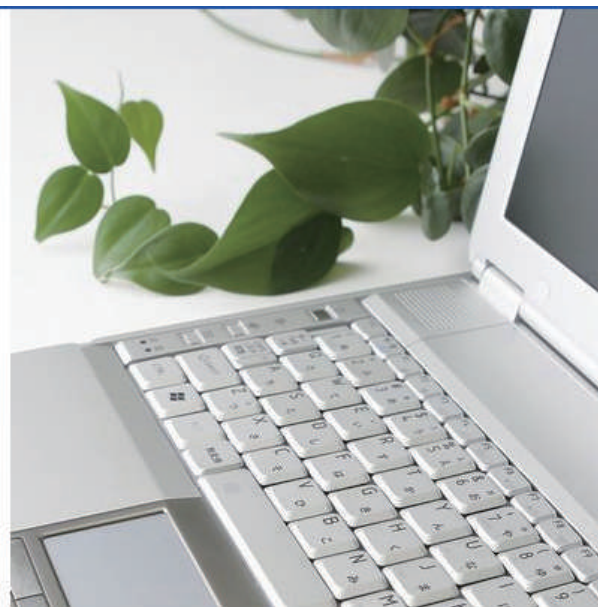


General Catalog of Thermostat



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

	Function Product Lineup
1.2	Applications list
	Drip-proof, vibration-proof type
3	US-118 (Completely sealed)
	1/2 Disc, Automatic Reset type thermostat
4	US-602 (For small high-capacity minute current)
5	US-621 (Medium – High temperature setting type)
6	US-622 (Low – medium temperature setting type)
7	US-625 (Ceramic high-temperature setting type)
	Drip-proof type
8	US-628 (Drip-proof type Horizontal lead wire out type)
	1/2 Disc, Manual Reset type thermostat
9	US-603 (Compact high capacity for or micro-current type)
10	US-623 (High-temperature setting type)
	Disk type and thin drip-proof type
11	US-630 (Resin seal structure and the load-bearing support type)
12	US-638 (Resin seal structure)
	PCB mounting type
13	US-802 (Small and thin)
	Small rapid thermal response type
14	US-828 (Reinforced insulation corresponding type)
	Leaf type Snap Action
15	US-415 (Temperature variable type)
	Product standards and handling notes etc.
16	Bracket Model
17	Marks of Overseas Safety Standards
17	Overseas Safety Standards
17	RoHS directive
17	The list of gas heating appliance parts inspections system registration
18	Specifications for UL approval products
19	Specifications for CMJ approval products
19	The list of gas heating appliance parts inspections system registration
20	General precautions
20	The use of bimetallic thermostat
21	Important Note
22	What's Thermostat
23	FAQ
	Sales and factory locations
24	Asahi Keiki headquarters and sales offices and factories / Asahi Keiki Group

Thermostat

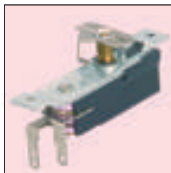
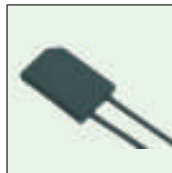
						
US-118	US-602	US-621	US-622	US-625	US-628	US-603

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°C max.



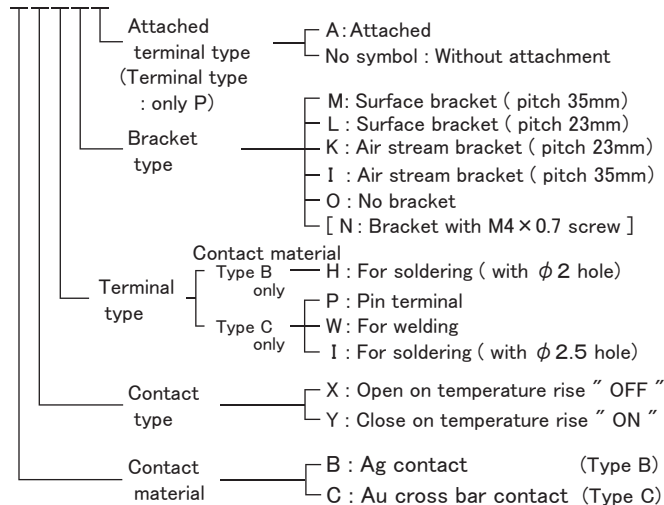
Stainless braket

US-118CXIO

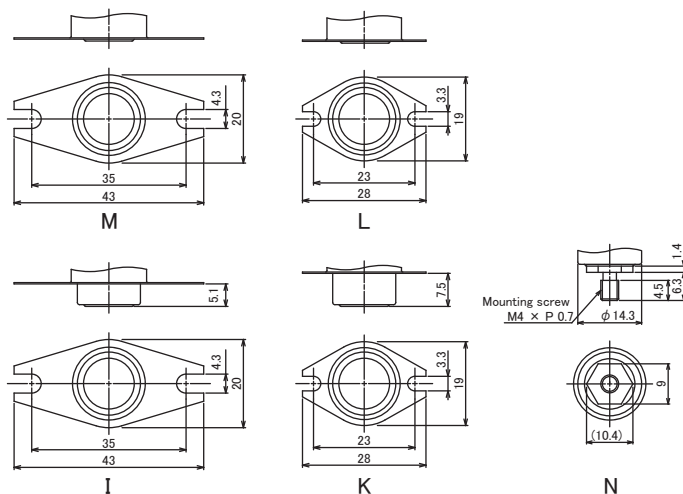


Model code

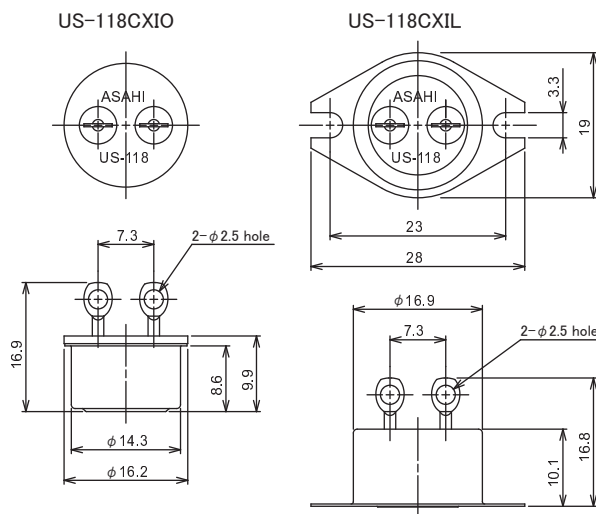
US-118□□□□



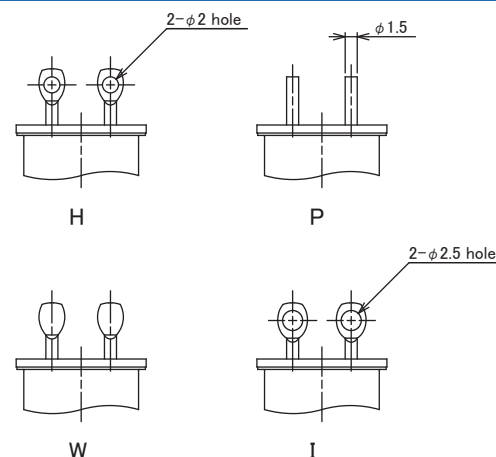
Bracket type



Dimensional drawings



Terminal type



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°C	51~100°C	101~150°C	151~190°C	191~250°C
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°C				
Cold resistance	-20°C				
Switching durability	100,000 times or more [at rated load]				

* The maximum temperature on the JIA certification will be 180 °C

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

1/2 inch, Automatic Reset type

THERMOSTAT
US-602

Application/Oven, Heating unit, LBP etc.

