



PULSER-M

Single phase / two phase controller for electric heating with minimum / maximum limitation.

PULSER-M is an electric heating controller for controlling electric heating batteries, electric panels etc. The controller can be connected to single phase or two phase 200...415 V.

PULSER-M is an electric heating controller (triac control) for single phase or two phase electric heating. It is connected in series between power supply and an electric heater, for example an electric heating battery or electric panel.

PULSER-M has a built-in temperature controller with input for an external main sensor and for the sensor for minimum or maximum limitation.

For controlling room temperature the built-in sensor in PULSER-M can be used as main sensor.

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 s and OFF = 30 s gives 50% output power. The cycle-time (the sum of on-time and off-time) is fixed approx 60 s.

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

PULSER-M automatically adapts control mode to suit the dynamics of the controlled object.

Supply air temperature control

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

Room temperature control

For slow temperature changes PULSER-M will work as a P-controller with a fixed proportional band of 1.5 K.

Short facts about PULSER-M

- Complete controller with built-in sensor and setpoint adjustment
- Function for minimum / maximum limitation
- For loads up to 3.6 kW (230 V) or 6.4 kW (400 V)
- Automatic adaption of control function, P or PI-control
- Can be connected to an external sensor or a potentiometer
- Adjustable night set-back 0...10K

Function for minimum/maximum limitation

When room temperature control is used, it can be necessary to set a minimum or maximum limitation for supply air temperature. To that purpose, place a sensor in the supply air duct and connect it to PULSER-M. You can then choose between minimum or maximum limitation, and adjust the setpoint by using the knob located under the controller's lid.

Night set-back

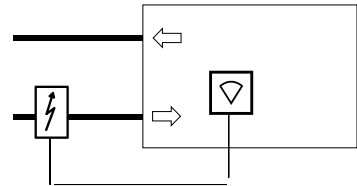
PULSER-M can, via an external time switch, provide an adjustable night set-back. On closure of the time-switch contact the PULSER-M setpoint is lowered by the set value, 0...10 K.

Controlling larger electric heaters

When the electric heater is larger than the capacity of PULSER-M the load can be split and controlled by PULSER-M in combination with the ancillary unit PULSER-ADD, see separate product sheet.

Application example

A room is heated by an electric duct-heater and the room temperature is controlled by the PULSER-M. On raising room temperature due to other heat sources, the room sensor will decrease the supply air heater. To prevent cold draughts due to low supply air temperature, the sensor in the duct will minimum limit the supply air temperature e.g. 17°C.



Technical data

Supply voltage	200... 415 V AC 50-60 Hz, single or two phase. Automatic adaption.
Load	Max. 16 A, min. 1 A. At 230 V, the maximum load is 3.6 kW and the minimum load is 230 W. At 400 V, the maximum load is 6.4 kW and the minimum load is 400 W.
Power dissipation	20 W for max. load.
Ambient temperature	Maximum 30°C with no condensation.
Storage temperature	-40 ... +50°C.
Ambient humidity	90% RH maximum.
Dimension	94 x 150 x 43 mm
Weight	0.3 kg
Protection class	IP20



This product conforms with the requirements of European EMC standards CENELEC EN 50081-1 and EN 50082-1, European LVD standards IEC 669-1 and IEC 669-2-1 and carries the CE mark.

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 control with 20 K P-band and 6 minutes I-time.
Room temperature control	P control with 1.5 K P-band
Pulse period	60 seconds
Indicator	Red LED that is lit when power is pulsed to the heater.
Built-in sensor	Measuring range 0...30°C

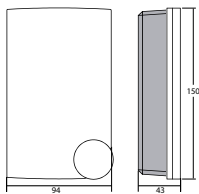
Inputs

External sensor or potentiometer	For Regin's NTC sensors and potentiometers. Choose preferably a sensor with the same measuring range as the main sensor. The PULSER-M temperature range depends on the sensor's measuring range.
Min./max. limitation sensor	For Regin's NTC sensors.

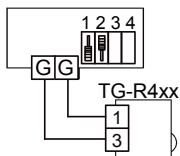
Settings

Setpoint	0...30°C. The choice of sensor determines the controller setpoint range.
Min./max. limitation	Depending on connected sensor. Sensor type TG-K330 means 0...30°C.
Night set-back	0...10 K

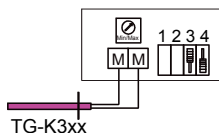
Wiring



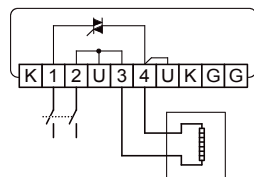
Room control using TG-R4XX as sensor and setpoint



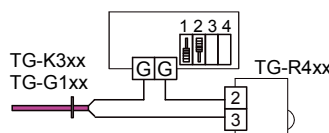
Minimum limit sensor



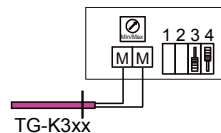
Supply voltage and load



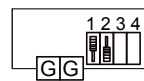
External separate sensor and TG-R4XX as setpoint



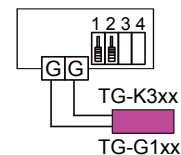
Maximum limit sensor



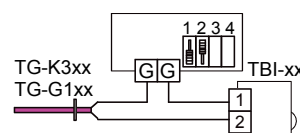
Internal setpoint and sensor



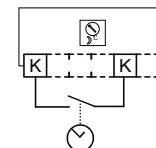
External sensor and internal setpoint



External separate sensor and potentiometer TBI-XX as setpoint



Night set-back function



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