

JUMO GmbH & Co. KG
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JUMO Instrument Co. Ltd.
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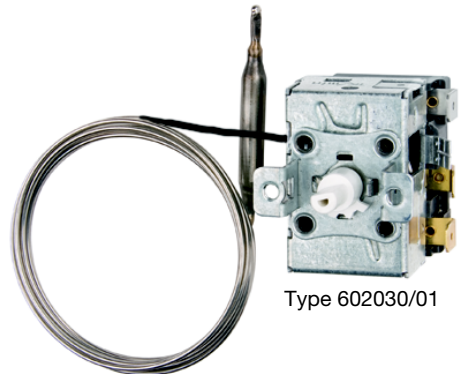
JUMO Process Control, Inc.
8 Technology Boulevard
Canastota, NY 13032, USA
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1-800-554-JUMO
Fax: 315-697-5867
e-mail: info@jumo.us
Internet: www.jumo.us



JUMO heatTHERM

Type 602030 and Type 602031

- Temperature regulator / Temperature monitor, as panel-mounting thermostat
- Safety temperature monitor / protection temperature limiter
- Stable switching point through ambient temperature compensation (standard)
- max. switching capacity 16 A, 400 V
- Tested according to DIN EN 14597 (replacement for DIN 3440)
- Life at least 250,000 operations in case of TR, TW
- Switching point deviation over the entire life of max. $\pm 5\%$



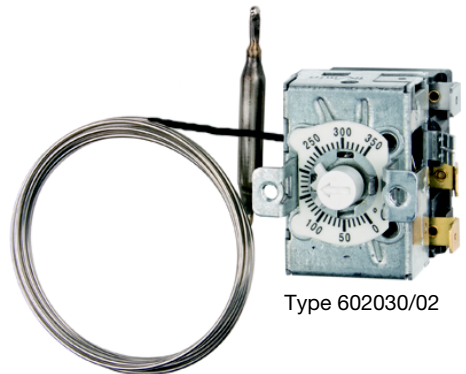
Type 602030/01

Brief description

Thermostats control and monitor thermal processes. The JUMO heatTHERM can be supplied as a temperature regulator TR, temperature monitor TW (Type 602030), safety temperature monitor STW or as protection temperature limiter STB (Type 602031).

The panel-mounting thermostat works according to the principle of liquid expansion. The electrical switching device is a snap-action switch.

The panel-mounting thermostat complies with RoHS and is free of cadmium.



Type 602030/02

Switching function

Temperature controller TR / Temperature monitor TW

If the prevailing temperature at the temperature sensor exceeds the desired (set) value, the snap-action switch gets actuated and the circuit is opened or closed. If the temperature drops below the selected setpoint (by the amount of the switching differential), the snap-action switch returns to its initial position.

Safety temperature monitor STW

If the temperature at the probe exceeds the selected setpoint, the snap-action switch is operated and the circuit is opened or closed. If the temperature drops below the selected setpoint, (by the amount of the switching differential), the snap-action switch returns to its initial position.

If the probe cools down to below -20°C (approx.), the circuit opens but will close again when the temperature rises.

In case of destruction of the measurement system, i.e. if the expansion fluid escapes, the pressure in the membrane drops and permanently opens the circuit.

Protection temperature limiter STB with lock-out and self-monitoring

If the temperature at the probe exceeds the set limit, the snap-action switch is operated through a transmission mechanism, the circuit is opened and the snap-action switch is locked out mechanically.

If the temperature drops below the selected setpoint by about 10K, the snap-action switch can be reset manually.

If the probe cools down to below -20°C (approx.), the circuit opens but will close again when the temperature rises.

In case of destruction of the measurement system, i.e. if the expansion fluid escapes, the pressure in the membrane drops and permanently opens the circuit. Unlocking is not possible any more.



Type 602031/20
Type 602031/21

Temperature compensation

A deviation of the ambient temperature at the switch head and the capillary from the $+22^{\circ}\text{C}$ calibration ambient temperature results in a shift of the switching point. The temperature compensation reduces this switching point shift to a minimum.



