US-602

US-602SXRLQE

Products registered in the electric apparatus parts/materials registration system, gas certificate products
UL, CSA, VDE, EN60730 or CCEE certified products

Featu-res • General-purpose low cost, compact, large capacity (S type), minute current (K type)

Appli-cation • Electronic oven, heating unit, water heater, etc.

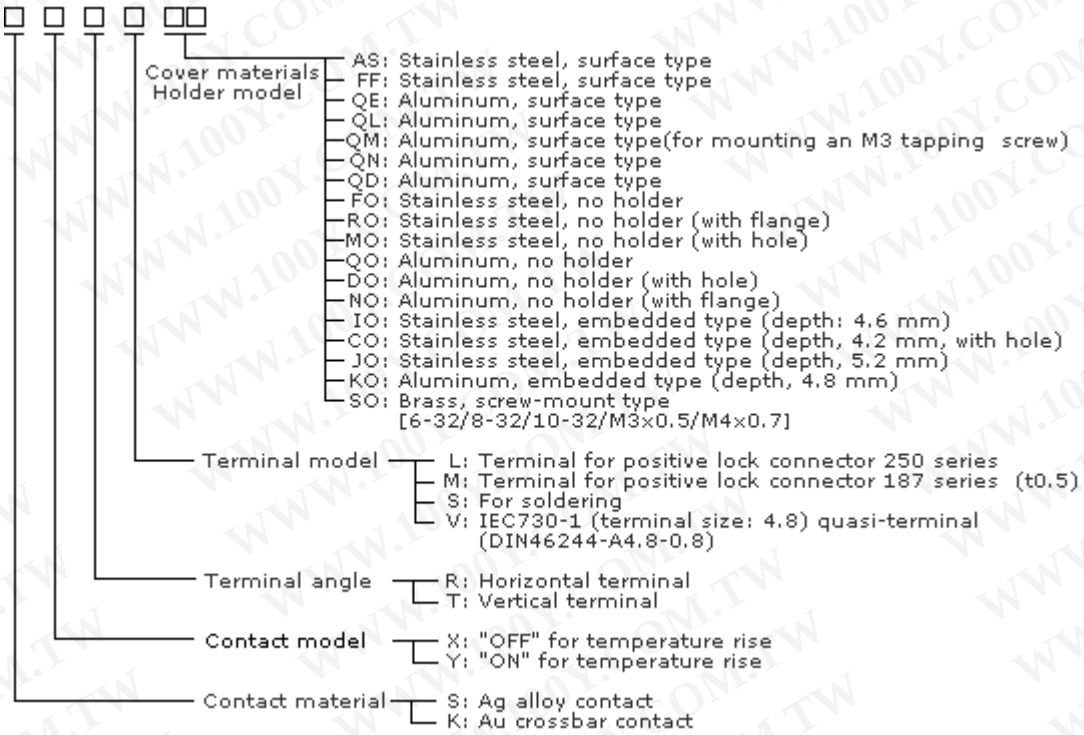
Specifications

Electrical ratings	S type:	125 VAC, max. 15A, resistance load
		250 VAC, max. 8A, resistance load
	K type:	30 VDC, max. 1A, resistance load
		120 VAC, 125 VA (pilot duty)
Temperature setting range		One-point temperature setting from 0 to 150° C
Differential		10-25K
Temperature tolerance		Operating temperature ±4° C/return temperature ±7° C
Circuit resistance (initial value)		50 mΩ or less
Insulation resistance		100 MΩ or greater [through the 500 VDC megger]
Withstand voltage	S type:	1,500 VAC/minute
	K type:	1,200 VAC/minute
Thermal resistance		150° C
Cold resistance		-20° C
Opening-closing durability		10,000 times or more [under rated load]

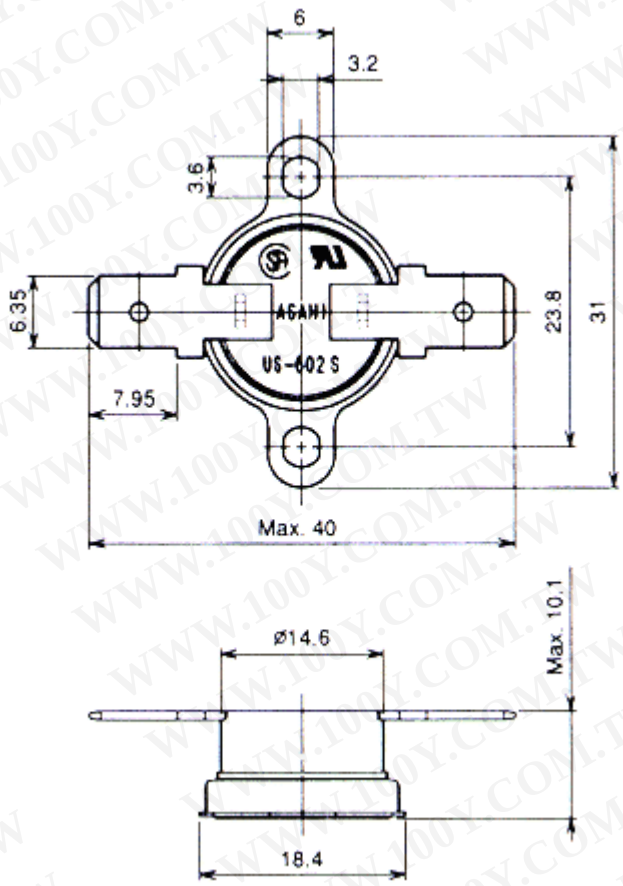
* The differential slightly varies depending on the operating temperature.

Model code

US-602



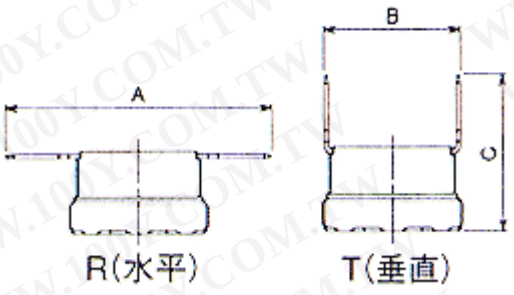
Dimensional outline drawing



Because the UL, CSA, VDE, DEMKO or CCEE certificate model or specification partially differs from the descriptions below, contact us for more information.

In addition, contact us for upgraded specifications.

Terminal angles



Terminal model	A	B	C
L	38.0	16.5	21.0
M	35.5	16.0	19.5
S	27.0	16.0	15.0
V	32.0	16.5	18.0

* Reference model [Unit: mm]

General Catalog of

Thermostat

ASAHI KEIKI CO.,LTD.

ASAHI create safe world

Support for comfortable living environment in the safety and trust of technology

～ The temperature as the core, to provide products that is attractive to all areas ～

Concept of our proposal is ″ Served with Safety Quality ″.

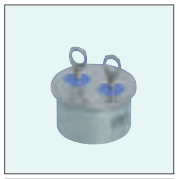
Asahi Keiki thermostat has supported our comfortable, safe and secure living environment.

For example, the gas and oil equipment, cooker, heater at home,copy machine in the office, the vending machine, also, such as industrial equipment, automobiles, ships etc . . , through the temperature in a wide range of fields, We will support your comfortable and rich life.

Safety and security, and offers the trust of technology.

Contents

Thermostat


US-118


US-602


US-621


US-622


US-625


US-628


US-603

Thermostat for Home Appliances

	US-118	US-602	US-621	US-622	US-625	US-628	US-603	US-623	US-415	US-630	US-638	US-802	US-828
Kettle / jar pot		○		○	○		○	○					
Oven		○		○	○			○					
Coffee maker		○		○	○			○					
Electric stove / ceramic heater		○		○	○	○		○		○	○		
Microwave		○		○	○								
Humidifier		○		○		○	○			○	○		
Refrigerators		○						○		○	○		
Sweep removal machine		○		○		○		○					
Drying washing machine / clothes dryer		○		○		○		○					
Garbage disposal		○		○	○	○				○	○		
Sandwich maker / crepe makers				○	○			○					
Hot plate / flyer				○	○								
Air conditioning		○		○		○							
Tableware dryer		○		○		○							
IH cooking heater				○	○	○							
IH rice dexterity			○										
Steamer / steamer		○			○	○				○	○		
Iron					○								
Electric kotatsu / cheap		○							○	○	○		

Thermostat for gas oil equipment

	US-118	US-602	US-621	US-622	US-625	US-628	US-603	US-623	US-415	US-630	US-638	US-802	US-828
gas oil stove / fan heater		○		○	○	○		○		○	○		
Supply hot water unit / for Eco Cute	○	○			○	○	○	○		○	○		
For wind Lu kettle	○	○		○	○	○	○	○					
For built-in stove	○			○	○	○		○					


US-623


US-415


US-630


US-638


US-802


US-828

Thermostat for residential equipment

	US-118	US-602	US-621	US-622	US-625	US-628	US-603	US-623	US-415	US-630	US-638	US-802	US-828
Electric water heater	○	○		○	○	○	○	○		○	○		
Electric mat / kitchen mat										○	○		
Warm water washing toilet seat		○				○	○			○	○		
Floor heating										○	○		

Thermostats for commercial equipment

	US-118	US-602	US-621	US-622	US-625	US-628	US-603	US-623	US-415	US-630	US-638	US-802	US-828
Vending machine / freezer display case		○		○		○	○						
Copier / printer / laser MFP			○	○	○								○
Liquid crystal projector		○		○			○	○		○	○	○	
Rear-projection							○	○				○	

Thermostat for OA equipment

	US-118	US-602	US-621	US-622	US-625	US-628	US-603	US-623	US-415	US-630	US-638	US-802	US-828
OA equipment			○	○	○					○	○	○	○

Thermostats for vehicles

	US-118	US-602	US-621	US-622	US-625	US-628	US-603	US-623	US-415	US-630	US-638	US-802	US-828
Car seat		○								○	○		
Automotive steering wheel heater		○								○	○	○	
Electric cart		○						○		○	○		
Outboard motor	○												

Thermostat for other areas

	US-118	US-602	US-621	US-622	US-625	US-628	US-603	US-623	US-415	US-630	US-638	US-802	US-828
Machine tools	○	○		○	○	○	○	○		○	○		
Power Equipment	○	○		○		○		○		○	○	○	
Printed circuit boards		○		○								○	
Alkaline ionized water dexterity	○	○		○		○				○	○		

1/2 Disc , Automatic Reset type thermostat

THERMOSTAT US-118

Application/Bath boiler, water heater, etc.

Operating temp. 250℃ max.

Stainless braket

US-118CXIO

US-118BXHL

US-118BXHM

Specification

Electrical rating	Type B : 125 VAC 3A max. (200mA min.) Type C : 24 VDC 1A max. (5 VDC 1mA min.) 40 VDC 0.5A max. (5 VDC 1mA min.)				
Operation temp. range	0～50℃	51～100℃	101～150℃	151～190℃	191～250℃
Temperature tolerance	±4/±5	±4/±6	±5/±7	±6/±8	±8/±10
Differential	15K	15K	20K	25K	30K
Circuit resistance	Type B : 70 mΩ or less Type C : 10 mΩ or less				
Insulation resistance	100 MΩ or more [with a 500 VDC megger]				
Dielectric strength	Type B : 1,200 VAC / 1min. Type C : 1,000 VAC / 1min.				
Heat resistance	250℃				
Cold resistance	−20℃				
Switching durability	100,000 times or more [at rated load]				

* The maximum temperature on the JIA certification will be 180 ℃
* Please contact the Overseas Sec. for the details since the types and specifications of the approved models are slightly different from those shown above.

