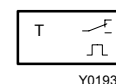


TSHK 621...661: Fan-coil room-temperature controller, electromechanical

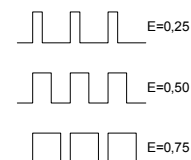
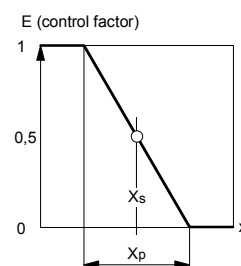
For flexible individual-room control in residential and business premises. For quasi-continuous temperature control of air-conditioning systems (fan-coil) with multi-speed fan. Can be changed over from heating to cooling by means of a switch or by the way the controller is connected. For 2-point pulsed operation. Suitable for electric heating systems and thermal drives, or for ventilators or cooling equipment in air-conditioning systems.

Housing 127 × 75 mm of pure-white (RAL 9010), flame-retardant thermoplastic (fire class as per UL94 HB). Black baseplate with bi-metallic sensor and quick-action contact system with permanent magnet. Thermal feedback. Setpoint adjuster with scale and rear mechanical min./max. limitation of the setting range. ON/OFF toggle switch for mains power. Depending on the type, there are other sliding switches for operating mode and ventilator. Suitable for mounting onto walls or recessed junction boxes. Cable inlet at rear. Separate terminal compartment with screw terminals (for wire of max. 2.5 mm²).



Type	Operating mode	Power	Weight [kg]
TSHK 621 F001	Heating/cooling; 2-pipe	230 V~	0.18
TSHK 631 F001	Cooling; 2-pipe	230 V~	0.18
TSHK 642 F001	Heating only/cooling only; 2-pipe	230 V~	0.18
TSHK 643 F001	Heating/cooling; 4-pipe	230 V~	0.18
TSHK 644 F002	Heating/cooling; 4-pipe	230/24V~	0.18
TSHK 645 F001	Heating/cooling; 4-pipe; ON/Auto	230 V~	0.18
TSHK 646 F001	Heating/cooling; 4-pipe; 3 LEDs	230 V~	0.18
TSHK 661 F001	Heating/cooling; 2-pipe or 4-pipe	230 V~	0.18

	TSHK 621	TSHK 631	TSHK 642	TSHK 643	TSHK 644	TSHK 645	TSHK 646	TSHK 661
Mains switch, on/off	•	•	•	•	•	•	•	•
Mode switch	☀ ☁	☁ ☀	—	☀ ☁	☀ ☁	☀ ☁	☀ ☁	
Fan speeds	☂ ☂ ☂	☂ ☂ ☂	☂ ☂ ☂	☂ ☂ ☂	—	☂ ☂ ☂	☂ ☂ ☂	☂ ☂ ☂
Ventilator mode		ON/AUTO			ON/AUTO	ON/AUTO		
Wiring diagram	A09153	A09154	A09155	A09156	A09157	A09158	A09159	A09160



B01806

Power supply ¹⁾	± 10%, 50...60 Hz	Time behaviour in air:	Dead time	Time constant
Switch rating	6 (3) A, 230 V~	still	2 min	20 min
Ventilator	6 (3) A, 230 V~	moving (0.2 m/s)	1 min	15 min
Setting range	5...30 °C	Ambient temperature	0...55 °C	
P-band Xp	3 K	Degree of protection	IP 30 (EN 60529)	
Hysteresis ²⁾	approx. ± 0.1...0.5 K	Protection class	II (IEC 60730)	
Shortest switching period	approx. 19 min (E = 0.5)	Wiring diagram	see table	
		Dimension drawing	M09206	
		Fitting instructions	MV 505680	

Accessories

0362239 001* Intermediate cover plate in pure white; fits various recessed junction boxes

¹⁾ Dimension drawing or wiring diagram are available under the same number

1) 10% higher voltage provides: P-band approx. 4 K; switching period 15 min.; actual-value reduction approximately 0.5 K.

