

Read all instructions thoroughly

INSTRUCTIONS

THERMOSTAT

Type **ALS • BLS**



IMPORTANT

Failure to read and follow all instructions carefully before installing or operating this LS Thermostat could cause personal injury and/or property damage. Save these instructions for future use.

NOTES FOR SAFETY

⚠ WARNING

- Before wiring and services, be sure to turn off power supply. Otherwise, may cause electrical shock.
- Do not pour water on the thermostat as it may cause electrical shock.
- Do not remove a cover while power is supplied as it may cause electrical shock.
- Be sure to connect code without removing a conduit rubber or please put code through the conduit gland as it may cause electrical shock with code cover damaged.

SPECIFICATIONS

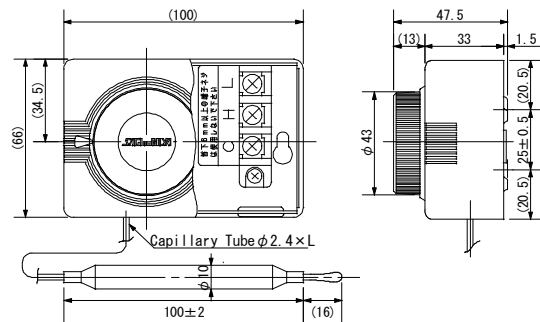
Catalog Number				Range (°C)		Differential (°C)	Use	Allowable temp (°C)		Mounting of sensing bulb	Weight (g)
Type	Contact Type	Temp.	Capillary Length	Min	Max			Bulb	Body		
ALS	C 1	0 1 1	L 1 : 1 m	-6 0	-1 0	Approx. 2.5 (fixed)	TS	6 0	In any position	300	
		0 2 0	L 2 : 2 m	-4 0	2 0			8 0			
		0 5 0	※ L 3 : 3 m	-1 0	5 0			1 1 0			
		0 9 0	※ L 5 : 5 m	4 0	9 0			1 5 0			
BLS		0 2 0		-2 0	2 0	Approx. 2.0 (fixed)	TB	6 0			

※3m, 5m Capillary Tubes are Except Type 090. TS... Ambient temp. of Switch Body. TB... Sensing Bulb Temp.
Special specifications: With dial knob lock mechanism and the falling point basis model are available.

⚠ CAUTION

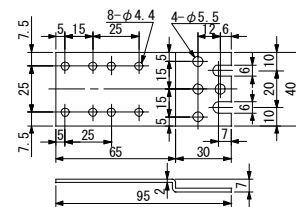
- Do not install the thermostat at place where vibration is expected.
- Make sure to use standard bracket and screws (M4×6mm) (furnished) to prevent the switch damage by using longer screw.
- Do not dent or deform the tip of the sensing bulb.
- Do not bent the capillary tube within a radius of 10mm or at a point within 40mm from joining part of the sensing bulb.
- The sensing bulb is tin plating on copper, but use a protective tube over the bulb when using fluid that erodes copper.
- Do not touch any part except dial knob and terminal screws absolutely.
- Do not use thermostat on an equipment with electrical rating over the listed load.

DIMENSION DRAWINGS



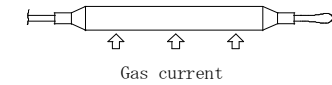
ACCESSORY (FURNISHED)

Mounting Bracket
With 2 screws (M4×6mm)



LOCATION OF SENSING BULB

- Locate the sensing bulb at a place where it will be well ventilated and at right angles to the gas current.
- For control of gas in a refrigerator, locate the sensing bulb on the upper place near the evaporator where it will be well circulated the cold gas and avoid mounting the bulb to touch the inside wall or the evaporator.
- For control of fluid, locate the sensing bulb at a place where the fluid is well circulated.

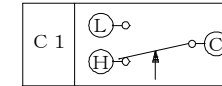


ELECTRIC RATING

Amps (A)	Voltage (V)	A C		D C	
		125	250	24	125
Noninductive Amp		0.05~10	0.05~5	0.05~5	0.05~0.5
Inductive Full load		0.05~8.5	0.05~4.5	0.05~3	0.05~0.2
Load Amps. Locked rotor		50	37	10	5

Special specifications: High current and very small current model are available.

CONTACT TYPE AND WIRING

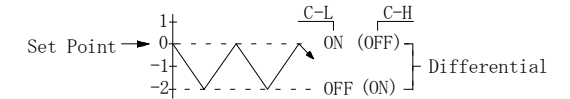


Arrow Mark indicates action on increase of temperature.

Cooling	Connect the terminal C and L
Heating	Connect the terminal C and H

TEMPERATURE SETTING

- Turn Dial Knob on front of case until pointer indicates desired set point temperature.

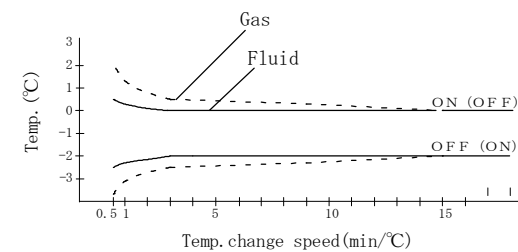


- Differential is fixed, non-adjustable.

