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Panel-mounting Thermostats KM-70 Series

Version to DIN 3440 and Pressure Equipment Directive 97/23/EC

for stock items
 see page 5

Brief description

Panel-mounting thermostats monitor thermal processes. The instrument is available as protection temperature limiter STB. In fault condition, the STB sets the system being monitored to a safe operational state.

Panel-mounting thermostats operate on the principle of liquid expansion, with a microswitch serving as the electrical switching device.

Switching action

Lock-out facility on the protection temperature limiter STB

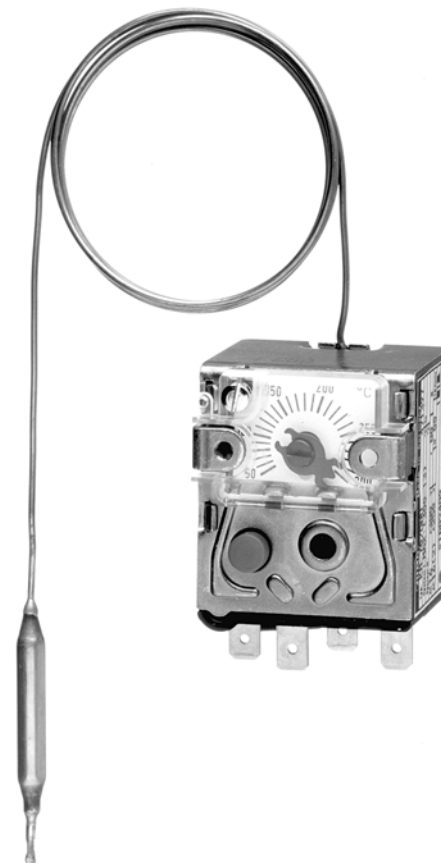
If the temperature at the probe exceeds the set limit, the circuit is opened and the microswitch locked out mechanically.

After the temperature has dropped below the danger temperature by about 10 % of the span, the microswitch can be reset manually.

Self-monitoring facility on the protection temperature limiter STB

Failure of the measuring system, i.e. a leakage of the expansion liquid, causes the pressure under the diaphragm of the STB to drop, thus permanently opening the circuit. A reset is now impossible.

If the probe cools down to below -20°C (approx.), the circuit is also opened. As the temperature rises above -20°C (approx.), the STB has to be reset manually, by pressing the reset button.



Types and approvals

Type	Switching action	DIN Reg. No.	Tests /approvals			DVGW Reg. No.	The Declarations of Conformity are available on the Internet at: www.jumo.net ⇒ Products ⇒ Thermostats ⇒ Data Sheet 60.2045 or can be sent to you on request.
KM-70	STB	STB 82404		Pressure Equipment Directive 97 / 23 / EC CE0036	DVGW Gas Appliances Directive 90/396/EEC	CE-0085 AR 0125	

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Technical data

Control ranges and temperature probe

Type	Control / limit ranges °C	Max. permissible probe temperature °C	Maximum capillary length mm	liquid-filled	
				Probe length "L" in mm	
				probe dia. "d" in mm, dia. 6 = standard	
				6	8
KM-70	0 to + 50	60	5000	163	104
	0 to +100	115		98	70
	+30 to +110	130		115	79
	+20 to +120	140		97	70
	+60 to +130	150		125	84
	+20 to +150	175		82	62
	+50 to +200	230		83	59
	+50 to +250*	290		67	51
+50 to +300*	345	57	---		

* Probe material stainless steel only

Capillary and temperature probe

Type	End of scale	Capillary	Temperature probe	Notes
KM- . .	up to 200°C	copper (Cu) 1.5mm dia. Mat. Ref. 2.0090	copper (Cu) Mat. Ref. 2.0090 brazed	-
	up to 350°C	copper (Cu) 1.5mm dia. Mat. Ref. 2.0090	stainless steel (CrNi) Mat. Ref. 1.4571 brazed	-
	up to 350°C	stainless steel (CrNi) 1.5mm dia. Mat. Ref. 1.4571	stainless steel (CrNi) Mat. Ref. 1.4571 welded	at extra cost
Capillary length	1000 mm standard, 5000 mm max.			
Min. bending radius of capillary	5 mm			