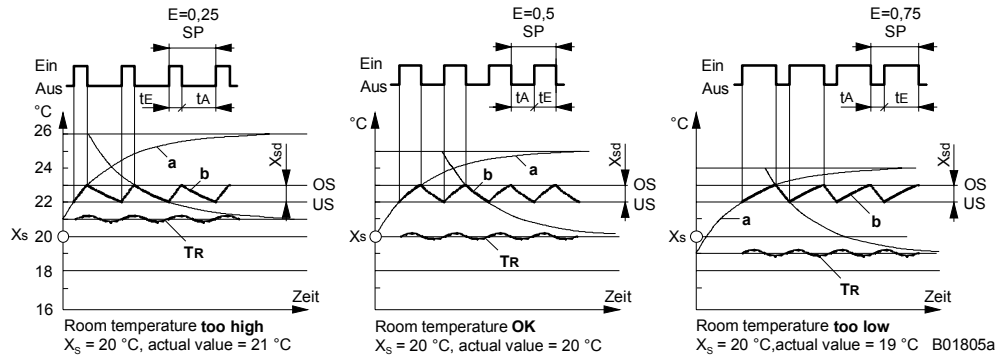
2) Devices with thermal feedback are made to pulse by an integrated heating resistor. The control factor falls as the temperature rises, i.e. control has proportional behaviour. The pulsing causes a small temperature deviation of ± 0.1...0.5 K, depending on the time constant of the room.

Operation

A bi-metallic snap-action system expands in relation to temperature, thereby activating an electric switch. Being coupled with a permanent magnet ensures that the contacts operate cleanly even when the temperature changes are very slow.

Thermal feedback

The bi-metallic strip is thermally coupled with a built-in heating element. When the thermostat operates as the temperature is falling, the heating element is switched on along with the external heating. This causes the thermostat to switch on and off, even if the room temperature barely changes. The control factor (heating time to period duration) falls as the room temperature rises, i.e. control has proportional behaviour. Because of the pulsing, the temperature variation in the room amounts to only 0.1 to 0.5 K, depending on the time constant.



Key

X_s	setpoint	t_E	length of time switched on
X_p	P-band	t_A	length of time switched off
X_{sd}	switching difference	SP	switching period ($t_E + t_A$)
T_R	room temperature	E	control factor (t_E/SP)
OS	upper switching point	a	transient response of thermal feedback
US	lower switching point	b	temperature at bi-metallic strip

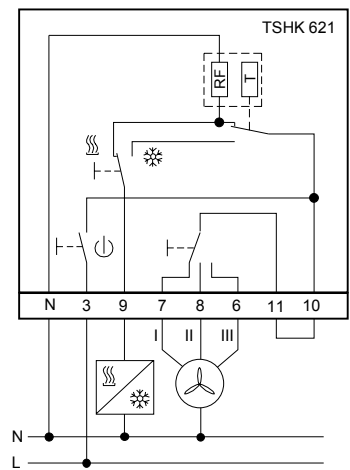
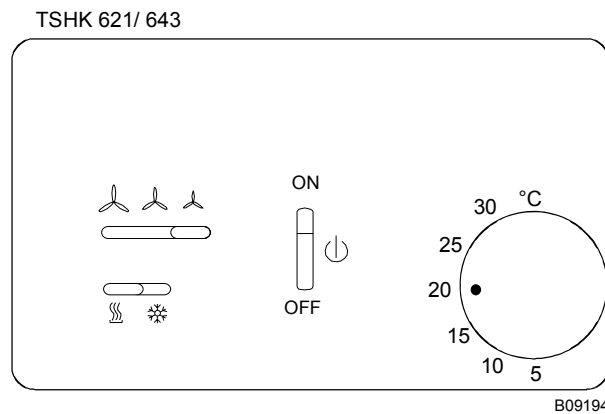
Engineering and fitting notes

The voltage tolerances are necessary because the rating of the feedback heating element is dependent on them. Excess voltage of 10% produces: 20% more performance; a P-band of 4 K instead of 3; a switching period of 15 minutes instead of 19; and a setback in room temperature of 0.5 K.

