# TTC25

3-phase controller for electric heating, 230 or 400 V / 25 A


*TTC25 is a 3-phase controller intended for time-proportional control of electric heaters, radiators, etc. The controller is capable of controlling both D- and Y-connected loads.*

- ✓ Built-in temperature controller with 0...10V signal for control of output unit
- ✓ Automatic adaptation to connected 230 or 400V supply voltage
- ✓ Can be controlled with external 0...10 V-control signal
- ✓ For DIN-rail mounting
- ✓ Settable min. and max. limitation
- ✓ Adjustable cycle time

## Application

TTC25 is a 3-phase triac controller for control of electric heaters. The device is connected in series between the power supply and an electric heater or radiator.

TTC25 has a temperature controller with inputs for sensors placed, for instance, in a supply air duct or room. It can also be controlled using an external control signal.

The controller utilises stepless, time-proportional control. I.e.: the ratio between on-time and off-time is varied in order to fit the present heating requirement.

Example: A controller output of 50 % will equal an on-time of 30 s and an off-time of 30 s if the cycle time is 60 s. The cycle time is adjustable 6...60 s.

Triac control is considerably more accurate than on/off control, meaning increased heating comfort and lowered energy costs.

## Function

TTC25 has a built-in function for automatically adapting the control mode as needed.

**Supply air control**

For rapid temperature changes, the supply air controller will function as a PI-controller. The P-band will be 20K with an I-time of 6 minutes.

**Room temperature control**

For slower temperature changes, the room controller will function as a P-controller. The P-band will be 1.5K. The

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supply air controller will retain the same settings as before. During room temperature control, the supply air temperature can be provided with a min. or max. limitation.

**Control of larger loads**

In cases where the electric heater is larger than the capacity of TTC25, the load can be divided and controlled by use of a TT-S4/D or TT-S6/D step controller in combination with the TTC25. Slave control of one or more TTC25 units via the TTC25 is also possible.

**External control signal**

TTC25 can also be run against a 0...10 V DC control signal from another controller. 0 V input signal will give 0 % output and 10 V input will give 100 % output. Minimum and maximum limit functions are not active when using an external control signal..

# Technical data

## 1 General

| | |
|---|---|
| **Supply voltage** | 3-phase, 210...255 / 380...415 V AC. Automatic adaptation |
| **Power output** | Max. 25 A, min. 3 A/phase. At 400 V, max. effect will be 17 kW |
| **Safety function** | The feed to the TTC should be interlocked with a high temp. limit switch |
| **Power emission** | 50 W at full load |
| **Cycle time** | Factory setting 60 sec. Adjustable 6...60 sec |
| **Indicator** | Red LED, lit when power is pulsed to heater |
| **Ambient temperature, operation** | 0...40°C |
| **Ambient humidity** | Max 90 %rH |
| **Storage temperature** | -40...+50°C |
| **Protection class** | IP20 |

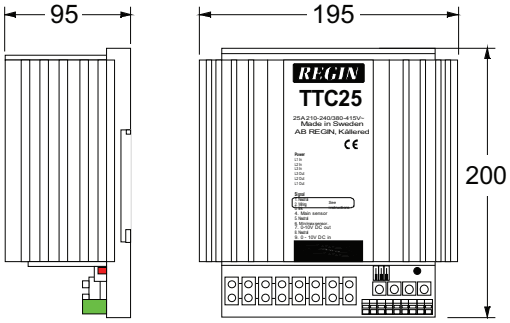
## 2 Control unit

| | |
|---|---|
| **Sensor inputs** | Main and min./max. sensor. Min./max. sensor: working range 0...60°C |
| **Main setpoint** | 0...30°C. Other areas dependant on connected sensor.<br>Includes external setpoint (e.g. TG-R430) |
| **Control parameters, primary control** | Rapid control circuits: PI-function with a P-band of 20K and I-time of 6 minutes.<br>Slower control circuits: P-function with a P-band of 1.5 K |
| **Setpoint, min. limitation** | 0...30°C |
| **Setpoint, max. limitation** | 20...60°C |
| **Control parameters, limitation** | PI-function with a P-band of 20K and an I-time of 6 minutes |
| **Output signal, controller** | 0...10 V. Connected to control input of output unit by wire strap (terminal 7-9) |
| **Control input** | For external control signal 0...10 V. |

CE

This product carries the CE-mark. More information is available at www.regincontrols.com.

