

JUMO GmbH & Co. KG

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JUMO Instrument Co. Ltd.

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JUMO Process Control, Inc.

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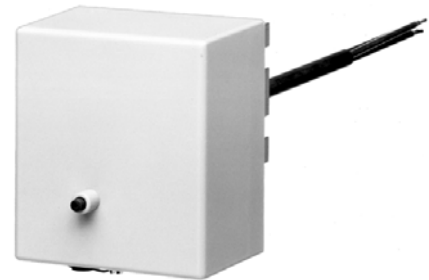


Hot Air Thermostats

WTHc series

Special features

- With microswitch
- Device combination consisting of 3 individual devices
- Protection class IP 40 or IP 54
- Tested according to DIN EN 14597



WTHc-2280

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 acc. 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.



WTHc-2280-SW

Switching function

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.

Approval/approval marks (see "Technical data")



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Technical data

General information

Control ranges and limit values

Control range / limit value	Ventilator controller	Burner monitor	Protection temperature limiter S
	TR - system 2 +20 to +80 °C	TW - system 2 +70 to +90 °C	STB - system 80 or 40 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, 1250 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 element	Ventilator controller burner monitor	Safety temperature limiter STB System 80	Safety temperature limiter STB System 40/U
	Microswitch with changeover contact	Microswitch with N/C contact and restart lock	Microswitch with N/C contact, restart lock, and additional signal contact
Maximum contact rating	AC 230 V +10 %, 10 (2) A, cos φ = 1 (0.6) DC 230 V +10 %, 0.25 A		
Electrical connection	Via terminal rail, 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	Switching function: Ventilator controller TR	14 ± 2 K
	Burner monitor TW	6 ± 1 K
Switching point accuracy	Switching function: In the upper third of the scale or limit value	At the scale beginning
	Ventilator controller TR: ± 4 K	± 6 K
	Burner monitor TW: ± 4 K	± 4 K
	Safety temperature limiter STB: +0/-5 K	---
Ambient temperature influence	On the switching head: 0.35 K/K	
	On the capillary: per meter: 0.07K/K	
Operating medium	Air	
Time constant	In air: ≤ 120 s	
Over-temperature security	At the temperature probe +200 °C	
Admissible storage temperature	-50 to +50 °C	
Admissible ambient temperature for use	Max. +80 °C	
Rated position	Acc. to DIN 16 257, rated position 0 to rated position 90 (different rated position on request)	

Comment	To achieve the full response accuracy, only use the device without the probe thermowells. The temperature probes of the device must be completely submerged into the operating medium to be monitored.
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Case

Standard	Case lid: polycarbonate Case bottom part: sheet steel, painted	Color: pebble gray RAL 7032
Extra code "SW"	Case lid: polycarbonate Case bottom part: aluminum die casting, painted	Color: pebble gray RAL 7032 Colour: anthracite gray RAL 7015
Setpoint value setting	Safety temperature limiter STB: permanently factory-set	Ventilator controller TR and burner monitor TW: The switching point can be adjusted by using a screwdriver once the case lid has been removed

	Standard	For extra code /SW
Protection type	EN 60 529-IP 40	EN 60 529-IP 54
Cable inlet	2 plug-type sockets	EN 60 529-IP 54
Mounting of switching head	With 2 screws through the case bottom part	With 2 screws on the support tube flange, then with one screw on the hexagonal part of the support tube
Weight	Approx. 0.7 kg	

Approval/approval marks

Approval marks	Inspection authority	Certificates / inspection number	Inspection basics	Valid for
DIN	DIN CERTCO / TÜV Süd	TR/TW/STB1064	DIN EN 14597	WTHc hot air thermo- stats
DIN	DIN CERTCO / TÜV Süd	TR/TW/STW1205	DIN EN 14597	
EAC ^a	Gost Norm AG	TC RU C-DE.AB98.B.00348	Technical rules of the cus- toms union Russia/ Belarus/Kazakhstan	

^a Russian documentation upon request

Note

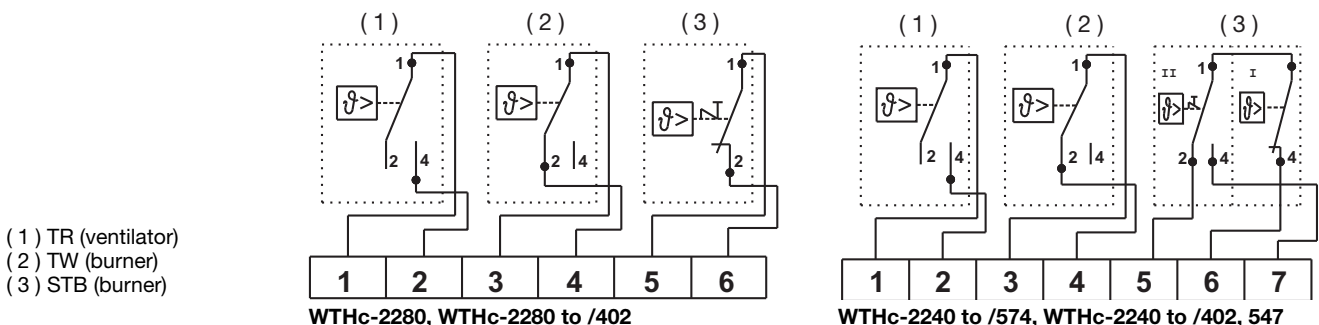
Physical and toxic features of the expansion means, which could emerge in the event of a measuring system break.

