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Panel-mounting Thermostats Type EM-80

tested to DIN 3440 as STB = Safety temperature limiter,
DVGW – approved to EC Gas Appliances Directive (90/396/EEC)
and Pressure Equipment Directive 97/23/EC

Brief description

Panel-mounting EM-80 thermostats monitor thermal processes. The instruments can be supplied as safety temperature limiters 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 safety temperature limiter STB

When 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 critical temperature by about 10 °C, the microswitch can be reset manually.

Self-monitoring on the safety 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. The thermostat cannot be reset now.

If the probe cools down to below about -10°C, the circuit is also opened. As the temperature rises to above -10°C (approx.), the reset is performed automatically.



You will find the Declarations of Conformity on the Internet at:
www.jumo.net
⇒ Products
⇒ Data Sheet 60.2026
or they can be sent to you on request.

Types and approvals

Type	Switching action	DIN Reg. No.	Tests/approvals			DVGW Reg. No.
EM-80 EM-80-TK	STB	STB 82604		Pressure Equipment Directive 97/23/EC CE0036	DVGW Gas Appliances Directive 90/396/EEC	CE-0085 AR 0124

Technical data

Limit	+60°C to +180°C according to choice, permanently set in factory
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Capillary and temperature probe

Type	Limit	Capillary	Temperature probe	Notes
EM-80	up to 180°C	copper (Cu) 1.5 mm dia. Mat. Ref. Cu-DHP	copper (Cu) Mat. Ref. Cu-DHP brazed	-
	up to 180°C	stainless steel (CrNi) 1.5 mm dia. Mat. Ref. 1.4571	stainless steel (CrNi) Mat. Ref. 1.4571 welded	at extra cost
Capillary length	standard is 1000 mm, max. 5000 mm			
Min. bending radius of capillary	5 mm			
Probe dimensions	Cu 6 mm dia., L ~ 84 mm / CrNi 6 mm dia., L ~ 76 mm			
Perm. temperature at probe	limit +15%			

Electrical data

Switching device	EM-80 (as standard)	EM-80 (extra code U)
	microswitch with break (n.c.) contact and lock-out	microswitch with break (n.c.) contact, lock-out and additional signal contact
Contact rating	10 (2) A, 230 V AC +10%, p.f. = 1 (0.6) 0.25A, 230 V DC +10%	at break (n.c.) contact: 10 (2) A, 230 V AC +10%, p.f. = 1 (0.6) 0.25A, 230 V DC +10%
	microswitch gold-plated, extra code /au 0.1 A, 24 V AC/DC,	at make (n.o.) contact: 2 (0.4) A, 230 V AC +10%, p.f. = 1 (0.6) 0.25A, 230 V DC +10%
Contact reliability	To ensure maximum switching reliability, we recommend a minimum loading of: with silver contacts: AC/DC = 24 V, 20 mA with gold-plated contacts (code "au"): AC/DC = 10 V, 10 mA	
Rated surge voltage	1500 V (via switching contacts: 400 V)	
Overtoltage category	II	
Required fusing	see Contact rating	

Operating data

Switching point accuracy	at limit +0/-5 °C
Effect of ambient temperature referred to limit	A deviation of the ambient temperature at the thermostat head from the +22°C calibration ambient temperature produces a displacement of the switching point: higher ambient temperature = lower switching point lower ambient temperature = higher switching point
	effect on thermostat head: 0.35 °C per °C
	effect on capillary: 0.07 °C per °C per meter
	If the ambient temperature differs appreciably from the +22°C calibration temperature, this can, on request, be allowed for during calibration (at extra cost).
Temperature compensation	extra code TK Please refer to the diagram on page 3 for more details.
Permissible storage temperature	- 50 to +50°C
Permissible ambient temperature in operation at head and capillary	max. +80°C min. +18°C (- 40°C with extra code TK)
Nom. position (NL)	unrestricted

