



TTC40F

3-phase controller for electric heating,
230 or 400 V / 40 A

TTC40F 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
- Model TTC40FX is intended for control using an external 0...10V control signal

TTC40F 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.

TTC40F 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.

- For DIN-rail mounting
- Settable min. and max. limitation
- Adjustable cycle time

TTC40F 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 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 TTC40F, the load can be divided and controlled by use of a TT-S4/D or TT-S6/D step controller in combination with the TTC40F. Slave control of one or more TTC25X / TTC40FX units via the TTC40F is also possible.

TTC40FX

This electric heating controller is intended only for control using an external 0...10V control signal. For this reason, it does not offer a built in control unit. It is otherwise identical to the TTC40F.

Models

Model	Description
TTC40F	Triac controller featuring built-in temperature controller
TTC40FX	Triac controller for external 0...10V control signal

Technical data

Supply voltage	3-phase, 210...255 / 380...415 V AC. Automatic adaptation
Power output	Max. 40 A, min. 4 A/phase. At 400 V, max. effect will be 27 kW
Safety function	The feed to the TTC should be interlocked with a high temp. limit switch
Power emission	70 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



Low Voltage Directive (LVD) standards: This product conforms to the requirements of the European Low Voltage Directive (LVD) 2006/95/EC through product standard EN 60730-1.

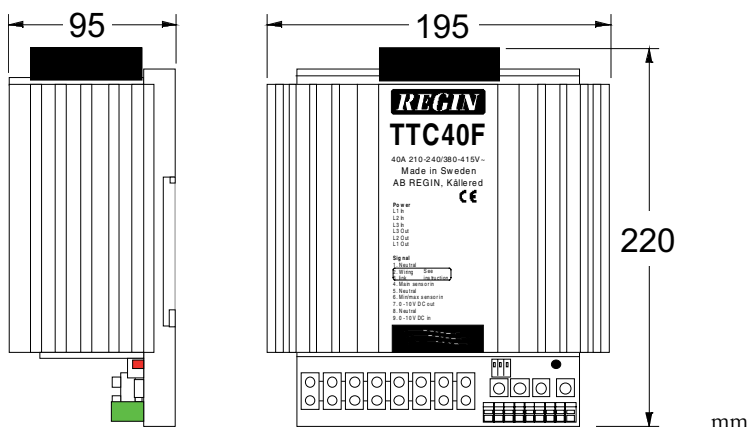
EMC emissions & immunity standards: This product conforms to the requirements of the EMC Directive 2004/108/EC through product standards EN 61000-6-1 and EN 61000-6-3.

RoHS: This product conforms with the Directive 2011/65/EU of the European Parliament and of the Council.

Control unit

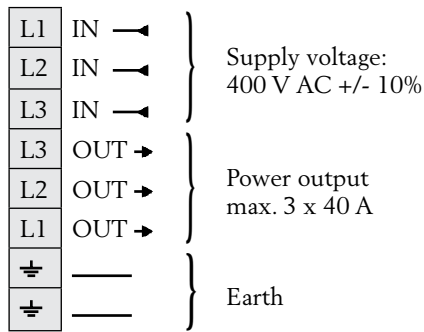
Sensor inputs	Main and min./max. sensor. Min./max. sensor: working range 0...60°C
Main setpoint	0...30°C. Other areas dependant on connected sensor. Includes external setpoint (e.g. TG-R430)
Control parameters, primary control	Rapid control circuits: PI-function with a P-band of 20K and I-time of 6 minutes. 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)
TTC40FX	
Control input	For external control signal 0...10 V. No integrated control unit. No function for min. and max. limitation. Other technical data as above

Dimensions

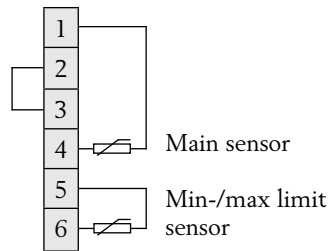


Wiring

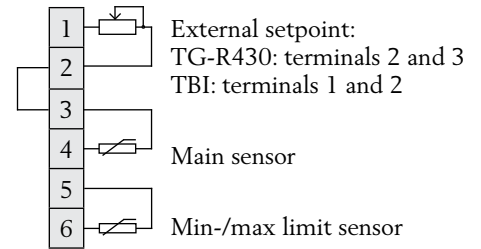
Power



Room temperature control

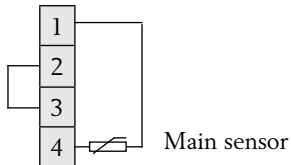


Room temperature control with external setpoint

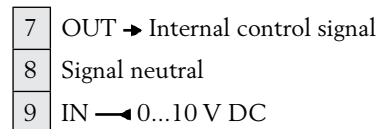


NOTE: When controlling Y-connected loads, the load must be symmetric and the signal neutral must not be connected!

Constant supply air

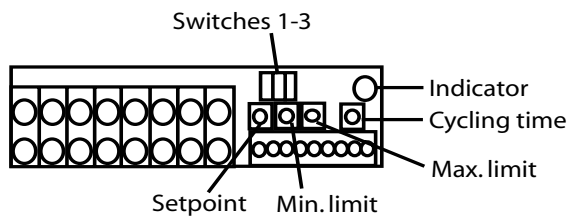


External signal 0...10 V DC



Terminals 7 and 9 are connected by a factory-mounted wire strap. Remove the wire strap when using external control signal.

Terminals 1-7 are not present on model TTC40FX.



Operating switches:

- 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

Product documentation

Document	Type
Instruction TTC40F	Instruction for TTC40F
Instruction TTC40FX	Instruction for TTC40FX

The documents can be downloaded from www.regin.se.