- Before setting temperature, check the temperature in a refrigerator by thermometer. If change of room temperature of the refrigerator will become larger. Then overfreezing or overheating may occur.
- Before setting temperature, check the condition of the controls. If the size of the refrigerator is large, the room temperature varies depending on whether the bulb is located at the corner or near the outlet of cold air, and with the condition.

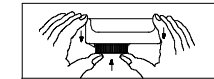
ADDITIONAL CHARACTERISTICS

In gas temperature control, operating points of "ALS" may differ from actual gas temperature of controlled medium and the change rate depend on temperature change acceleration of controlled medium as shown in the curve. Temperature setting should be carefully determined in such case while checking change rate of gas. Keep temperature variable acceleration more than 3 minutes per 1°C in fluid, more than 15 minutes per 1°C in gas for proper control conditions.



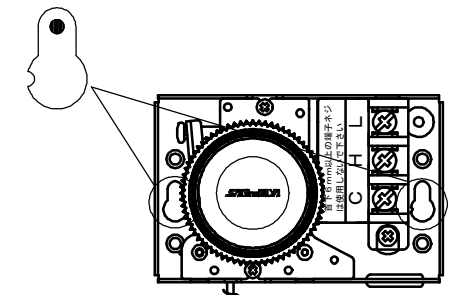
HOW TO REMOVE COVER

Remove a cover in a way shown in the figure.



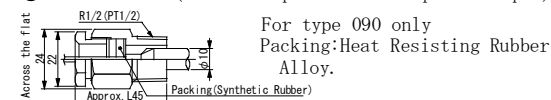
HOW TO REMOVE THE KNOCK OUT PART

Knock out part, place a flathead screwdriver near the black circle, and remove by tapping on it with a hammer.



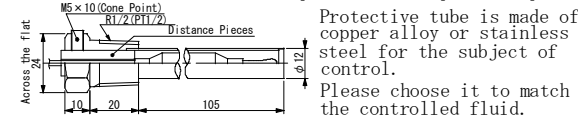
OPTION

- Insert Holder (Allowable press.: Static press. 1Mpa)



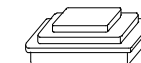
For type 090 only
Packing: Heat Resisting Rubber Alloy.

- Protective Tube (Allowable press.: Static press. 3Mpa)



Protective tube is made of copper alloy or stainless steel for the subject of control. Please choose it to match the controlled fluid.

- Drip Proof Case



It is suitable for the place where water drips and dusts are apt to enter.

GENERAL SERVICE HINTS

SYMPTOM	CAUSE	REMEDY
●Action Rate will not match to setting temperature.	• The sensing bulb is touched to a wall or the evaporator, or is located where it affects on influence of a draft. • It is located where the place is poorly ventilated.	Install the sensing bulb at a proper location.
	• A gap of setting temperature.	Correct the previous temperature setting.
	• Gas is a little leaking from the sensing bulb. • Deformation of the sensing bulb.	Replace with new thermostat.
	• Temperature change rate to the sensing bulb is too fast.	Make a proper temperature rate, or adjust temp. setting to allow for a temp. gap in the refrigerator.
●Thermostat will not work.	• The sensing bulb is touched to a wall or the evaporator, or it is located where the place is poorly ventilated.	Install the sensing bulb at a proper location.
	• Gas is leaking from the sensing bulb.	Replace with new thermostat.
	• Supply voltage at thermostat is too high. Contact points are melted together.	• Check why supply voltage is too high, then replace with new thermostat.
●The TV picture will flicker or the radio program will be hampered by noise.	• Disturbance through an electric power line. • Disturbance through an electric wave.	• Separate the power source of thermostat and receive. • Use noise filter to prevent these trouble.

NOTE: Thermostat test
 • • • Dip the sensing bulb into finely crush ice water, then check the condition of the switch at the setting temp. 0°C

CONFIRMATION OF OPERATION

All customers using this Product (hereinafter referred to as "Customers") are requested to, after properly installing this Product, test the operation of this Product to confirm that all the systems in connection with this Product fully function. In order to prevent the occurrence of bodily injury, fire accidents, serious damage, etc., in connection with the Customers' machinery or equipment due to improper installation of this Product, Saginomiya kindly requests the Customers to take the necessary safety measures by preparing safe designs such as a fail-safe design (*1) and a fire spread prevention design, as well as to make the proper adjustments for product reliability necessary for fault-tolerance (*2).

- (*1) Fail-safe design: Design to ensure safety in the event of any mechanical failure
 (*2) Fault-tolerance: Utilization of redundancy technology

Periodic Inspection of this Product

Be sure to confirm the proper operation of this Product and keep records of such operation at least once a year.

Saginomiya shall be held harmless and be indemnified by the Customers from any damages incurred due to the Customers failing to conduct the above operational procedures, provided, however, that, this shall not apply if the damages which the Customers incurred due to the defect of this Product caused by Saginomiya.