Thermostat head

Chassis	galvanized steel sheet
Fixing	standard: central fixing M 10 x 1 with cap nut
	extra code b1 with 2 M4 screws , 28 mm spacing
	extra code b2 with 2 M3 screws, 33 mm spacing
	extra code b3 with 2 M3 screws, 22 mm spacing
Electrical connection	standard: faston connector A 6.3 x 0.8 mm (DIN 46244), extra code X: screw connection up to 2.5 mm ² conductor cross-section
Limit setting	The limit is permanently factory-set, according to customer requirements
Enclosure protection	EN 60 529-IP00
Weight	approx. 0.3 kg

Process connection

Type EM-80 with capillary	plain cylindrical probe A see Data Sheet 60.6710 for other process connections and pockets
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⚠ Note

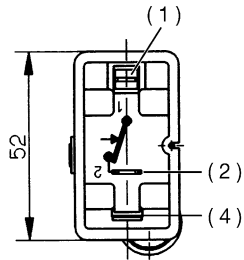
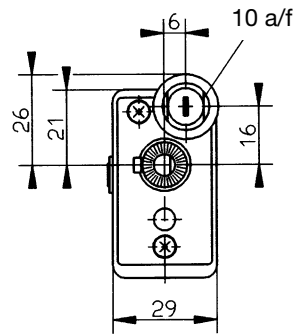
Physical and toxicological properties of the expansion media that may escape in the event of a system fracture.

Limit	Dangerous reactions	Fire/explosion hazard		Water contamination	Toxicological data		
		Ignition temperature	Explosion limit		irritant	danger to health	toxic
≤ +180°C	no	+ 355°C	0.6 - 8 % v/v	yes	yes	1)	no

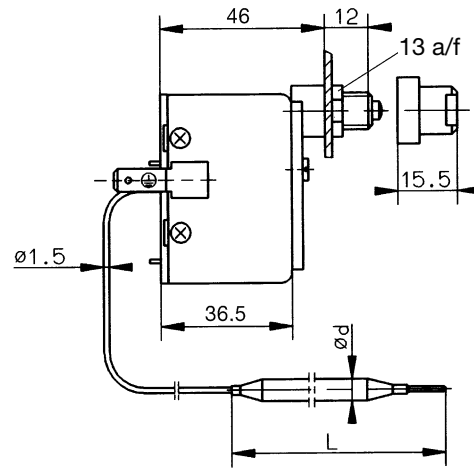
1) At present there is no restrictive statement from the health authorities concerning any danger to health over short periods and at low concentrations, e.g. after a fracture of the measuring system.

Dimensions

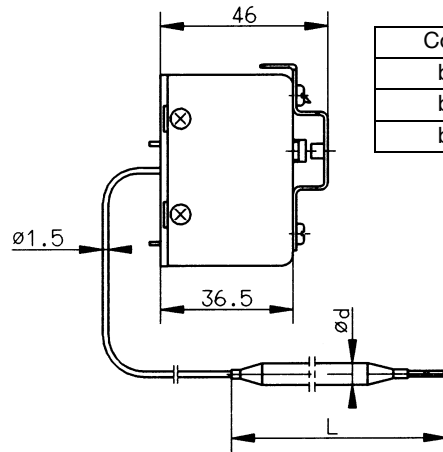
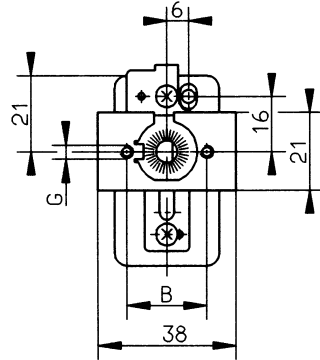
EM-80 with central fixing (standard)



(1) + (2) = standard: faston connector A 6.3 x 0.8 mm (DIN 46 244)
 (4) = only with extra code /U; faston connector A 6.3 x 0.8 mm (DIN 46 244)



EM-80 with fixing bracket (extra code b1, b2, b3)



