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Hot Air Thermostats WTHc

Special features

- With microswitch
- Device combination consisting of 3 individual devices
- Protection class IP40 or IP54
- Tested according to DIN EN 14597

Brief description

Thermostats are used to control and monitor thermal processes.

The thermostats of the WTHc series are suitable for the use in hot air systems according to DIN 4794 and consist of 3 separate measuring and switching systems with the following functions: temperature controller TR, temperature monitor TW, and safety temperature limiter STB.

In the event of a malfunction, the STB switches the monitored machine line to an operational safe status.

Hot air thermostats operate according to the fluid expansion principle. The electrical switching elements are microswitches.

Switching functions

Temperature controller TR and temperature monitor TW

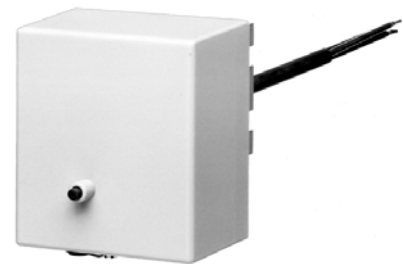
If the temperature on the temperature probe exceeds the setpoint value, the microswitch is activated by the transmission mechanics and the electrical circuit is opened or closed. If the temperature falls below the selected setpoint value (by the amount of the switching differential), the microswitch is reset to its initial position.

Temperature monitor TW and safety temperature limiter STB

The microswitch can be manually unlocked once the dangerous temperature drops by approx. 10 K. The microswitch can be manually unlocked once the dangerous temperature drops by approx. 10 K.

Self-monitoring for the safety temperature limiter STB

If the measuring system is destroyed (i.e. if the expansion fluid escapes) the pressure in the membrane of the STB drops and permanently opens the electrical circuit. Unlocking is then no longer possible. The electrical circuit opens when cooling the probe of STB down to the negative temperature range, but it then closes again if the temperature unlocks itself automatically.



Typ 604514/2280-...



Typ 604514/2280-.../402

Approvals and approval marks (see technical data)



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Technical data

Control ranges and limit values

Control range/limit value	Ventilator controller TR	Burner monitor TW	Safety temperature limiter STB
	TR system 2 20 to 80 °C	TW system 2 70 to 90 °C	STB system Limit value 100 °C

Capillary and temperature probe

Capillary	
Material	Copper (Cu), material no. 2.0090
Diameter	Ø 1.5 mm
Capillary length including probe	350 mm with support tube, 1,250 mm without support tube ^a
Minimum bending radius	5 mm
Temperature probe	
Material	Copper (Cu), material no. 2.0090, hard soldered
Diameter	3 probes Ø 4 mm

^a Probe identification for the version with capillary: ventilator controller TR: red; burner monitor TW: blue

Electrical data

Switching function	Ventilator controller TR, burner monitor TW	Safety temperature limiter STB
	Microswitch with changeover contact	Microswitch with N/C contact, restart lock, and additional signal contact (extra code 574)
Maximum contact rating	AC 230 V +10 %, 10(2) A, cos φ = 1(0.6) DC 230 V +10 %, 0.25 A	
Electrical connection	The electrical connection can be reached via the terminal strip after removing the case lid. Temperature controller and terminal rail are mounted to a PCB (epoxy resin glass fabrics) with printed diagram.	

Operating data

Switching differential	
Ventilator controller TR	14 ±2 K
Burner monitor TW	6 ±1 K
Switching point accuracy	
Ventilator controller TR	In the upper third of the scale or limit value ±4 K, at the scale beginning ±6 K
Burner monitor TW	In the upper third of the scale or limit value ±4 K, at the scale beginning ±4 K
Safety temperature limiter STB	In the upper third of the scale or limit value +0/-5 K
Ambient temperature influence	
On the switching head	0.35 K/K
On the capillary	0.07 K/K per meter
Operating medium	Air
Time constant	≤ 120 s in air
Over-temperature security	200 °C at the temperature probe
Admissible storage temperature	-50 to +50 °C
Admissible ambient temperature for use	Max. 80 °C
Rated position	According to DIN 16257, rated position 0 to rated position 90 (different rated position on request)

Use the device without a probe thermowell to achieve full response accuracy. Immerse the entire length of the device's temperature probe in the operating medium to be monitored.

