not essential to the actual control.

The TROVIS 5477 Ventilation Controller also has four 0 to 10 V inputs which enable, for example, two active temperature/humidity sensors to be connected.

Up to four continuous-action outputs 0(2) to 10 V are controlled by the PID algorithm implemented in the software. The fourth 0 to 10 V analog output can alternatively be used for requesting the externally required control signal from the pre-control circuit or for controlling the frequency converters for the fans.

Five floating binary outputs are available for operating pumps and fans.

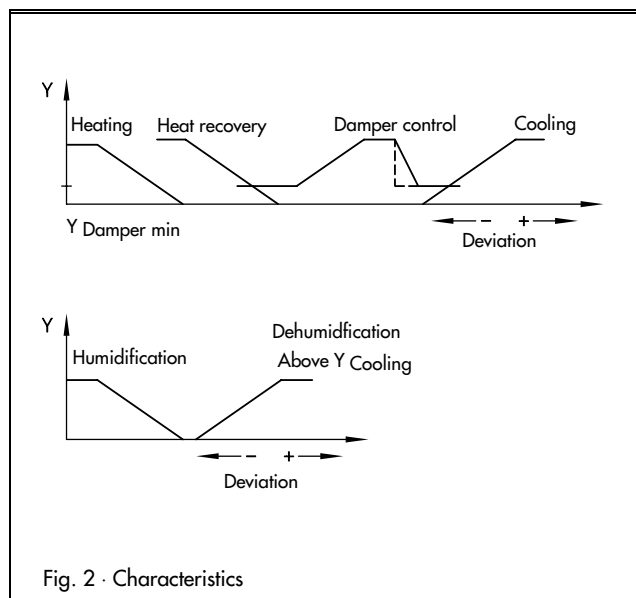


Fig. 2 · Characteristics

For communication with a control system, the ventilation controller offers two interface options, either an RS-485 interface for use in a bus system or an RS-232 interface for use with a modem.

## System functions and applications

| System code no. | Application   | Special functions   |
|-----------------|---|---|
| System 0        | Ventilation system with one heating coil  | Outdoor temperature-compensated supply air control, Fan operation, 2-stage or 0 to 10 V   |
| System 1        | Ventilation system with one heating and one cooling coil (also chilled ceiling or 1-stage direct expansion coil)                            | Summer compensation, Sequence operation of heating/cooling or overlapping operation, Fan operation, 2-stage or 0 to 10 V  |
| System 2        | Ventilation system with one heating coil and one mixed air chamber  | Summer time operation, Sequence operation heating/dampers or mixed air temperature control, Automatic reversal of operating action for mixed air chamber, Fan operation, 2-stage or 0 to 10 V   |
| System 3        | Ventilation system with one heating coil and one heat recovery unit   | Frost protection for heat recovery unit, Autom. reversal of operating action configurable for heat recovery unit, Fan operation, 2-stage or 0 to 10 V   |
| System 4        | Ventilation system with one heating and one cooling coil (also chilled ceiling or 1-stage direct expansion coil) and one mixed air chamber  | Summer compensation, Summer time operation, Sequence operation of heating/dampers/cooling or temperature sequence control of heating/cooling and mixed air, Automatic reversal of operating action for mixed air chamber, Fan operation, 2-stage or 0 to 10 V |
| System 5        | Ventilation system with one heating and one cooling coil (also chilled ceiling or 1-stage direct expansion coil) and one heat recovery unit | Summer compensation, Frost protection for the heat recovery unit, Autom. reversal of operating action configurable for heat recovery unit, Fan operation, 2-stage or 0 to 10 V  |
| System 6        | Air-conditioning system with one heating and one cooling coil and one humidifier  | Configurable for humidifying or humidifying/dehumidifying service, Summer compensation, Fan operation, 2-stage or 0 to 10 V   |
| System 7        | Ventilation system with one cooling coil (also chilled ceiling or 1-stage direct exp. coil)   | Summer compensation, Fan operation, 2-stage or 0 to 10 V  |
| System 8        | Air-conditioning system with one heating and one cooling coil, one mixed air chamber and one humidifier                                     | Configurable for humidifying or humidifying/dehumidifying service, Summer compensation, Summer time operation, Automatic reversal of operating action for mixed air chamber, Fan operation, 2-stage or 0 to 10 V  |
| System 9        | Air-conditioning system with one heating and one cooling coil, one heat recovery unit and one humidifier                                    | Configurable for humidifying or humidifying/dehumidifying service, Summer compensation, Autom. reversal of operating action configurable for heat recovery unit, Fan operation, 2-stage or 0 to 10 V  |