Operating temp. 150°C max.



Phenol resin case

US-602SXRLQE



Model code

US-602□□□□□

Cover •
mounting
bracket
type

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

- QO : Aluminum cover , no bracket
- QE : Aluminum , movable surface bracket (pitch 23.8mm)
- QE-FB : Aluminum , fixed surface bracket (pitch 23.8mm)
- QL : Aluminum , movable surface bracket (pitch 24.5mm)
- QL-FB : Aluminum , fixed surface bracket (pitch 24.5mm)
- KO : Aluminum , air stream bracket (depth 5.0mm , 24.5mm)
- AS : Stainless , movable surface bracket (pitch 24.0mm)
- IO : Stainless , air stream bracket (depth 4.6mm , 24.5mm)
- JO : Stainless , air stream bracket (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



US-602SXRSKO



US-602SXTSSO

Specification

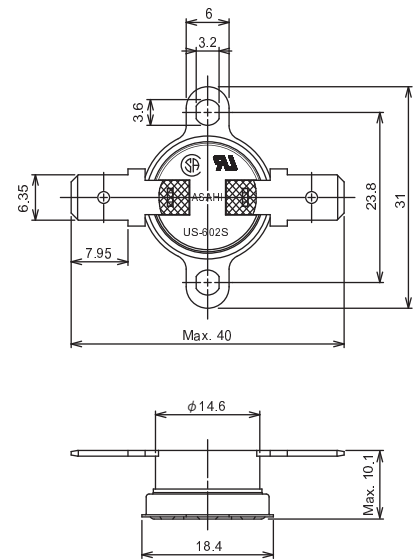
Electrical rating	Type S : 125 VAC 15A max. (200mA min.) 250 VAC 8A max. (200mA min.) Type K : 30 VDC 1A max. (5 VDC 1mA min.) 120 VAC 125 VA (Pilot Duty)		
Operating temp. range	0~50°C	51~100°C	101~150°C
Temperature tolerance	±4K / ±5K	±4K / ±6K	±5K / ±7K
Differential	12K	15K	20K
Circuit resistance	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°C		
Cold resistance	-20°C		
Switching durability	100,000 times or more [at rated load]		

* The differential varies slightly with the operating temperature.

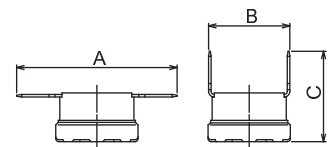
* Please contact the Overseas Sec for the details since the type s and specifications of the approved models are slightly different from those shown above.

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 dimation is applied for US-602

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

1/2 inch, Automatic Reset type

THERMOSTAT
US-621

Application/ Scanner, Printer, Copier, etc.

Operating temp. 200°C max.



US-621AXTGKO



US-621AXTGQE

Specification

Electrical rating	125 VAC 15A max. (200mA min.) 250 VAC 10A max. (200mA min.)				
Operating temp. range	0~50°C	51~100°C	101~150°C	151~190°C	191~200°C
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°C				
Cold resistance	-20°C				
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.

PPS resin case

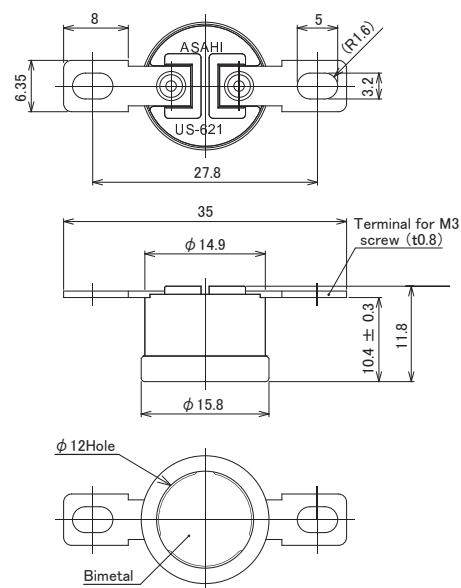
US-621AXRIMO



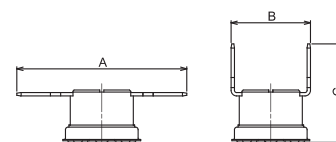
Model code

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 dimension is applied for US-621

US-621 A□□□□

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

- QO : Aluminum cover , No bracket
- QE : Aluminum , Stationally surface bracket (pitch 23.8mm)
- QE-FB : Aluminum , Fixed surface bracket (pitch 23.8mm)
- QL : Aluminum , Movable surface bracket (pitch 24.5mm)
- QL-FB : Aluminum , Fixed surface bracket (pitch 24.5mm)
- KO : Aluminum , Air stream bracket (depth 5.0mm , 24.5mm)
- GO : Aluminum , Air stream bracket (depth 5.4mm , 24.5mm)
- MO : Stainless cover , No bracket (with φ 12 hole type)
- IO : Stainless , Air stream bracket (depth 4.6mm , 24.5mm)
- JO : Stainless , Air stream bracket (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 φ 12 hole type)
- NO : Aluminum cover , No bracket (with frange type)
- CO : Stainless , Air stream bracket (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]

Cover •
mounting
bracket
typeTerminal
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.

1/2 inch, Automatic Reset type

THERMOSTAT
US-622

Application/ Oven, Heating unit, LBP etc.

Operating temp. 185°C max.



Polyester resin case

US-622AXRLQE



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 bracket (pitch 23.8mm)
- QL : Aluminum, movable surface bracket (pitch 24.5mm)
- QL-FB : Aluminum, fixed surface bracket (pitch 24.5mm)
- KO : Aluminum, air stream basket (depth 5.0mm, 24.5mm)
- GO : Aluminum, air stream basket (depth 5.4mm, 24.5mm)
- MO : Stainless cover, no bracket (with ϕ 12 hole type)
- IO : Stainless, air stream basket (depth 4.6mm, 24.5mm)
- JO : Stainless, air stream basket (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 ϕ 12 hole type)
- NO : Aluminum cover, no bracket (with frange type)
- CO : Stainless, air stream basket (with hole, depth 5.2, 24.5)
- SO : Brass cover, stud mounting type
[M3 × 0.5, M4 × 0.7, M5 × 0.8, 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 / standard case (Type A)
- P : Ag • Ag alloy contact / 4 post case (Type P)
- K : Au cross bar contact / standard case (Type K)

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



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 ϕ 0.6, inductive load
10,000 times
Type K : 30 VDC 1 A max. (5 VDC 1mA min.)

