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Panel-mounting thermostats, type series EM

Particularities

- Operating temperature limiter
- Limit value range up to +650 °C
- with temperature compensation



Brief description

Panel-mounting thermostats EM are used to monitor thermal processes. The devices are available as temperature monitor (TW), limiter (TB) and safety temperature limiter (STB). In the event of a malfunction, the STB switches the monitored machine line to an operational safe status.

Panel-mounting thermostats operate according to the fluid expansion principle. The electrical switching element is a microswitch.

Types	**EM-2/707**	**EM-5/707**	**EM-50/707**
	Temperature monitor (TW)	Temperature limiter (TB)	Safety temperature limiter (STB)

Switching function	**TW**	**Restart lock of the TB and STB**	**Self-monitoring of the STB**
	If the temperature exceeds the limit value set on the temperature probe, the current circuit is opened via a snap switch. The switch is reset to its original status once the set limit value is gone below (by the hysteresis).	If the temperature exceeds the limit value set on the temperature probe, a snap switch is actuated and locked mechanically. Once the limit value is gone below by approx. 100 *K,* the snap switch can be manually unlocked.	When the temperature probe cools down below -10 °C, the snap switch is also actuated. The current circuit automatically closes again when the temperature rises. In the event of a measuring system break (leaks), the snap switch is permanently actuated and mechanically locked.

Approvals/approval marks (see "Technical data")

EAC

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Technical Data

Limit value ranges	Control / limit value range °C	Hysteresis K	Scale range ° ⊀
TW and TB	+230...+650	50 - 80 (TW)	250
STB	+500...+650	-	70

Capillary and temperature probe

Capillary	Length	Diameter	min. bending radius	Material
	standard: 1 m maximum: 3 m	1.5 mm	5 mm	Stainless steel

Temperature probe	Process connection*	Probe length x Diameter	Material
	plain cylindrical probe "10“ (standard)	115 x 8 mm	high-temperature resistant stainless steel, welded

* For different process connections and sheaths refer to data sheet 606710 (only 50, 52 and 54).

Electrical data

Switching element 1-pole snap switch	EM-2/707	EM-5/707 EM-50/707	EM-5/707/574 EM-50/707/574
	Microswitch with change-over contact	Microswitch with N/C contact and restart lock	Microswitch with N/C contact, restart lock and additional signal contact
maximum contact rating	**Switching function**	**N/C contact, terminal 2**	**N/O contact, terminal 4**
	TW	AC 230 V +10%, 16 (3) A, cos φ = 1 (0.6) DC 230 V +10%, 0.25A	AC 230 V +10%, 8 (1.5) A, cos φ = 1 (0.6) DC 230 V +10%, 0.25A
	TB, STB		AC 230 V +10%, 2 (1) A, cos φ = 1 (0.6) DC 230 V +10%, 0.25A
Contact reliability	To ensure a high switching reliability, we recommend a minimum load of: AC/DC = 24 V, 100 mA		
Rating surge voltage	1500 V (via the switching contacts 400 V)		
Overvoltage category	II		
Required fuse rating	refer to maximum contact rating		
Electrical connection	serial	Tab connector A 6.3 x 0.6 DIN 46 244	
	Extra code 699	Screw-connection up to 2.5 mm^2 cable cross section (against surcharge) – also suitable for retrofitting –	

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Operating data

Switching point accuracy	(in % from the scale range; referring to the set point or limit value at T_u +22 °C, with increasing temperature)		
	Switching function	Type	accuracy in the upper third of the scale or limit value
	TW	EM-2/707	$^{+0}_{-18}$ K
	TB	EM-5/TK, EM-5/707/574	$^{+0}_{-48}$ K
	STB	EM-50/TK, EM-50/707/574	$^{+0}_{-48}$ K
Average ambient temperature influence (referring to the limit value)	When the ambient temperature [Δt] on the switch head and the capillary deviates from the calibration temperature +22 °C, a switch point offset t_V occurs. Higher ambient temperatures = lower switching point Lower ambient temperature = higher switching point		
	on the switch head: $t_V = 0.06 \cdot \Delta t$		on the capillary: $t_V = 0.33 \cdot \Delta t \cdot m$
	If the operating temperature on the switch head and capillary deviates essentially from the calibration temperature +22 °C, it can be taken into account during adjustment on request against surcharge.		
admissible ambient temperature	during use		admissible storage temperature
	on the switch head and capillary	on the probe	
	max. +100 °C / min. -40 °C	max. +750 °C / min. -40 °C	max. +50 °C / min. -50 °C
Rated position	any		

Case

Material	Sheet steel, galvanized
Fastening	serial with 2 M 3 screws, spacing 22 mm
	Extra code 704 with 2 M 4 screws, spacing 28 mm
	Extra code 705 with 2 M 3 screws, spacing 33 mm
	Extra code 710 Central fastening M 10 x 1 with acorn nut (only for TB and STB)
Limit value setting	Switching point can adjusted by means of a screwdriver
Protection type	EN 60529-IP 00
Weight	approx. 0.3 kg

Approvals/approval marks

Approval marks	Inspection authority	Certificates/ inspection number	Inspection basis	Valid for
EAC[a]	Gost Norm AG	TC RU C-DE.AB98.B.00348	Technical rules of the customs union Russia/ Belarus/Kazakhstan	EM-...