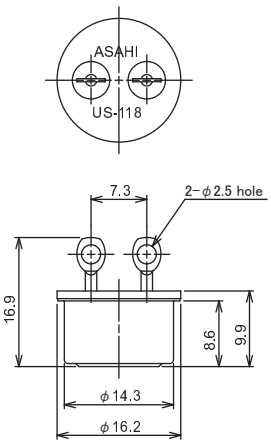
Model code

US-118□□□□□

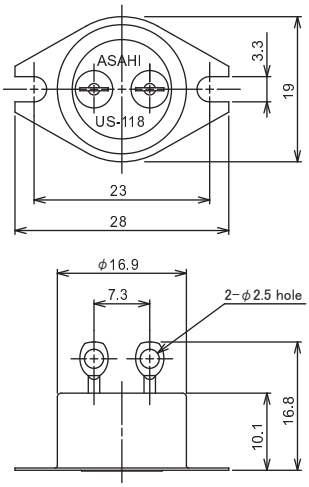
- Attached terminal type (Terminal type : only P)
  - A : Attached
  - No symbol : Without attachment
- Bracket type
  - M : Surface bracket (pitch 35mm)
  - L : Surface bracket (pitch 23mm)
  - K : Air stream bracket (pitch 23mm)
  - I : Air stream bracket (pitch 35mm)
  - O : No bracket
  - [N : Bracket with M4 × 0.7 screw]
- Terminal type
  - Contact material
  - Type B only
    - H : For soldering (with φ2 hole)
    - P : Pin terminal
  - Type C only
    - W : For welding
    - I : For soldering (with φ2.5 hole)
- Contact type
  - X : Open on temperature rise " OFF "
  - Y : Close on temperature rise " ON "
- Contact material
  - B : Ag contact (Type B)
  - C : Au cross bar contact (Type C)

Dimensional drawings

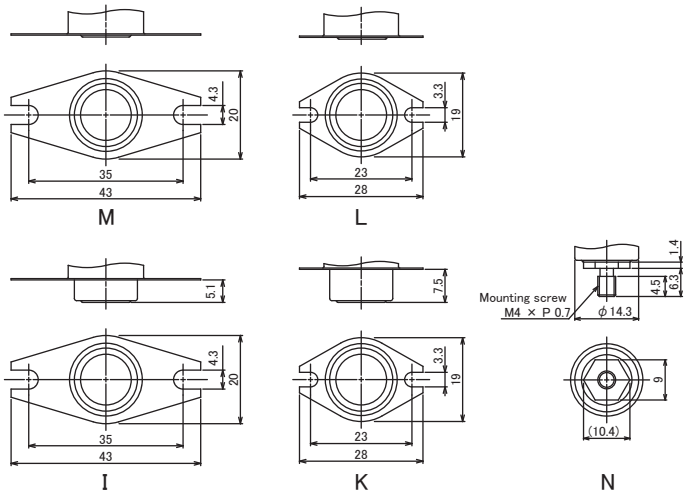
US-118CXIO



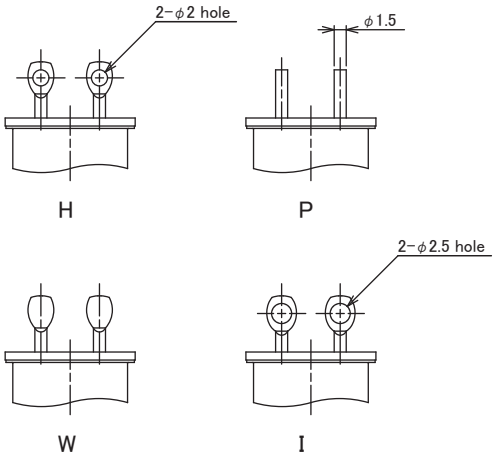
US-118CXIL



Bracket type



Terminal type



ASAHI KEIKI CO., LTD.

1/2 inch, Automatic Reset type

THERMOSTAT
US-602

Application/Oven, Heating unit, LBP etc.

Operating temp. 150℃ max.

US-602SXRLQE

Phenol resin case

US-602SXRSKO

US-602SXTSSO

Specification

Electrical rating	Type S : 125 VAC 15A max. (200mA min.) 250 VAC 8A max. (200mA min.) Type K : 30 VDC 1A max. (5 VDC 1mA min.) 120 VAC 125 VA (Pilot Duty)		
Operating temp. range	0～50℃	51～100℃	101～150℃
Temperature tolerance	±4K / ±5K	±4K / ±6K	±5K / ±7K
Differential	12K	15K	20K
Circuit resistance	Type S : 50 mΩ or less Type K : 10 mΩ or less		
Insulation resistance	100 MΩ or more [with a 500 VDC megger]		
Dielectric strength	Type S : 1500 VAC / 1 min. Type K : 1200 VAC / 1 min.		
The max. override temp.	150℃		
Cold resistance	−20℃		
Switching durability	100,000 times or more [at rated load]		

* The differential varies slightly with the operating temperature.
* Please contact the Overseas Sec for the details since the type s and specifications of the approved models are slightly different from those shown above.

Model code

US-602□□□□□□

The material of the bracket stainless steel (other than KO and SO)

Cover・mounting bracket type
- QO : Aluminum cover , no bracket
- QE : Aluminum , movable surface bracket (pitch 23.8mm)
- QE-FB : Aluminum , fixed surface backet (pitch 23.8mm)
- QL : Aluminum , movable surface bracket (pitch 24.5mm)
- QL-FB : Aluminum , fixed surface backet (pitch 24.5mm)
- KO : Aluminum , air stream backet (depth 5.0mm , 24.5mm)
- AS : Stainless , movable surface bracket (pitch 24.0mm)
- I O : Stainless , air stream backet (depth 4.6mm , 24.5mm)
- JO : Stainless , air stream backet (depth 5.2mm , 24.5mm)
- QD : Aluminum , movable surface bracket (pitch 30.0mm)
- QM : Aluminum , movable surface bracket (pitch 23.8mm) (for mounting an M3 tapping screw)
- FO : Stainless cover , no bracket
- FF : Stainless , movable surface bracket (pitch 25.0mm)
- SO : Brass cover , stud mounting type [M3×0.5,M4×0.7,M5×0.8,6-32UNC,8-32UNC,10-32UNF]

Terminal type
- L : Terminal for positive lock connector 250 series (size : 6.35×t 0.8 material:brass , Sn-plated)
- M : Terminal for positive lock connector 187 series (size : 4.75×t 0.5 material:brass , Sn-plated)
- V : Connector IEC60730-1 quasi-terminal (size : 4.8×t 0.8 material:brass , Sn-plated)
- S : For soldering (Brass t 0.5 , Ni-plated)

Terminal angle
- R : Horizontal terminal
- T : Vertical terminal

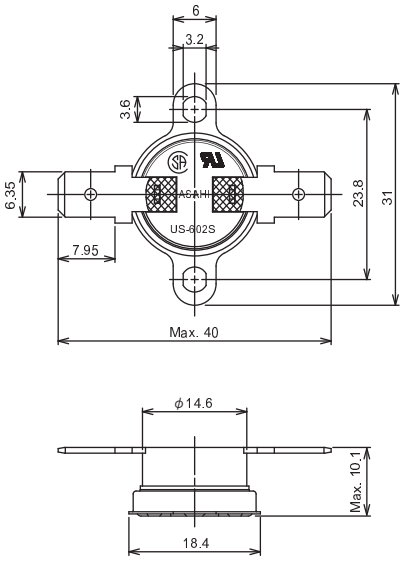
Contact type
- X : Open on temperature rise
- Y : Close on temperature rise

Application type
- S : Ag・Ag alloy contact / standerd case
- K : Au cross bar contact / standerd case

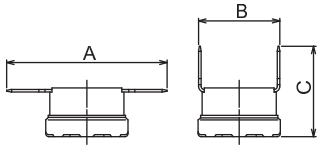
※ For Cover and bracket model, please refer to page 16.

Dimensional drawings

US-602SXRLQE



Terminal type and angle



R : Horizontal terminal T : Vertical terminal

[Unit : mm]

Terminal type	A	B	C
L	Max.40	(17.0)	(21.0)
M	Max.36	(16.0)	(19.5)
V	Max.33	(16.6)	(18.2)
S	Max.28	(16.0)	(14.8)

※ Above dimention is applied for US-602

1/2 inch, Automatic Reset type

THERMOSTAT US-621


US-621AXTGKO


US-621AXTGQE

Application/ Scanner, Printer, Copier, etc.

Operating temp. 200℃ max.


US-621AXRIMO

PPS resin case

Specification

Electrical rating	125 VAC 15A max. (200mA min.) 250 VAC 10A max. (200mA min.)				
Operating temp. range	0～50℃	51～100℃	101～150℃	151～190℃	191～200℃
Temperature tolerance	±4/±5K	±4/±6K	±5/±7K	±6/±8K	±7/±10K
Differential	12K	15K	20K	25K	30K
Circuit resistance	50 mΩ or less				
Insulation resistance	100 MΩ or more [with a 500 VDC megger]				
Dielectric strength	1500 VAC / 1 min.				
Heat resistance	200℃				
Cold resistance	−20℃				
Switching durability	100,000 times or more [at rated load]				

* The differential varies slightly with the operating temperature.
* Please contact the Overseas Sec for the details since the types and specifications of the approved models are slightly different from those shown above.
* US-621 is adapted to be a S.O.D. with a quick response.

Model code

US-621 A □□□□□

The material of the bracket stainless steel (other than KO and SO)

Cover・mounting bracket type
- QO : Aluminum cover , No bracket
- QE : Aluminum , Stationaly surface bracket (pitch 23.8mm)
- QE-FB : Aluminum , Fixed surface backet (pitch 23.8mm)
- QL : Aluminum , Movable surface bracket (pitch 24.5mm)
- QL-FB : Aluminum , Fixed surface backet (pitch 24.5mm)
- KO : Aluminum , Air stream backet (depth 5.0mm , 24.5mm)
- GO : Aluminum , Air stream backet (depth 5.4mm , 24.5mm)
- MO : Stainless cover , No bracket (with ϕ12 hole type)
- I O : Stainless , Air stream backet (depth 4.6mm , 24.5mm)
- JO : Stainless , Air stream backet (depth 5.2mm , 24.5mm)
- QD : Aluminum , Movable surface bracket (pitch 30.0mm)
- QM : Aluminum , Movable surface bracket (pitch 23.8mm) (for mounting an M3 tapping screw)
- DO : Aluminum cover , No bracket (with ϕ12 hole type)
- NO : Aluminum cover , No bracket (with frange type)
- CO : Stainless , Air stream backet (with hole , depth 4.2 , 24.5)
- SO : Brass cover , Stud mounting type [M3×0.5,M4×0.7,M5×0.8,6-32UNC,8-32UNC,10-32UNF]

Terminal type
- G : Equivalent to Positive Lock Connector 250 series (size : 6.35×t 0.8 material:steel , Ni-plated)
- H : Equivalent to Positive Lock Connector 187 series (size : 4.75×t 0.5 material:steel , Ni-plated) ※ H : Combination of horizontal terminal (R)
- I : Fixed screw mount (steel t 0.8 , Ni-plated) ※ I : Combination of horizontal terminal (R)

Terminal angle
- R : Horizontal terminal
- T : Vertical terminal

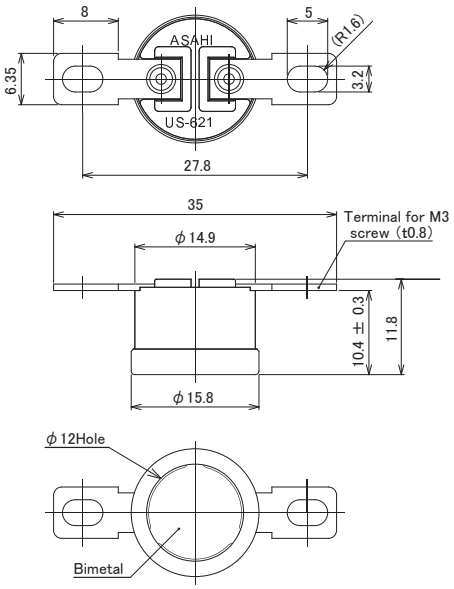
Contact type
- X : Open on temperature rise
- Y : Close on temperature rise

Application type
- A : Ag・Ag alloy contact

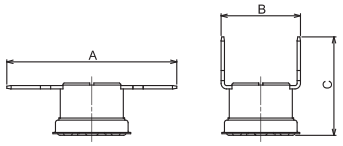
※ For Cover and bracket model, please refer to page 16.