Operating temp. range

0~50°C 51~100°C 101~150°C 151~185°C

Temperature tolerance

 $\pm 4K / \pm 5K$ $\pm 4K / \pm 6K$ $\pm 5K / \pm 7K$ $\pm 6K / \pm 8K$

Differential

12K 15K 20K 25K

Circuit resistance

Type A•P : 50 m Ω or less , Type K : 10 m Ω or less

Insulation resistance

100 M Ω 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°C

Cold resistance

-20°C

Switching durability

100,000 times or more [at rated load]

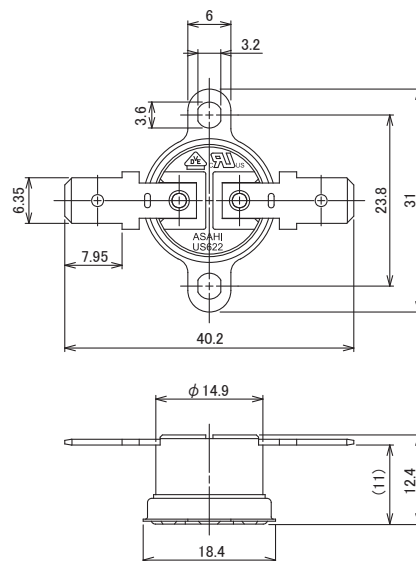
* The differential varies slightly with the operating temperature.

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

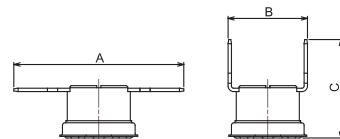
* US-622 is adapted to be a S.O.D. with a quick response.

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 dimension is applied for US-622

1/2 inch, Automatic Reset type

THERMOSTAT
US-625

Application/ Electric oven, Heating unit, LBP etc.

Operating temp. 260°C max.



Ceramic case

US-625AXRLQL



Model code

US-625□□□□□

- The material of the bracket stainless steel (other than KO and SO)
- QO : Aluminum cover , no bracket
 - QE : Aluminum , movable surface bracket (pitch 23.8mm)
 - QE-FB : Aluminum , fixed surface bracket (pitch 23.8mm)
 - QL : Aluminum , movable surface bracket (pitch 24.5mm)
 - QL-FB : Aluminum , fixed surface bracket (pitch 24.5mm)
 - KO : Aluminum , air stream bracket (depth 5.0mm , 24.5mm)
 - GO : Aluminum , air stream bracket (depth 5.4mm , 24.5mm)
 - MO : Stainless cover , no bracket (with ϕ 12 hole type)
 - JO : Stainless , air stream bracket (depth 5.2mm , 24.5mm)
 - QD : Aluminum , movable surface bracket (pitch 30.0mm)
 - DO : Aluminum cover , No bracket (with ϕ 12 hole type)
 - NO : Aluminum cover , no bracket (with frange type)
- Cover • mounting bracket 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 type
- R : Horizontal terminal
 - T : Vertical terminal
- Terminal angle
- X : Open on temperature rise
 - Y : Close on temperature rise
- Contact type
- A : Ag • Ag alloy contact / standerd case (Type A)
 - K : Au cross bar contact / standerd case (Type K)
- Application type



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°C	51~100°C	101~150°C	151~190°C	191~260°C
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°C (Max. operating temp. 200°C)				
Cold resistance	-20°C				
Switching durability	100,000 times or more [at rated load]				

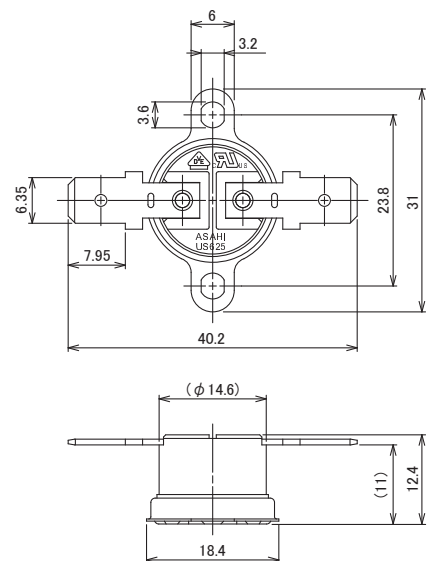
* The differential varies slightly with the operating temperature.

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

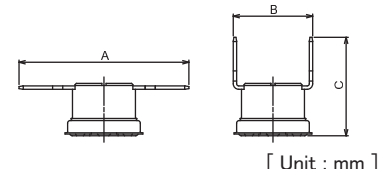
* US-625 is adapted to be a S.O.D. with a quick response.

Dimensional drawings

US-625AXRLQE



Terminal type and angle



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

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

IP67 Drip-proof performance

THERMOSTAT
US-628

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

Operating temp. 130°C max.



Phenol resin case

US628AXSSAS-F



Model code

US-628□□□□□□□□□□

Special specifications

F: Fluoropolymer wire (Heatproof temperature 180°C)
[Standard : White , 0.5sq 、 Length 100mm]V : Heat-proof, lead-free PVC wire
(Heatproof temperature 115°C)
[Standard : Black , 0.5sq 、 Length 100mm]

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 bracket (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)

Cover
•
mounting
bracket
typeTerminal
type

SS : Filling a dedicated terminal (Standard)

Contact
typeX : Open on temperature rise
Y : Close on temperature riseApplication
typeA : Ag • Ag alloy contact Type A
K : Au cross bar contact Type K

US-628AXSSAT-F



US-628AXSSKO-F

Specification

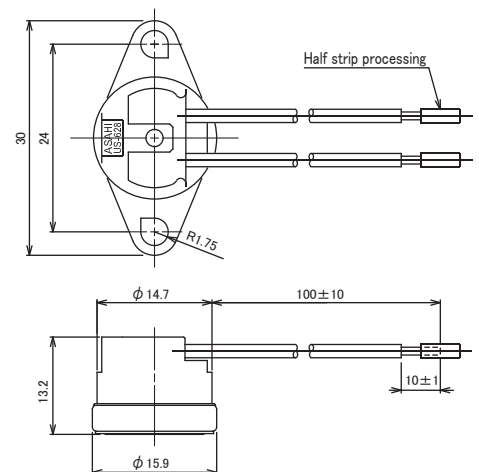
Electrical rating	Type A : 125 VAC 10A max. (200mA min.) 250 VAC 5A max. (200mA min.)		
	Type K : 24 VDC 1A max. (5 VDC 1mA min.) 40 VDC 0.5A max. (5 VDC 1mA min.)		
Operating temp. range	30~50°C	51~100°C	101~130°C
Temperature tolerance	±4K / ±5K	±4K / ±6K	±5K / ±7K
Differential	12K	15K	20K
Circuit resistance	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°C		
Cold resistance	-20°C		
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.

Dimensional drawings

US-628AXSSAS-F



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

1/2 inch, Manual Reset type

THERMOSTAT
US-603

Application/ Jar pot , Wind lu kettle , etc.