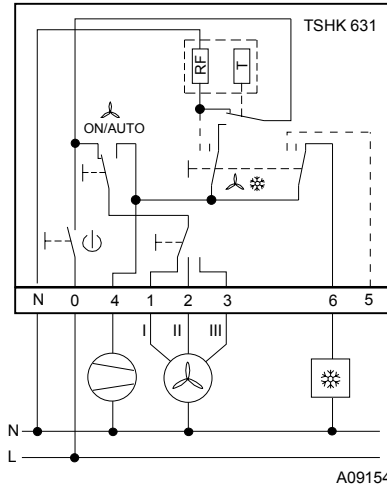
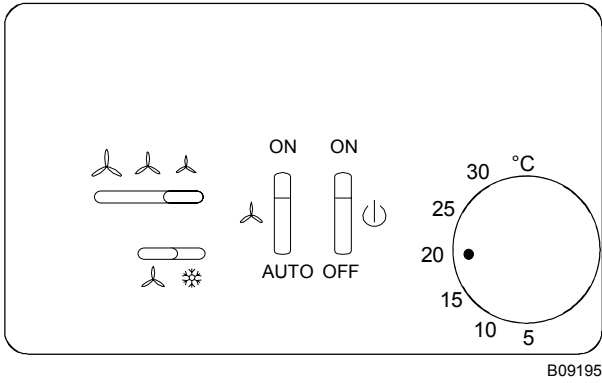
Fitting position: horizontal on walls, avoiding draughts and insulation, at a height of approx. 1.5 m.

The mechanical restriction on the setpoint adjuster permits adjustment but prevents extreme settings and, therefore, energy wastage.

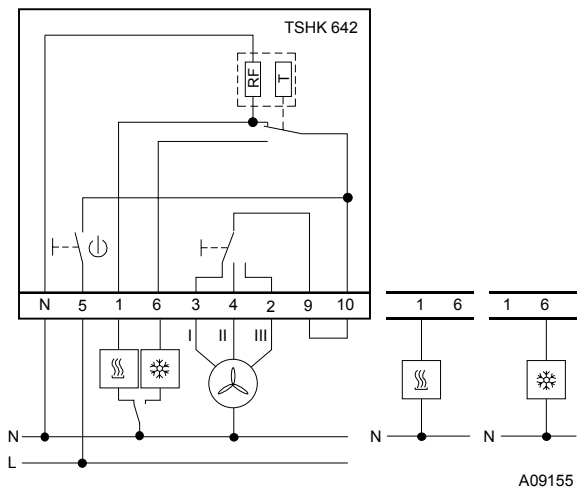
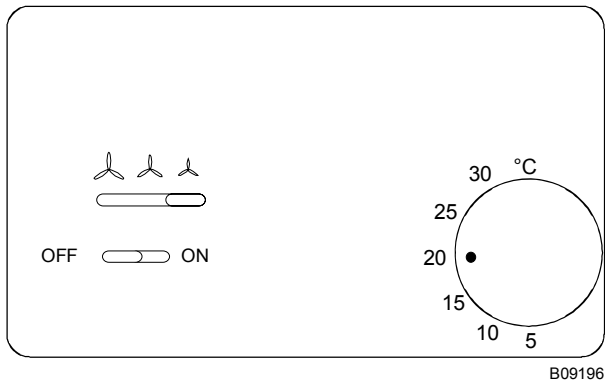
Wiring diagrams