Dimensional drawings

US-621AXRIMO



Terminal type and angle



[Unit : mm]

Terminal type	A	B	C
G	(40.2)	(19.0)	(23.3)
H	(36.0)	—	—
I	(36.0)	—	—

※ Above dimention is applied for US-621

1/2 inch, Automatic Reset type

THERMOSTAT
US-622

Application/ Oven, Heating unit, LBP etc.

Operating temp. 185℃ max.

Polyester resin case

US-622AXRLQE

US-622AXRSGO

US-622AXTLQE

Specification

Electrical rating Switching durability	Type A・P : 125 VAC 15A max. , 250 VAC 10A max. (resistive load) ・・・ 100,000 times or more 250 VAC 16A max. (resistive load) 30,000 times 250 VAC 6 (6)A Cos φ0.6, inductive load 10,000 times Type K : 30 VDC 1 A max. (5 VDC 1mA min.)			
Operating temp. range	0～50℃	51～100℃	101～150℃	151～185℃
Temperature tolerance	±4K / ±5K	±4K / ±6K	±5K / ±7K	±6K / ±8K
Differential	12K	15K	20K	25K
Circuit resistance	Type A・P : 50 mΩ or less , Type K : 10 mΩ or less			
Insulation resistance	100 MΩ or more [with a 500 VDC megger]			
Dielectric strength	Type A・P : 1500 VAC / 1 min. ,Type K : 1200 VAC /1 min.			
The max. override temp.	235℃			
Cold resistance	−20℃			
Switching durability	100,000 times or more [at rated load]			

* The differential varies slightly with the operating temperature.
* Please contact the Overseas Sec for the details since the types and specifications of the approved models are slightly different from those shown above.
* US-622 is adapted to be a S.O.D. with a quick response.

Model code

US-622□□□□□□

The material of the bracket stainless steel (other than KO and SO)

Cover・mounting bracket type
- QO : Aluminum cover , no bracket
- QE : Aluminum , movable surface bracket (pitch 23.8mm)
- QE-FB : Aluminum , fixed surface backet (pitch 23.8mm)
- QL : Aluminum , movable surface bracket (pitch 24.5mm)
- QL-FB : Aluminum , fixed surface backet (pitch 24.5mm)
- KO : Aluminum , air stream backet(depth 5.0mm , 24.5mm)
- GO : Aluminum , air stream backet(depth 5.4mm , 24.5mm)
- MO : Stainless cover , no bracket (with φ12 hole type)
- I O : Stainless , air stream backet(depth 4.6mm , 24.5mm)
- JO : Stainless , air stream backet(depth 5.2mm , 24.5mm)
- QD : Aluminum , movable surface bracket (pitch 30.0mm)
- QM : Aluminum , movable surface bracket (pitch 23.8mm) (for mounting an M3 tapping screw)
- FO : Stainless cover , no bracket
- DO : Aluminum cover , no bracket (with φ12 hole type)
- NO : Aluminum cover , no bracket (with frange type)
- CO : Stainless , air stream backet(with hole, depth 5.2, 24.5)
- SO : Brass cover , stud mounting type [M3×0.5,M4×0.7,M5×0.8,6-32UNC,8-32UNC,10-32UNF]

Terminal type
- L : Terminal for positive lock connector 250 series (size : 6.35×t 0.8 material:brass , Ni-plated)
- G : Terminal for positive lock connector 250 series (size : 6.35×t 0.8 material:steel , Ni-plated)
- M : Terminal for positive lock connector 187 series (size : 4.75×t 0.5 material:brass , Ni-plated)
- H : Terminal for positive lock connector 187 series (size : 4.75×t 0.5 material:steel , Ni-plated) ※ H : Combination of horizontal terminal (R)
- V : Connector IEC60730-1 quasi-terminal (size : 4.8×t 0.8 material:brass , Ni-plated)
- D : DIN46244 quasi-terminal (size : 4.8×t 0.8 material:brass , Ni-plated)
- I : For fixing with screw (steel t 0.8 , Ni-plated) ※ I : Combination of horizontal terminal (R)
- S : For soldering (Brass t 0.5 , Sn-plated)

Terminal angle
- R : Horizontal terminal
- T : Vertical terminal

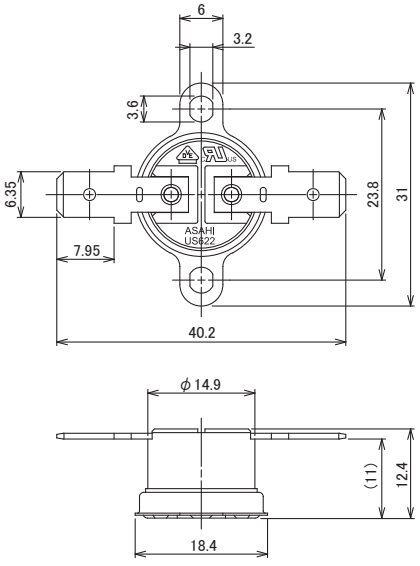
Contact type
- X : Open on temperature rise
- Y : Close on temperature rise

Application type
- A : Ag・Ag alloy contact / standerd case (Type A)
- P : Ag・Ag alloy contact / 4 post case (Type P)
- K : Au cross bar contact / standerd case (Type K)

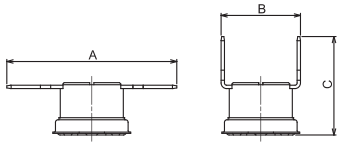
※ For Cover and bracket model, please refer to page 16.

Dimensional drawings

US-622SXRLQE



Terminal type and angle



[Unit : mm]

Terminal type	A	B	C
L , G	(40.2)	(18.8)	(23.3)
M , H	(36.0)	(18.2)	(20.9)
V	(33.0)	(19.0)	(19.5)
D	(34.5)	(19.0)	(20.5)
I	(34.5)	—	—
S	(22.5)	(16.0)	(16.0)

※ Above dimention is applied for US-622

1/2 inch, Automatic Reset type

THERMOSTAT US-625

Application/ Electric oven,Heating unit,LBP etc.

Operating temp. 260℃ max.

Ceramic case

US-625AXRLQL

US-625AXRSQE

US-625AXTLGO

Specification

Electrical rating	Type A : 125 VAC 15A max. (200mA min.) 250 VAC 10A max. (200mA min.) Type K : 30 VDC 1 A max. (5 VDC 1mA min.)				
Operating temp. range	0～50℃	51～100℃	101～150℃	151～190℃	191～260℃
Temperature tolerance	±4/±5K	±4/±6K	±5/±7K	±6/±8K	±7/±10K
Differential	12K	15K	20K	25K	30K
Circuit resistance	Type A : 50 mΩ or less Type K : 10 mΩ or less				
Insulation resistance	100 MΩ or more [with a 500 VDC megger]				
Dielectric strength	Type A : 1500 VAC / 1 min. Type K : 1200 VAC / 1 min.				
The max. override temp.	260℃ (Max. operating temp. 200℃)				
Cold resistance	−20℃				
Switching durability	100,000 times or more [at rated load]				

＊The differential varies slightly with the operating temperature.
＊Please contact the Overseas Sec for the details since the types and specifications of the approved models are slightly different from those shown above.
＊US-625 is adapted to be a S.O.D. with a quick response.

Model code

US-625□□□□□□

The material of the bracket stainless steel (other than KO and SO)

Cover・mounting bracket type
- QO : Aluminum cover , no bracket
- QE : Aluminum , movable surface bracket (pitch 23.8mm)
- QE-FB : Aluminum , fixed surface backet (pitch 23.8mm)
- QL : Aluminum , movable surface bracket (pitch 24.5mm)
- QL-FB : Aluminum , fixed surface backet (pitch 24.5mm)
- KO : Aluminum , air stream backet (depth 5.0mm , 24.5mm)
- GO : Aluminum , air stream backet (depth 5.4mm , 24.5mm)
- MO : Stainless cover , no bracket (with φ12 hole type)
- JO : Stainless , air stream backet (depth 5.2mm , 24.5mm)
- QD : Aluminum , movable surface bracket (pitch 30.0mm)
- DO : Aluminum cover , No bracket (with φ12 hole type)
- NO : Aluminum cover , no bracket (with frange type)

Terminal type
- L : Equivalent to Positive Lock Connector 250 series (size : 6.35×t 0.8 material:brass , Ni-plated)
- G : Equivalent to Positive Lock Connector 250 series (size : 6.35×t 0.8 material:steel , Ni-plated)
- M : Equivalent to Positive Lock Connector 187 series (size : 4.75×t 0.5 material:brass , Ni-plated)
- H : Equivalent to Positive Lock Connector 187 series (size : 4.75×t 0.5 material:steel , Ni-plated) ※ H : Combination of horizontal terminal (R)
- V : Equivalent to IEC 60730-1 quasi-terminal (size : 4.8×t 0.8 material:brass , Ni-plated)
- D : Equivalent to DIN46244 (size : 4.8×t 0.8 material:brass , Ni-plated)
- I : Fixed screw mount (steel t 0.8 , Ni-plated) ※ I : Combination of horizontal terminal (R)
- S : For soldering (Brass t 0.5 , Sn-plated)

Terminal angle
- R : Horizontal terminal
- T : Vertical terminal

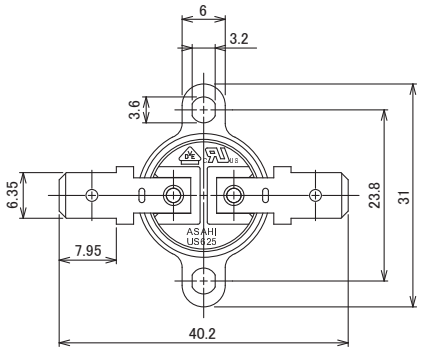
Contact type
- X : Open on temperature rise
- Y : Close on temperature rise

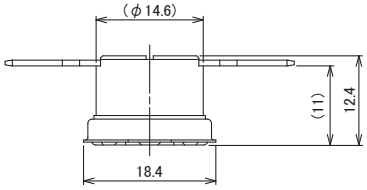
Application type
- A : Ag・Ag alloy contact / standerd case (Type A)
- K : Au cross bar contact / standerd case (Type K)

※ For Cover and bracket model, please refer to page 16.

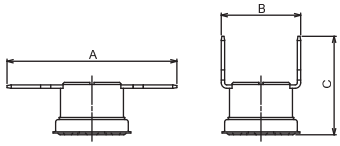
Dimensional drawings

US-625AXRLQE





Terminal type and angle



[Unit : mm]

Terminal type	A	B	C
L , G	(40.2)	(18.8)	(23.3)
M , H	(36.0)	(18.2)	(20.9)
V	(33.0)	(19.0)	(19.5)
D	(34.5)	(19.0)	(20.5)
I	(34.5)	—	—
S	(22.5)	(16.0)	(16.0)

※ Above dimention is applied for US-625

IP67 Drip-proof performance

THERMOSTAT
US-628

Application/ gas and oil appliances, fuel cell, etc.

Operating temp. 130℃ max.

Phenol resin case

US628AXSSAS-F

US-628AXSSAT-F

US-628AXSSKO-F

Specification

Electrical rating	Type A : 125 VAC 10A max. (200mA min.) 250 VAC 5A max. (200mA min.) Type K : 24 VDC 1A max. (5 VDC 1mA min.) 40 VDC 0.5A max. (5 VDC 1mA min.)		
Operating temp. range	30～50℃	51～100℃	101～130℃
Temperature tolerance	±4K / ±5K	±4K / ±6K	±5K / ±7K
Differential	12K	15K	20K
Circuit resistance	70 mΩ or less [varies depending on the lead]		
Insulation resistance	100 MΩ or more [with a 500 VDC megger]		
Dielectric strength	Type A : 1500 VAC / 1 minute Type K : 1200 VAC / 1 minute		
Heat resistance	130℃		
Cold resistance	-20℃		
Switching durability	30,000 times or more [at rated load]		

* The differential varies slightly with the operating temperature.
* Please contact the Overseas Sec for the details since the type s and specifications of the approved models are slightly different from those shown above.

