

**JUMO GmbH & Co. KG**  
 Delivery address: Mackenrodtstraße 14  
 36039 Fulda, Germany  
 Postal address: 36035 Fulda, Germany  
 Phone: +49 661 6003-0  
 Fax: +49 661 6003-607  
 Email: mail@jumo.net  
 Internet: www.jumo.net

**JUMO Instrument Co. Ltd.**  
 JUMO House  
 Temple Bank, Riverway  
 Harlow, Essex, CM20 2DY, UK  
 Phone: +44 1279 63 55 33  
 Fax: +44 1279 62 50 29  
 Email: sales@jumo.co.uk  
 Internet: www.jumo.co.uk

**JUMO Process Control, Inc.**  
 6733 Myers Road  
 East Syracuse, NY 13057, USA  
 Phone: +1 315 437 5866  
 Fax: +1 315 437 5860  
 Email: info.us@jumo.net  
 Internet: www.jumousa.com



# JUMO heatTHERM S600

## Surface-mounted double thermostat

### Special features

- Efficient startup
- One middle output for the thermowell
- Temperature monitor (TW)
- Safety temperature limiter (STB)
- Self-monitoring through capillary break protection
- Attractive visual design

### Brief description

Thermostats control and monitor thermal processes. Surface-mounted double thermostats consist of two separate measuring and switching systems.

The device consists of a temperature monitor (TW) and a safety temperature limiter (STB).

Surface-mounted double thermostats operate according to the fluid expansion principle. A microswitch is used as the electrical switching element. The temperature is measured by a temperature probe.



Type 603045

Types	Temperature monitor (TW)	Safety temperature limiter (STB)	Circuit diagram
Switching function	<p>If the entered setpoint value is reached when the temperature rises, the monitor switches the contact connection from 3-2 to 3-1.</p> <p>Once the temperature has dropped by the switching differential, the controller reestablishes the 3-2 contact connection.</p>	<p>If the switch-off temperature is reached when the temperature rises, the STB opens the 4-6 contact connection and remains mechanically locked in 5-6 this position.</p> <p>Once the temperature has dropped by approx. 10 K, the STB can be manually unlocked using a push button.</p>	

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## Technical data

### General Information

Switching function	Control range °C	Switching differential %	Max. probe temperature °C	Max. switching head temperature °C	Possible capillary length in mm to	Probe length dimension "L" in mm, Probe Ø "d" in mm, Ø 6 = Standard	
						Ø 6	Ø 8
TW	0 to 50	1	60	60	3 000	283	165
		2.5	60		3 000	283	165
		5	105		5 000	159	101
		7	110		5 000	117	80
	20 to 90	1	115	80	1 000	210	127
		2.5	115		1 000	210	127
		5	140		5 000	121	82
		7	175		5 000	91	67
	0 to 100	1	125	80	2 000	157	100
		2.5	125		2 000	157	100
		5	165		5 000	94	68
		7	200		5 000	73	58
	30 to 110	1	135	80	2 000	188	116
		2.5	135		2 000	188	116
		5	170		5 000	110	76
		7	200		5 000	84	63

Switching function	Limit value range °C	Limit value tolerance	Max. probe temperature °C	Max. switching head temperature °C	Possible capillary length in mm to	Probe length dimension "L" in mm, Probe Ø "d" in mm, Ø 6 = Standard	
						Ø 6	Ø 8
STB	45 to 70 75 to 110 95 to 120	-5 K to 0 K	Limit value +15 %	80	5 000	84	53

Observe the max. admissible probe temperature of the TW!

Other control ranges upon request.

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## Operating data

	Switching function	Switching differential %	In the upper third of the scale or limit value %	
Switching point accuracy in % of the control range/limit value range	TW	± 2.5	± 1.5	As a standard feature
		± 5	± 3	Upon request
		± 7	± 4	
		± 1	± 1.5	
	STB	-	See table for general information, limit value tolerance	
Mean ambient temperature influence	When the ambient temperature on the switching head and/or the capillary deviates from the calibration ambient temperature of 22 °C, a switching point offset occurs. Higher ambient temperature = lower switching point Lower ambient temperature = higher switching point			
Switching differential in %	TW			STB
	1 / 2.5 %	5 %	7 %	- %
Ambient temperature influence on the switching head in %/K	0.15	0.26	0.34	0.35
Ambient temperature influence on the capillary in %/m	0.05 × K × m		0.07 × K × m	
Temperatures				
Admissible storage temperature	-30 to +50 °C			
Admissible ambient temperature	During use: max. +80 °C			
Rated position (NL)	NL 0 to NL 90 according to DIN 16257 (other rated positions upon request)			

