- **Miniature bimetal thermal protector**
- **Low restistance**
- **Maximal Operating temperature 230°C**

Working Principle

The snap-action thermostat is a bimetal thermal protector in the category of thermostat relay parts. The bimetal disc will snap instantly when the predefined temperature is reached, causing a quick switching action of contacts via mechanical function that will interrupt or complete a circuit. The device has the advantages of a fixed working temperature that needs no adjustment and offers reliable and agile action, less arcing, long service life as well as less radio disturbance.

Temperature Characteristics

According to different temperature actuation characteristics, there are 4 operating types as follows:

1. Normal type: OFF temperature higher than ON temperature
2. K type: ON temperature higher than OFF temperature
3. Manual reset type: the bimetal disc will snap at the predefined temperature. The thermostat switch needs to be reset manually (by pressing the reset button).
4. One-shot type: The thermostat switches off at the predefined temperature and won't be able to be reset. It would need to be replaced.

Symbol Explaining

OT: Operating temperature, the higher value of OFF and ON:

Tmax: Heat-resistant temperature

Diff: Differentials of OFF set point and ON set point

Tr: Reset temperature, the lower value of OFF and ON.

KSD 301 Series

KSD301 series snap-action thermostat is a miniature bimetal thermal protector (1/2" disc). It is of single-pole single-throw structure and works under resisitive load. KSD301 series is in wide use in a great variety of compact type home appliances, such as coffee maker, water dispenser, toaster, microwave oven, electric pad and portable icebox etc., to provide temperature control or temperature protection. According to different structures and service purposes, the KSD301 series is divided into five sub series as: KSD301-V, KSD301-G, KSD301-R/KSD301-R-G, KSD301-U-G and KSD301-M.

Basic Technical Parameter

- Rated current: 10A, 16A (resistive)
- Resistance between terminals: below 50mΩ (numeric mΩ MV meter, by volt-ampere standard, DC10V, 1A)
- Insulation Resistance: with a DC 500V megger, borne DC 500V, the tested value is over 10MΩ
- Dielectric strength: parts between electriferous components and non-electriferous ones can bear 500V (3750V for reinforced insulation type), 50Hz AC current, which is nearly sine wave, for one minute as bearing test. Resulted no breakdown, no flash-over. Class of temperature characteristic: normally closed, normally open, manual reset, one-shot
- Max. OT: 230° C

Tmax. of various OT							
	OT <30	OT 31 - 70	OT 71 - 120	OT 121 - 180	OT 181 - 220	OT 221 - 250	OT 251 - 280
KSD301	100 (L) 130 (S)	140 (L) 170 (S)	205 (L) 235 (S)		---	---	---
KSD301-V				205 (L)			
KSD301-R				235 (S)			
KSD301-G KSD301-R-G				220 (L) 250 (S)	280 (L) 310 (S)	300 (L) 310 (S)	320 (L) 350 (S)
KSD301-G (for coffee maker)				280 (L) 310 (S)	---	---	---

L = Long period
S = Less than 15 min

OFF Tolerance of OFF Temperature			
Range of OT	Common Diff.	Limit of tolerance	
		Auto-reset	Manual reset
≤ 100°C	±3.0°C	±2.0°C	±2.5°C
101 - 145°C	±3.5°C	±2.5°C	±3.0°C
146 - 160°C	±4.0°C	±3.0°C	±3.5°C
161 - 180°C	±4.5°C	±3.5°C	±4.0°C
181 - 200°C	±5.0°C	±4.0°C	±4.5°C
201 - 230°C	±5.5°C	±4.5°C	±5.0°C

ON Tolerance of OFF Temperature			
Range of Diff.	Range of OFF temp.	Common tolerance	Limit of tolerance
≤ 7.5°C	≤ 100°C	±4.0°C	±3.0°C
7.5 ~ 15°C	≤ 100°C	±4.5°C	±3.5°C
	101 - 145°C	±5.0°C	±4.0°C
	146 - 160°C	±6.0°C	±5.0°C
15.1 ~ 30°C	≤ 100°C	±5.0°C	±4.0°C
	101 - 145°C	±6.0°C	±5.0°C
	146 - 160°C	±7.0°C	±6.0°C
	161 - 190°C	±9.0°C	±8.0°C
	191 - 230°C	±11.0°C	±10.0°C