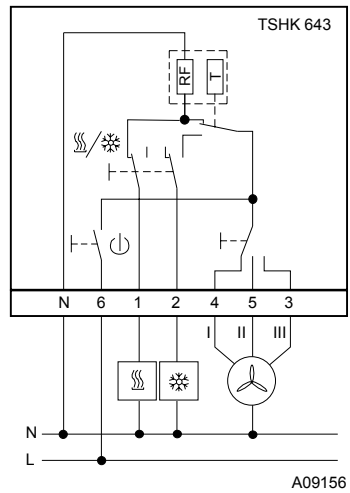
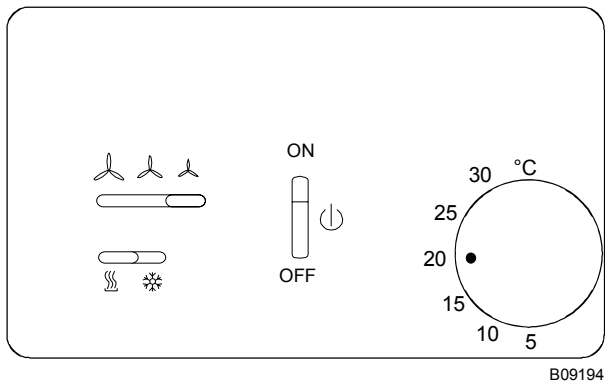
TSHK 631



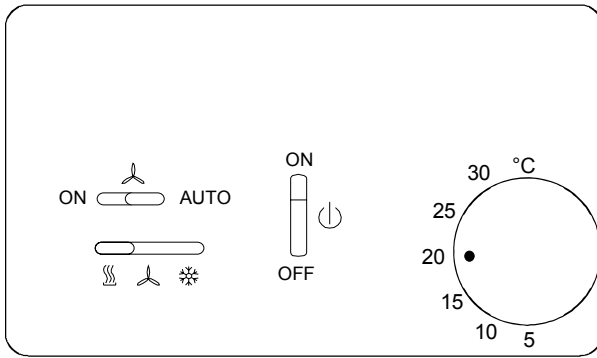
TSHK 642



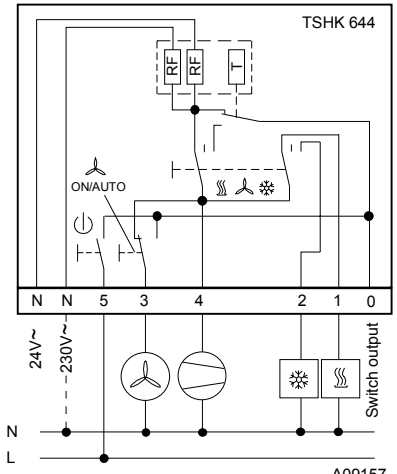
TSHK 621/ 643



TSHK 644

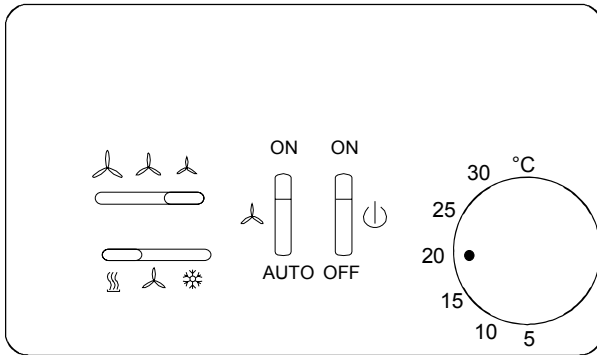


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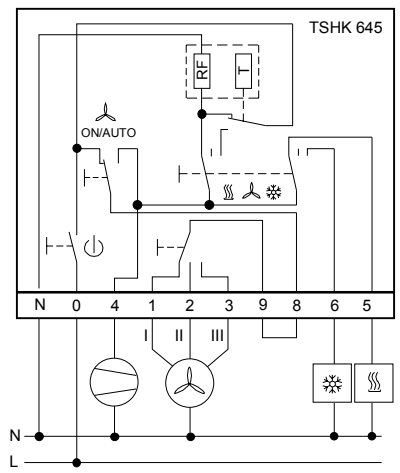