## Process connection

With rigid thermowell	
Type: Protection tube "20"	Screw-in sleeve with screw-in spigot G 1/2, form A according to DIN 3852/2
Type: Protection tube "21"	Screw-in sleeve with screw-in spigot G 1/2, form A according to DIN 3852/2, open at bottom
With capillary	
Type: Plain cylindrical probe "10"	See dimensions
Material	
Protection tube "20", "21"	Brass (CuZn) as a standard feature Stainless steel (CrNi)
Insertion length (S)	Standard lengths: 100, 120, 150, 200, or 300 mm (other lengths upon request)
Immersion tube diameter (D)	15 mm

For different process connections and protection tubes refer to data sheet 606710.

## Housing

Material/color	
Case lid	ABS/RAL 7035
Case bottom section	PA6/RAL 7001
Protection type	DIN EN 60529-IP54
Limit value setting	adjustable
Cable inlet <sup>a</sup>	M16 × 1.5, sealing range Ø 4.5 to 10 mm

<sup>a</sup> A second cable fitting is available as an option

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## Capillary and temperature probe

Capillary	
Diameter	1.5 mm
Min. bending radius	5 mm
Material	Copper (Cu)
Temperature probe	
Process connection <sup>a</sup>	10, 20, 21
Material	Copper (Cu)

<sup>a</sup> For process connections refer to data sheet 606710 (only 10, 20, 21).

## Electrical data

Switching element	TW	STB
Single-pole snap-action switch	Microswitch with changeover contact	Microswitch with N/C contact, Restart lock and additional signal contact
Switching capacity at the terminals <sup>a</sup> 	Terminal 1, 2, 3, 4, 6	For silver contacts (standard): AC 24 to 230 V, 0.1 to 10(2) A, cos φ = 1 (0.6) DC 24 to 230 V, 0.1 to 0.25 A
		For gold plated contacts (extra code 702): AC 10 to 24 V, 0.005 to 0.1 A DC 10 to 24 V, 0.005 to 0.1 A
	Terminal 5	For silver contacts (standard): AC 24 to 230 V, 0.1 to 2(0.4) A, cos φ = 1 (0.6) DC 24 to 230 V, 0.1 to 0.25 A
		For gold plated contacts (extra code 702): AC 10 to 24 V, 0.005 to 0.1 A DC 10 to 24 V, 0.005 to 0.1 A
Rated surge voltage	2 500 V	
Overtoltage category	II	
Required fuse protection	See max. switching capacity	
Electrical connection	Screw terminal up to 2.5 mm <sup>2</sup> conductor cross section	

<sup>a</sup> As soon as a terminal (1, 2, 3, 4, 6) is connected with terminal 5, the following line applies: terminal 5.

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## Dimensions

<p>Type 603045/...          With rigid thermowell</p>	
<p>Type 603045/...          View from above</p>	

