

Fan heater | AC fans control

Warm air heaters

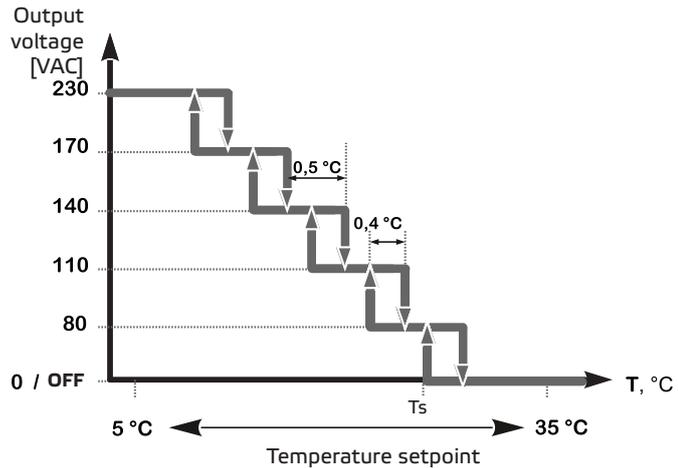


SOLUTION DESCRIPTION

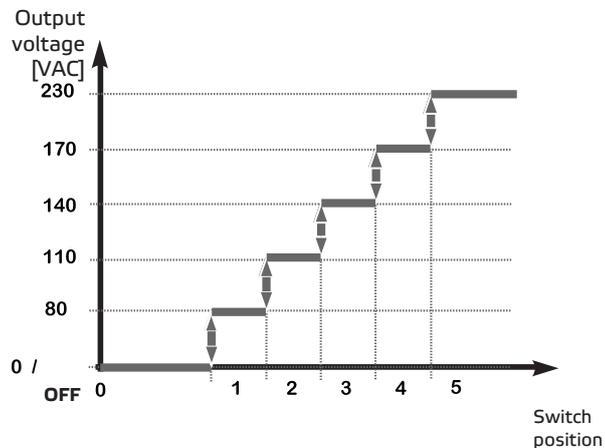
This solution controls fan heaters with an AC motor. The controller regulates fan speed based on ambient temperature. The higher the difference between the measured temperature value and the temperature setpoint, the higher the AC fan speed. The unregulated output controls a water valve or an electric heating element. Typically, this solution is applied in large halls such as warehouses or manufacturing plants.

Operational diagram

Heating - automatic mode



Heating - manual mode



When $T > T_s$: the motor is disabled
 When $T < T_s$: the motor speed is according to this diagram

Fan speed

When the ambient temperature is higher than the temperature setpoint, the fan is disabled.

When the ambient temperature drops below the temperature setpoint, the fan is activated.

Fan speed can be set manually (5 possibilities) or automatically. In automatic mode, fan speed increases in 5 steps based on the temperature. The lower the temperature, the higher the fan speed.

Autotransformer technology is used to reduce the motor voltage and the fan speed in 5 steps. This controller is therefore only suitable for voltage controllable motors. If you are not sure whether your motor is voltage controllable, it is best to contact the motor manufacturer. Autotransformer technology is very reliable and robust. It generates a motor voltage with perfect sinusoidal shape. This results in exceptionally quiet motor operation and extended service life. A special impregnated coating reduces the electrical noise from the autotransformers.

Heater control

The unregulated output controls the heater. This can be a water valve to control the flow of hot water or a relay to activate an electric heater.

The unregulated output is activated simultaneously with the fan. When the fan runs, the heater is activated.

Ambient temperature

Ambient temperature is measured via the PT500 temperature sensor. This temperature sensor is available in different enclosure types. It is advisable to keep the sensor cable length limited. The longer the cable length, the higher the risk of faulty measurements and inaccuracies.

Typical applications

- Fan heater control in warehouses
- Fan heater control in industrial areas

TECHNICAL DATA

- IP54 protection for indoor installation
- Single-phase voltage controllable motors
- Maximum motor current: 2,5 or 5 A, depending on GTH-1 type.
- Output for heater control: 230 VAC, I_{max} 2 A
- PT500 temperature sensor

WIRING AND CONNECTIONS

One example of the solution is shown in the connection diagram below. Different combinations are possible.