Operating temp. 150°C 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°C	101~150°C
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°C	
Cold resistance	-20°C	
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.



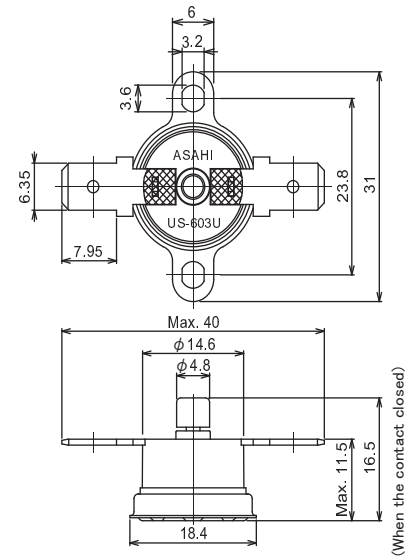
Model code

US-603□ X□□□□-□

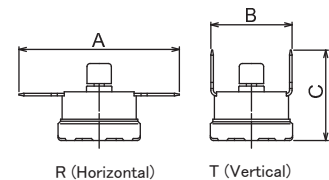
- H : VDE, EN 60730 (U type)
 QO : Aluminum cover , No bracket
 QE : Aluminum , Movable surface bracket (pitch 23.8mm)
 QE-FB : Aluminum , Fixed surface bracket (pitch 23.8mm)
 QL : Aluminum , Movable surface bracket (pitch 24.5mm)
 QL-FB : Aluminum , Fixed surface bracket (pitch 24.5mm)
 KO : Aluminum , Air stream bracket (depth 5.0mm , 24.5mm)
 AS : Stainless , Stationary surface bracket (pitch 24.0mm)
 IO : Stainless , Air stream bracket (depth 4.6mm , 24.5mm)
 JO : Stainless , Air stream bracket (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]
 Cover • mounting bracket 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 type
- R : Horizontal terminal
 T : Vertical terminal
 Terminal angle
- X : Open on temperature rise
 Contact type
- U Ag • Ag alloy contact / standerd case
 K : Au cross bar contact / standerd case
 Application type

Dimensional drawings

US-603AXRLQE



Terminal type and angle



[Unit : mm]

			K type	U type
Terminal type	A	B	C	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°C max.



US-623AXTGKO



US-623AXRGJO

Specification

Electrical rating	125 VAC 16A max. (200mA min.) 250 VAC 16A max. (200mA min.)
Operating temp. range	151~200°C
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°C
Cold resistance	-20°C
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.

PPS resin case

US-623AXRGQL



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 bracket (pitch 23.8mm)
- QL : Aluminum , movable surface bracket (pitch 24.5mm)
- QL-FB : Aluminum , fixed surface bracket (pitch 24.5mm)
- KO : Aluminum , air stream bracket (depth 5.0mm , 24.5mm)
- GO : Aluminum , air stream bracket (depth 5.4mm , 24.5mm)
- MO : Stainless cover , no bracket (with φ 12 hole type)
- IO : Stainless , air stream bracket (depth 4.6mm , 24.5mm)
- JO : Stainless , air stream bracket (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 φ 12 hole type)
- NO : Aluminum cover , no bracket (with fringe type)
- CO : Stainless , air stream bracket (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

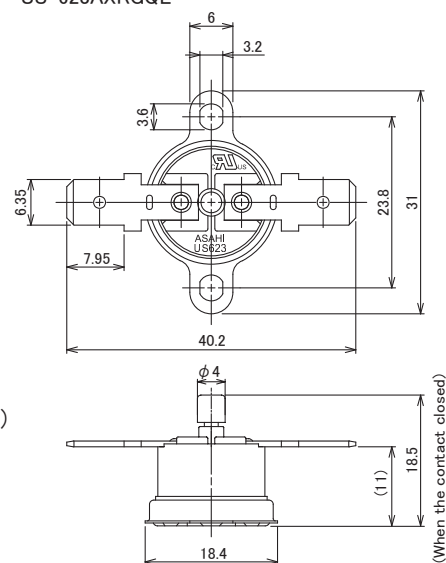
- X : Open on temperature rise

Contact
material

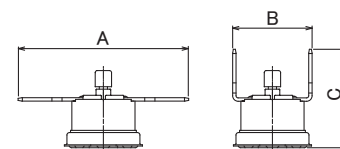
- A : Ag • Ag alloy contact

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 dimension is applied for US-623

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

With thermal fuse / No thermal fuse

THERMOSTAT
US-630

Application/ Auto parts, Floor heater, Vending

Operating temp. 120°C max.



PBT Resin

US630AXAWA



Model code

US-630A□□□□-□□□□

Special specification

- 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
- ⋮

Lead wire type

- Case type
- S : Case attachment type [without fuse]
- W : Withstanding load case [with/without fuse]

Thermal Fuse type

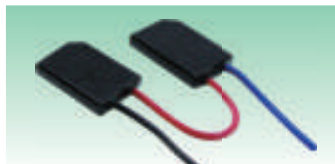
- A : 2A 100°C
- B : 2A 112°C
- C : 2A 129°C
- K : 5A 100°C
- L : 5A 112°C
- M : 5A 133°C
- F : 8A 99°C
- G : 8A 113°C
- H : 8A 130°C
- O : without fuse

Contact type

- X : "OFF" for temperature rise
- Y : "ON" for temperature rise

Contact material

- A : Ag Contact



US-630AXAW2



US-630AXBW3

Specification

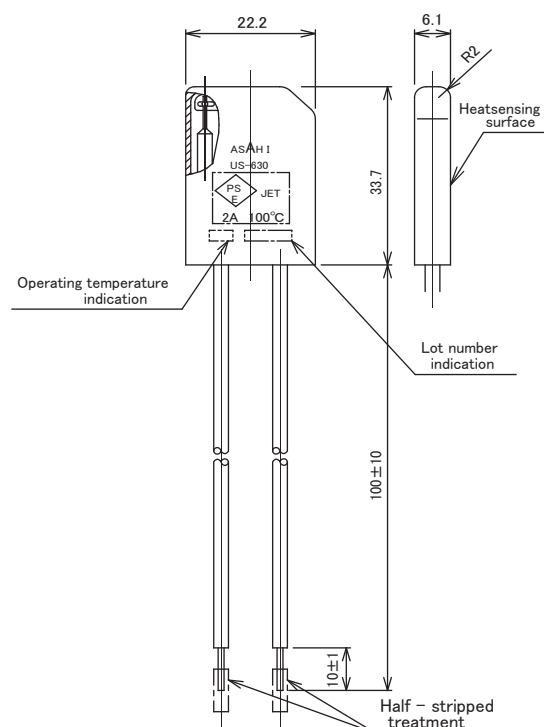
Electrical rating	125 VAC 8A max. (200mA min.) 250 VAC 4A max. (200mA min.)		
Operation temp. range	0~50°C	51~100°C	101~120°C
Tolerance	±4K / ±5K	±5K / ±5K	±5K / ±5K
Differential	10K	10K	12K
Circuit resistance	70 mΩ or less [varies depending on the lead]		
Insulation resistance	100 MΩ or more [with a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

Dimensional drawings

US-630AXAWR

With thermal fuse 2A · heavy load case type



5.1mm thickness, Preattachment Lead wire

THERMOSTAT
US-638

Application/ Auto parts, Floor heater, Vending

Operating temp. 100°C max.