Control range with scale limit value	Hazardous reactions	Fire and explosion hazard		Hazardous to waters	Information about toxicology		
		Ignition temperature	Explosion limit		Irritant	Dangerous to health	Toxic
≤ +200 °C	No	+355 °C	0.6 - 8 V%	Yes	Yes	^a	No

^a At present, no statement concerning health hazards in the event of short-term exposure and low concentration (e.g. measuring system rupture) has been made by the health authority

Connection diagram

The connection diagram in the data sheet provides preliminary information about the connection possibilities. For the electrical connection only use the operating manual. The knowledge and the correct technical execution of the safety information/instructions contained in these documents are mandatory for installation, electrical connection, and startup as well as for safety during operation.



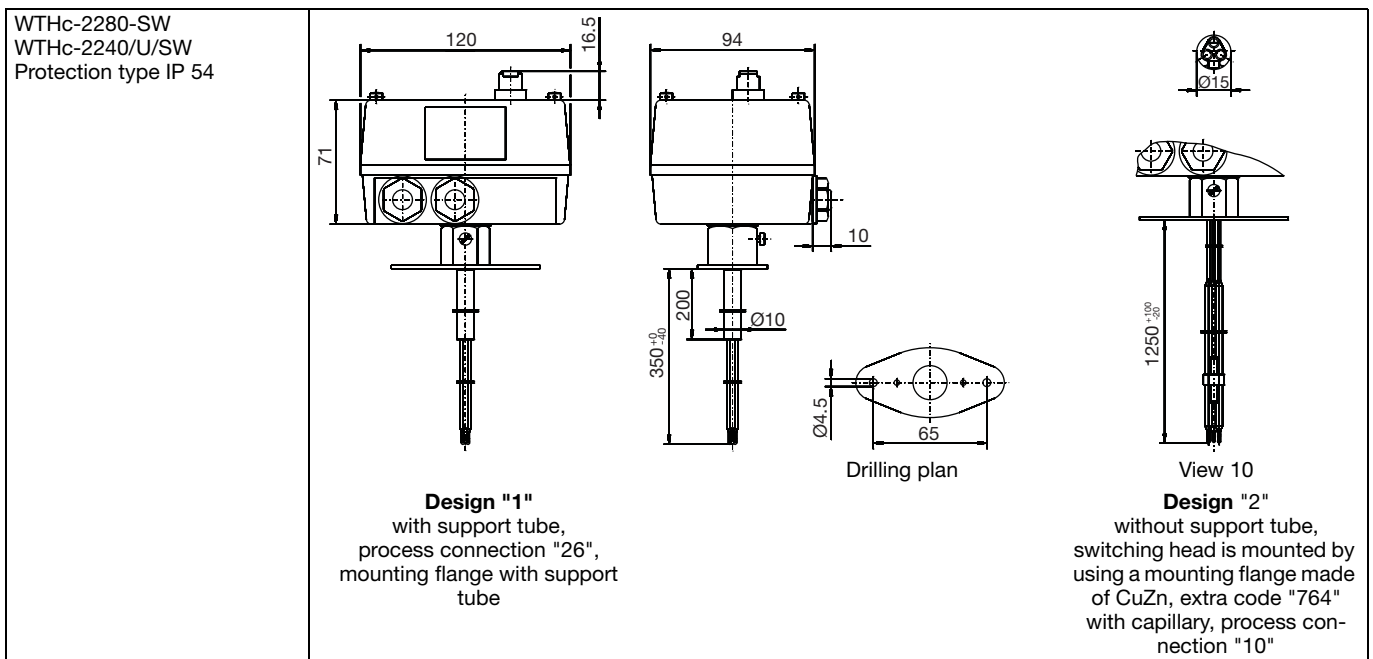
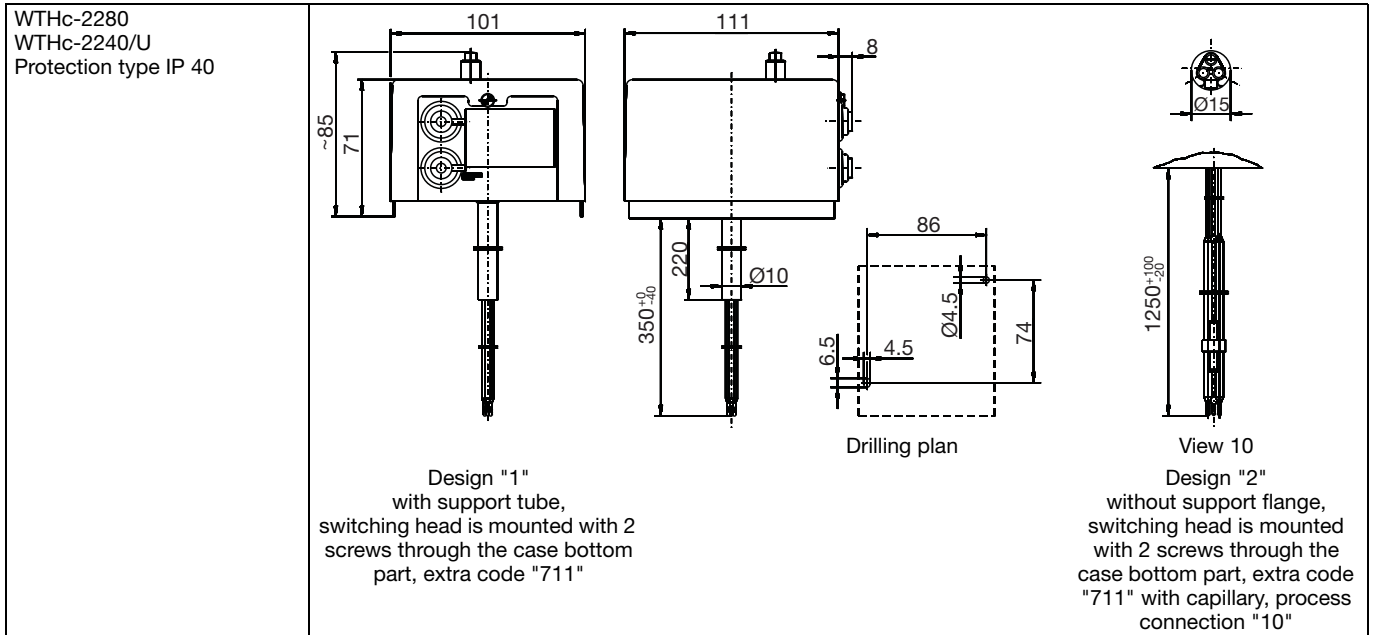
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Dimensions