ON Tolerance of OFF Temperature			
Range of Diff.	Range of OFF temp.	Common tolerance	Limit of tolerance
30.1 ~ 45°C	≤ 100°C	±6.5°C	±5.5°C
	101 - 145°C	±7.5°C	±6.5°C
	146 - 160°C	±8.5°C	±7.5°C
	161 - 190°C	±10.5°C	±9.5°C
	191-230°C	±12.5°C	±11.5°C
45.1 ~ 60°C	≤ 100°C	±8.0°C	±7.0°C
	101 - 145°C	±9.0°C	±8.0°C
	146 - 160°C	±10.0°C	±9.0°C
	161 - 190°C	±12.0°C	±11.0°C
	191 - 230°C	±14.0°C	±13.0°C

ON Tolerance of OFF Temperature			
Range of Diff.	Range of OFF temp.	Common tolerance	Limit of tolerance
60.1 ~ 75°C	≤ 100°C	±9.5°C	±8.5°C
	101 - 145°C	±10.5°C	±9.5°C
	146 - 160°C	±11.5°C	±10.5°C
	161 - 190°C	±12.0°C	±11.0°C
	191-230°C	±14.0°C	±13.0°C
75.1 ~ 90°C	≤ 100°C	±11.0°C	±10.0°C
	101 - 145°C	±12.0°C	±11.0°C
	146 - 160°C	±13.0°C	±12.0°C
	161 - 190°C	±15.0°C	±14.0°C
	191 - 230°C	±17.0°C	±16.0°C

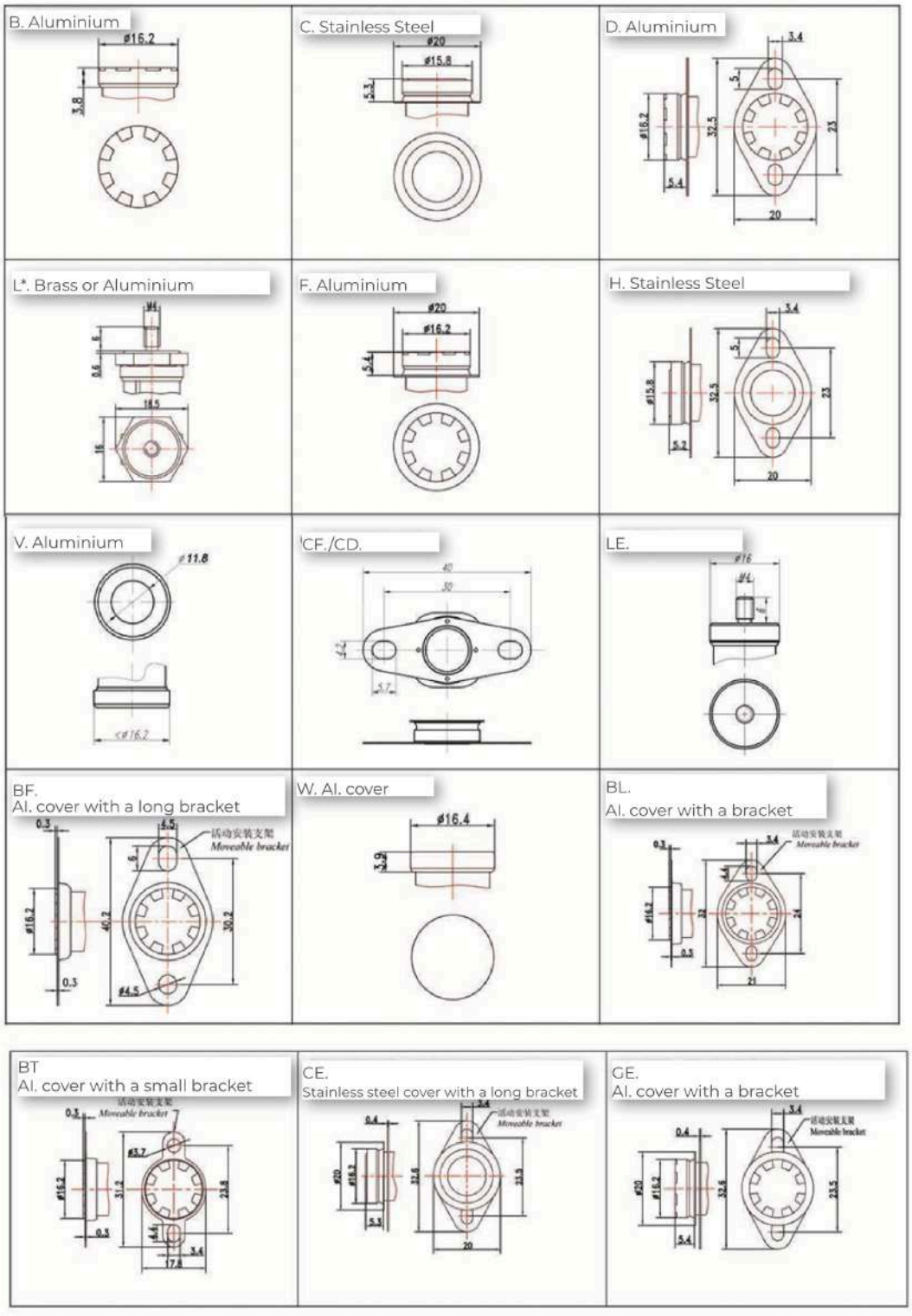
ON Tolerance of OFF Temperature			
Range of Diff.	Range of OFF temp.	Common tolerance	Limit of tolerance
90.1 ~ 105°C	≤ 100°C	±12.5°C	±11.5°C
	101 - 145°C	±13.5°C	±12.5°C
	146 - 160°C	±14.5°C	±13.5°C
	161 - 190°C	±16.5°C	±15.5°C
	191 - 230°C	±18.5°C	±17.5°C
>105°C	≤ 145°C	±15.0°C	±14.0°C
	146 - 190°C	±17.0°C	±16.0°C
	191 - 230°C	±19.0°C	±18.0°C

