



TTC2000 is a controller for controlling 3-phase electric heating batteries. TTC2000 is a controller which provides a high degree of versatility at a reasonable price.

- * The same unit for 3-phase 230V and 3-phase 400V. Automatic voltage adaption.
- * Can control both star-connected and delta-connected loads.
- * PI-control for constant supply air temperature control and P-control for room temperature control with automatic function adaption.
- * Minimum and maximum limits adjustable.
- * TTC2000 is a complete controller for use with Regin temperature sensors.
- * TTC2000 can be controlled by a 0... 10 V signal from another controller.

Function

TTC2000 is a 3-phase triac controller for controlling electric heating up to 25 A. It is made for wall mounting. TTC2000 is to be connected in series between power-supply and an electric heater and can control both Y- and Delta- connected loads. TTC2000 can control asymmetrical Delta-loads.

Function

The controller pulses the entire power output ON/OFF. The controller utilises time-proportional control, the ratio between On-time and Off-time is varied to fit the prevailing heating requirement. E.g. ON = 30 sec. and OFF= 30 sec. gives 50% output power. The cycle-time (the sum of on-time and off-time) is adjustable 6...120 sec.

This control accuracy contributes to reduced energy costs and to the increased comfort of an even temperature. Since the current is switched by semi- conductors (triacs) there are no moving parts that can wear out. The current is switched at zero phase angle, which eliminates network disturbance.

TTC2000 automatically adapts control mode to suit the dynamics of the controlled object.

Supply air temperature control

For rapid temperature changes, TTC2000 will work as a PI-controller with a fixed proportional band of 20K and a fixed reset time of 6 minutes.

Room temperature control

For slow temperature changes, TTC2000 will work as a P-controller with a fixed proportional band of 1.5 K. When running room temperature control the supply air temperature can be maximum and/or minimum limited.

Controlling larger electric heaters

At larger loads TTC2000 can be combined with ancillary board TT-S1 (see below) or step controllers TT-S4/D or TT-S6/D (See separate leaflet).

TT-S1

The power handling capacity can be increased by using the TT-S1 relay control board.

On increasing heat demand the TTC2000 will primarily activate the triac controlled output. When this is running at full output the TT-S1 relay output will be activated and the triac controlled output will be reduced.

For best control the two part loads must be of equal size. For wiring diagram and more information, see the instructions for the TT-S1.

Technical data

General

Supply voltage	3-phase 210...255 / 380...415 V AC
Power output	Maximum 25A/phase. Minimum 3A/phase. Both Y- and Delta- connected loads.
Ambient temp. running	0...40°C with no condensation. N.B. TTC2000 emits approx. 45W of heat
Ambient temp. storage	-40...+50°C
Humidity	90% RH maximum
Protection class	IP30
CE	This product conforms with the requirements of European EMC standards CENELEC EN 50081-1 and EN 50082-1 and carries the CE mark

Control unit parameters TTC2000

Proportional band	(Supply air temperature control) 20K, fixed.
Reset time	(Supply air temperature control) 6 minutes, fixed.
Proportional band	(Room temperature control) 1,5 K, fixed.
Indicator	LED that is lit when power is pulsed to the heater.
Sensor inputs	Two (2) inputs for main sensor and maximum/minimum sensor. See Section 6-100 for choice of sensor. N.B. Max/min sensor must be 0...60°C.
Setpoint	Selectable, either internal setpoint potentiometer or external setting device.
Signal input	0...10V DC when running against other controllers.

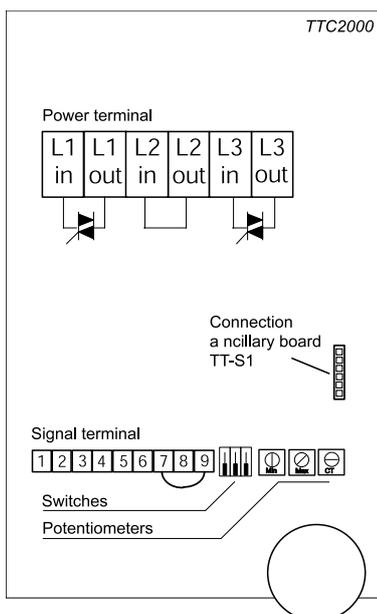
Function switches (see drawing below)

- 1 Down = External setpoint in use.
Up = Internal setpoint in use.
- 2 Down = Minimum limit not active.
Up = Minimum limit active.
- 3 Down = Maximum limit not active.
Up = Maximum limit active.

Function potentiometers (see drawing below)

Setp.	Setpoint 0 - 30°C.
Min	Minimum limit for supply air temperature when running room temperature control.
Max	Maximum limit for supply air temperature when running room temperature control.
CT	Cycle time. 6 - 120 seconds.
Night set-back	Possible by using Night Set-back unit NS/D , see datasheet section 1 position 325.

Wiring and dimensions

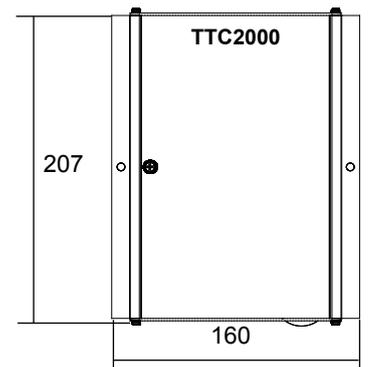


Signal terminal

- 1 Signal neutral
- 2 } Bridging terminals,
3 } Internally interconnected
- 4 Main sensor or sensor+setpoint
- 5 Signal neutral
- 6 Limiting sensor
- 7 0...10 V out
- 8 Signal neutral
- 9 0...10 V in

Power terminal

- L1 in
- L1 out
- L2 in
- L2 out
- L3 in
- L3 out



Depth: 94 mm

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