Model code

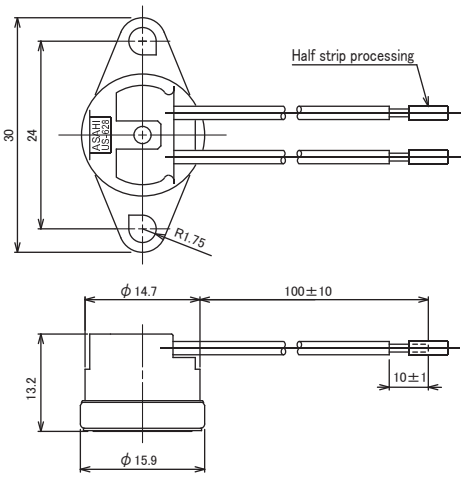
US-628□□ S S □□-□□□

- Special specifications
  - F: Fluoropolymer wire (Heatproof temperature 180℃) [Standard : White , 0.5sq 、 Length 100mm]
  - V : Heat-proof, lead-free PVC wire (Heatproof temperature 115℃) [Standard : Black , 0.5sq 、 Length 100mm]
- Cover・mounting bracket type (The material of the bracket stainless steel)
  - QO : Aluminum cover , no bracket
  - QE : Aluminum , movable surface bracket (pitch 23.8mm)
  - QE-FB : Aluminum , fixed surface backet (pitch 23.8mm)
  - QL : Aluminum , movable surface bracket (pitch 24.5mm)
  - QL-FB : Aluminum , fixed surface bracket (pitch 24.5mm)
  - AS : Stainless , movable surface bracket (pitch 24.0mm)
  - AT : Stainless , movable surface bracket (pitch 24.5～26mm)
- Terminal type
  - SS : Filling a dedicated terminal (Standard)
- Contact type
  - X : Open on temperature rise
  - Y : Close on temperature rise
- Application type
  - A : Ag・Ag alloy contact Type A
  - K : Au cross bar contact Type K

※ For Cover and bracket model, please refer to page 16.

Dimensional drawings

US-628AXSSAS-F



1/2 inch, Manual Reset type

THERMOSTAT US-603

Application/ Jar pot , Wind lu kettle , etc.

Operating temp. 150℃ max.

Phenol resin case

US-603UXRLQE-H

US-603UXTMAS-H

US-603UXTLKO-H

Specification

Electrical rating	Type U : 125 VAC 15A max. (200mA min.) 250 VAC 10A max. (200mA min.) Type K : 30 VDC 1A max. (5 VDC 1mA min.)	
Operating temp. range	50～100℃	101～150℃
Temperature tolerance	±4K	±5K
Circuit resistance	Type U : 50 mΩ or less Type K : 10 mΩ or less	
Insulation resistance	100 MΩ or more [with a 500 VDC megger]	
Dielectric strength	Type U : 1500 VAC / 1 min. Type K : 1200 VAC / 1 min.	
Heat resistance	150℃	
Cold resistance	−20℃	
Switching durability	5,000 times or more [at rated load]	

* The differential varies slightly with the operating temperature.
* Please contact the Overseas Sec for the details since the types and specifications of the approved models are slightly different from those shown above.

Model code

US-603□ X□□□□-□

- H : VDE, EN 60730 (U type)

Cover・mounting bracket type
- QO : Aluminum cover , No bracket
- QE : Aluminum , Movable surface bracket (pitch 23.8mm)
- QE-FB : Aluminum , Fixed surface backet (pitch 23.8mm)
- QL : Aluminum , Movable surface bracket (pitch 24.5mm)
- QL-FB : Aluminum , Fixed surface backet (pitch 24.5mm)
- KO : Aluminum , Air stream backet (depth 5.0mm , 24.5mm)
- AS : Stainless , Stationary surface bracket (pitch 24.0mm)
- I O : Stainless , Air stream backet (depth 4.6mm , 24.5mm)
- JO : Stainless , Air stream backet (depth 5.2mm , 24.5mm)
- QD : Aluminum , Movable surface bracket (pitch 30.0mm)
- QM : Aluminum , movable surface bracket (pitch 23.8mm) (for mounting an M3 tapping screw)
- FO : Stainless cover , No bracket
- FF : Stainless, Movable surface bracket (pitch 25.0mm)
- SO : Brass cover , stud mounting type [M3×0.5,M4×0.7,M5×0.8,6-32UNC,8-32UNC,10-32UNF]

Terminal type
- L : Terminal for positive lock connector 250 series (size : 6.35×t 0.8 material:brass , Sn-plated)
- M : Terminal for positive lock connector 187 series (size : 4.75×t 0.5 material:brass , Sn-plated)
- V : Connector IEC60730-1 quasi-terminal (size : 4.8×t 0.8 material:brass , Sn-plated)
- S : For soldering (Brass t 0.5 , Ni-plated)

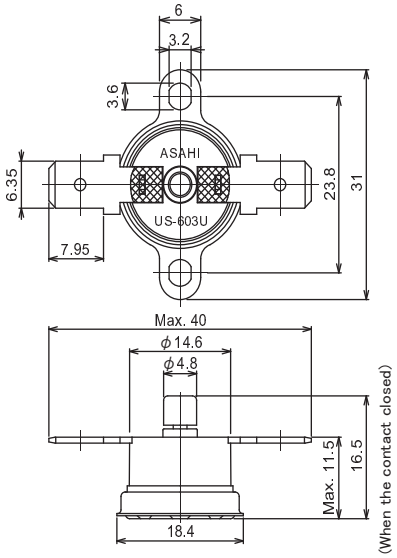
Terminal angle
- R : Horizontal terminal
- T : Vertical terminal

Contact type
- X : Open on temperature rise

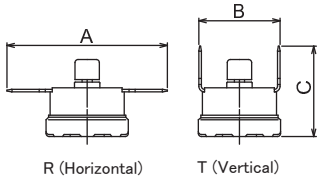
Application type
- U Ag・Ag alloy contact / standerd case
- K : Au cross bar contact / standerd case

Dimensional drawings

US-603AXRLQE



Terminal type and angle



R (Horizontal) T (Vertical)

[Unit : mm]

Terminal type	A	B	K type C	U type C
L	Max.40	(17.0)	(21.0)	(22.4)
M	Max.36	(16.0)	(19.5)	(20.9)
V	Max.33	(16.6)	(18.2)	(19.4)
S	Max.28	(16.0)	(14.8)	(16.5)

※ Above dimention is applied for US-603

1/2 Disc , Manual Reset type

THERMOSTAT
US-623

Application/ Boilers , heaters etc.

Operating temp. 200℃ max.

PPS resin case

US-623AXRGQL

US-623AXTGKO

US-623AXRGJO

Specification

Electrical rating	125 VAC 16A max. (200mA min.) 250 VAC 16A max. (200mA min.)
Operating temp. range	151～200℃
Temperature tolerance	±7K
Circuit resistance	50 mΩ or less
Insulation resistance	100 MΩ or more [with a 500 VDC megger]
Dielectric strength	1500 VAC / 1min.
Heat resistance	200℃
Cold resistance	−20℃
Switching durability	6,000 times or more [at rated load]

* The differential varies slightly with the operating temperature.
* Please contact the Overseas Sec for the details since the types and specifications of the approved models are slightly different from those shown above.

Model code

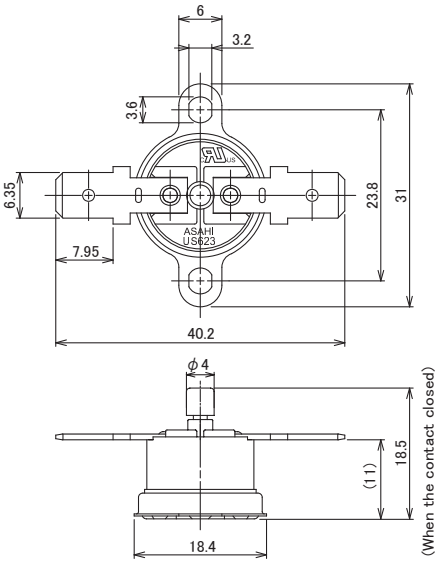
US-623□□□□□□

- Cover・mounting bracket type
  - QO : Aluminum cover , no bracket
  - QE : Aluminum , movable surface bracket (pitch 23.8mm)
  - QE-FB : Aluminum , fixed surface backet (pitch 23.8mm)
  - QL : Aluminum , movable surface bracket (pitch 24.5mm)
  - QL-FB : Aluminum , fixed surface backet (pitch 24.5mm)
  - KO : Aluminum , air stream backet(depth 5.0mm , 24.5mm)
  - GO : Aluminum , air stream backet(depth 5.4mm , 24.5mm)
  - MO : Stainless cover , no bracket (with φ12 hole type)
  - I O : Stainless , air stream backet(depth 4.6mm , 24.5mm)
  - JO : Stainless , air stream backet(depth 5.2mm , 24.5mm)
  - QD : Aluminum , movable surface bracket (pitch 30.0mm)
  - QM : Aluminum , movable surface bracket (pitch 23.8mm) (for mounting an M3 tapping screw)
  - DO : Aluminum cover , no bracket (with φ12 hole type)
  - NO : Aluminum cover , no bracket (with frange type)
  - CO : Stainless , air stream backet(with hole, depth 5.2, 24.5)
  - SO : Brass cover , stud mounting type [M3×0.5,M4×0.7,M5×0.8,6-32UNC,8-32UNC,10-32UNF]
- Terminal type
  - G : Terminal for positive lock connector 250 series (size : 6.35×t 0.8 material:steel , Ni-plated)
  - H : Terminal for positive lock connector 187 series (size : 4.75×t 0.5 material:steel , Ni-plated) ※ H : Combination of horizontal terminal (R)
  - I : For fixing with screw (steel t 0.8 , Ni-plated) ※ I : Combination of horizontal terminal (R)
- Terminal angle
  - R : Horizontal termina
  - T : Vertical terminal
- Contact type
  - X : Open on temperature rise
- Contact material
  - A : Ag ・Ag alloy contact

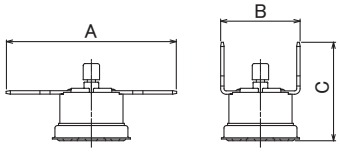
※ For Cover and bracket model, please refer to page 16.

Dimensional drawings

US-623AXRGQL



Terminal type and angle



[Unit: mm]

Terminal type	A	B	C
G	(40.2)	(18.8)	(23.3)
H	(36.0)	—	—
I	(34.5)	—	—

※ Above dimention is applied for US-623

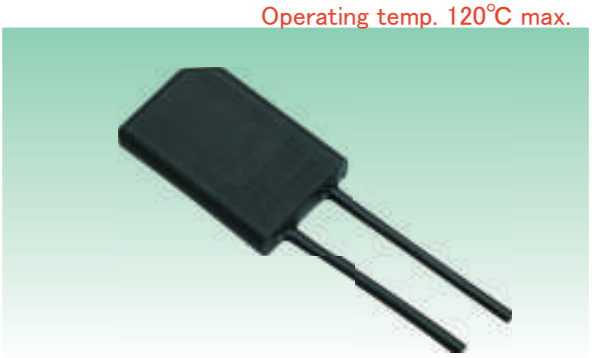
Square type thermostat

With thermal fuse / No thermal fuse

THERMOSTAT
US-630

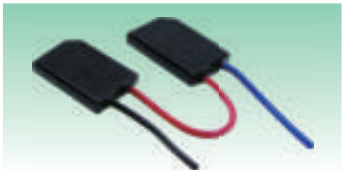
Application/ Auto parts, Floor heater, Vending

Operating temp. 120℃ max.