Installation and Direction for Use

1. Method of earth: by means of the metal cup of thermostat connected in the earthing metal part.
2. The thermostat should work in environment with humidity not higher than 90%, free of caustic, flammable gas and conducting dust.
3. When the thermostat is used to sense the temperature of solid items, its cover should be clung to the heating part of such items. Meanwhile, heat-conducting silicon grease, or other heat media of similar nature, should be applied to the cover's surface.
4. If the thermostat is used to sense the temperature of liquids or steam, it is strongly recommended to adopt a version with stainless-steeled cup. Moreover, cautious measures should be taken to prevent liquids getting into/onto the thermostat's insulation parts.
5. The top of the cup must not be pressed to sink, so as to avoid adverse effect on the thermostat's temperature sensitivity or its other functions.
6. Liquids must be kept out of the thermostat's inner part! Any force that could lead to a crack in the base must be avoided. It should be kept clear and away from the pollution of electric substance to prevent insulation weakening that leads to short-circuited damages.
7. The terminals should be bent, or else, the reliability of electric connection will be influenced.

Cover code and the sketch

The materials of cover include aluminium, brass and stainless steel. If the thermostat is used to sense the temperature of liquids or steam, it should adopt a stainless steel version.

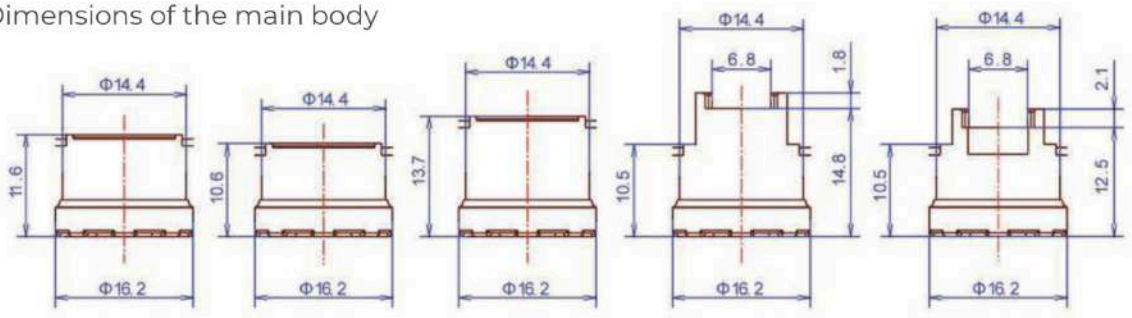


We can customize the covers according to the client's requirements.

KSD301-V / Sub-series of KSD301

Auto-reset type, heat-resistant resin base; OT180°C max.