Electrical data

Switching device	KM-70	KM-70
	extra code O (708) microswitch with break contact and lock-out	extra code U (574): microswitch with break contact, lock-out and additional signal contact
Rating	16 A, 400 V AC +10% 16 (2) A, 230 V AC +10%, p.f. = 1 (0.6) 0.25A, 230 V DC +10%	on break contact: 16 A, 400 V AC +10% 16 (2) A, 230 V AC +10%, p.f. = 1 (0.6) 0.25A, 230 V DC +10% on make contact: 2 A, 400 V AC +10% 2 (1) A, 230 V AC +10%, p.f. = 1 (0.6) 0.25A, 230 V DC +10%

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Operating data

Switching point accuracy in % of control / limit range	in upper third of scale +0/-5%, at start of scale +0/-10%	
Ambient temperature error referred to control / limit range	Deviation of the ambient temperature at the case from the calibration ambient temperature 22°C produces a displacement of the switching point: higher ambient temperature = lower switching point lower ambient temperature = higher switching point	
	panel-mounting thermostats with end of scale	
	< 200°C	≥ 200°C ≤ 350°C
	on thermostat head, % per °C	
	0.17	0.13
	on capillary, % per °C per m length	
	0.054	0.11
Permissible storage temperature	-50 to +50°C	
Permissible ambient temperature in operation	+80°C max.	
Nom. position (NL)	unrestricted	

Thermostat head

Case material	zinc-plated steel
Fixing	2 screws M 4, spacing 28 mm
Scale span	250° ↯
Electrical connection	extra code X (699): faston connectors A 6.3 x 0.8 mm (DIN 46244), Code X: screw terminals up to 2.5 mm ² conductor cross-section
Limit setting	The limit can be set prior to installation, using a screwdriver on the setting spindle
Protection	EN 60 529-IP00
Weight	approx. 0.3 kg

Process connection¹

KM- Series with capillary	plain cylindrical probe A (as standard)
	pocket U (on request)
	screw-in pocket with screw-in spigot G 1/2 Form A to DIN 3852/2 and clamping clip with fixing screw for securing the probe
Material	up to +150°C: CuZn (nickel-plated) as standard above +150°C: St as standard (CrNi on request)
Fitting length S	standard lengths: 100, 120, 150, 200 or 300 mm other lengths on request
Immersion tube dia.	D = 8 mm

¹ See data sheet 60.6710 for additional process connections and pockets.

Note:

Physical and toxicological properties of the expansion media that may escape in the event of a system fracture.

Control range with end of scale	Dangerous reactions	Fire/explosion hazard		Water contamination	Toxicological data		
		Ignition temperature	Explosion limit		irritant	danger to health	toxic
< +200°C	no	+ 355°C	0.6 — 8 % v/v	yes	yes	²	no
≥ 200°C ≤ 350°C	no	+ 490°C	- -	yes	yes	²	no

² At present there is no restrictive statement from the health authorities concerning any danger to health over short periods and at low concentrations, e.g. after a fracture of the measuring system.

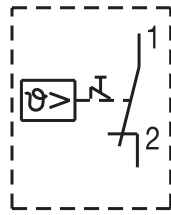
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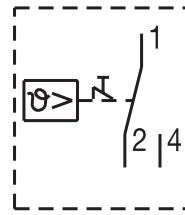
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Connection diagrams



