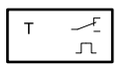
# TSHK 621...643: Fan-coil room-temperature controller, electromechanical


**TSHK6**F00***




## How energy efficiency is improved

Enables controlling of HVAC components according to needs

## Features

- Variable room temperature as setpoint based on printed temperature scale
- Changeover from heating to cooling via switch or type of connection
- On/Off toggle switch for mains voltage, plus other slide switches for operating mode and fan, depending on the type
- More constant room temperature due to thermal feedback
- Suitable for wall mounting or fitting on recessed junction boxes
- Setpoint adjuster with mechanical min. and max. limitation of the setting range
- Two-point pulsed activation
- Individual unitary temperature control in residential and business rooms for activating, for example, electric heating systems, thermal actuators, or fans or cooling units in air-conditioning systems.

## Technical data

| | | |
|---|---|---|
| **Power supply** | | |
| | Power supply[1)] | 230 V~, approx. ±10%, 50...60 Hz |
| **Parameters** | | |
| | Setting range | 5...30 °C |
| | Proportional band | 3 K |
| | Hysteresis[2)] | Approx. ±0.1...0.5 K |
| | Shortest switching interval | Approx. 19 minutes (E = 0.5) |
| | Time constant in still air | 20 minutes |
| | Dead time in still air | 2 minutes |
| | Time constant in moving air (0.2 m/s) | 15 minutes |
| | Dead time in moving air (0.2 m/s) | 1 minute |
| **Ambient conditions** | | |
| | Ambient temperature | 0...55 °C |
| **Outputs** | | |
| | Load | 6(3) A, 230 V~ |
| | Fan load | 6(3) A, 230 V~ |
| **Construction** | | |
| | Weight | 0.18 kg |
| | Housing | Pure white (RAL 9010) |
| | Housing material | Fire-retardant thermoplastic (fire classification UL94 HB) |
| | Baseplate | Black thermoplastic with bimetallic sensor and contact snap mechanism with permanent magnet |
| | Cable inlet | At rear |
| | Screw terminals | For electrical cables of up to 2.5 mm² |
| **Standards and directives** | | |
| | Type of protection | IP30 (EN 60529) |
| | Protection class | II (IEC 60730) |
| | Energy class | I = 1%<br>as per EU 811/2013, 2010/30/EU, 2009/125/EC |

1) *10% more voltage results in: P-band = approx. 4 K, switching period = 15 min., actual-value reduction = approx. 0.5 K*

2) *Devices with thermal feedback are pulsed by an in-built heating element. The control factor reduces as the temperature increases (i.e. the controller has proportional behaviour). A small temperature variation of ±0.1…0.5 K occurs as a result of pulsing, depending on the time constant of the room*

| Overview of types | |
|---|---|
| Type | Operating mode |
| TSHK621F001 | Heating/cooling; 2-pipe |
| TSHK642F001 | Heating only / cooling only; 2-pipe |
| TSHK643F001 | Heating/cooling; 4-pipe |

| | TSHK621 | TSHK642 | TSHK643 |
|---|---|---|---|
| Mains switch On/Off | • | • | • |
| Operating mode switch | ≀≀≀ ❄ | – | ≀≀≀ ❄ |
| Fan speeds | ⅄⅄⅄ | ⅄⅄⅄ | ⅄⅄⅄ |

| Accessories | |
|---|---|
| Type | Description |
| 0362239001 | Pure white intermediate cover plate, suitable for various recessed junction boxes |

## Description of operation

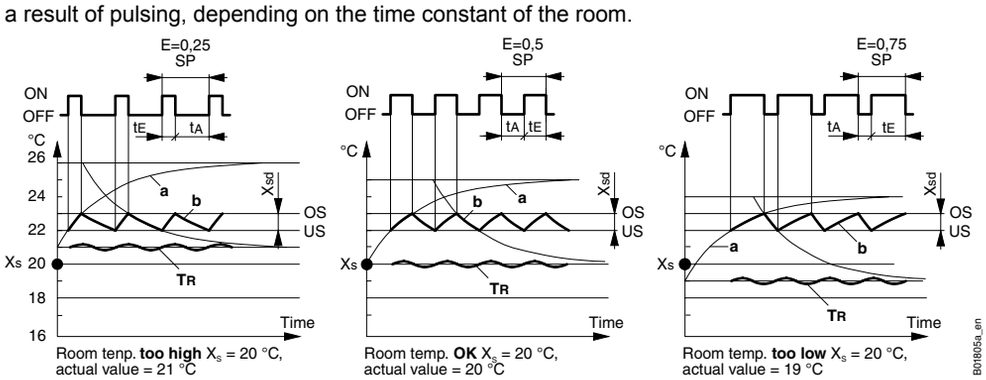
A bi-metallic strip snap mechanism expands depending on the temperature and activates an electrical switch. The coupling with a permanent magnet means that even if the temperature changes are very slow, a clear contact is made.