Type 602031/80
Type 602031/81

Approvals



DGRL
97/23/EC



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Technical Data

Housing	sheet steel, zinc-plated				
Base	black polyester resin compound				
System of protection	IP 00 according to EN 60 529				
max. permissible ambient temperatures	for transport and storage: -50...+50°C in operation: max. +80°C				
Nominal position (NL)	unrestricted				
Weight	approx. 0.12 kg				
Capillary	standard 2000 mm incl. protective sleeve 460 mm min. bending radius of the capillary 5 mm				
Electrical contact	snap-action switch with single-pole toggle contact				
Switching capacity	TR / TW	STW	STB		
	At the break contact (contact track 1-2): AC 400 V +10%, 16 A ¹⁾ AC 230 V +10%, 16 (2.5) A, cos φ = 1 (0.6) ²⁾ DC 230 V +10%, 0.25A				
	At the make contact (contact track 1-4): AC 400 V +10%, 6.3 A ¹⁾ AC 230 V +10%, 6.3 (2.5) A, cos φ = 1 (0.6) ²⁾ DC 230 V +10%, 0.25A		At the signal contact (contact track 1-4): AC 400 V +10%, 2 A ¹⁾ AC 230 V +10%, 2 (0.4) A, cos φ = 1 (0.6) ²⁾ DC 230 V +10%, 0.25A		
gold-plated snap-action switch, code 702: AC / DC 24 V, 0.1A					
electrical connection	A 6.3-0.8 according to DIN 46244				
Switching reliability	To ensure maximum switching reliability, we recommend a minimum load of: AC / DC = 24 V, 100 mA with silver contacts AC / DC = 10 V, 5 mA with gold-plated contacts (code 702)				
Switching difference in % of control range	Switching function	Nominal value			
	TR, TW	2.5%	standard		
		7%	if desired		
STW	7%	standard			
with temperature compensation (TK)	A deviation from the ambient temperature at the switch head and capillary – from the +22°C calibration ambient temperature will result in a switching point shift of about $-0.1^{K/K}$				
Switching point accuracy	Switching difference		Start of scale		
	TR / TW	2.5%	standard	+/- 6%	upper one-third
		7%	if desired	+/- 8%	+/- 4%
	STW / STB	7%	Control range	in the first half"	in the "second half"
			+70...130°C	+0/-12K	+0/-5K
		+95...120°C	+0/- 5K	+0/-5K	

Probe length "L" in mm

Control range	+20...90°C	+0...120°C	0...200°C	+50...300°C	70...130°C	95...120°C
Probe-dia						
4 mm	--	--	88	75	--	--
6 mm	79	87	--	--	60	72

¹⁾ with DIN approval
²⁾ with UL approval






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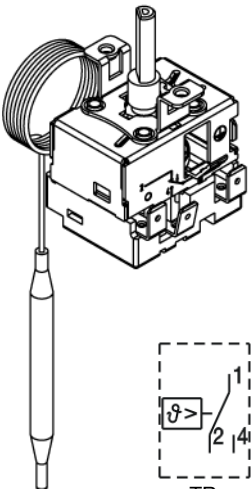
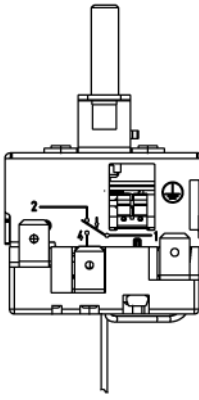