US630AXAWA

PBT Resin



US-630AXAW2

US-630AXBW3

Specification

Electrical rating	125 VAC 8A max. (200mA min.) 250 VAC 4A max. (200mA min.)		
Operation temp. range	0～50℃	51～100℃	101～120℃
Tolerance	±4K / ±5K	±5K / ±5K	±5K / ±5K
Differential	10K	10K	12K
Circuit resistance	70 mΩ or less [varies depending on the lead]		
Insulation resistance	100 MΩ or more [with a 500 VDC megger]		
Dielectric strength	1500 VAC / 1min		
Heat resistance	130℃ [except the lead]		
Cold resistance	−20℃		
Switching durability	100,000 times or more [at rated load]		

* The differential varies slightly with the operating temperature.
* Please contact the Overseas Sec for the length of the lead wires, lead wires with Various terminals, and multiple types with two to six elements.
* The operating temp. of Thermal fuse must be fixed higher 30℃ against operating temperature of thermostat.
* Please contact the Overseas Sec for the details since the types and specifications of the approved models are slightly different from those shown above.

Model code

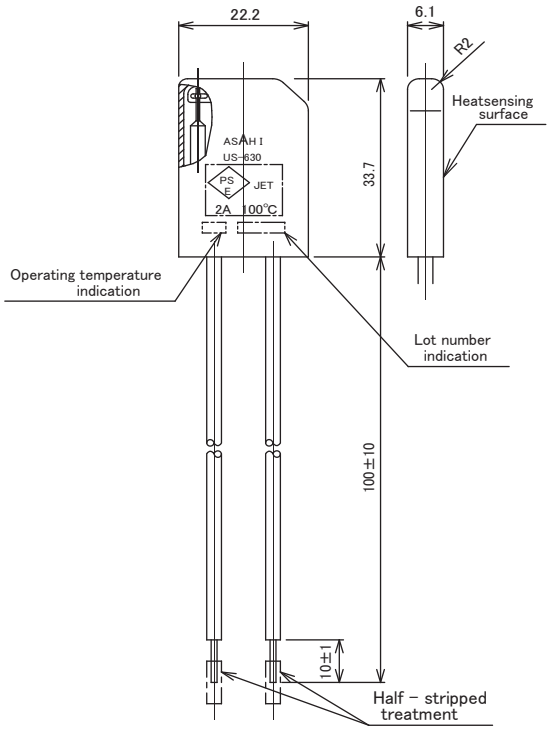
US-630A□□□□-□□□□

- Special specification
- Lead wire type
  - R :Heatproof vinyl insulated wire [0.5mm² , Black , length 100mm]
  - A :Heatproof vinyl insulated wire [0.75mm² , Black , length 100mm]
  - F : Faston187 series equivalent
  - T : Unit specification [special lead wire]
  - 2 : 2-ream specification
  - 3 : 3-ream specification
- Case type
  - S : Case attachment type [without fuse]
  - W : Withstanding load case [with/without fuse]
- Thermal Fuse type
  - A : 2A 100℃
  - B : 2A 112℃
  - C : 2A 129℃
  - K : 5A 100℃
  - L : 5A 112℃
  - M : 5A 133℃
  - F : 8A 99℃
  - G : 8A 113℃
  - H : 8A 130℃
  - O : without fuse
- Contact type
  - X : "OFF" for temperature rise
  - Y : "ON" for temperature rise
- Contact material
  - A : Ag Contact

Dimensional drawings

US-630AXAWR

With thermal fuse 2A · heavy load case type



ASAHI KEIKI CO., LTD.

5.1mm thickness, Preattachment Lead wire

THERMOSTAT
US-638

Application/ Auto parts, Floor heater, Vending

Operating temp. 100℃ max.

PBT Resin

US-638BXAB

US-638BXAB

Specification

Electrical rating	125 VAC 8A max. (200mA min.) 250 VAC 4A max. (200mA min.) 12 VDC 8A max. (200mA min.) 24 VDC 4A max. (200mA min.)	
Operation temp. range (One point fixed type)	30～50℃	51～100℃
Tolerance	±4K / ±5K	±5K / ±6K
Differential	10～20K	20K
Circuit resitance (initial value)	70 mΩ or less [varies depending on the lead length]	
Insulation resistance	100 MΩ or more [with a 500 VDC megger]	
Dielectric strength	1,500 VAC / 1 min.	
Heat resistance	120℃ (except for a lead wire)	
Cold resistance	−20℃	
Switching durability	100,000 times or more [at rated load]	

＊Please contact us for the various lead spec (type, colour, length, head fabricated, connector assembly etc.)

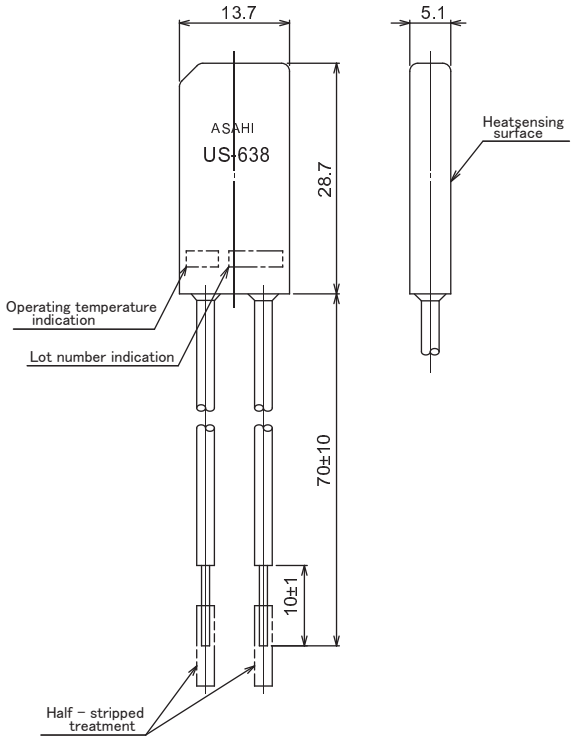
Model code

US-638□ X A □

- Lead wire type
  - A : Red automotive wires AV [0.5mm² 、standard length 70mm]
  - B : Brack heat resisting wire VW-HT [0.75mm² 、standard length 70mm]
- Case type — A : Normal type thin 5.1mm
- Contact type — X : Open on temperature rise ″ OFF ″
- Filler material
  - A : Epoxy resin
  - B : Hot melt

Dimensional drawings

US-638BXAB



Square type thermostat, Ultra compact

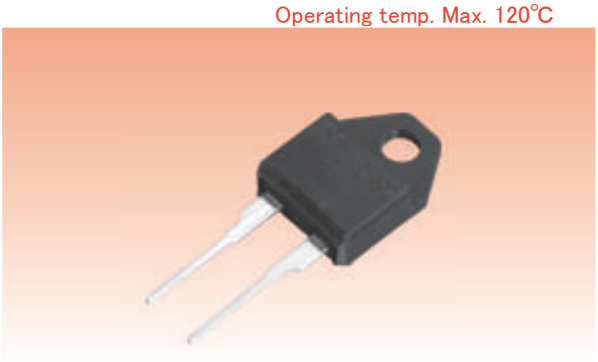
PCB mounting type

Temp. sensing in a space-saving

THERMOSTAT
US-802

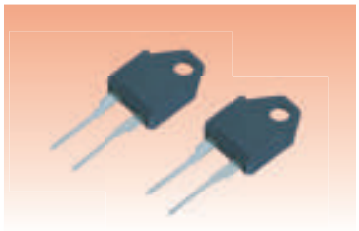
Application/ LCD, Projecter, PCB

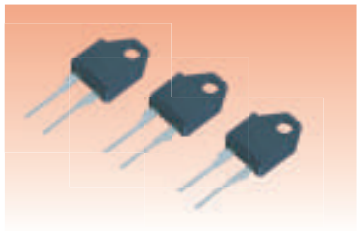
Operating temp. Max. 120℃



PBT Resin

US-802AX (AY)





US-802AX (AY)

Specification

Electrical rating	125 VAC max. 1A (200mA min.) 48 VDC max. 1A (5 VDC 1mA min.)
Operation temp. range	40～120℃ (5K indent)
Tolerance	Operate ±5K / Reset ±7K
Differential	15K
Circuit resistance	50 mΩ or less [DC 1A]
Insulation resistance	100 MΩ or more [with a 500 VDC megger]
Withstand voltage	1200 VAC / 1min.
Heat resistance	125℃
Cold resistance	−20℃
Switching durability	100,000 times or more [at rated load]

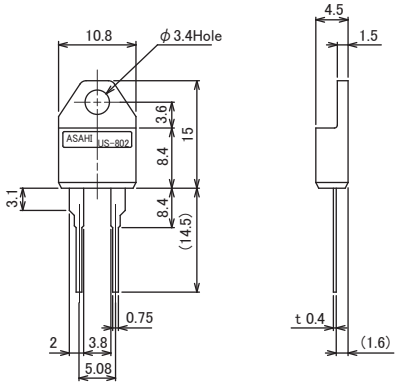
* Ultra-compact design, easy to mount on a PC Board
* Please contact us for specifications that exceeds this specification

Model code

US-802A □□□□

- Operating Temperature — ex) 085 (85℃)
- Contact type — X : Open on temperature rise (OFF)
- Contact type — Y : Close on temperature rise (ON)
- Application type — A : Standard

Dimensional drawings



Operating temperature / return temperature table

US-802AX type (Open on temperature rise)

Model code	Operate temp. OFF ±5K	Reset temp. ON ±7K
802AX040	40	25
802AX045	45	30
802AX050	50	35
802AX055	55	40
802AX060	60	45
802AX065	65	50
802AX070	70	55
802AX075	75	60
802AX080	80	65
802AX085	85	70
802AX090	90	75
802AX095	95	80
802AX100	100	85
802AX105	105	90
802AX110	110	95
802AX115	115	100
802AX120	120	105

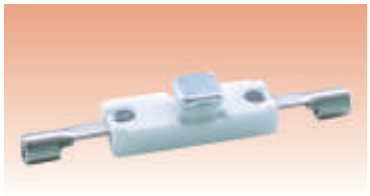
US-802AY type (Close on temperature rise)

Model code	Operate temp. ON ±5K	Reset temp. OFF ±7K
802AY040	40	25
802AY045	45	30
802AY050	50	35
802AY055	55	40
802AY060	60	45
802AY065	65	50
802AY070	70	55
802AY075	75	60
802AY080	80	65
802AY085	85	70
802AY090	90	75
802AY095	95	80
802AY100	100	85
802AY105	105	90
802AY110	110	95
802AY115	115	100
802AY120	120	105

Compatible with reinforced insulation (S.O.D.) Specification-compliant products

THERMOSTAT
US-828


US-828AXAB


US-828AXBB

Application/Copy, LBP etc.

Operating temp. 290℃ max.