PBT Resin

US-638BXAB



US-638BXAB

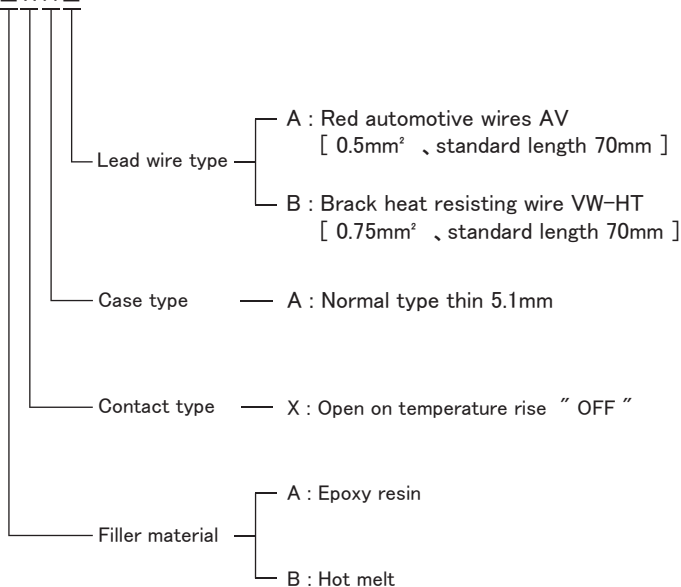
Specification

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°C	51~100°C
Tolerance	±4K / ±5K	±5K / ±6K
Differential	10~20K	20K
Circuit resistance (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°C (except for a lead wire)	
Cold resistance	-20°C	
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.)

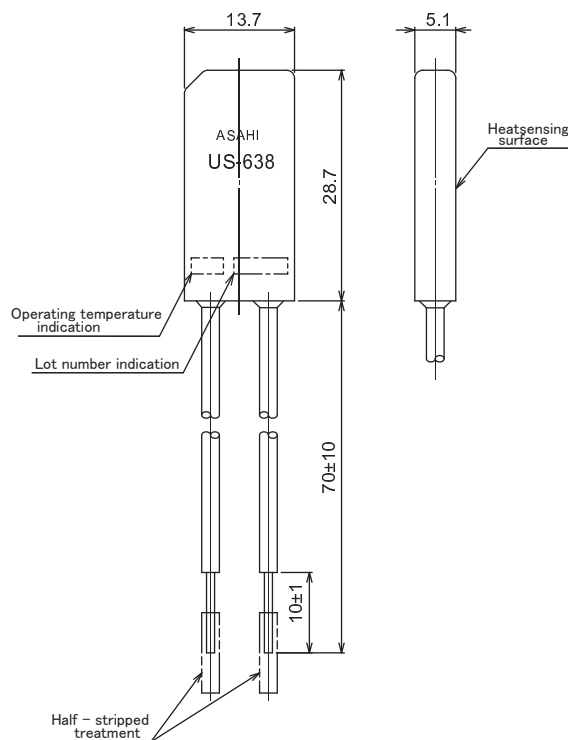
Model code

US-638□ X A □



Dimensional drawings

US-638BXAB



Temp. sensing in a space-saving

THERMOSTAT US-802

Application/ LCD, Projector, PCB

Operating temp. Max. 120°C

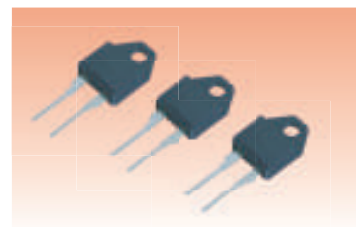
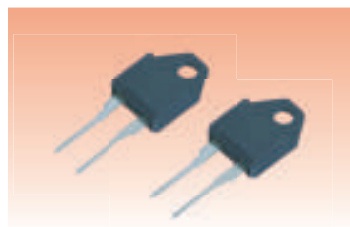
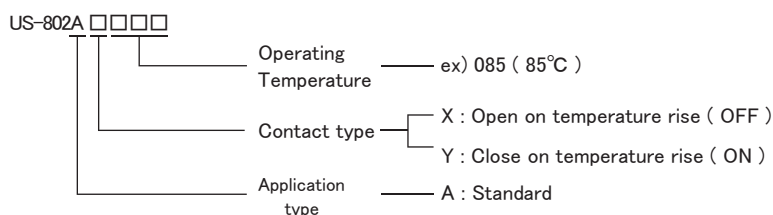


PBT Resin

US-802AX (AY)



Model code



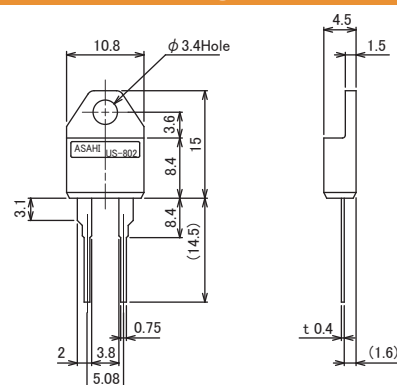
US-802AX (AY)

Specification

Electrical rating	125 VAC max. 1A (200mA min.) 48 VDC max. 1A (5 VDC 1mA min.)
Operation temp. range	40~120°C (5K indent)
Tolerance	Operate $\pm 5K$ / Reset $\pm 7K$
Differential	15K
Circuit resistance	50 m Ω or less [DC 1A]
Insulation resistance	100 M Ω or more [with a 500 VDC megger]
Withstand voltage	1200 VAC / 1min.
Heat resistance	125°C
Cold resistance	-20°C
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

Dimensional drawings



Operating temperature / return temperature table

US-802AX type (Open on temperature rise)

Model code	Operate temp. OFF $\pm 5K$	Reset temp. ON $\pm 7K$
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 $\pm 5K$	Reset temp. OFF $\pm 7K$
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

Application/Copy, LBP etc.

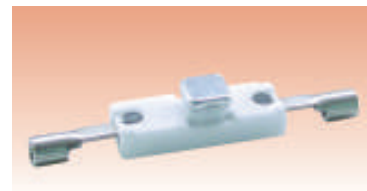
Operating temp. 290°C max.