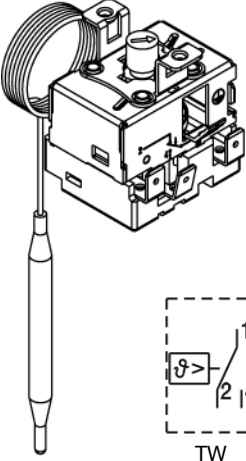
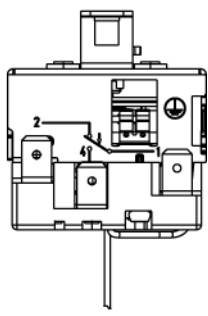
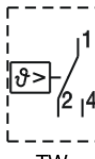
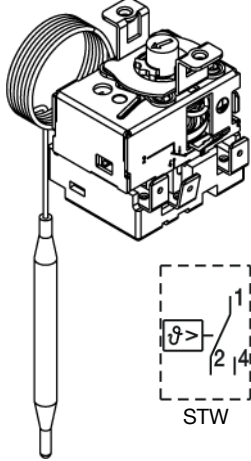
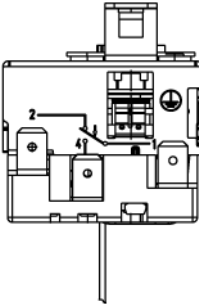
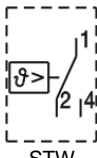
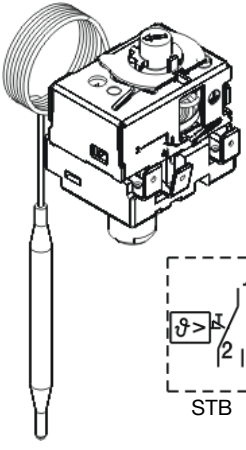
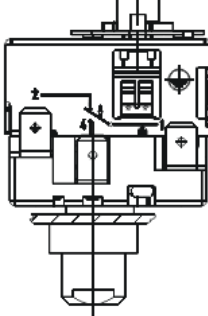
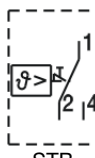
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Approvals

Type 602030	DIN-Reg.-No.	Tests	Declarations of Conformity
	TR 116807 TW 118907	 	Mode of operation as per DIN EN 14597 and DIN EN 60 730-2-9: Type 2BL
	can be found on the Internet at : www.jumo.net or will be sent upon request.		
Type 602031	DIN-Reg.-No.	Tests	Declarations of Conformity
	STB 116907 STW (STB) 119007	  	Mode of operation as per DIN EN 14597 and DIN EN 60 730-2-9: STW (STB): 2BKLNP STB: 2BFHKLNPV
	can be found on the Internet at : www.jumo.net or will be sent upon request.		

Connection diagram

Type 602030	Type 602030/01	Type 602030/02
	   <p>TR</p>	   <p>TW</p>
Type 602031	Type 602031/20 and 602031/21	Type 602031/80 and 602031/81
	   <p>STW</p>	   <p>STB</p>

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Stock items

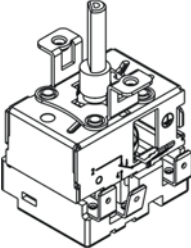
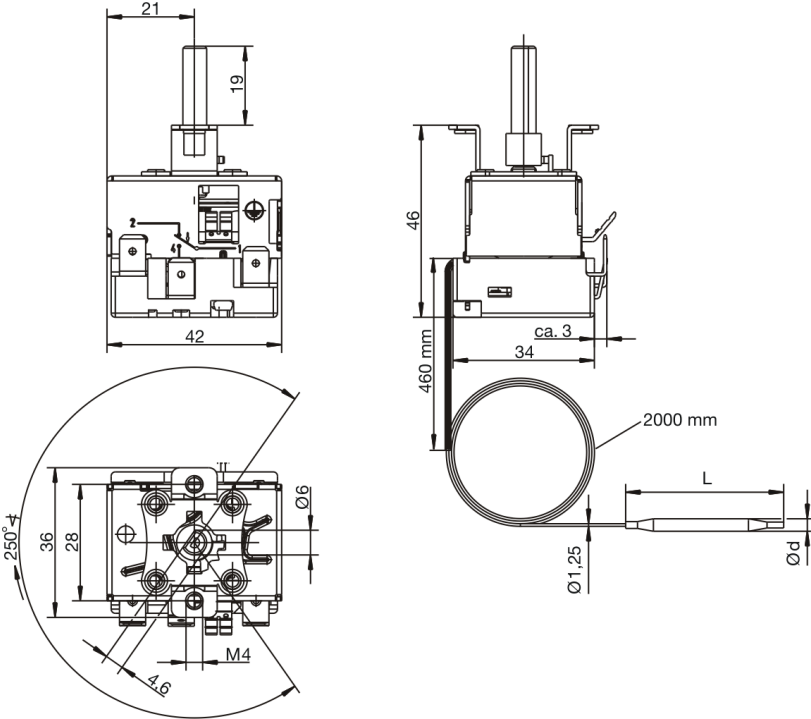
shipment in 3 working days after receipt of order