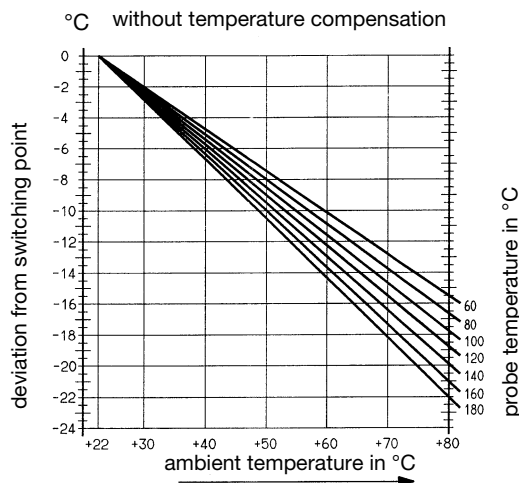
Code	B	G
b1	28	M4
b2	33	M3
b3	22	M3

Temperature compensation (TK)

If the temperature at the thermostat head deviates from the +22°C calibration ambient temperature, this will result in a displacement of the switching point. With ambient temperatures that fluctuate considerably, it is advisable to use thermostats with temperature compensation (code TK).

EM-80 without temperature compensation

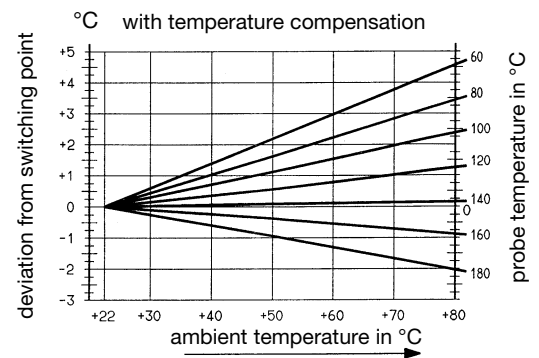
Switching point deviation as a function of ambient temperature at the thermostat head, taking into account the probe temperature.



EM-80/TK with temperature compensation

Switching point deviation as a function of ambient temperature at the thermostat head, taking into account the probe temperature.

The temperature error at the capillary has not yet been allowed for, and may introduce an additional error of approx. 0.07°C per °C per meter.



Order details: Type EM-80

Stock items

delivery 3 working days after receipt of order

Sales No.	Type	Limit °C	Capillary mm	Process connection	Probe dia. x length mm
60/60000775	EM-80	+ 110	1000	A	6 x ~ 84
60/60000753	EM-80	+ 95			

Non-stock items

Order code

(1) Basic type

602026 Panel-mounting thermostat, EM series

(2) Basic type extension

80 EM-80 Safety temperature limiter with break (n.c.) contact and capillary

(3) Limit

95 + 95°C

100 +100°C

110 +110°C

120 +120°C

Other limits, selectable between +60 and +180°C, can be permanently factory-set (details in plain text)

(4) Capillary length (in 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*

10 A = plain cylindrical probe



99 * for other process connections and pockets, see Data Sheet 60.6710 (details in plain text)

(7) Diameter d (probe diameter)

6 6 mm

(8) Extra codes

000 no extra code

574 **U** STB with break (n.c.) contact, lock-out and additional signal contact

702 **au** snap-action switch contact gold-plated (only on STB with break (n.c.) contact)

699 **X** screw connection up to 2.5 mm² conductor cross-section

704 **b1** thermostat head fixing by 2 M4 screws, 28 mm spacing

705 **b2** thermostat head fixing by 2 M3 screws, 33 mm spacing

706 **b3** thermostat head fixing by 2 M3 screws, 22 mm spacing

707 **TK** temperature compensation

Order code

(1) (2) (3) (4) (5) (6) (7) (8)

602026 / .. - ... - - .. - .. - . / ...

Order example

602026 / 80 - 120 - 2000 - 20 - 10 - 6 / 000