US-828AXAB



US-828AXAB



US-828AXBB

Specification

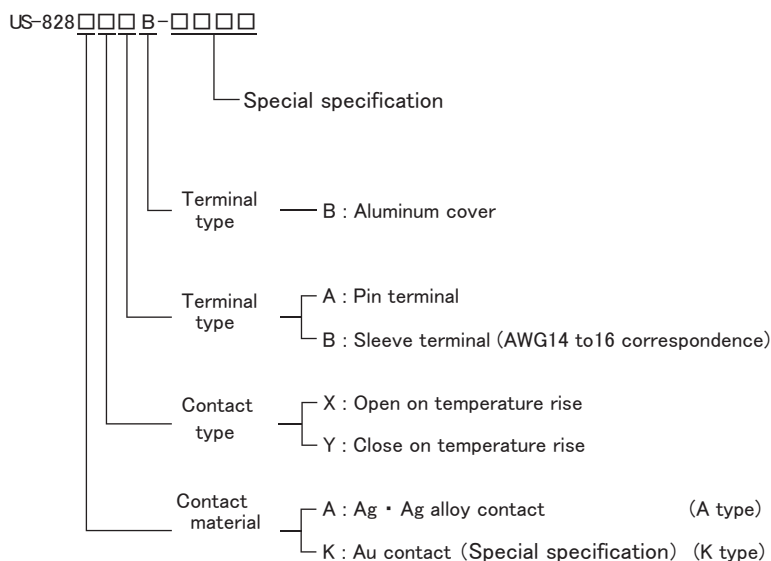
Electrical rating	Type A : 125 VAC 16A max. (200mA min.) 250 VAC 10A max. (200mA min.) Type K : 24 VDC 1A max. (5 VDC 1mA min.)
Operating temp. range	220~290°C
Temperature tolerance	±7K or more
Circuit resistance	50 mΩ or less
Insulation resistance	100 MΩ or more [with a 500 VDC megger]
Dielectric strength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

* Please contact us for specifications that exceeds this specification

Ceramic case

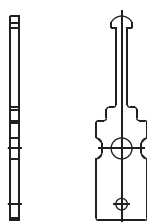


Model code

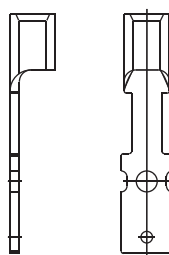


Terminal shape view

A type

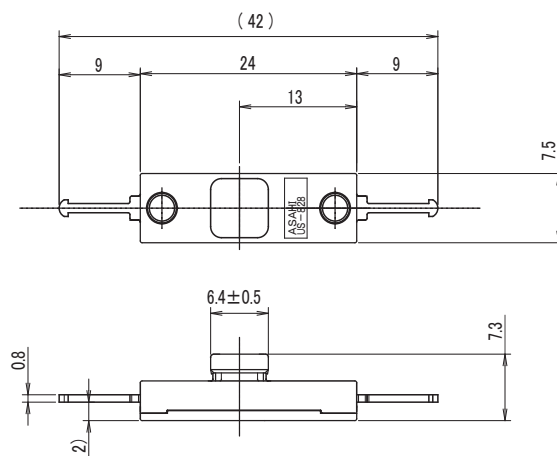


B type

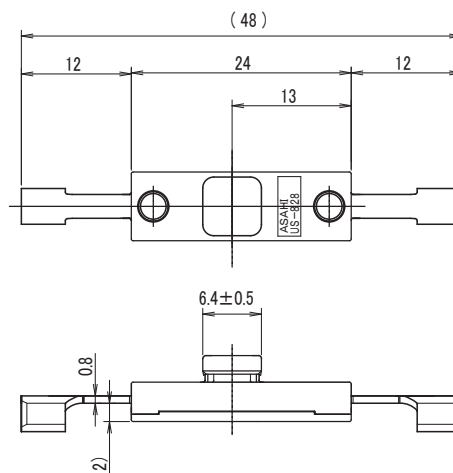


Dimensional drawings

US-828AXAB



US-828AXBB



THERMOSTAT US-415



Operating temp. 105°C max.



US-415BXDS2

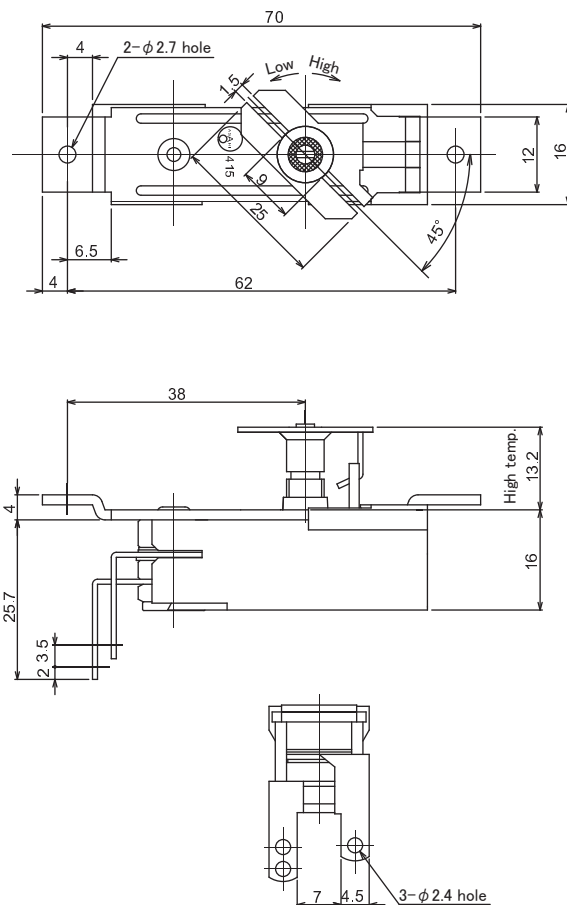


Electrical rating	General : 125 VAC MAX. 500W (Min. 200mA) L type : 125 VAC MAX. 600W (Min. 200mA)	
Operation temp. range	70~100°C	101~105°C
Tolerance	±4K	±5K
Differential	7~15K	9~17K
Circuit resistance (initial value)	50 mΩ or less	
Insulation resistance	100 MΩ or more [with a 500 VDC megger]	
Dielectric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