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Dimensions

Type 602030/01

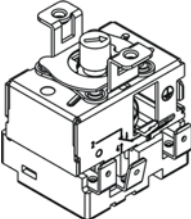
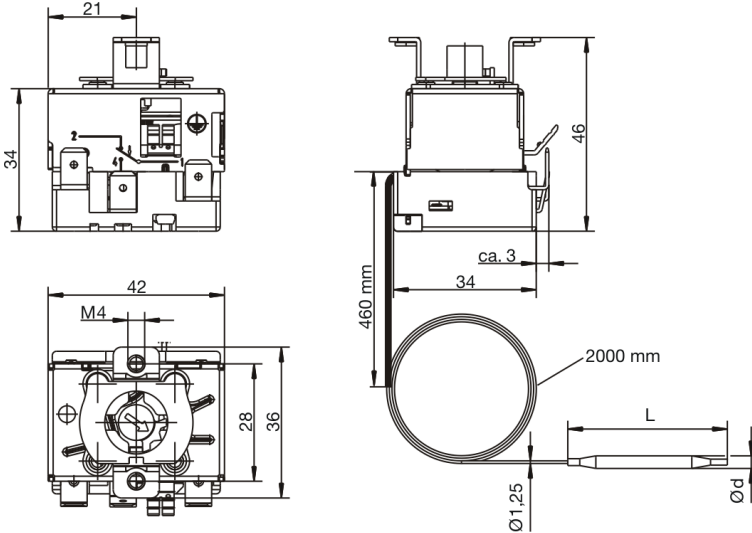
- Temperature regulator as panel-mounting thermostat
- compensated for ambient temperature (standard)
- max. switching capacity 16 A, 400 V
- Tested according to DIN EN 14597 (replacement for DIN 3440)
- Life minimum 250,000 switching operations
- Switching point deviation (drift) over the entire life of max. ± 5%
- Setpoint limiting through adjustable limit stop (in conjunction with setpoint adjuster W8, page 8)

Sales no.	Type	Control range °C	Capillary	Switching difference	Probe-Ø (d) x L
60/60003218	602030/01	+20...	2000	approx. 2K	6 x 79 mm
60/60003219		+ 0...120		approx. 3K	6 x 87 mm
60/60003220		+ 0...200		approx. 5K	4 x 88 mm
60/60003221		+50...300		approx. 6K	4 x 75 mm

Type 602030/02

- Temperature monitor as panel-mounting thermostat
- compensated for ambient temperature (standard)
- max. switching capacity 16 A, 400 V
- Tested according to DIN EN 14597 (replacement for DIN 3440)
- Life minimum 250,000 switching operations
- Switching point deviation (drift) over the entire life of max. ± 5%

Sales no.	Type	Control range °C	Capillary	Switching difference	Probe-Ø (d) x L
60/60003222	602030/02	+20...	2000	approx. 2K	6 x 79 mm
60/60003223		+ 0...120		approx. 3K	6 x 87 mm
60/60003224		+ 0...200		approx. 5K	4 x 88 mm
60/60003225		+50...300		approx. 6K	4 x 75 mm