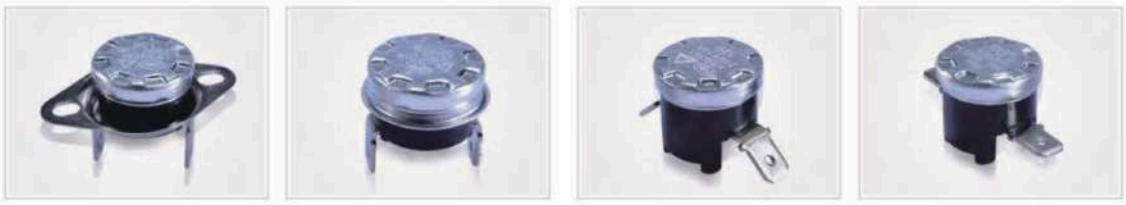
Dimensions of the main body



Normal type | Short type | Reinforced insulation type | Press fixing type 2 | Press fixing type 3

Safety Certificate

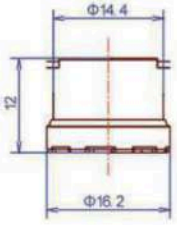
Max OT	Life cycles	120V 7A 240V 5A	250V 5A	250V 10A	250V 16A	125V 16A
145°C	60.000		CQC,TUV		CQC,TUV	
	100.000	UL				
180°C	100.000			UL,CQC,TUV		UL



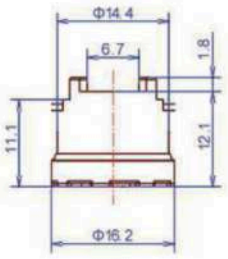
KSD301-G / Sub-series of KSD301

Auto-reset type, ceramic base; OT: 220° max.

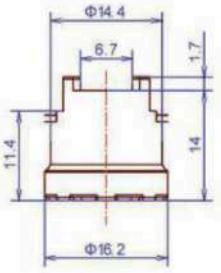
Dimensions of the main body



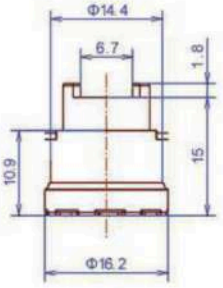
Normal type



Press fixing type 4



Press fixing type 5



Press fixing type 6

Safety Certificate

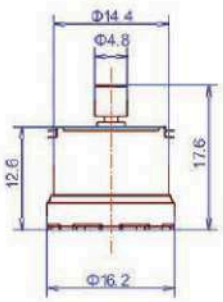
Max OT	Life cycles	250V 5A	250V 10A	125V 16A	250V 16A
150°C	100.000	UL	UL	UL	
160°C	100.000		CQC,TUV		
190°C	300.000	CQC	TUV		
	600.000				CQC,TUV
220°C	300.000		CQC,TUV		
	100.000		UL	UL	

KSD301-R / KSD301R-G / Sub-series of KSD301

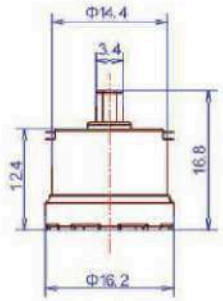
KSD301-R: 180°C, manual reset type, resin base, OT 180°C max

KSD301R-G: 215°C, manual reset type, ceramic base, OT 220°C max

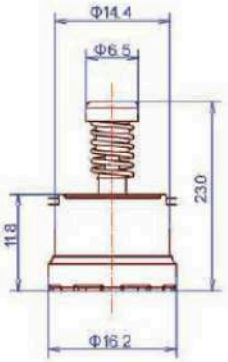
Dimensions of the main body



Normal type



KSD301-R-G



KSD301-R
High type

Safety Certificate of KSD301-R

Max OT	Life cycles	120V 7A 240V 5A	250V 5A	250V 10A	125V 16A	250V 16A
145°C	10.000	UL	CQC			CQC,TUV
190°C	10.000			CQC,TUV, UL	UL	

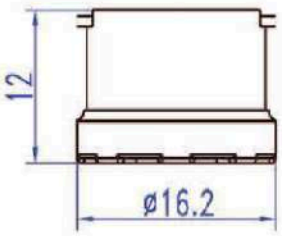
Safety Certificate of KSD301-R-G

Max OT	Life cycles	250V 10A	125V 16A	250V 16A
185°C	10.000			CQC,TUV
215°C	10.000	CQC,TUV, UL	UL	

KSD301-U-G / Sub-series of KSD301

One-shot type, ceramic base, OT 220°C max.

