



CTR

Triac controller for electric heating, single phase or two phase

CTR is an electric heating controller for controlling electric heating batteries, electric panels etc. The controller can be connected to single phase or two phase voltage, 210...415 V.

CTR is an electric heating controller with triac control for single phase or two phase electric heating. Intended primarily for wall mounting, it is connected in series between a power supply and electric heater; such as an electric heating battery or electric panel.

CTR has a built-in temperature controller featuring external sensor input, where the sensor can for instance be mounted in a room or a supply-air duct. For control of room temperature, the on-board sensor built into CTR may be used.

The controller uses time-proportional control, where the On-time and Off-time ratio is varied to fit the prevailing heating requirement. E.g. ON = 30 s and OFF = 30 s gives 50% output power. The cycle-time (ie: combined on-/off-time) is fixed at approx. 60s.

This contributes to greater energy savings and to the increased comfort that an even temperature brings with it. Since the current is switched by semiconductor (triac), there are no moving parts that can wear out. Network disturbances are also eliminated, as the current is switched at a zero phase angle.

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

Supply air temperature control

For rapid temperature changes, CTR will function as a PI controller. The P band is 20 K and the I-time 6 min.

Room temperature control

For slow temperature changes, CTR will work as a P controller with a fixed proportional band of 2K.

Short facts about CTR

- Complete electric heating controller with built-in sensor and setpoint adjustment.
- External sensor and external setpoint can be connected.
- Control function adapts automatically, using PI for supply air control and P for room control.
- For loads up to 3.6kW (230 V) or 6.4kW (400 V).
- Automatic adaption to connected supply voltage 210...415 V.
- Adjustable night set-back, 0...10K.

Night set-back

Using an external time switch, CTR can provide an adjustable night set-back. When closing the time-switch contact, the setpoint is lowered by the set value, 0...10K.

Controlling larger electrical outputs

When the electric battery or heater is larger than the capacity of CTR, the load can be split and controlled by CTR in combination with the ancillary unit CTR-ADD (see separate leaflet.)

Technical data

Supply voltage	210...415 V AC. 1- or 2-phase, automatic adaptation
Power output	Up to 16 A, min. 1 A. At 230 V, max output is 3.6 kW and min. output 230 W. At 400 V, max. effect will be 6.4 kW and min. effect will be 400 W.
Power emission	20 W at full load
Ambient temperature	0...30°C with no condensation
Ambient humidity	Max 90 % rH
Storage temperature	-40...+50°C
Form of protection	IP20
Weight	0.3 kg



Low Voltage Directive (LVD) standards: This product conforms to the requirements of the European Low Voltage Directive (LVD) 2006/95/EC through product standards EN 60730-1 and EN 60730-2-9.

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 to the Directive 2011/65/EU of the European Parliament and of the Council.

Control unit parameters

Supply air control	PI function using P-band 20 K and I-time 6 min.
Room control	P function using P-band 1.5 K
Pulse period	60 s
Indicator	Red LED on bottom of CTR, lit when power is pulsed to the heater

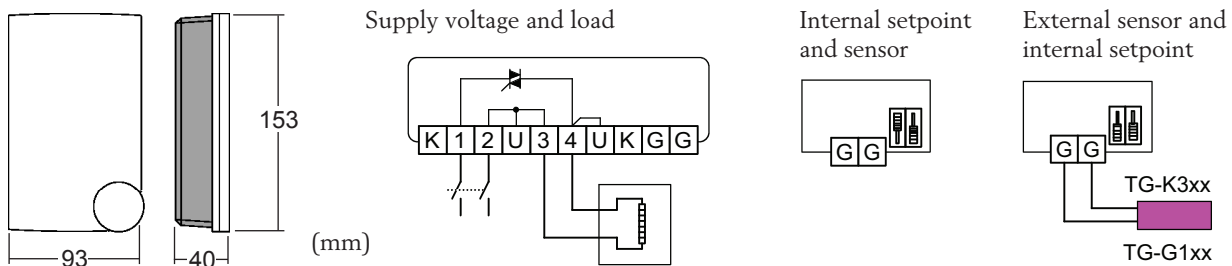
Sensor

Built-in sensor	Measurement range 0...30°C
Input external sensor/setpoint	For Regin brand NTC sensors and setpoint devices. Temperature range depends on measuring range of sensor. The sensor connection has high ground zero potential and the installation should therefore follow standard mains voltage installation procedures.

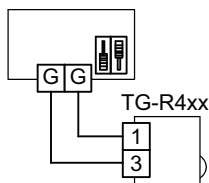
Settings

Setpoint	0...30°C. Knob with scale for other temperature ranges can be ordered.
Night set-back	0...10 K

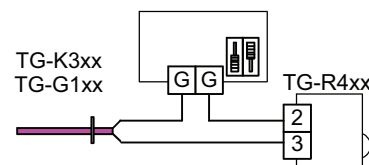
Dimensions and wiring diagrams



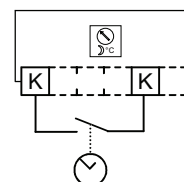
Room control with SAP-NTC15-01-3 as external sensor and setpoint



External, separate sensor and SAP-NTC15-01-3 as setpoint only



Night set-back function



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