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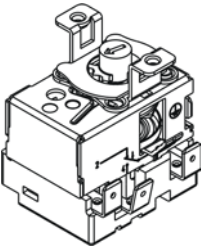
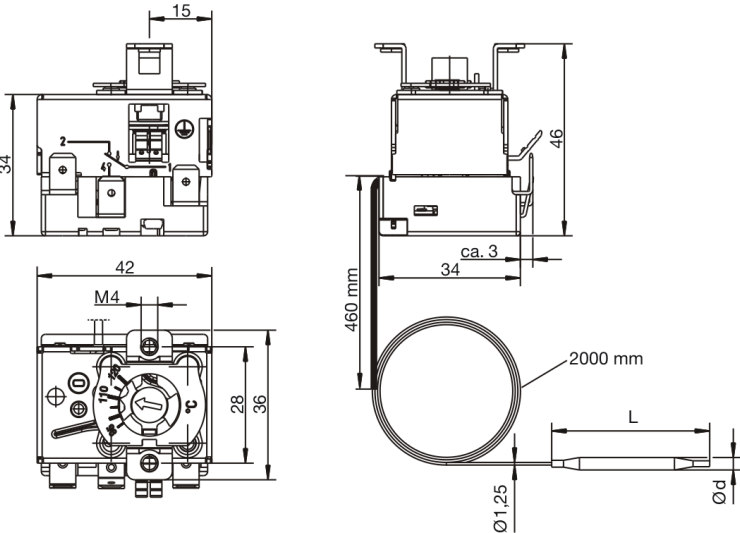


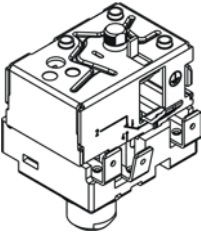
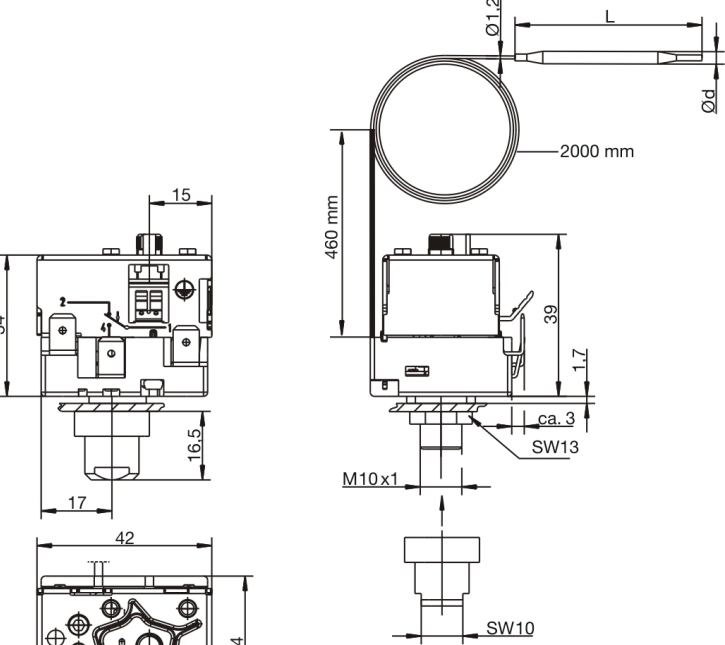
Stock items

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Dimensions

<p>Type 602031/21</p> <ul style="list-style-type: none"> ■ Safety temperature monitor ■ compensated for ambient temperature (standard) ■ max. switching capacity 16 A, 400 V ■ Tested according to DIN EN 14597 (replacement for DIN 3440) ■ DGRL 97/23/EC 					
<p>Sales no. 60/60003226</p>	<p>Type 602031/21</p>	<p>Control range °C +70...130</p>	<p>Capillary 2000 mm</p>	<p>Switching difference approx. 10K</p>	<p>Probe-Ø (d) x L 6 x 60 mm</p>

<p>Type: 602031/80</p> <ul style="list-style-type: none"> ■ Protection temperature limiter ■ compensated for ambient temperature (standard) ■ max. switching capacity 16 A, 400 V ■ Tested according to DIN EN 14597 (replacement for DIN 3440) ■ DGRL 97/23/EC 					
<p>Sales no. 60/60002994</p>	<p>Type 602031/80</p>	<p>Switching point °C +100</p>	<p>Capillary mm 2000</p>	<p>Reset difference approx. 10K</p>	<p>Probe-Ø (d) x L 6 x 72</p>