Stock versions

Part no.	Type	Control range °C	Capillary including probe mm	Installation length mm
60002161	WTHc-2280	TR = +20 to +80	- -	350
60002162	WTHc-2280	TW = +70 to +90	1250	- -
60002658	WTHc-2280-SW	STB = +100 fix	- -	320

(Delivery within 3 working days after receipt of order)

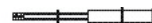
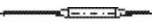
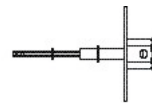
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Order details

Order code	(1) Basic type	
604514	Hot air thermostat, WTHc series	
	(2) Basic type extensions	
2280	WTHc-2280	Temperature controller TR and temperature monitor TW with changeover contact, safety temperature limiter STB with N/C contact, and restart lock
2240	WTHc-2240	Temperature controller TR and temperature monitor TW with changeover contact, safety temperature limiter STB with N/C contact, restart lock, and additional signal contact (only with extra code "574")
	(3) Design type	
1	With support tube (with capillary)	
2	Without support tube (with capillary)	
	(4) Control / limit value range, temperature controller^a	
040	+20 to +80 °C	
	(5) Control / limit value range, temperature controller^a	
070	+70 to +90 °C	
	(6) Limit value, safety temperature limiter^a	
10	+100 °C	
	(7) Capillary length	
0	Design type 01 (with capillary)	
1250	1250 mm (only capillary without support tube)	
...	(Special length, specification in mm, max. 5000 mm)	
	(8) Process connection (PA)	
00	Switching head mounting "711", design type 01	
10	Plain cylindrical probe (only for design type 02)	
26	Protection tube with flange, open	
	(9) Fitting length	
000	With capillary	
350	350 mm (support tube with capillary)	
	(10) Probe diameter Ø	
4	4 mm	
	(11) Extra codes	
000	Without extra codes	
574	Microswitch with N/C contact, restart lock, and additional signal contacts (only for STB)	
402	Protection type IP 54: dust and splash-water-proof case	
711	Switching head is mounted by 2 screws through the bottom section of the case	
764	Mounting flange made of CUZn	

^a Other control / limit ranges upon request

Order code	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	
	605414	/		-		-		-		-		/
Order example	604514	/	2240	-	1	-	040	-	070	-	100	-
												0
												26
												350
												4
												/
												000 ^a
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^a List extra codes in sequence, separated by commas.