US-828AXAB

Ceramic case

Specification

Electrical rating	Type A : 125 VAC 16A max. (200mA min.) 250 VAC 10A max. (200mA min.) Type K : 24 VDC 1A max. (5 VDC 1mA min.)
Operating temp. range	220～290℃
Temperature tolerance	±7K or more
Circuit resistance	50 mΩ or less
Insulation resistance	100 MΩ or more [with a 500 VDC megger]
Dielectric strength	1500 VAC / 1min.
Heat resistance	300℃
Cold resistance	−20℃
Switching durability (Use S.O.D.)	3 times or more [at rated load]

＊ Please contact us for specifications that exceeds this specification

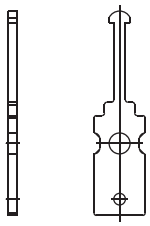
Model code

US-828□□□B-□□□□

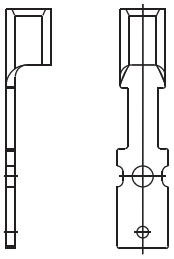
- Special specification
- Terminal type — B : Aluminum cover
- Terminal type — A : Pin terminal; B : Sleeve terminal (AWG14 to16 correspondence)
- Contact type — X : Open on temperature rise; Y : Close on temperature rise
- Contact material — A : Ag・Ag alloy contact (A type); K : Au contact (Special specification) (K type)

Terminal shape view

A type

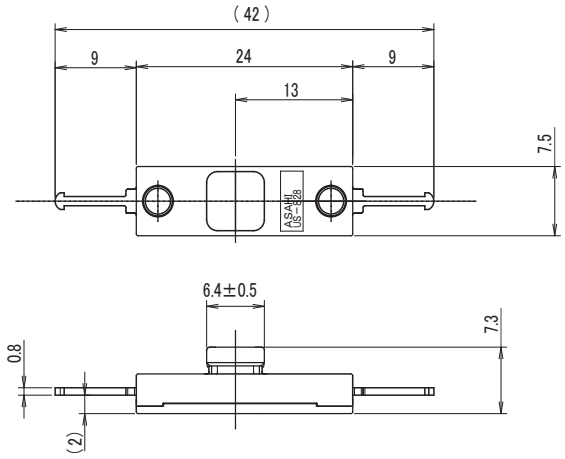


B type

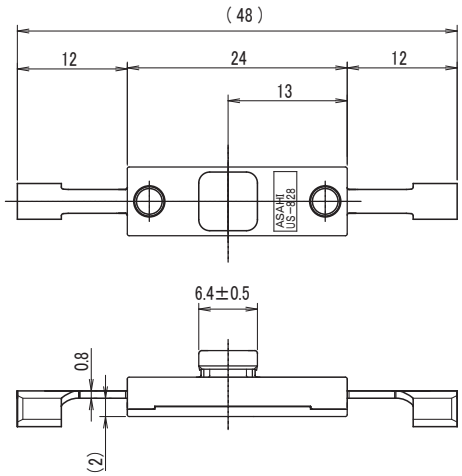


Dimensional drawings

US-828AXAB



US-828AXBB



Small rapid thermal response type

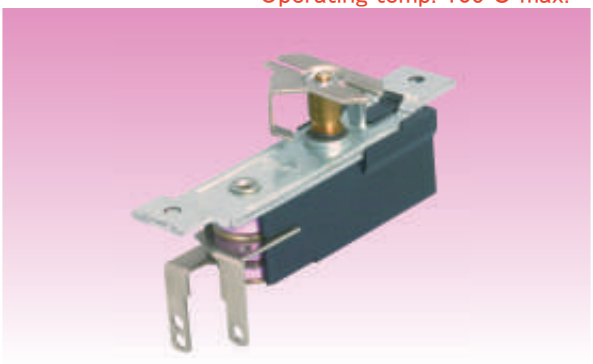
Leaf type, snap action type

THERMOSTAT US-415

US-415HXDM2

Application/ Electric kotatsu, anchor etc.

Operating temp. 105℃ max.



Temp. variable type

US-415BXDS2

Specification

Electrical rating	General : 125 VAC MAX. 500W (Min. 200mA) L type : 125 VAC MAX. 600W (Min. 200mA)	
Operation temp. range	70～100℃	101～105℃
Tolerance	±4K	±5K
Differential	7～15K	9～17K
Circuit resitance (initial value)	50 mΩ or less	
Insulation resistance	100 MΩ or more [with a 500 VDC megger]	
Dielectric strength	1500 VAC / 1min.	
Heat resistance	130℃	
Cold resistance	−20℃	
Switching durability	100,000 times or more [at rated load]	

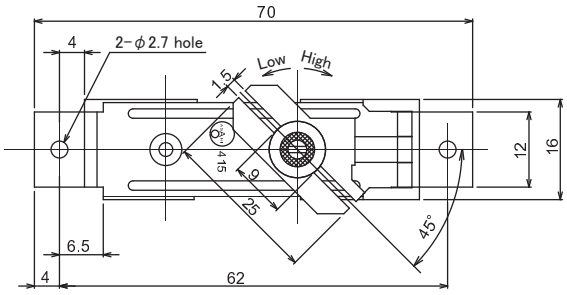
＊Please contact the Overseas Sec for the details since the type s and specifications of the approved models are slightly different from those shown above.

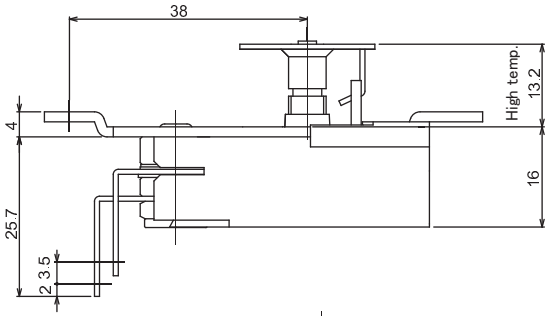
Model code

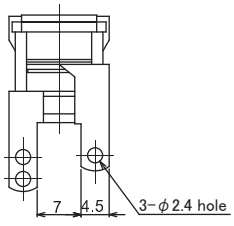
US-415□X D□□-□-□□

- Special specification
- Load capacity model
  - L : 500W～600W
  - No symbol : 500W or less
- Cover model
  - 1 : Cover hole provided
  - 2 : Cover hole not provided
- Stoper model
  - O : Fixed type
  - M : ∠180° Variable type (caulking)
  - S : ∠310° Variable type (soldering)
- Contact material
  - D : Ag･Ag alloy contact
- Contact model
  - X : “OFF” for temperature rise
- Support board material
  - A : Vertical mounting [both sides] [stopper model “S”], variable range 37K by ∠270° rotation
  - B : Horizontal mounting [both sides] [stopper model “S”], variable range 37K by ∠270° rotation
  - H : Horizontal mounting [both sides] [stopper model “M”], variable range 34K by ∠180° rotation
  - F : Vertical mounting, [single side] [stopper model “O” only], fixed type

Dimensional drawings







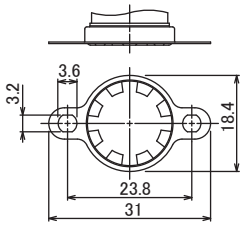
Leaf type, snap action type

ASAHI KEIKI CO., LTD.

Target product type US-602, US-603, US-621, US-622, US-623, US-625, US-628

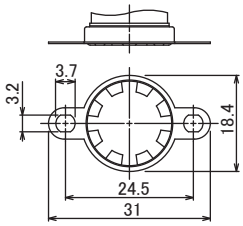
Movable bracket (FREE)

Aluminum (t 0.4) cover
Stainless (t 0.3) bracket



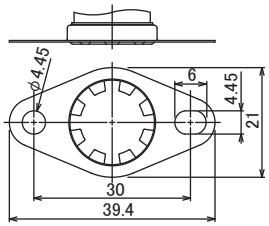
QE

Aluminum (t 0.4) cover
Stainless (t 0.3) bracket



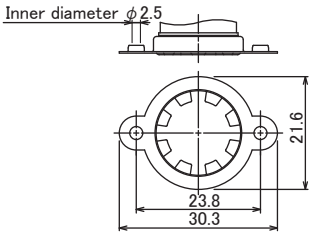
QL

Aluminum (t 0.4) cover
Stainless (t 0.3) bracket



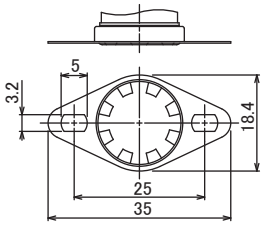
QD

Aluminum (t 0.4) cover
Iron (t 0.3) Chromate plating bracket



QM

Stainless (t 0.25) cover
Stainless (t 0.3) bracket

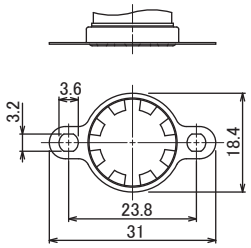


FF

The combination of US-622・621・625 is not allowed

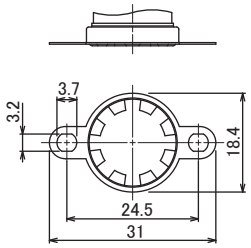
Fixed bracket (FIXED)

Aluminum (t 0.4) cover
Stainless (t 0.3) bracket



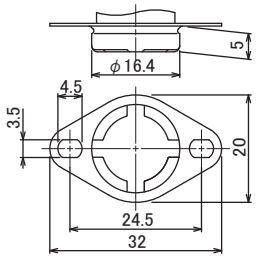
QE-FB

Aluminum (t 0.4) cover
Stainless (t 0.3) bracket



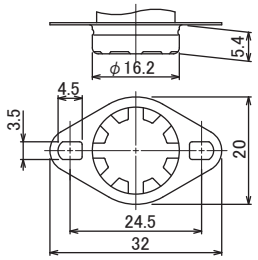
QL-FB

Aluminum (t 0.5) Buried bracket



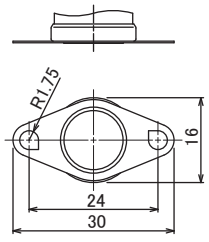
KO

Aluminum (t 0.4) Buried bracket



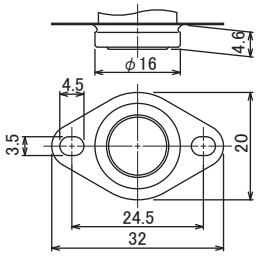
GO

Stainless (t 0.2) cover
Stainless (t 0.3) bracket



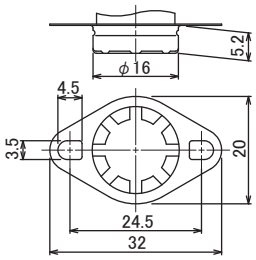
AS

Stainless (t 0.25) Buried bracket



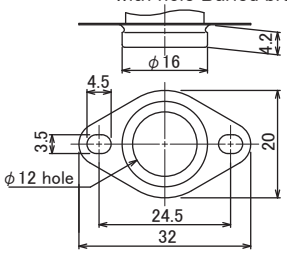
IO

Stainless (t 0.25) Buried bracket



JO

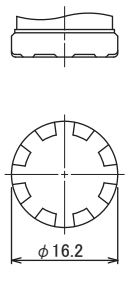
Stainless (t 0.25)
with hole Buried bracket



CO

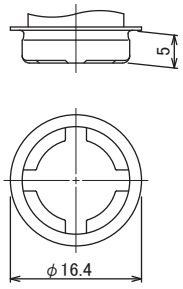
No bracket

Aluminum (t 0.4) cover



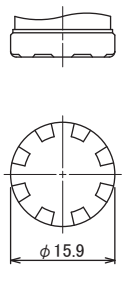
QO

Aluminum (t 0.5) cover



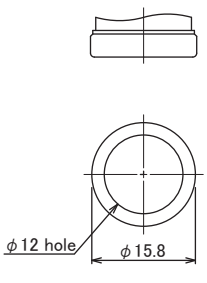
NO

Stainless (t 0.25) cover



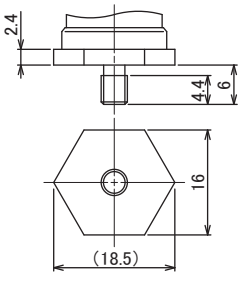
FO

Stainless (t 0.25) cover



MO

With brass screws cover



SO

Mark of Overseas Safety Standards

UL	UL	C-UL (csa certification equivalent)	C-UL	CSA	CSA	CQC	CQC
VDE	VDE	TÜV	TÜV	CMJ	CMJ	RHoS	RHoS

Overseas Safety Standards

MODEL (US-)	602S	602K	603U	603U-H	603K	621 (SOD)	622	622K	622 (SOD)	623
UL	●	●	●	●	●	●	●	●	●	●
C-UL		●		●	●	●	●	●	●	●
CSA	●									
VDE EN 0730	●			●		●	●	●	●	
CQC	●		●	●			●			

MODEL (US-)	625	625 (SOD)	628	628K	630U	802 (SOD含む)	828 (SOD)
UL	●	●	●	●	●	●	●
C-UL	●	●				●	●
CSA							
VDE EN 0730	●	●			●	●	
CQC	●	●					
TÜV		●					●

RoHS directive [Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment]

Beginning in July 2006, following specific amount of toxic substances or more will become sales regulated products in the EU whole area.

Pb (Plumb)
Cd (cadmium)
Hg (Mercury)
Hexad chrome
PBB (polybrominated biphenyl)
PBDE (polybrominated biphenyl ether)

The products with environmental care

we are making efforts as an environmental-friendly products.