RESTRICTIONS OF USE

This Product is designed and manufactured for the purpose of using them for cooling and heating and refrigerating appliances and air conditioning equipment or various industrial equipment, but is not designed and manufactured for the purpose of using this Product for any instrument or system related to human life or health purposes. Therefore, the use of this Product in fields related to items (1) through (3) below is not intended whatsoever. Saginomiya shall be held harmless and be indemnified from any and all damages incurred by use of this Product under item (3).

- (1) In any field related to nuclear power and radiation;
- (2) In any field related to space or seafloor equipment;
- (3) In any equipment or device requiring a high degree of reliance on such equipment or device with respect to which it is reasonably foreseeable that failure or malfunction of the equipment or device would either directly or indirectly cause serious damage to human life, health or property;

Also, when using this Product under the fields related to items (1) through (10), (except for item (3), in relation to which this Product must never be used), please be sure to notify Saginomiya's contact desk in charge of sales and obtain Saginomiya's prior written approval for such use.

Saginomiya shall be held harmless and be indemnified from any and all damages incurred by use of this Product in relation to these fields if the Customers do not notify Saginomiya's contact desk and obtain Saginomiya's prior written approval.

- (4) Heating, cooling and air conditioning equipment that uses flammable and/or toxic refrigerants, or various industrial equipment that uses flammable and/or toxic fluids;
- (5) Transportation device (railroad, aviation, ship or vessel, vehicle equipment, etc.);
- (6) Disaster-prevention or crime-prevention device;
- (7) Facility or application directly related to medical equipment, burning appliances, electro thermal equipment, amusement rides and devices, facilities/applications associated directly with billing;
- (8) Equipment requiring high reliance on supply systems such as electricity, gas, water, etc., in large-scale communication system, or in transportation or air traffic control system;
- (9) Facilities that are to comply with regulations of governmental / public agencies or specific industries or
- (10) Other machineries or equipment equivalent to those set forth in the above items (4) to (9) which require for high reliability and safety.

It is recommended to replace this Product within 5 to 10 years of delivery if no other duration of use is provided in the applicable specifications or instruction manual because the conditions and environment of use also have an impact on this Product.

SCOPE OF WARRANTY

SAGINOMIYA WILL PROVIDE THE CUSTOMERS WITH REPLACEMENT OR REPAIRED THIS PRODUCT DELIVERED, FREE OF COST, ONLY WITHIN ONE YEAR OF DELIVERY TO THE CUSTOMER, IF FAILURE OCCURS IN THE CUSTOMERS' EQUIPMENT USING THIS PRODUCT DUE TO A DEFECT OF THIS PRODUCT; PROVIDED, HOWEVER, THAT IN ANY EVENT THE RATIO OF THE AMOUNT THAT SAGINOMIYA BEARS FOR THE DAMAGES INCURRED BY THE FAILURE OF THIS PRODUCT OR CUSTOMERS' EQUIPMENT SHALL NOT EXCEED THE PRICE OF THIS PRODUCT WE DELIVERED. IN ADDITION, SAGINOMIYA SHALL BE HELD HARMLESS AND BE INDEMNIFIED FROM ANY AND ALL DAMAGES INCURRED WHEN THE FAILURE OF THE CUSTOMERS' EQUIPMENT OCCURRED DUE TO ANY CAUSE SET FORTH BELOW.

- (1) WHEN CAUSED BY INAPPROPRIATE HANDLING OR USE OF THIS PRODUCT BY THE CUSTOMERS (SUCH AS NOT COMPLYING WITH THE CONDITIONS, ENVIRONMENTAL SPECIFICATIONS OR CAUTIONS INDICATED IN ANY APPLICABLE CATALOGUE, SPECIFICATIONS, INSTRUCTION MANUAL, ETC.);
- (2) WHEN FAILURE OCCURRED DUE TO ANY REASON OTHER THAN THIS PRODUCT;
- (3) WHEN CAUSED BY MODIFICATION OR REPAIR OF THIS PRODUCT MADE BY ANYONE OTHER THAN SAGINOMIYA OR DESIGNEE OF SAGINOMIYA;
- (4) WHEN CAUSED BY THE USE OF THIS PRODUCT IN VIOLATION OF THE ABOVE "RESTRICTIONS OF USE" OR "CONFIRMATION OF OPERATION";
- (5) WHEN SUCH FAILURE WAS NOT REASONABLY FORESEEABLE AT THE TIME OF SAGINOMIYA'S SHIPMENT; OR
- (6) BY ANY OTHER CAUSE NOT ATTRIBUTABLE TO SAGINOMIYA, SUCH AS AN ACT OF GOD, DISASTER, OR ACT OF ANY THIRD PARTY.

PLEASE NOTE THAT THE CUSTOMERS WILL NOT BE ENTITLED TO ANY OF THE ABOVE WARRANTY IF THE CUSTOMERS PURCHASED THIS PRODUCT FROM INTERNET AUCTION, ETC.

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