## Intended use

This product is only suitable for the purpose intended by the manufacturer, as described in the “Description of operation” section.
All related product regulations must also be adhered to. Changing or converting the product is not admissible.

## Thermal feedback

The bi-metallic strip is thermally coupled with a built-in heating resistor. When the thermostat switches as the temperature decreases, the heating resistor is also switched on with the external heating. This causes the thermostat to be switched on and off even if the room temperature barely changes. The control factor (heating time to period) reduces as the room temperature increases (i.e. the controller has proportional behaviour). Only a small temperature variation of ±0.1…0.5 K occurs in the room as a result of pulsing, depending on the time constant of the room.




**Key**

| | | | |
|---|---|---|---|
| $X_S$ | Setpoint | $t_E$ | Operating time |
| $X_p$ | Proportional band | $t_A$ | Duration of 'off' time |
| $X_{Sd}$ | Switching difference | SP | Switching period ($t_E$ + $t_A$) |
| $T_R$ | Room temperature | E | Control factor ($t_E$/SP) |
| OS | Upper change-over point | a | Transient response of therm. feedback |
| US | Lower change-over point | b | Temperature at bi-metallic strip |

## Engineering and fitting notes

The specified voltage tolerances are necessary because the output of the feedback heating resistor is significantly dependent on it. 10% excess voltage results in: 20% more power, P-band 4 K instead of 3 K, switching period 15 min. instead of 19 min., reduction in room temperature 0.5 K.

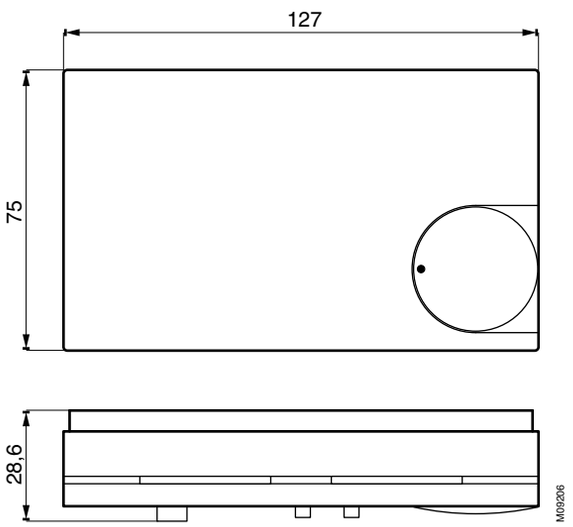
Fitting position: Horizontally on the wall. Avoid draughts and solar radiation. Fitting height approx. 1.5 m. The mechanical limitation of the setpoint adjuster enables individual corrections but prevents energy wastage through extreme settings.

## Disposal

When disposing of the product, observe the currently applicable local laws.
More information on materials can be found in the Declaration on materials and the environment for this product.