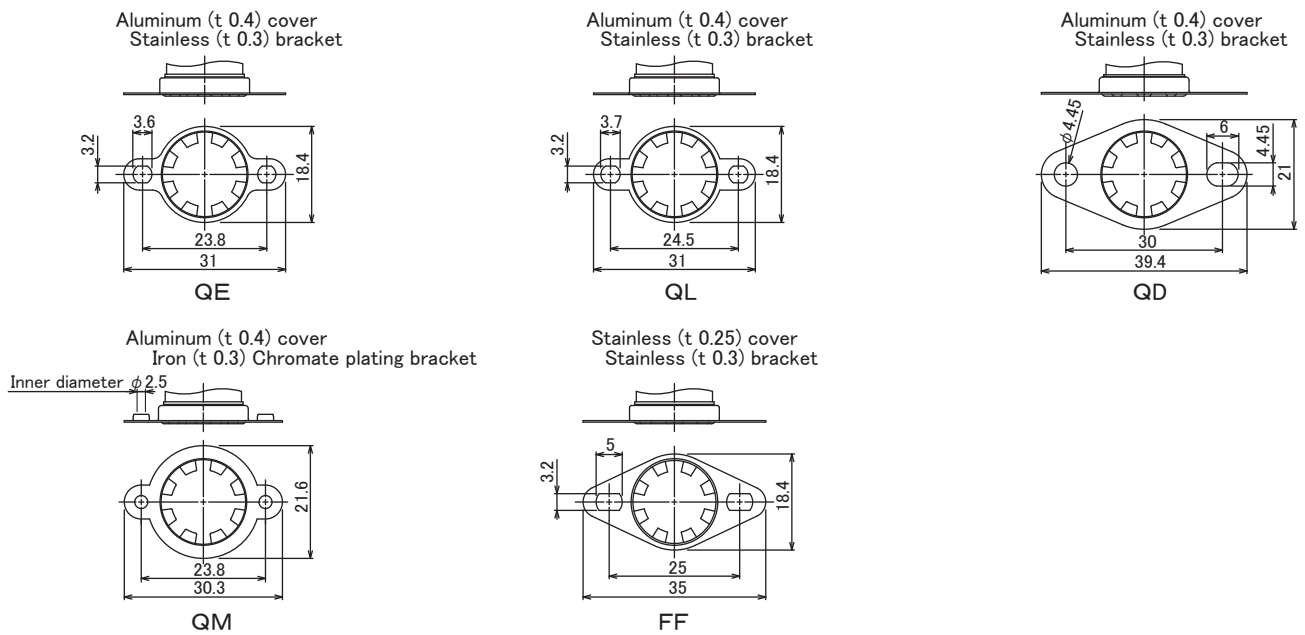
Model code

Dimensional drawings

		Special specification
Load capacity model	L : 500W~600W No symbol : 500W or less	
Cover model	1 : Cover hole provided 2 : Cover hole not provided	
Stopper model	O : Fixed type M : $\angle 180^\circ$ Variable type (caulking) S : $\angle 310^\circ$ 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 $\angle 270^\circ$ rotation B : Horizontal mounting [both sides] [stopper model "S"], variable range 37K by $\angle 270^\circ$ rotation H : Horizontal mounting [both sides] [stopper model "M"], variable range 34K by $\angle 180^\circ$ rotation F : Vertical mounting, [single side] [stopper model "O" only], fixed type	

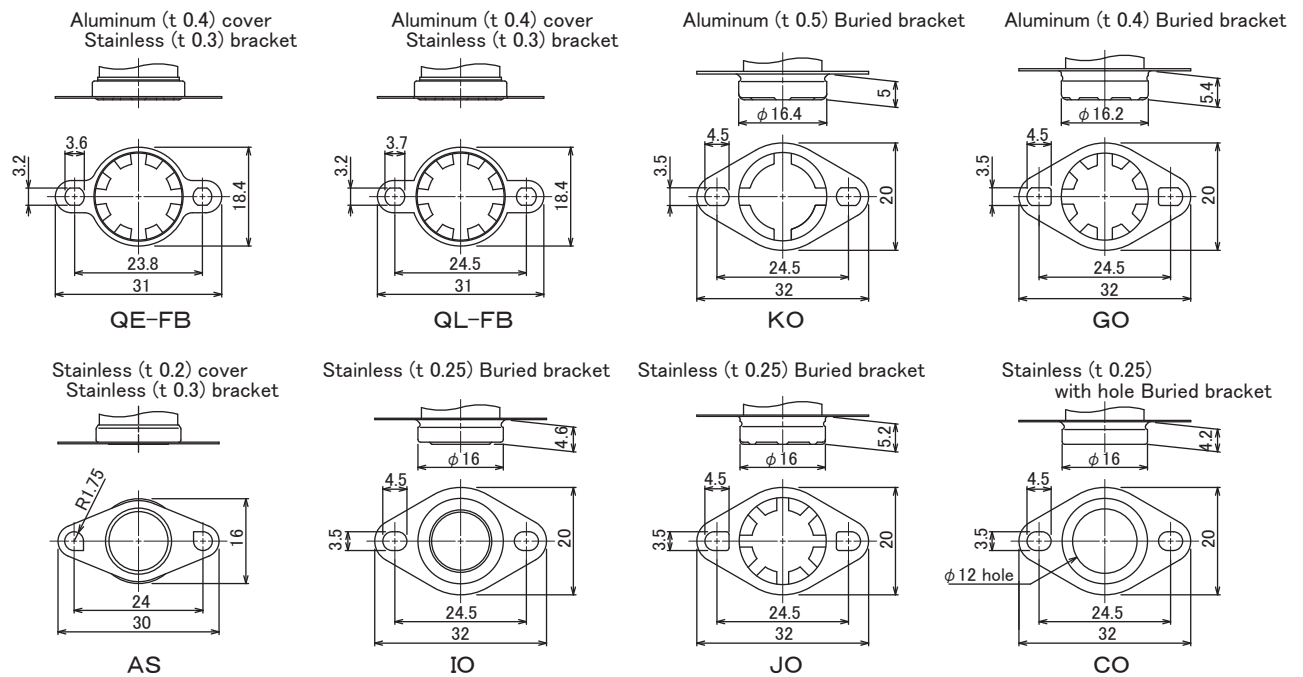


Movable bracket (FREE)

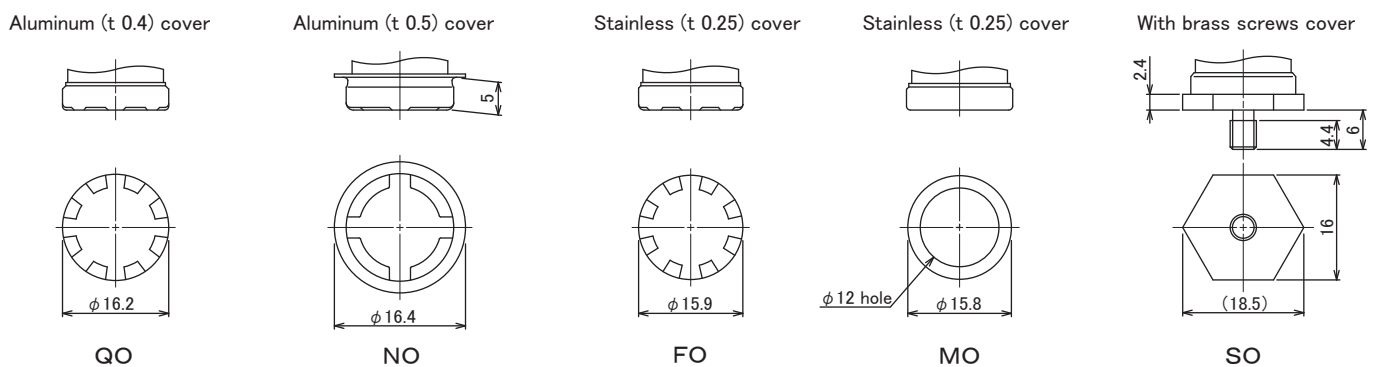


The combination of US-622•621•625 is not allowed

Fixed bracket (FIXED)



No bracket



Mark of Overseas Safety Standards



UL

C-UL
(csa certification equivalent)

