

Thermal cut-out thermostat
Automatic or manual reset

R

27

28

29



Applications

- Domestic appliances
- Coffee machines
- Heaters and heating Elements
- Antifreeze
- Diesel preheating (automobile)

Benefits

- Ceramic housing available for high temperatures
- Low tolerances up to $\pm 3K$
- various attachments
- Low hysteresis up to 10K

Description

The R27/R28/R29 temperature switches are very reliable bimetal technology components, offering a long life time. The normally closed contacts open when reaching the predefined temperature by snapping of a bimetal disc. Temperature setting is defined through conditioning (aging, stamping, ...) of the disc. After a corresponding cooling down, the bimetal disc snaps back to the original position and closes the current circuit again or remains in open position until manually reset. These R27/R28/R29 types are perfect surface mount components, offering high temperature sensibility and can be used in a wide range of white goods, automotive technology, mechanical engineering, kitchen devices.



Technical data

ratings			type						
			03EN		52N	60EN ¹⁾	05EN	15N	23EN
function			automatic				manual reset		
version			normally closed (n.c.) / normally open (n.o.)				normally closed (n.c.)		
VDE	rated current 250V AC (cos φ 0,95)		16 A	10 A	16 A	250 V AC, 10 A 10.000 switching cycles 0°C ...100°C	16 A	16 A	16 A
	switching cycles		30,000	100,000	10,000		3,000	6,000	3,000
	temperature T _A (steps in 5 K)		max. 150°C	max. 150°C	max. 230°C ²⁾		max. 150°C	max. 250°C	max. 150°C
UL	rated current 240V AC (cos φ 1,0)		---	10 A	250 V, 10 A	0°C ...100°C	10 A	16 A	10 A
	switching cycles		---	100,000	100,000		6,000	6,000	6,000
	temperature T _A (steps in 5 K)		---	max. 150°C	max. 230°C		40°C ..150°C	40°C ..250°C	40°C ..150°C
tolerance			T _A <100°C: ±3 K / T _A ≥100°C: ±4 K / T _A >140°C: ±5 K / T _A ≥170°C: ±8 K / T _A ≥200°C: ±10 K				T _A <100°C: ±4 K / T _A ≥100°C: ±5 K / T _A ≥150°C: ±8 K / T _A ≥200°C: ±10 K		
contact resistance			< 30 mΩ						
hysteresis / reset temperature			T _A <130°C: 25K / T _A >130°C: 25 ±15K/ T _A >200°C: 30K ±20K				---		
degree of protection of enclosure (EN 60529)			IP00 (60EN IP64)						
dielectric strength			AC 1.500 V/1min. or AC 1.800 V/1 sec.						
suitable for use in protection class			I, II						
certifications	VDE		EN 60730-1 / -2-9						
	UL		UL873 / UL60730-1A / -2-9 ⁴⁾						
	CSA		C22.2 No. 24 ³⁾						

¹⁾ no certification ²⁾ type 55H only VDE: 7A, 250V AC, 30.000 cycles, up to 260°C

³⁾ different ratings ⁴⁾ type 15N

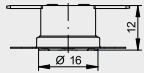
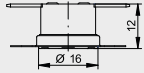
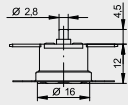
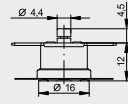
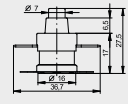
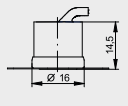
Caps

	cap code 1 in standard execution (T _A 50°C - 199°C), material aluminium
	cap code T (T _A 0°C - 50°C and T _a ≥ 200°C and all normally open types), material aluminium

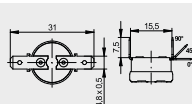
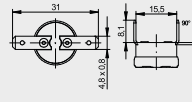
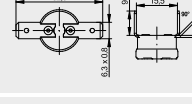
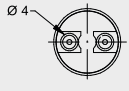
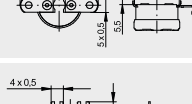
Deviations from standard controls (caps, terminals, fixings) on request.

Especially for electronic applications with voltage 6...120 Vac / 6...30 Vdc and current 10...100 mA there are switches with crossbar-contacts available. Controls as single operation device (SOD) up to 150°C and reset temperature minus 35°C are available (Typ 81ES).

Standard types

type	n.c. normally closed = 1	n.o. normally open = 3	code	illustration	drawing dimensions (mm)	technical description
R28 11EN	1	3	low mounting form, housing thermoset- ting plastic, 9 mm			terminals 6.3 x 0.8, small, loose bracket, aluminium cap
R28 03EN	1	3	housing thermoset- ting plastic, 12 mm			terminals 6.3 x 0.8, small, loose bracket, aluminium cap
R28 52N	1	3	housing ceramic, 12 mm			terminals 6.3 x 0.8, small, loose bracket, aluminium cap
R27 05EN	1	---	manual, reset pin, housing thermosetting plastic			terminals 6.3 x 0.8, small, loose bracket, aluminium cap, reset pin
R27 15N	1	---	manual, reset pin, housing ceramic			terminals 6.3 x 0.8, small, loose bracket, aluminium cap, ceramic reset pin
R29 23EN	1	---	manual, reset pin, housing thermoset- ting plastic			terminals 6.3 x 0.8, small, loose bracket aluminium cap, reset pin
R28 60EN	1	3	tight against humidity, leads, housing thermoset- ting plastic			lead wire, standard lead length 300 mm, fixed bracket, aluminium cap degree of protection IP64

Terminals

code	used in type	illustration	drawing dimensions (mm)	technical description
Ms: 05 (0°) Ms: 10 (45°) Ms: 06 (90°)	R27, R28, R29			terminals 4.8 x 0.5, brass nickel plated up to T _A max. 150°C, >150°C steel nickel plated, also available angle 45 / 90 deg.
Ms: 45 (0°) Ms: 46 (90°)	R27, R28, R29			terminals 4.8 x 0.8, brass nickel plated up to T _A max. 150°C, also available angle 90 deg.
Ms: 03 (0°) Ms: 09 (45°) Ms: 04 (90°) St: 93 (0°) St: 94 (90°)	R27, R28, R29			terminals 6.3 x 0.8, brass nickel plated up to T _A max. 150°C, >150°C steel nickel plated, also available angle 45 / 90 deg.
00	R28			solder terminals, T _A max. 140°C
41 (0°) 42 (90°)	R27, R28, R29			solder terminals, nickel plated, also available angle 90 deg. T _A max. 140°C
SA	R27, R28			PCB terminals, solder terminals, T _A max. 140°C

Brackets

code	used in type	illustration	drawing dimensions (mm)	technical description
4	R27, R28, R29			loose bracket, small
3	R27, R28, R29			loose bracket
S	R27, R28, R29			stud of M5 x 6 brass, SW17 (also other variations available)
M, J, E, K, L	R27, R28, R29			pipe mounting bracket, sizes: 2/8", 3/8", 4/8", 5/8", 6/8"
A+B	R27, R28, R29			fixed bracket
Variation angle degrees for fix brackets (A + B)	R27, R28, R29			Possible angles: 0 / 45 / 90 / 135 degrees

Ordering example

R28	03	E	N	1	5	T	03	4	50±3	40±4
									reset temperature	
									response temperature	
									fixing code	
									terminal code	
									cap code	
									housing material (2 ceramic / 5 plastic)	
									contact execution (1 normally closed / 3 normally open)	
									type of contact (N normal contact / P low current)	
									Microtherm type	

Marking

A100	norm. closed (B norm. open) resp. temperature
03EN XXXX	type manufacture code
XXXX	date of manufacture

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