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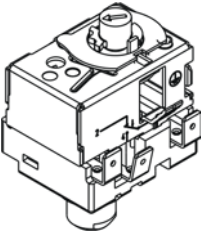
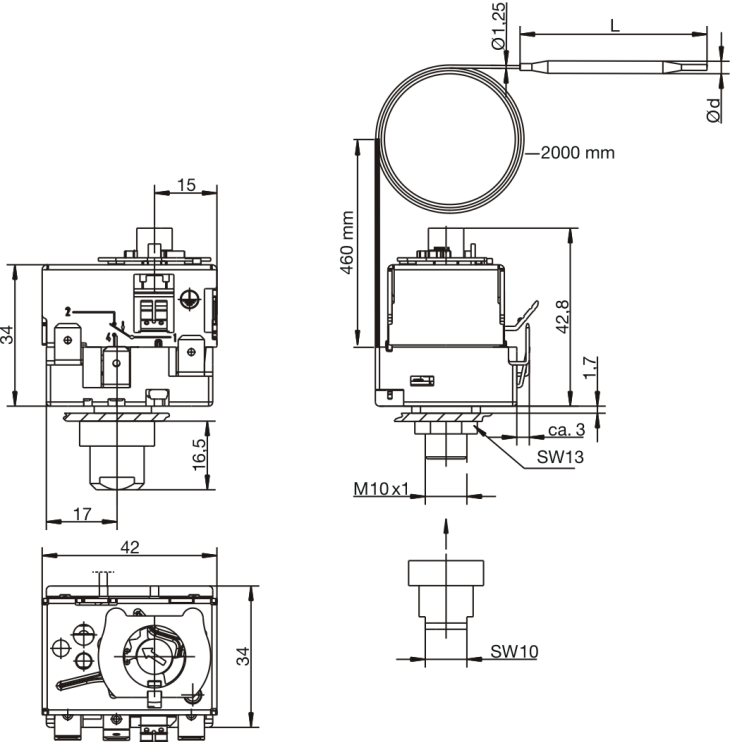


Stock items

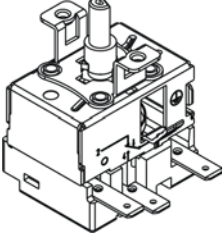
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Dimensions

<p>Type: 602031/81</p> <ul style="list-style-type: none"> ■ Protection temperature limiter ■ compensated for ambient temperature (standard) ■ max. switching capacity 16 A, 400 V ■ Tested according to DIN EN 14597 (replacement for DIN 3440) ■ DGRL 97/23/EC 					
<p>Sales no.</p> <p>60/60002995</p> <p>60/60003136</p>	<p>Type</p> <p>602031/81</p>	<p>Control range °C</p> <p>+95...+120</p> <p>+70...+130</p>	<p>Capillary mm</p> <p>2000</p>	<p>Reset difference</p> <p>approx. 10K</p>	<p>Probe-Ø (d) x L</p> <p>6 x 72</p> <p>6 x 60</p>

Instrument versions that differ from the stock models are available on request - minimum order quantity 300 items

<p>Plug, straight, TZ 742</p> 	
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Ordering data:

Panel-mounting thermostat JUMO heatTHERM Type 602030 and 602031

Plug order code		(1) Basic type		
	602030	Panel-mounting thermostat JUMO heatTHERM with single-pole snap-action switch (TR/TW)		
	602031	Panel-mounting thermostat JUMO heatTHERM with single-pole snap-action switch (STW/STB)		
(2) Basic type enhancement				
X	01	Temperature regulator (TR) with changeover contact ¹		
X	02	Temperature regulator (TW) with changeover contact ¹		
X	20	Safety temperature monitor (STW) with fixed setting with changeover contact ¹		
X	21	Safety temperature monitor (STW) adjustable with changeover contact ¹		
X	80	Protection temperature limiter (STB) with fixed setting with changeover contact and lock-out		
X	81	Protection temperature limiter (STB) adjustable, with changeover contact and lock-out		
(3) Control range				
				max. permissible probe temperature
X	X	000	in case of fixed switching point	
X		041	+20 ... + 90°C	+115°C
X		026	0 ... +120°C	+145°C
X		028	0 ... +200°C	+230°C
X		064	+50 ... +300°C	+345°C
	X	671	+ 70...+130°C	+155°C
	X	666	+ 95...+120°C	+145°C
			Temperature probe of CrNi	
(4) Fixed switching point				
			Switching point tolerance	max. permissible probe temperature
X	X	000	with adjustable switching point	
X	X	095	+ 95°C	+0/-5K
X	X	100	+100°C	+0/-5K
X	X	110	+110°C	+0/-5K
X	X	120	+120°C	+0/-5K
X	X	...	other switching points up to max. 350°C, specified in °C	
(5) Switching difference				
	X	00	no specification in case of STB	
X		25	2.5 %	
X	X	70	7%	
(6) Long-distance cable length				
X	X	2000	2000 mm	
X	X	...	Special length (specify in plain text – in 1000 mm steps, max. length 5000 mm)	
(7) Material of long-distance cable				
X	X	40	Cu (copper) Ø 1,25 mm	
(8) Insulation of capillary				
X	X	13	with	
(9) Length of insulation (from housing)				
X	X	460	460 mm	
X	X	...	Special length (specify in plain text in mm, max. length 800 mm)	

¹ UL-approval being applied for

(X = selection option for respective basic type)

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 Internet: www.jumo.us



Ordering data:

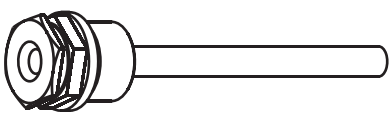
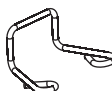
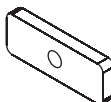

Panel-mounting thermostat JUMO heatTHERM Type 602030 and 602031

Order code		(10) Process connection (PA)
X	X	10 A = Smooth round sensor 
		(11) Diameter "d" (sensor diameter)
X	X	4 4 mm
X	X	6 6 mm
		(12) Material of temperature probe
X	X	40 Cu (copper)
		20 CrNi (stainless steel 1.4571)
		(13) Extra codes (TZ)
X	X	000 Without extra codes
X	X	702 gold-plated snap-action switch contacts
X	X	742 Plug, straight

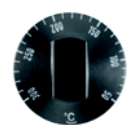


(X = selection option for respective basic type)

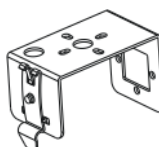


special versions on request! The minimum order quantity for special versions is 300 items.

Accessories

Protection tube set suitable for Type 602030 and 602031	Protection tube with sealing collar 	Bracket for strain relief 	Shim for surface-mounting thermostat 	Screw for surface-mounting thermostat 
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Sales-no.	Type	Abbreviation	Connection	Fitting length EL (mm)	Material
60/60003177	Screw-in protection tube with sealing collar	U4	G ½	100	Brass / nickel-plated
60/60003203				150	
60/60003171				200	
60/60003172				100	Stainless steel / 1.4571
60/60003205				150	
60/60003173				200	

Set point setter for Type 602030/01					
Sales no.	Type	Control range °C	W 8		
60/60003091	W 8	+20... 90			
60/60003227		0...120			
60/60003095		0...200			
60/60003098		+50...300			

Assembly set for mounting rail DIN EN 60715 TH 35-7,5				
Sales no.	Type			
60/00511794	adapter set, Mounting rail heatTHERM/EM 			2 screws M3 x 4 
				2 screws M4 x 5 

Order code	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
602031	/		-		-		-		-		-		/

Ordering example
602031 / 80 - 000 - 110 - 00 - 2000 - 40 - 13 - 450 - 10 - 4 - 40 / 000