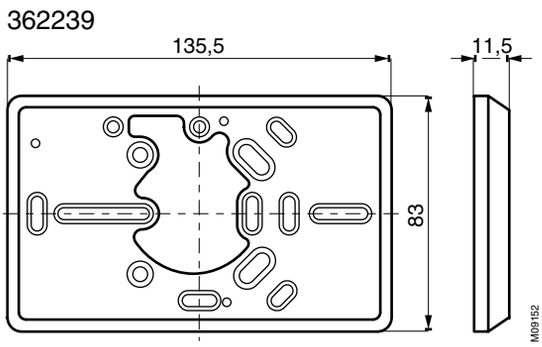
## Dimension drawing

**TSHK 621...643**




**Accessories**

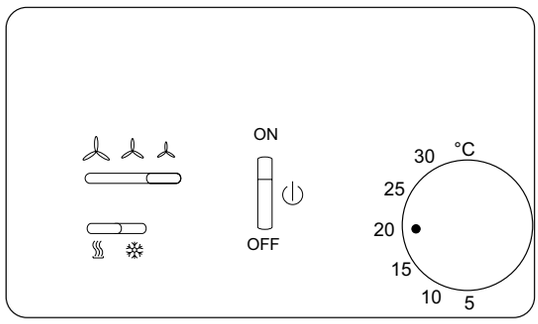
362239

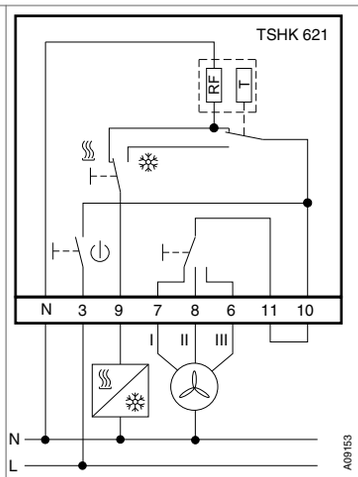


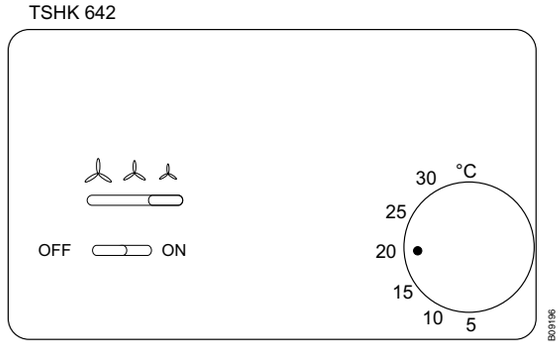
## Connection diagrams

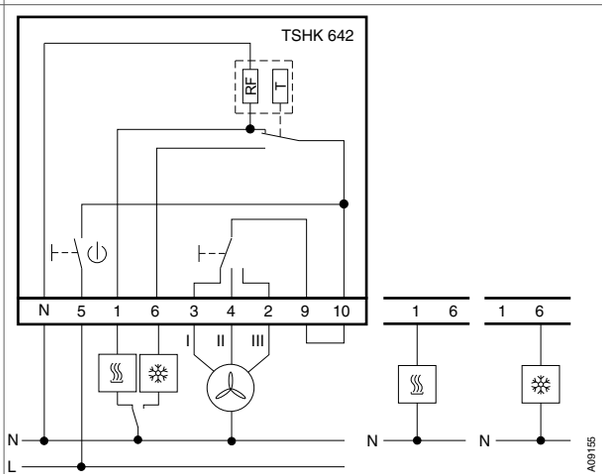
TSHK 621



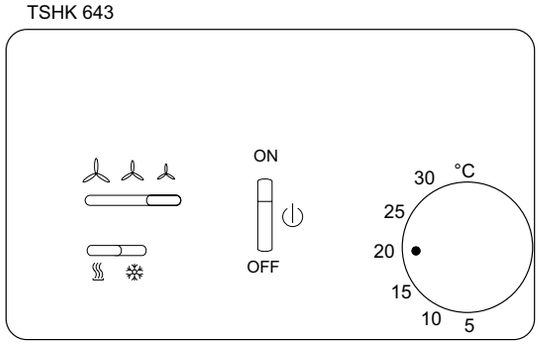



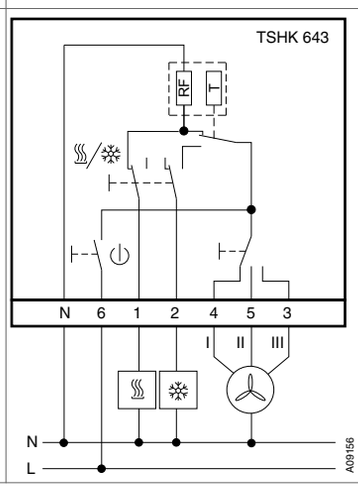

TSHK 642




TSHK 643

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