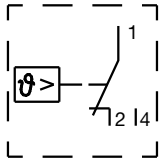
[a] Russian documentation upon request

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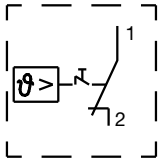
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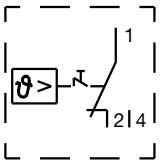
Wiring diagrams



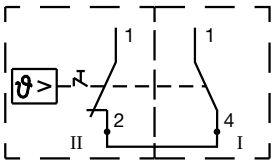
EM-2/707



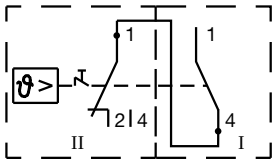
EM-5/707



EM-5/707/574

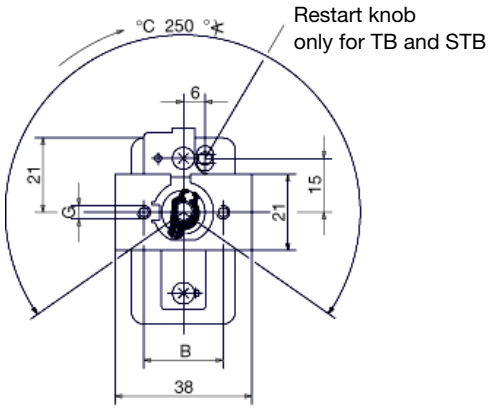


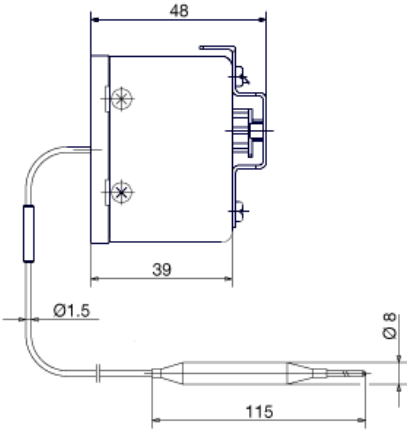
EM-50/707

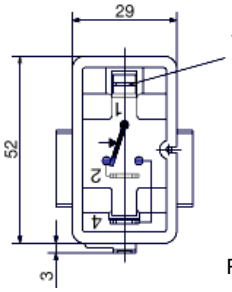


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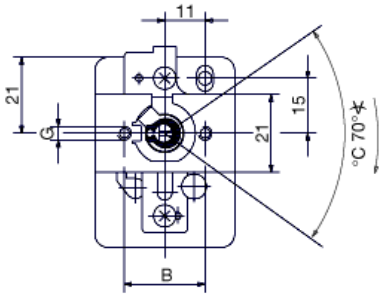
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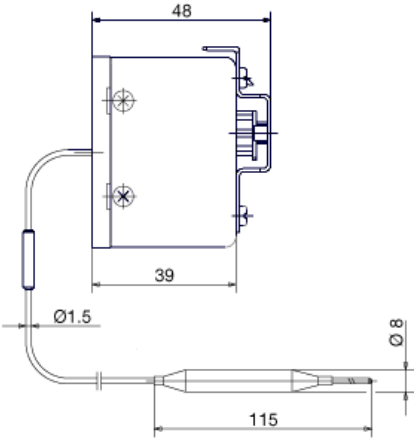


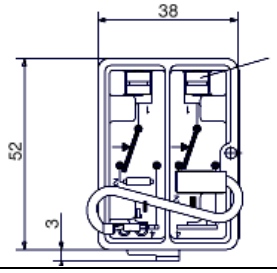




EM-2/707
EM-5/707







EM-50/707

Extra code	B	G
serial	22 mm	M3
704	28 mm	M4
705	33 mm	M3

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Stock versions

(Delivery within 3 working days after receipt of order)

Part no.	Type	Limit value °C	Capillary mm	Process connection	Probe Ø x length mm
60003016	EM-2/707	+230...+650	2000	„10“ plain cylindrical probe	8 x 115

Order details

EM type series:

Order code		
	(1)	**Basic type**
602025		Panel-mounting thermostat, type series EM up to +650 °C
	(2)	**Basic type extensions**
0002		EM-2/707 Temperature monitor
0005		EM-5/707 Temperature limiter
0050		EM-50/707 Safety temperature limiter
	(3)	**Control / limit value ranges**
093		+230...+650 °C (only for TW and TB)
097		+500...+650 °C (only for STB)
	(4)	**Capillary length** (specifications in mm)
1000		1000 mm
2000		2000 mm
3000		3000 mm
. . . .		Special length, specification in mm (max. 3000 mm)
	(5)	**Process connection ***
10		plain cylindrical probe
		* For different process connections and sheaths see data sheet 606710 (only 50, 52 and 54)
	(6)	**Diameter "d" (probe diameter)**
8		8 mm
	(7)	**Extra codes** [1]
000		without extra codes
574		"U" Microswitch with N/C contact, reactivation lock and additional signal contact (only for TB and STB)
699		"X" Screw connection up to 2.5 mm2 cable cross section
704		"b1" Switch head fastening with 2 M4 screws, spacing 28 mm
705		"b2" Switch head fastening with 2 M3 screws, spacing 33 mm
707		"TK“ Temperature compensation
710		"b7" Central fastening with acorn nut (only for TB and STB)

Order code

(1)		(2)		(3)		(4)		(5)		(6)		(7)
602025	/	. .	-	. . .	-	. . . .	-	. .	-	.	/	. . .

Order example

602025	/	0050	-	097	-	1000	-	10	-	8	/	710[1]

[1] List extra codes in sequence, separated by commas.