Room temperature controller TRS

In-room temperature controller with two continuous outputs DC 0…10 V

Application
The TRS Room Temperature Controller is intended for the individual control of room air temperature in heating, ventilating and air-conditioning systems (HVAC). The temperature sensor is incorporated into the controller itself, although an external sensor can be connected if required. The controller provides appropriate operating control (heating or cooling) for the modulating actuators of control and mixing dampers, valves and air-volume controllers.

A selector switch allows the user to choose from four alternative operating modes whichever suits him best for the room. A slide-type potentiometer is provided to allow local correction of the temperature setpoint (±3 °C) according to individual needs.

The controller also has an input for summer compensation and central operating control.

Mode of operation
The TRS controller employs a proportional characteristic with fixed, preset proportional bands. It compares the actual value with the setpoint and, if there is a discrepancy between the two, generates a continuous proportional control signal to correct it. There is an adjustable dead band Xe between the two control outputs for heating and cooling. The setting potentiometers for setpoint and dead band are housed inside the controller itself.

By means of an external override signal (DC –10…0…+10 V) it is possible to enlarge the dead band when necessary (for summer compensation) or to shift the cooling and heating setpoints by 10 K and 6 K respectively. This is consistent with ensuring minimum power consumption and monitoring of limit values.

Mode selector
Removing the housing cover gives access to the selector switch which allows the operating mode to be altered as necessary. The selector can also be disengaged completely if required.

Technical data
Nominal voltage AC 24 V 50/60 Hz
Nominal voltage range AC 19.2…28.8 V
Power consumption 0.5 W
For wire sizing 1.3 VA
Connection screw terminals (2 × 1.5 mm²)
Temperature sensor NTC (0…40 °C) on p.c.b. or external sensor TFK (TRS-3)
Output signal Yh heating DC 0…10 V (reverse-acting)
Yk cooling DC 0…10 V (direct-acting)
Operating range, heating/cooling DC 1.5…9.5 V
Output current max. 1 mA/output
Setting ranges setpoint, internal XK: 21 °C ± 5 K
Setpoint, external ∆XK: ±3 K (slide potentiometer)
dead band Xe: –1…+5 K (factory preset: 2 K)
Mode selector Automatic
Night (unassigned)
Continuous
Ventilation (MAX Yk/MAX flow)
Proportional band xp heating: 1.5 K (fixed) cooling: 1.0 K (fixed)
Control input k/k’ k: DC –10…0…+10 V k’: AC 24 V
Power consumption k/k’ k: DC 0…10 V 1.5 mW (0.35 mA)
k’: AC 24 V 40 mW (1.7 mA)
Degree of protection IP 30
Ambient temperature range 0…+40 °C operating; –20…+70 °C storage
Ambient humidity 20…90%
EMC CE according to 89/336 EEC and 92/31 EEC
Weight 70 g

Wiring diagram

Dimensions