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Housing

Material	
Case lid, color	Polycarbonat, pebble gray RAL 7032
Case bottom part, color	Sheet steel, painted; Aluminum die casting, painted, anthracite gray RAL 7015 (extra code 402)
Setpoint value setting	
Safety temperature limiter STB	The setpoint setting is permanently factory-set.
Ventilator controller TR, burner monitor TW	The switching point can be adjusted with a screwdriver after removing the case lid.
Protection type	IP40, according to EN 60529 (standard); IP54, according to EN 60529 (extra code 402)
Cable inlet	2 plug-type sockets; IP54, according to EN 60529 (extra code 402)
Mounting of switching head	Fasten the switch head with 2 screws through the case bottom section. Fasten the switch head to the flange of the support tube with 2 screws, then fix it to the hexagon of the support tube with a screw (extra code 402).
Weight	Approx. 700 g

Approvals and approval marks

DIN	
Testing agency	DIN CERTCO/TÜV Süd
Certificates/certificate numbers	TR/TW/STB1064
Inspection basis	DIN EN 14597
Valid for	Type 604514
DIN	
Testing agency	DIN CERTCO/TÜV Süd
Certificates/certificate numbers	TR/TW/STW1205
Inspection basis	DIN EN 14597
Valid for	Type 604514
EAC ^a	
Testing agency	Gost Norm AG
Certificates/certificate numbers	TC RU C-DE.AB98.B.00348
Inspection basis	Technical rules of the customs union Russia/Belarus/Kazakhstan
Valid for	Type 604514

^a Russian documentation available upon request.

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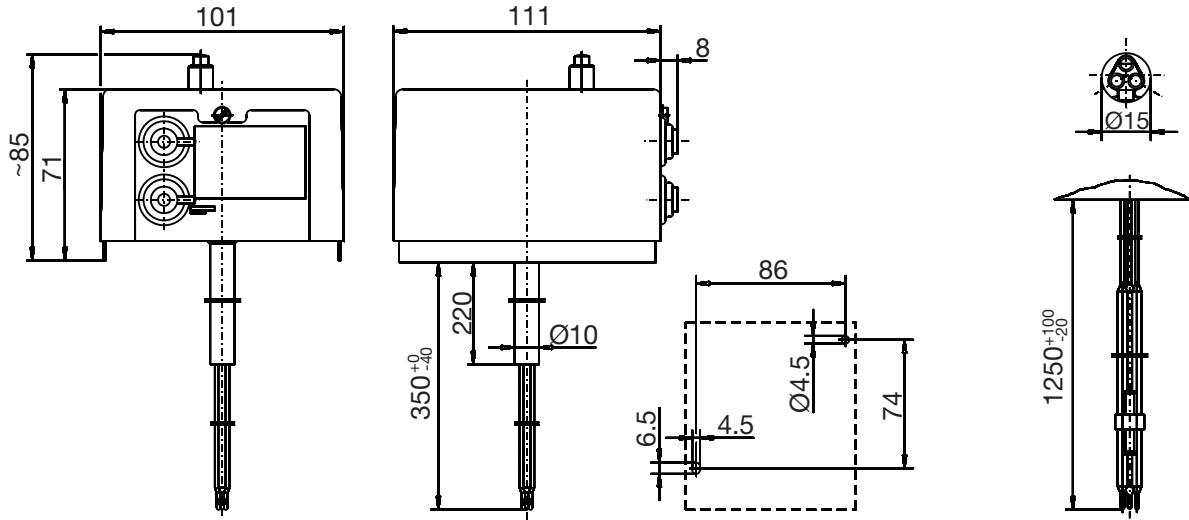
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Dimensions