The list of the products with environmental care.				
Disc type	US-118	US-602	US-603	US-621
	US-622	US-623	US-625	US-628
	US-630	US-638	US-828	
Print circuit board	US-802			

Specifications for UL Approval Products

File No. E52529

Standard : Temperature-indicating and -Regulating Equipment UL873
Product Classification : COMPONENT-Temperature-indicating and -Regulating Equipment (XAPX2)

UL Model	Rating	Maximum Temperature Rating	Durability
US-602S	AC 125V 15A AC 250V 8A Resistive Load	150℃	Limiting 100,000 times
	DC 30V 5A Resistive Load		Limiting 30,000 times
*US-602K	DC 30V 1A Resistive Load AC 120V 125VA Pirot Duty	150℃	Limiting 100,000 times
*US-603U (US-603U-H)	AC 125V 15A AC 250V 8A Resistive Load AC 120V 10A Inducative Load 120VAC, FLA 5.8A, LRA 34.8A 240VAC, FLA 2.9A, LRA 17.4A	160℃	Regulating 6,000 times
*US-603K	DC 30V 1A Resistive Load AC 120V 125VA Pirot Duty	150℃	Regulating 6,000 times
*US-622	AC 125V 15A AC 250V 10A Resistive Load	185℃	Limiting 100,000 times
		160℃	S.O.D. (Single Operation Device) 1 times
*US-622K	DC 30V 1A Resistive Load	130℃	Limiting 100,000 times
	AC 120V 125VA Pirot Duty	160℃	
*US-621	AC 125V 15A AC 250V 10A Resistive Load	220℃	S.O.D. (Single Operation Device) 1 times
*US-623	AC 120V 15A AC 250V 16A Resistive Load	205℃	Regulating 6,000 times
*US-625	AC 125V 15A AC 250V 10A Resistive Load	260℃	Limiting 100,000 times
		220℃ 260℃ (US-625F)	S.O.D. (Single Operation Device) 1 times
US-628	AC 125V 10A AC 250V 5A DC 24V 5A DC 40V 0.5A Resistive Load	130℃	Limiting 30,000 times
*US-802	DC 48V 1A AC 125V 1A Resistive Load	120℃	Regulating 30,000 times
US-630U	AC 120V 5A AC 120V 2A Resistive Load	100℃	Limiting 100,000 times
US-828U	AC 125V 16A AC 250V 16A Resistive Load	290℃	S.O.D. (Single Operation Device) 1 times

※ We acquire the C-UL certification regarding the * mark model.
※ Please contact the Overseas Sec about the UL certified product's variation of cover・holder model and terminal model.

File No. E166395

Standard : Thermal Motor Protectors and Protectors for Hermetic and Semi-hermetic Compressors UL2111
Product Classification : COMPONENT-Thermal Motor Protectors (YFZW2)

US-602S	AC 120V FLA 5.8A / LRA 34.8A AC 240V FLA 2.9A / LRA 17.4A Inducative Load	150℃	Limiting 100,000 times	Same as the File No. E52529

The list of Components /CMJ Registration

Type	US-602	US-622	US-621	US-625	US-630	US-802	US-603	US-623	US-415
Registration No	J-175	J-172	J-162	J-136	J-67	J-140	J-7	J-179	J-68
Product name	Thermostat & Self-resetting thermal cutout						Temperature limiter & Manual-resetting thermal cutout		Thermostat
Rated voltage / Rated Current	AC125V/15A AC250V/10A	AC125V/15A AC250V/10A	AC125V/15A AC250V/10A	AC125V/15A	AC125V/8A	AC125V/1A	AC125V/15A	AC125V/16A	AC125V/6A
Type of load	Resist								Resist
Type of switching action	Quick action type								
Contact housing	Totally enclosed type								Open type
Operating temperature setting	Fixed								Adjustable
Operating method	Open and Close operating type (when temperature rise)						Open operating type (when temperature rise)		
Contact Open temperature Contact Middle temprerature	150℃ 142.5℃	185℃ 170℃	200℃ 185℃	250℃ 230℃	120℃ 114℃	110℃ 100℃	150℃	200℃	110℃ 104.5℃
Number of rated load switching cycles of endurance test	10,000	10,000	10,000	10,000	10,000	10,000	5,000	5,000	100,000
Insulation materials with lowest temperature index	Phenol Formaldehyde	Unsaturated Polyester	Polyphenylene Sulfide	Ceramic	Polybutylene Terephthalate		Phenol Formaldehyde	Polyphenylene Sulfide	Ceramic Polybutylene Terephthalate

The list of gas heating appliance parts inspections system registration

Code number	Type	Variety	Maximum temperature	Air tight specification	Voltage・Electric current	Remarks
Type , registration number : PC－1003						
002	118C	nomally close・automatic recovery type	180℃	air tight specification	40 VDC 0.5A	stainless cover
005 006	118B				125 VAC 3A 24 VDC 3A	
019 020	630A		120℃		24 VDC 3A	PBT
021 022	602S		150℃	without air tight	40 VDC 2A	stainless cover aluminum cover
024	602K		150℃	without air tight	40 VDC 0.5A	stainless cover
030	623A		130℃	without air tight	125 VAC 10A 250 VDC 5A 24 VDC 5A 40 VDC 2A	stainless cover
031	628A		130℃	without air tight	40 VDC 0.5A	stainless cover
Type , registration number : PC－1004						
002	603A	normally close・manual reset type	150℃	without air tight	40 VDC 2A	stainless cover
006	603AXRT				125 VAC 10A	

＊ This list is consisted of the registration number and contents for simple overview which passed the exam of ″The parts for gas heating device inspection system″ and registered.

＊ This table is a content that the recognition registration is done, and part differs As general use for this model.

＊ Please contact the Overseas Sec in detail,there is a special variation option which adoesn't register

＊ In the case of applying this registered products whose terminal apply with this list the test of ″gas burning appliance type approval , thermostat test will be abbreviated so that please write down the above described [type authorization number and code number] (maker name [Asahi Keiki Co.,Ltd] [type name [US-＊＊＊].

＊ This system's examination and registration agency is Japan Gas Application Inspection Association (Nagoya examination office)

General cautions

〈Storage procedure〉

1) Please avoid direct sunlight and keep it in a long-term keeping, within the range of the temperature of −10+70℃ and in relative humidity of 60% or less.

2) Please preserve the product in the place have no dust, dirt, toxic dose of chemicals in electric parts and gas.

About the use of the bimetal thermostat

Precautions in handling

Snapper type

a) A deformed heat sensitive surface may result in changed thermal responses or disturbance of operating temperature.
   (1) Avoid the deformity of the sensitive surface from dropping or hitting with tools.
   (2) Do not apply excessive force to a terminal, especially while connecting lead wires if the product has a small body and a large terminal.
   (Example) Employ a procedure starting from the "Lead wire connection"to"Thermostat installation" When a reverse procedure is employed, use jigs.

b) Pay attention to storage to ensure that no dust enters from a case joint part although the problem is not serious as in leaf products. If there is an inadvertent drop or shock, it is recommended that you re-check the operating temperature.

PRECAUTIONS

Please use thermostat at below to electrical rating and current rating.

1. Thermal response

When the thermal response is slow, it can be apparently improved by bringing a part of the heater close to the thermostat or by utilizing self-heating with an excited current. Basically, however it is required that you reduce heating resistance from the heat source to the heat sensitive surface of the thermostat mainly to improve the following properties:

(1) Decrease temperature ripple in the steady stats.
(2) Reduce overshooting during initial operation.
   (Larger overshooting may result in fuse disconnection even if the thermostat functions.)
(3) Faster responses during abnormalities.
(4) Decreased influence by changing atmospheric temperatures.
(5) Greater differences from excessive rise protective temperatures can be obtained to avoid wrong operation during normal operation.
(6) Smaller variations in mass production.

In practical applications, please pay attention to the following.

a) Finish a counterpart surface of installation which comes into contact with a teat absorbing part of a thermostat as flat as possible (a rivet base surface in leaf products, a heat-sensitive surface in snapper products).
b) During installation, make sure that no dirt is caught in counterpart surface.
c) To decrease radiation from the rear, insulate the rear by using a cover or other measures.

2. Electrical cautions.

Unless otherwise specified, the rated voltage/current is indicated at the resistive load (power factor=1).
However, current-carrying capacities are reduced roughly as shown in Table 1 at the following loads:
In practice, considerable changes can be produced by different temperature conditions, vibrations atmospheres or environments. If you use the product in an area close to lthe imit of the rated values, it is recommended that you contact us or test it under actual load conditions for verification.

[Table 1]

	Resistive load (power factor=1)	Inductive load (power factor=0.4)
AC 125V	100% of the rated value	50%
DC 30V	50%	20%

* In the case of inductive loads, a significantly high counter electromotive force is generated when contacts are open, to produce an arc between contacts. Especially in DC, this are is difficult to get rid of, leading to premature contact wear.
* While contact is made, a lash current larger that the steady state can be generated depending on the loads used. This results in severe damage to the contacts.

[Table 2]

Load	Lash current
Ramp	10 to 15 times higher than steady state Approx. 3 Times
Mercury lamp・ Fluorescent light	
Solenoid	10 to 20 times
Magnet switch	3 to 10 times
Motor	5 to 10 times

In the case of resistive loads, a lash current is, normally, 1.0 to 1.2 times higher than the steady state, causing no serious problems, but resistive loads with even a slight inductivity (e.g,. a thin wire with a large number of windings) may affect a contact life.
Please check the nature of the load employed.

About the use of the bimetal thermostat

3. Operating temperature
Our measuring method.

The operating temperature data of our thermostat products are measured mainly under following conditions.
Which are widely used in the usual measuring method;
(1) Air circulation thermostats are used.
(2) Temperature is increased or decreased by one degree C in one minute.
(3) No load current runs
(4) The first operating temperature (1st operation) is recorded

Determination of the operating temperature in practical application

When a product is actually used, the respective conditions described above are subjected to a significant change including:
(1) A product is often tightly mounted to an object.
(2) The rates of temperature rises or decrease vary greatly depending on the equipment,
(3) The actual load current flows.
(4) It is the first operation with an excessive temperature-rise protection device but for controls, operation each time is effective.
This may result in apparent changes in the operating temperatures. Therefore, obtain a correlation of a single thermostat measuring data item and the temperatures of the controlled object (place) according to experiments and the determine the appropriate operating temperature of the thermostat so that the controlled object has a specified temperature. Please specify the thermostat operating temperature to be set when you place an order.

Important

○ The contents described in this book based on the data as of March 2007 so that it is likely to be going to change without a previous notice in the future. Please contact our sales department when you consider mass production.

○ Please acknowledge that our company cannot carry by concerning directly and attaching to a structural manufacturing method of the product of our company besides the one when it concerns and problem occurs in third party's industrial property etc. by having used this product.

○ Generally, the breakdown will occur in electronic parts at certain probability.
It is impossible to adjust the establishment to 0 percent probability though it works for the improvement of the quality of product and reliability as our company.
When the trouble breakdown occurs by any chance, we will exchange the Replacements free of charge.

○ Our product is an intention of the thing used for "General usage" shown below.

So that if you have any ideas using our products for the devices or systems like special usage as below,
Please contact our company sales department prior because we could prospect special quality standard will be needed.

＊Common application :
computer, OA machines communication equipments measurement instruments, audio-visual devices home electric appliances, working machines Personal computers and industrial robot.

＊Special application :
transportation equipment (automobile, train, ships and etc.)'s Control unit, aircraft, Medical equipment for life maintenance, Etc.

What is a thermostat ?

What is a thermostat ?

● Thermostat
A device that stabilizes heat and temperature
The etymology for thermostat is a compound word combining “thermo” which means temperature or heat, and “stat” which means a stationary state.
“Thermo” is how the word is pronounced in English, but in German it is pronounced “terumo” or “tamu”.

● Purpose
(1) Temperature regulator (controller): Maintains a certain degree of temperature.
(2) Excess temperature rise protector (limiter/protector): Turns off the heat source when the temperature rises above a particular level.
(3) Temperature detector: Signals when the set temperature has been reached and causes another operation to occur.
These are the main purposes of the thermostat.