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TSHK 645

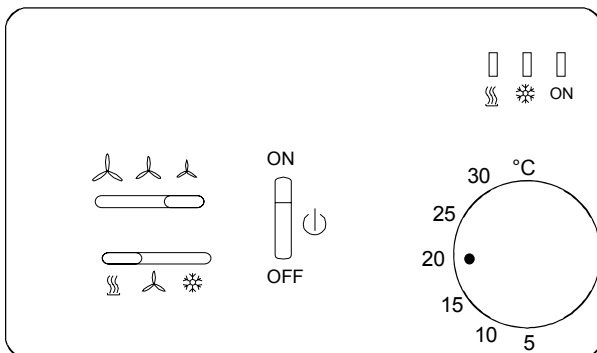


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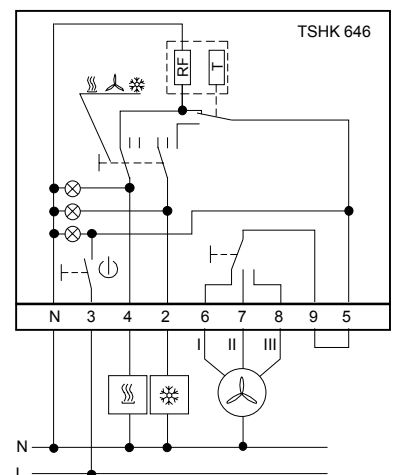


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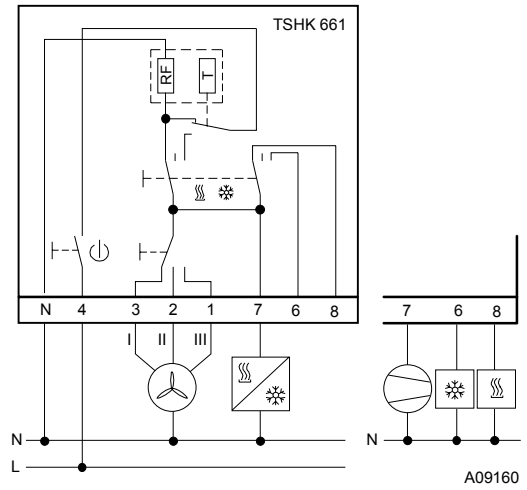
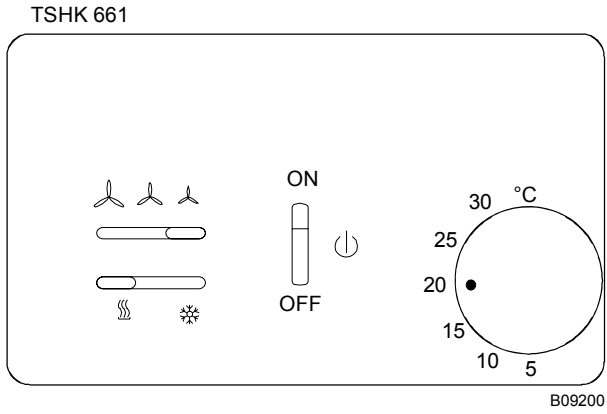
TSHK 646



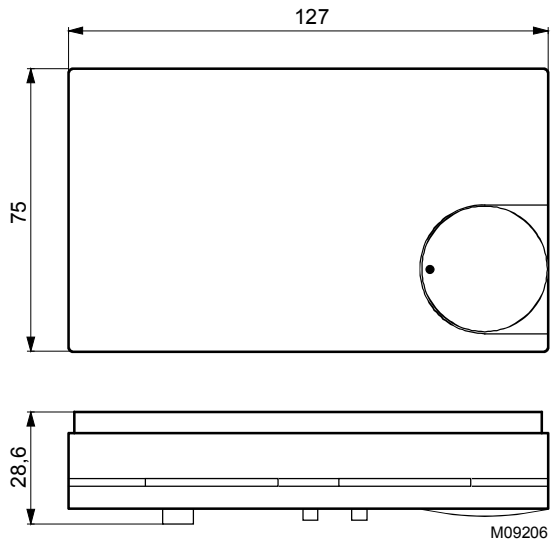
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Dimension drawing



Accessories