Typ 604514/2280-... with protection type IP40



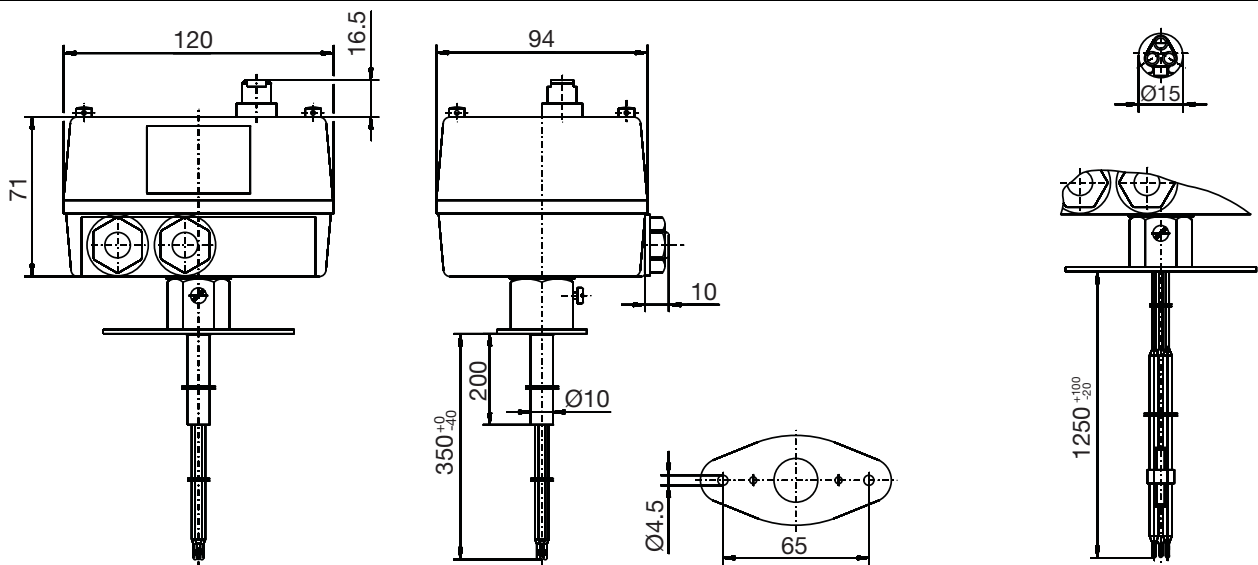
Design 1 with support tube, switching head is mounted with 2 screws through the case bottom section, extra code 711

Drilling plan

View 10

Design 2 without support tube, switching head is mounted with 2 screws through the case bottom section, extra code 711 with capillary, process connection 10

Typ 604514/2280-.../402 with protection type IP54 (extra code 402)



Design 1 with support tube, process connection 26, thermowell with flange, open

Drilling plan

View 10

Design 2 without support tube, switching head is mounted by using a mounting flange made of CuZn, extra code 764 with capillary, process connection 10

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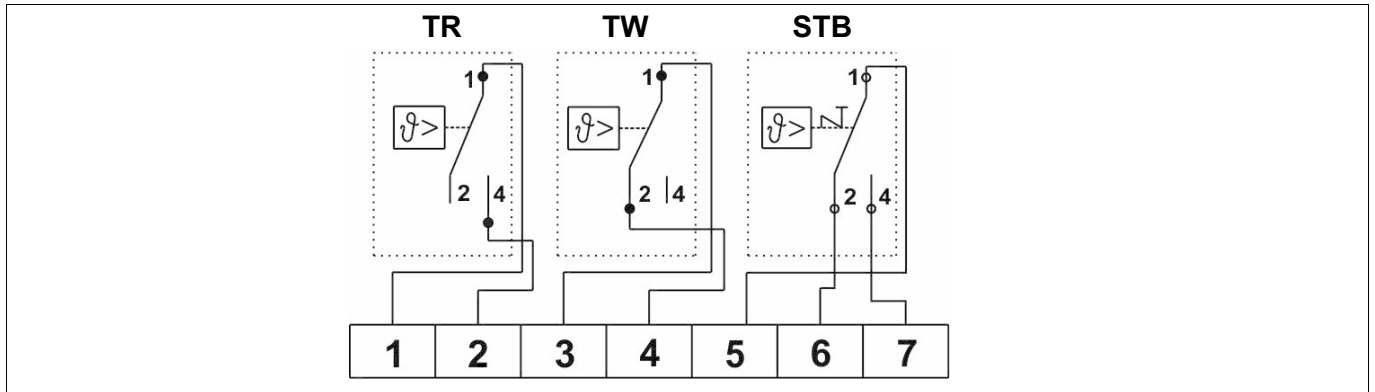
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Connection diagram

The connection diagram in the data sheet provides information on product selection.

For the electrical connection, only use the installation instructions or the operating manual.



TR Ventilator
TW Burner
STB Burner

For versions without extra code 574, terminal 7 is not assigned.