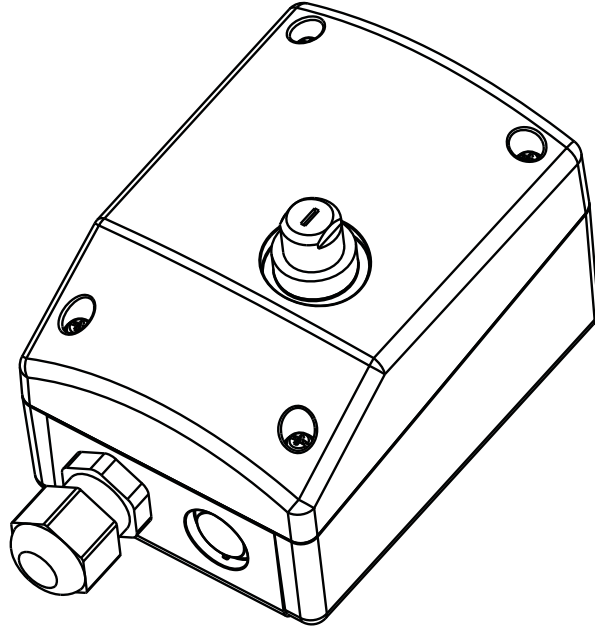
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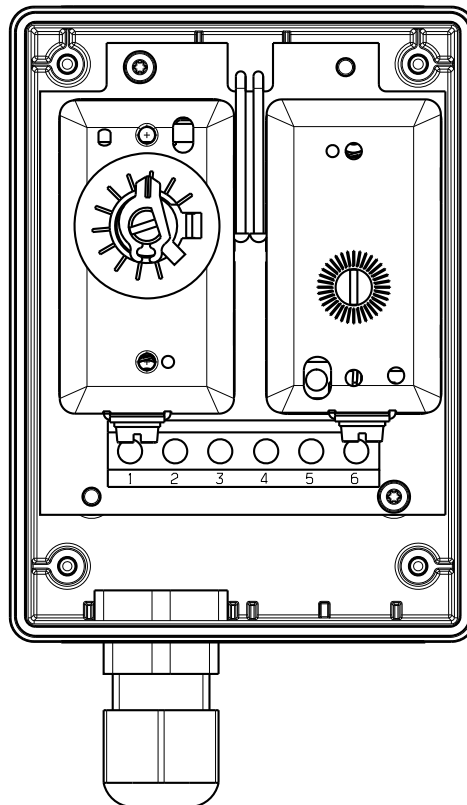
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Type 603045/...  
Perspective



Type 603045/...  
View from above open





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## Order details

<b>(1) Basic type</b>	
603045	JUMO heatTHERM S600 – Surface-mounted double thermostat
<b>(2) Basic type extension</b>	
0280	Temperature monitor (TW) and safety temperature limiter (STB)
<b>(3) Design type</b>	
1	With rigid thermowell
2	With capillary
<b>(4) Control ranges (TW)</b>	
021	0 to 50 °C
025	0 to 100 °C
041	20 to 90 °C
052	30 to 110 °C
	Other ranges upon request
<b>(5) Limit value range (adjustable)</b>	
374	45 to 70 °C
075	75 to 100 °C
461	95 to 120 °C
	Other ranges upon request
<b>(6) Switching differential (from scale range)</b>	
25	2.5 % As a standard feature
10	1 %
50	5 %
70	7 %
<b>(7) Capillary length</b>	
0	None
1 000	1 000 mm
2 000	2 000 mm
3 000	3 000 mm
4 000	4 000 mm
5 000	5 000 mm
...	Special length, different lengths (TW) (STB), specifications in plain text
<b>(8) Process connection</b>	
10	Plain cylindrical probe
20	Screw-in thermowell
21	Screw-in thermowell open
<b>(9) Thread of process connection</b>	
00	None
13	External thread G 1/2



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<b>(10) Process connection material</b>	
00	Only with process connection 10
46	Brass (CuZn) As a standard feature
26	Stainless steel (CrNi)
<b>(11) Insertion length "S" (thermowell length)</b>	
000	None
100	100 mm
120	120 mm
150	150 mm
200	200 mm
300	300 mm
...	Special length, specifications in plain text
<b>(12) Diameter "D" (thermowell diameter)</b>	
00	None
15	15 mm
<b>(13) Diameter "d" (probe diameter)</b>	
6	6 mm
8	8 mm
<b>(14) Extra codes</b>	
000	None
702	Snap-action switching contact with gold plating
707	Temperature compensation

**Order code**

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14)  
 /  -  -  -  -  -  -  -  -  -  -  -  -  /

**Order example**

603045 / 0280 - 1 - 052 - 461 - 70 - 0 - 20 - 13 - 46 - 150 - 15 - 6 / 707

**Stock version**

Type	Design type	Control range	Limit value range	Switching differential	Insertion length	Part no.
603045/0280	Rigid thermowell	30 to 110 °C	95 to 120 °C	5 %	150 mm	60003447

Type	Part no.
603045/0280-1-052-461-50-0-20-13-46-150-15-6/707	60003447

(Delivery within 3 working days after receipt of order)