CSA



CQC



VDE



TÜV



CMJ



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°C	Limiting 100,000 times
	DC 30V 5A Resistive Load		Limiting 30,000 times
*US-602K	DC 30V 1A Resistive Load AC 120V 125VA Pilot Duty	150°C	Limiting 100,000 times
*US-603U (US-603U-H)	AC 125V 15A AC 250V 8A Resistive Load AC 120V 10A Inductive Load 120VAC, FLA 5.8A, LRA 34.8A 240VAC, FLA 2.9A, LRA 17.4A	160°C	Regulating 6,000 times
*US-603K	DC 30V 1A Resistive Load AC 120V 125VA Pilot Duty	150°C	Regulating 6,000 times
*US-622	AC 125V 15A AC 250V 10A Resistive Load	185°C	Limiting 100,000 times
		160°C	S.O.D. (Single Operation Device) 1 times
*US-622K	DC 30V 1A Resistive Load	130°C	Limiting 100,000 times
	AC 120V 125VA Pilot Duty	160°C	
*US-621	AC 125V 15A AC 250V 10A Resistive Load	220°C	S.O.D. (Single Operation Device) 1 times
*US-623	AC 120V 15A AC 250V 16A Resistive Load	205°C	Regulating 6,000 times
*US-625	AC 125V 15A AC 250V 10A Resistive Load	260°C	Limiting 100,000 times
		220°C 260°C (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°C	Limiting 30,000 times
*US-802	DC 48V 1A AC 125V 1A Resistive Load	120°C	Regulating 30,000 times
US-630U	AC 120V 5A AC 120V 2A Resistive Load	100°C	Limiting 100,000 times
US-828U	AC 125V 16A AC 250V 16A Resistive Load	290°C	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 Inductive Load	150°C	Limiting 100,000 times	Same as the File No. E52529
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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 temprature	150°C 142.5°C	185°C 170°C	200°C 185°C	250°C 230°C	120°C 114°C	110°C 100°C	150°C	200°C	110°C 104.5°C
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		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 $-10+70^{\circ}\text{C}$ 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 heat 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 the limit 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 than 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 Mercury lamp Fluorescent light	10 to 15 times higher than steady state Approx. 3 Times
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 ?

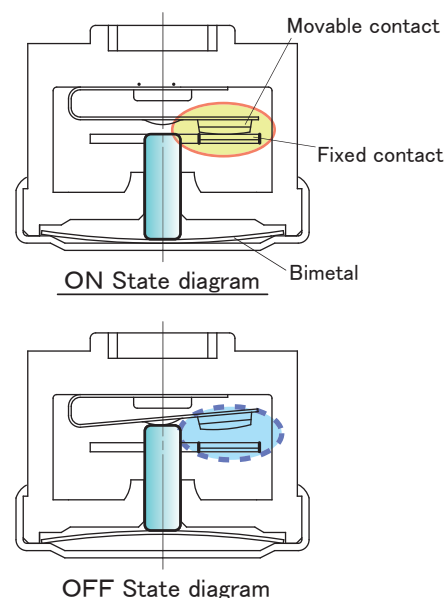
- **Thermostat**
A device that stabilizes heat and temperature
The etymology for thermostat is a compound word combining “thermo” which means temperature or heat, and “stat” which means a stationary state.
“Thermo” is how the word is pronounced in English, but in German it is pronounced “terumo” or “tamu”.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



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.

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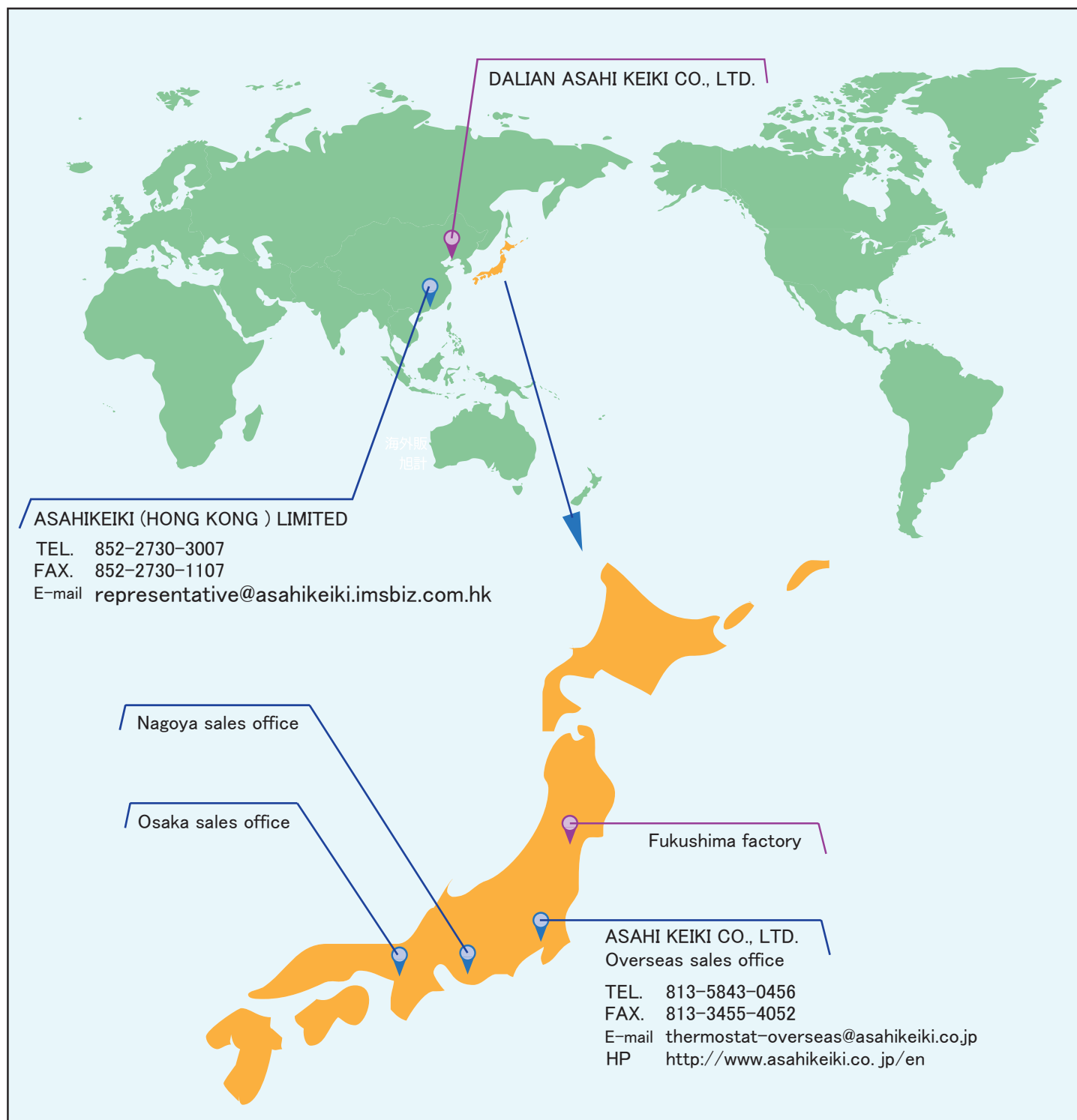


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