Dimensions of the main body



Normal type

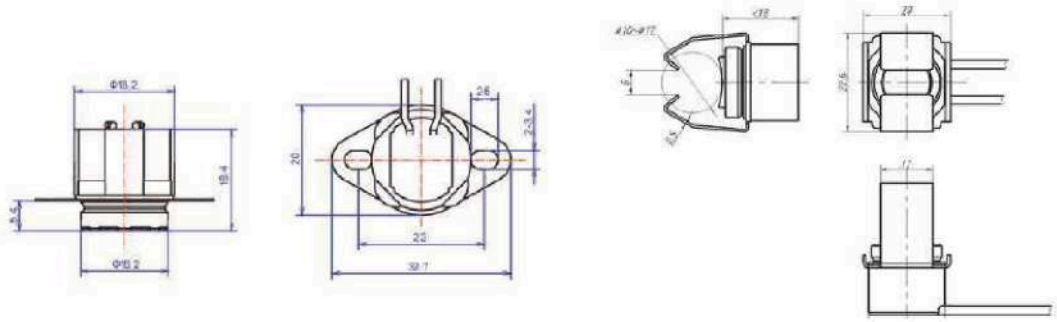
Safety Certificate

Max OT	250V 10A	125V 16A	250V 16A
40 - 185°C			CQC
185 - 280°C	CQC		
60 - 270°C	VDE		
60 - 220°C			VDE
210°C	UL	UL	

KSD301-M / Sub-series of KSD301

The KSD301-M series thermostat is a type of water proof thermostat, it has more water proof components than the other KSD301 series products, the protection class of the main body is up to IP54. It is suitable for working in the wet conditions of appliances.

Dimensions of the main body



Basic Technical Parameter

- Rated current: 10A (resistive)
- Insulation resistance in water: with a DC500 V megger in water, the tested value is over 100 mΩ
- Class of temperature characteristics: Auto-reset, normally closed and normally open
- Switch structure: SPST
- Max. OT: 145° C
- Tmax: 185°C

Safety Certificate

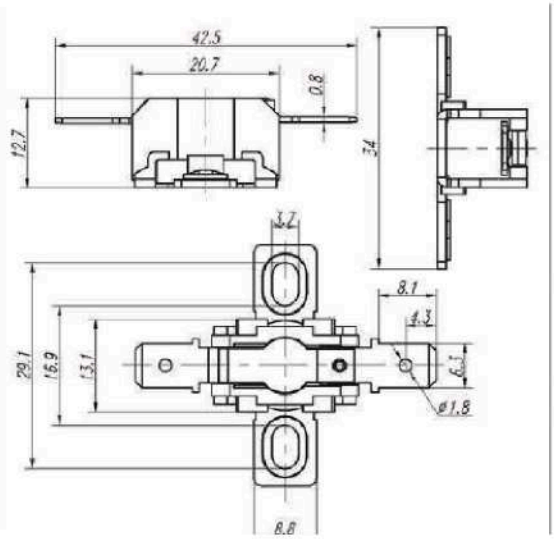
Max OT	Life cycles	250V 10A	120V 7A / 240V 5A 125V 16A
105°C	100.000	UL	UL
145°C	10.000	CQC	
	100.000	TUV	

KSD309 Series

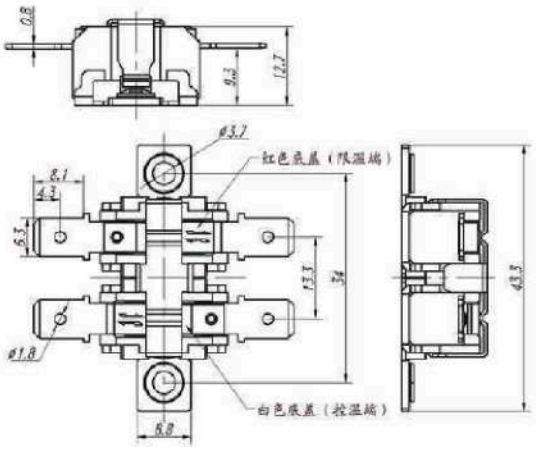
The KSD309 series has the max. operating temperature (280°C) of snap-action thermostats. It suits the high-temp. home appliances, such as oven, toaster, microwave oven etc. KSD309 series is divided into 2 sub-series: KSD309-A single body (temperature control), KSD309-C dual body (temperature control+protection).

Dimensions of the main body

Dimensions of KSD309-A
(single temp. type)



Dimensions of KSD309-A
(dual temp. type)



The KSD309 dual temp. type bimetal thermostat combination of two SPST structure thermostats KSD309-A and SD309-U. With different operating temperature, it has both functions of temperature

Basic Technical Parameter

- Rated current: 10A, 16A (resistive)
- Resistance between terminals
- Below 80mΩ (Numeric mΩ mV meter, by volt-ampere standard)
- Insulation resistance
- With a DC500 V megger, borne DC 500V, the tested value is over 100 mΩ
- Class of temperature characteristics:
  KSD309-A: Normally closed with auto reset
  KSD309-C: Normally closed with auto reset and one-shot (the temperature limiting part), consisting of KSD309-A series and KSD309-U series
- Switch structure: SPST
- Max. OT: 280° C
- Heat-resistant temperature: 320°C

KSD309 Series cont.