# Dimensions




**[mm]**

## Wiring

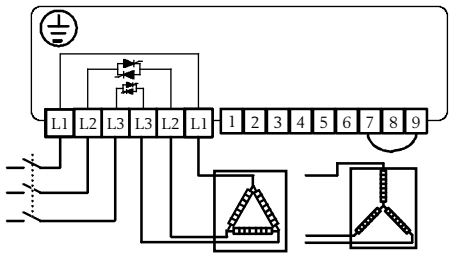



*Fig. 1 Wiring of supply voltage and load*

**Note!** The controller must be grounded and the supply voltage must be interlocked via a high temperature limit switch!

**Note!** When controlling Y-connected loads, the load must be symmetric and the signal neutral must not be connected!

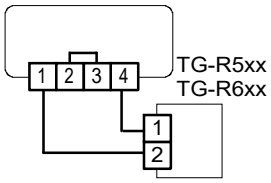



*Fig. 2 Wiring of room temperature sensor TG-R5xx or TG-R6xx when using internal setpoint*

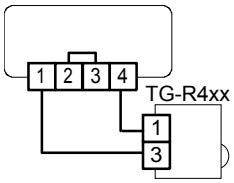



*Fig. 3 Wiring of TG-R430 sensor as external sensor and setpoint adjustment for room control*

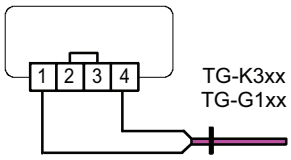



*Fig. 4 Wiring of floor or duct sensor when using internal setpoint*

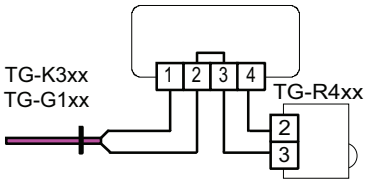



*Fig. 5 Wiring of an external, separate sensor and TG-R4xx as a setpoint device only*

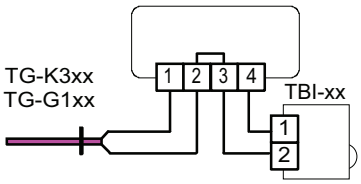



*Fig. 6 Wiring of an external, separate sensor and a TBI-xx potentiometer as a setpoint device*

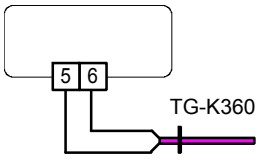



*Fig. 7 Wiring of a limitation sensor*

**Note!** TG-K360 must be used.

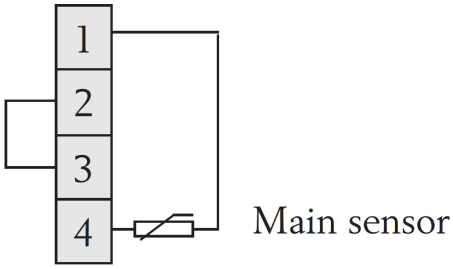



*Fig. 8 Constant supply air*

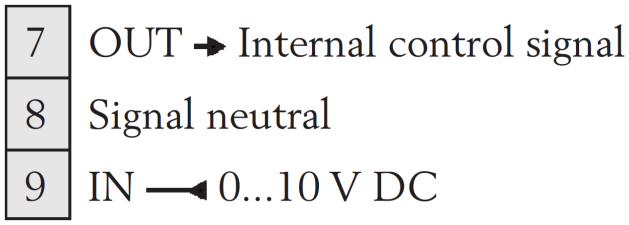



*Fig. 9 External signal 0...10 V DC*

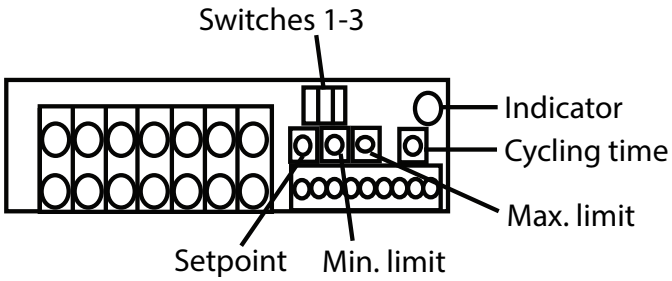



*Fig. 10*

① *Setpoint:*
*Up: Built-in setpoint*
*Down: External setpoint*

② *Min. temp. limit.:*
*Up: Activated*
*Down: Deactivated*

③ *Max. temp. limit.:*
*Up: Activated*
*Down: Deactivated*

*Min. and max. limit. function can be active simultaneously*

## Documentation

All documentation can be downloaded from www.regincontrols.com.