● Asahi’s Thermostat is a bimetal thermostat.
The temperature switch senses the temperature through the bimetal and controls the electricity contacts (turning them on or off).
There are various kinds of devices for temperature control and measurement.

What are the principles of bimetal?

● Bimetal
Two metals (a low expansion metal and a high expansion metal) are milled into a single sheet using a roller → Bimetal

● combining “bi” (a prefix meaning “two”) and “metal.”

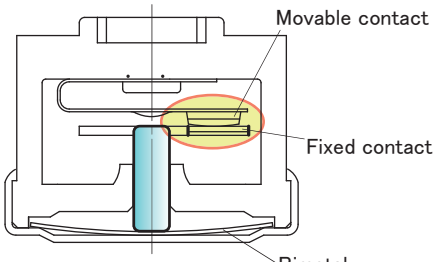
● Pressurized bonding ··· Bonding by cool or hot rolling (molecular bonding). No adhesive is used.

● Materials
High expansion metal contains an iron alloy (Fe) and nickel (Ni) with added substances Cr, Mn, and Mg; low expansion metal contains iron (Fe) and nickel (Ni) as the main materials for Invar (Ni35–Fe)

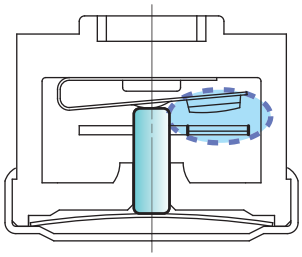
● Bimetal bends in one direction as the temperature rises and in the other direction as it falls.

● Force arises where the movement is controlled, and in the thermostat. the set point pressure exerts a repelling force.

Operating principle Figure



ON State diagram


OFF State diagram

Types, structures and purposes of bimetal thermostats

● Types and structures

PLaminated type	: In this type, parts have been laminated together and fastened with a rivet, facilitating temperature variations in small increments.
Snap disc type	: In this type, parts are contained in a covered case. It has a relatively large differential, and uses a low cost snap disc to prevent excessive temperature rises.
Protector type	: This type is contained in a covered case, with, a snap disc integrated into the electric circuit for the detection and prevention of temperature rises or overcurrent situations.

● Applications

Home electric appliances	: Home electric appliances: Kitchen goods (Computerized hot water kettles, coffee makers, ovens, hot plates, rice-cake makers, etc.) Heating devices: Electric space heaters, electric heating pads, electric kotatsu (coffee-table type heaters with coverlets), panel heaters, electric mats, etc.) Others: Ironing presses, hair dryers, vacuum cleaners, futon dryers, etc.)
Household goods	: Lavatory seats, washlets (a seat-type of bidet incorporating seat warming and warm water irrigator), battery chargers, etc.)
Gas and oil	: Bathtub boilers, water heaters, floor warmers, fan heaters, space heaters, etc.)
Others	: Copy machines, automatic vending machines, automobiles, motorboats, marine jets, etc.
Industrial equipment	: Construction tools, road signs, welding machines, etc.

Q. What's Snapper?

A. Snapper is a registered trademark of Asahi Keiki. It is a generic name for round thermostats (US-118, 602, 603, 621, 622, 625, 628) using disc bimetals.

Q. Could you explain the related domestic and overseas standards?

A. In Japan, our products have passed the tests defined in the Electric Parts/Material Registration System and the Gas Burner Parts Inspection System. In addition, they have been qualified in the overseas standards such as UL, C-UL, CSA, DEMCO, VDE and CCEE. or details, refer to our product catalog.

Q. Could you explain the rated current and rated voltage?

A. Unless otherwise stated, the rated current and rated voltage are represented by resistance loads (power factor: $\cos\phi=1$). When the load is not a resistance load, the current capacity and rush current vary. For details, refer to the relevant catalog or contact us.

Q. Could you explain the use of gold and silver contacts?

A. gold contact should be used when the maximum rating is 125 VAC, 0.5 A, 50 VDC, 1 A, 40 VDC, 0,5 A or 24 VDC, 1A. In contrast, a silver contact should be used when the maximum rating is other than the above combinations.

Q. Could you explain the temperature range?

A. temperature range must be 150° C for US-602 and US-603, 0 to 185° C for US-622, 50 to 250° C for US-625 and 0 to 250° C for US-118. A temperature point is set in each range. (For other models, contact us with the specifics.)

Q. Why does a sound (a snap) occur at startup?

A. This sound is generated due to the thermostat's bimetal inversion. It does not indicate a problem.

Q. Could you explain a differential?

A. In short, it means the difference between the operating temperature and the return temperature. For example, for a thermostat, the thermostat temperature is 15 degrees by default when the temperatures are set to 100° C OFF and 85° C ON.

Q. Could you explain us how to set the operating temperature?

A. The operating temperature data of our thermostats are as follows:

(1) Using an air circulation high temperature furnace
(2) Raising or lowering the temperature based on 1K per minute
(3) Preventing load current
(4) Recording the first operating temperature

This method is being widely used as the regular method.

In addition, when the operating temperature varies significantly depending on the mounting location and the real load current, check the temperature of the control target and designate it before placing an order.

Q. Please tell me the contact for product procurement or other information acquisition.

A. From office guidance on the home page, please contact us. Please refer also to the contacts in 24 pages.

Q. Could you explain the difference between excess temperature rise prevention and temperature control, and their purposes?

A. Generally, excess temperature rise prevention does not take place frequently. It is usually used as a fail-safe. For example, it is used to prevent heating without water supply in water heaters. In addition, temperature control usually takes place to keep the temperature of the product constant. It frequently is used in such electrical appliances as electric rice-cookers, electric mats, and kotatsu (coffee-table type heaters with coverlets).

Q. What physically happens to contacts that have exceeded their limits of open/close durability?

A. All thermostats turn OFF because the contact springs of the traveling points bend or the traveling contact plate drops, except in situations where the contacts have melted due to overcurrent.

Q. Is it possible to use a thermostat with a thermal surface depression without problem?

A. We don't recommend that you use such a thermostat because thermostats are very important components and their set temperatures sometimes vary due to thermal surface depressions or significant shock.

ASAHI KEIKI head office, sales branch and factory

ASAHI KEIKI CO., LTD.

Dai-ni Takatori Building 3rd F, 3-31, Shibaura 2-chome, Minato-ku, Tokyo 108-0023, JAPAN
TEL. +81-3-5843-0441 FAX. +81-3-5843-0450

Tokyo sales Office

TEL. +81-3-5843-0452 FAX. +81-3-3455-4052
E-mail : thermostat-sales@asahikeiki.co.jp

Overseas sales Office

TEL. +81-3-5843-0456 FAX. +81-3-3455-4052
E-mail : thermostat-overseas@asahikeiki.co.jp

Osaka sales Office

TEL. +81-6-6310-8562 FAX. +81-6-6310-8500
E-mail : thermostat-osaka@asahikeiki.co.jp

Nagoya sales Office

TEL. +81-52-932-0651 FAX. +81-52-932-0653
E-mail : thermostat-nagoya@asahikeiki.co.jp

ASAHI KEIKI CO., LTD. Fukushima Plant

1-55 Kuwajima, Kori-machi, Date-gun, Fukushima 969-1613, JAPAN
TEL. +81-24-582-2215 FAX. +81-24-582-2244
E-mail : kohjoh-sohmuka@asahikeiki.co.jp

ASAHI KEIKI Group

DALIAN ASAHI KEIKI CO., LTD.

41, Dongbei Street No.3
Dalian Development Zone,Dalian, P.R.China 116600
TEL.86-411-8761-3740 FAX.86-411-8761-3734
E-mail : dac@mail.dlptt.in.cn

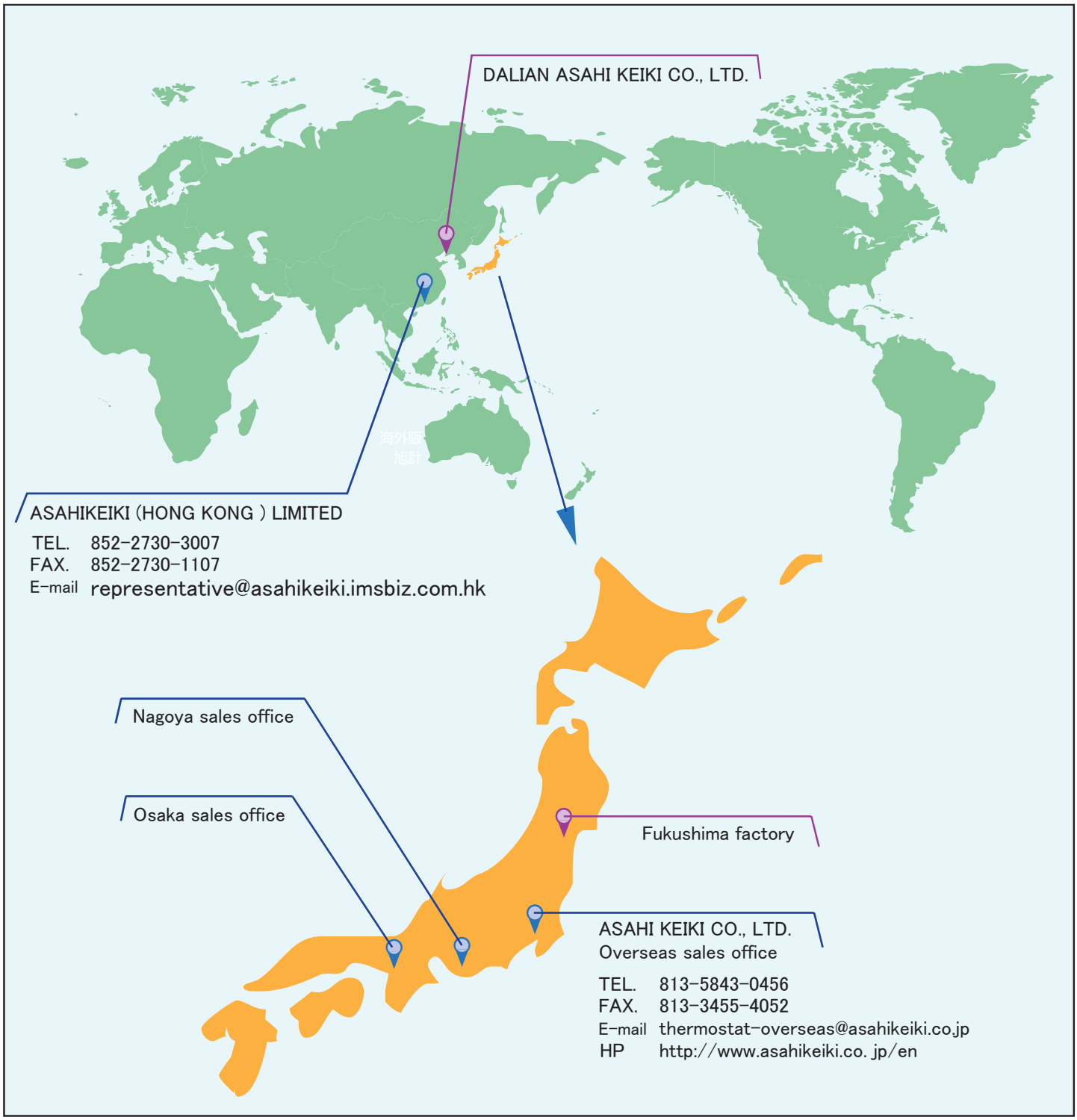
ASAHI KEIKI (HONG KONG) LIMITED

Unit 3 on 7th Floor, Nan Fung Commercial Centre, No.19 Lam Lok Street, Kowloon Bay, Hong Kong

TEL.852-2730-3007
FAX.852-2730-1107

E-mail:
representative@asahikeiki.imsbiz.com.hk

Global network of Asahi Keiki [📍: Sales office, 📍: Manufacturing base]



Sales agent

http://www.asahikeiki.co. jp/en

201609

ISO 9001 JQ3307A Qualified

ISO 14001 JE0970A Qualified