Range of OT	Comm Diff.	Min. Diff.
151 ~ 220°C	25°C	14°C
221 ~ 240°C	30°C	20°C
241 ~ 280°C	35°C	25°C

Tolerance

Range of OT	Comm Diff.	Preferable tolerance	Limit of the tolerance
151 ~ 180°C	± 4°C	± 3.5°C	± 3°C
181 ~ 220°C	± 5°C	± 4°C	± 3.5°C
221 ~ 240°C	± 6°C	± 6°C	± 4.5°C
241 ~ 280°C	± 7°C	± 6°C	± 5.5 °C

Safety Certificate

Sub series	OT range	Life cycles	250V 10 A	125V 16A	250V 16 A
KSD309-A	60 ~ 180°C	100,000	VDE: 40044740		
	60 ~ 210°C		CQC: 14002120139 TUV:R50332938		
	60 ~ 280°C	60,000		UL:E137238 Sec.12	UL:E137236 Sec.12
	60 ~ 280°C	30,000	VDE: 40044740		
	210 ~ 280°C		CQC: 14002120139 TUV:R50332938		
	60 ~ 180°C				VDE: 40044740
	60 ~ 210°C				CQC: 14002120139 TUV:R50332938
KSD309-U	40 ~ 250°C	1 (SOD)	VDE: 40044740		
	40 ~ 280°C			UL:E137236 Sec.12	VDE: 40044740 UL:E137238 Sec.12
KSD309-C	KSD309-A	KSD309-A	TUV:R50332938 VDE:	UL:E137236 Sec.12	VDE: TUV:50357322 UL:E137238 Sec.12
	KSD309-U	KSD309-U			

Installation and Direction for Use

1. Method of earth: by means of the metal cup of thermostat connected in the earthing metal part.
2. The thermostat should work in environment with humidity not higher than 90%, free of caustic, flammable gas and conducting dust.
3. When the thermostat is used to sense the temperature of solid items, its cover should be clung to the heating part of such items. Meanwhile, heat-conducting silicon grease, or other heat media of similar nature, should be applied to the cover's surface.
4. If the thermostat is used to sense the temperature of liquids or steam, it is strongly recommended to adopt a version with stainless-steeled cup. Moreover, cautious measures should be taken to prevent liquids getting into/onto the thermostat's insulation parts.
5. The top of the cup must not be pressed to sink, so as to avoid adverse effect on the thermostat's temperature sensitivity or its other functions.
6. Liquids must be kept out of the thermostat's inner part! Any force that could lead to a crack in the base must be avoided. It should be kept clear and away from the pollution of electric substance to prevent insulation weakening that leads to short-circuited damages.
7. The terminals should be bent, or else, the reliability of electric connection will be influenced.

KSD309 Series Nomenclature

KSD309 --- A --- 28.0 / 10 B 15 S20
I II III IV V VI VII

I: Basic type designation
II: Special specification code, "A" stands for "KSD309-A" series
III: Temperature code 1/10 of operating temperature value
IV: Rated current
V: Cover shape code: stands for the type of cover, one or two digits
VI: Terminal code: stands for the type of terminal, two digits
VII: Action temperature spec. code
- blank: Temperature differential of 17°C (automatic reset, OFF ≥ ON)
- X: Temperature differential of 11°C (automatic reset, OFF ≥ ON)
- X1: Temperature differential of 8°C (automatic reset, OFF ≥ ON)
- X2: Temperature differential of 14°C (automatic reset, OFF ≥ ON)
- S**: Stands for the temperature differential (automatic reset, OFF ≥ ON), e.g. S20 for 20°C or S50 for 50°C.
- K**: Stands for the temperature differential (automatic reset, OFF ≥ ON), e.g. K20 for 20°C or K50 for 50°C.

KSD309 --- C --- 10 F 15 / 80 / 60 / 180
I II III IV V VI VII VIII

I: Basic type designation
II: Special specification code, "C" stands for "KSD309-C" series
III: Rated current
IV: Cover shape code: stands for the type of cover, one or two digits
V: Terminal code: stands for the type of terminal, two digits
VI: Operating temperature of thermostat
VII: Reset temperature of thermostat
VIII: Operating temperature of thermal cut out