## Technical data

|                                |  |
|--------------------------------|--|
| <b>Inputs</b>                  | 12 configurable inputs for sensors (Pt 100 and PTC or Pt 100 and Pt 1000) or binary messages (e.g. system on/off, feedback of fan operation as well as frost protection); inputs F8 and F9 also for 1 to 2 k $\Omega$ for remote adjustment<br><br>4 inputs for 0 to 10 V for connecting active temperature humidity sensors |
| <b>Outputs</b>                 |  |
| Analog outputs                 | 4 continuous-action outputs 0(2) to 10 V, load > 5 k $\Omega$  |
| Binary outputs                 | 5 for pumps or fans, floating, load max. 230 V~, 3 A, cos $\varphi$ = 0.6; min. 230 V~, 10 mA/ 24 V~, 50 mA  |
| <b>Interface</b>               | RS-485 interface for four-wire bus connection or RS-232 for modem connection   |
| <b>Control parameters</b>      | K <sub>p</sub> : 0.1 to 99; T <sub>n</sub> : 1 to 999 s;<br>T <sub>v</sub> : 1 to 999 s  |
| <b>Operating voltage</b>       | 230 V (+10 %, -15 %), 3 VA   |
| <b>Temperature range</b>       | Operation: 0 to 40 °C <sup>1)</sup> ,<br>Storage -20 to 60 °C  |
| <b>Degree of protection</b>    | IP 40 according to IEC 529   |
| <b>Protection class</b>        | II according to VDE 0106   |
| <b>Degree of contamination</b> | 2 according to VDE 0110  |
| <b>Overvoltage category</b>    | II according to VDE 0110   |
| <b>Humidity class</b>          | F according to VDE 40040   |
| <b>Noise immunity</b>          | According to EN 50082 Part 1   |
| <b>Noise emission</b>          | According to EN 50081 Part 1   |
| <b>Weight</b>                  | Approx. 0.6 kg   |

<sup>1)</sup> Avoid areas with poor ventilation to prevent heat from building up

## Electrical connection and assembly

The ventilation controller consists of an electronics section which can be found in the controller case and a separate terminal board used for connecting the electrical leads. Two wires with a maximum cross section of 1.5 mm<sup>2</sup> can be connected to each terminal.

Sensor leads are to be wired separately from the lines of the output relay.

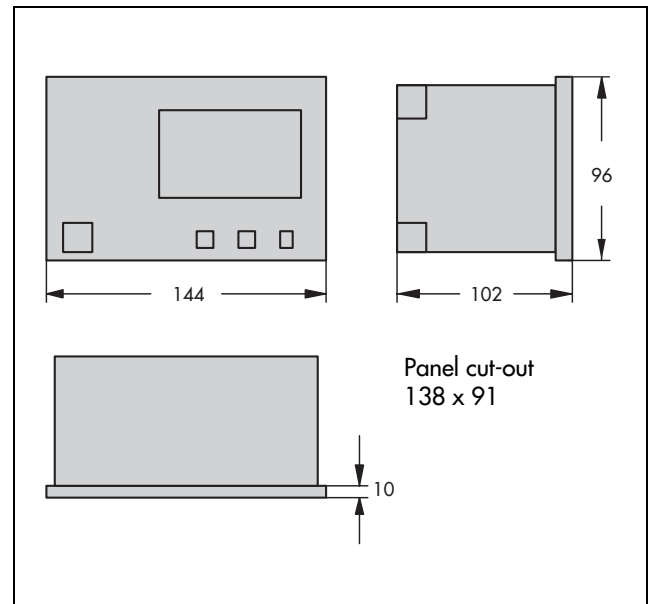
With the wall-mounted version, the terminal section is screwed to the wall. After connecting the electrical leads, the controller case is inserted on the terminal board and fastened with two screws.

With the panel-mounted version, the controller is locked in the control panel using two brackets.

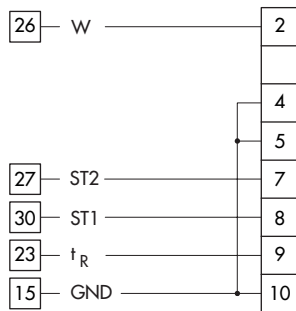
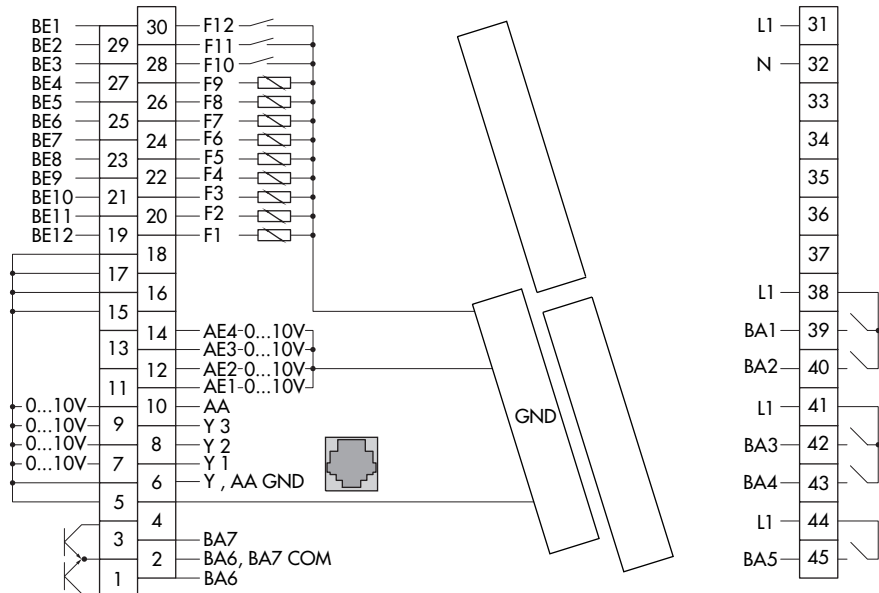
## Ordering text

TROVIS 5477 Ventilation Controller with RS-485 or RS-232 interface.

## Dimensions in mm



## Terminal assignment



Connection of the optional  
Type 5257-6 Remote Control Unit

AA Analog output  
 AE Analog input  
 BA Binary output  
 BE Binary input  
 F Sensor or potentiometer input  
 GND Ground

ST1 Fan stage 1  
 ST2 Fan stage 2  
 t<sub>R</sub> Room temperature  
 W Temperature set point