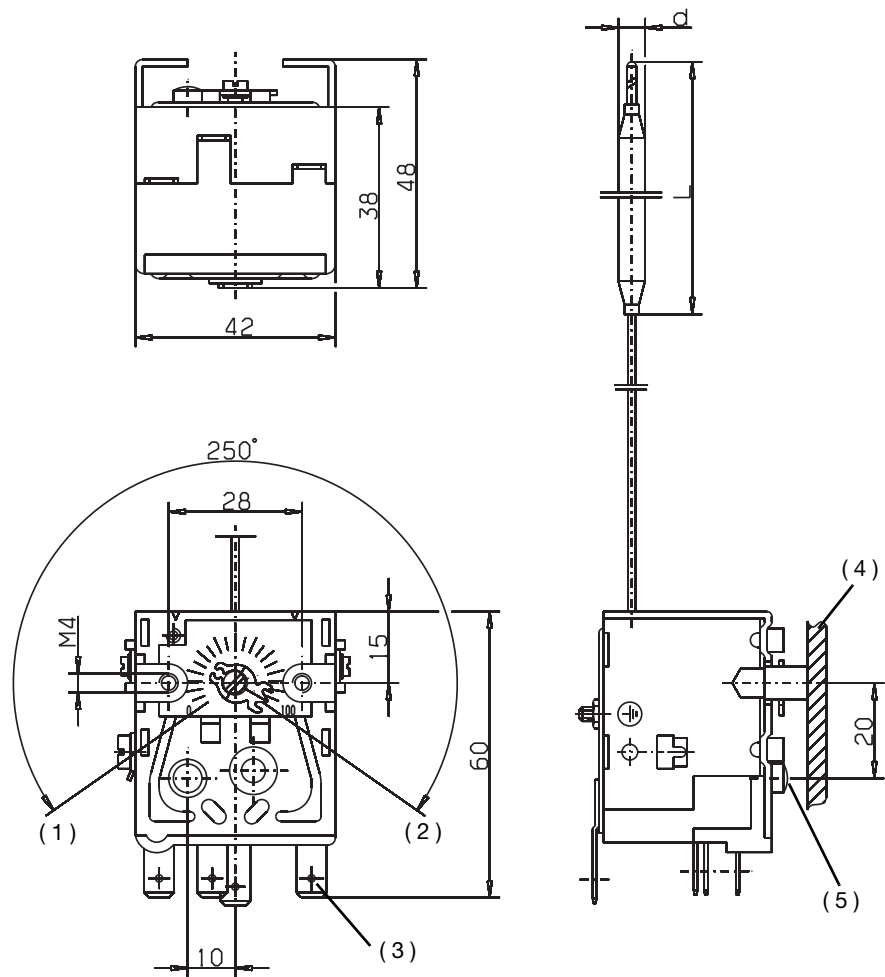
KM-70
Code O



KM-70
Code U

Dimensions

Type
KM-70



- (1) Start of scale
- (2) End of scale
- (3) Faston connectors, A 6.3 x 0.6, DIN 46244
- (4) Panel
- (5) Reset knob

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Stock items

(shipment: 3 working days after receipt of order)

Sales No.	Type	Control/limit range	Capillary mm	Process connection	Probe dia. x length mm
60/60001545	KM-70/U	+20 to +150°C	1000	A	6 x 82
60/60001544	KM-70/U	+50 to +300°C	1000	A	6 x 57

Order details

Panel-mounting thermostat KM-70 Series

Order	(1) Basic type
602045	Panel-mounting thermostat, KM Series
	(2) Basic type extension
70	KM-70 Protection temperature limiter STB with break (SPST-NC) contact and capillary
	(3) Control / limit ranges
021	0 to + 50°C
025	0 to +100°C
052	+30 to +110°C
042	+20 to +120°C
066	+60 to +130°C
043	+20 to +150°C
062	+50 to +200°C
063	+50 to +250°C
064	+50 to +300°C
	(4) Capillary length (mm)
1000	1000 mm
2000	2000 mm
3000	3000 mm
4000	4000 mm
5000	5000 mm
....	(special length, details in plain text)
	(5) Material of capillary
40	Cu (copper)
20	CrNi (stainless steel 1.4571)
	(6) Process connection PA¹
10	A = plain cylindrical probe 
20	U = screw-in pocket 
	(7) Thread for process connection¹
00	no thread (process connection A)
13	external thread G 1/2
	(8) Material of process connection
00	only for process connection A
46	CuZn (brass)
01	St (steel)
20	CrNi (stainless steel 1.4571)
	(9) Fitting length S (immersion tube length)
000	no pocket
100	100mm
120	120mm
150	150mm
200	200mm
300	300mm
.... special length, details in plain text

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Order details

Panel-mounting thermostat KM-70 Series

Order	(10) Diameter D (immersion tube dia.)
00	no pocket
8	8 mm
10	10 mm
	(11) Diameter d (probe dia.)
6	6 mm
8	8 mm
	(12) Extra codes ²
000	no extra code
574	„U“ STB with (n.c.) break contact, lock-out and additional signal contact
699	„X“ screw connection up to 2.5 mm ² conductor cross-section

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

Order example 602045 / [..] - [..] - [..] - [..] - [..] - [..] - [..] - [..] - [..] - [..] - [..] / [..] , ...

Order example 602045 / 70 - 052 - 1000 - 40 - 10 - 00 - 00 - 000 - 00 - 6 / 574²

¹ See data sheet 60.6710 for additional probe mountings and pockets.

² List extra codes in sequence, separated by commas.