

# Insertion Thermostat

## ■ General

Models TY6800Z and TTY6800Z are insertion thermostats applicable to control temperature (two-position) for air in duct and liquid in tank or pipe.

## ■ Features

### (1) Electric two-position control

The temperature sensing element, filled with liquid, detects changing of temperature.

Model TY6800Z has a built-in microswitch, TTY6800Z has two built-in microswitches. They are applicable to heating or cooling control.

### (2) Easy temperature setting and differential gap adjustment

Temperature setpoint is easily set by the knob in the front of the thermostat.

Model TY6800Z has the differential gap adjustment function to control equipment smoothly.

Each microswitch of Model TTY6800Z has the fixed differential gap. Difference between the two switches is easily adjusted to enable suitable sequence control for the connected equipment.



## ■ Model Numbers

Model Number	Temperature setting range (°C)	Allowable max. temp. of temp. sensor (°C)	Allowable min. temp. of temp. sensor (°C)	Capillary length (m)
TY6800Z6000	-15-70	100	-40	1.5
TY6800Z6010	-15-70	100	-40	5
TY6800Z7000	5-90	100	-40	1.5
TY6800Z7010	5-90	100	-40	5
TY6800Z8000	40-125	150	-40	1.5
TY6800Z8010	40-125	150	-40	5
TTY6800Z6000	-15-70	100	-40	1.5
TTY6800Z6010	-15-70	100	-40	5
TTY6800Z7000	5-90	100	-40	1.5

Note: Actual length of capillary is 1.35-1.6 m for 1.5 m type, 4.75-5 m for 5 m type. Order the capillary considering the minimum required length.

## ● Parts ordered separately

Description	Model Number	Note	Reference
Immersion well	112624AA-J	R1/2 SUS304	Figure 2. in this manual AB-4074, Immersion Wells Specifications/ Instructions
Pressure fitting	83165370-001	1/2NPT	Figure 3. in this manual
Temperature sensor holder	DY3002A1011	Construction material	Figure 4. in this manual AB-4009, Bulb Holder Specifications/ Instructions

## Safety Instructions

Please read instructions carefully and use the product as specified in this manual.

Be sure to keep this manual near by for ready reference.

### Usage Restrictions

This product is targeted for general air conditioning. Do not use this product in a situation where human life may be affected. If this product is used in a clean room or a place where reliability or control accuracy is particularly required, please contact our sales representative. Azbil Corporation will not bear any responsibility for the results produced by the operators.

### ● Cautions for connecting to system

- If this product breaks down, it does not have function to avoid or notify the abnormal conditions to other equipment.  
Please take countermeasures independently from this product.
- If the enclosed liquid leaks, the contacts are welded, etc., the output might be stuck to ON.  
To use this product for controlling a heating device such as hot water heater, be sure to implement safety measures, e.g., preventing dry-heating.

### ● Prohibitions for installing this product

- Do not install the product in the following environments. Doing so might cause malfunction of the device or device failure in a short period of usage.
- Where special chemicals or corrosive gas (such as ammonia, sulfur, chlorine, ethylenic compound, acids, etc.) exist.
  - Where water droplets or excessive damp air exists.
  - Where condensation is made on the product.
  - Where exposed to direct sunlight or high temperature.
  - Where vibrations or shocks are applied.
  - Where dust or particles will not easily enter into the product.

### ● Cautions for installing this product

- Mount the the temperature sensor where representative temperature of the measuring object can be measured.
- Do not mount the temperature sensor in locations such as the following.  
Temperature may not be correctly measured.
  - Where exposed to warm or cold wind directly.
  - Where air stagnates or there is a draft.
  - Where water level changes largely.
  - Where the temperature sensor cannot be securely mounted.
  - Where unauthorized persons can have easy access.
- Secure space around the product for maintenance.

## ■ Warnings and Cautions



**WARNING**

Alerts users that improper handling may cause death or serious injury.



**CAUTION**

Alerts users that improper handling may cause minor injury or material loss.

## ■ Signs



Alerts users possible hazardous conditions caused by erroneous operation or erroneous use. The symbol inside  $\triangle$  indicates the specific type of danger. (For example, the sign on the left warns of the risk of electric shock.)



Notifies users that specific actions are prohibited to prevent possible danger. The symbol inside  $\odot$  graphically indicates the prohibited action. (For example, the sign on the left notifies that disassembly is prohibited.)



Instructs users to carry out a specific obligatory action to prevent possible danger. The symbol inside  $\bullet$  graphically indicates the actual action to be carried out. (For example, the sign on the left indicates general instructions.)

### $\triangle$ WARNING



If this product is connected to a system, be sure to implement safety measures. Failure to do might cause fire.



Be sure to ground the product with ground resistance of less than 100  $\Omega$ . Improper grounding might cause electric shock or malfunction.



Before wiring or servicing, be sure to turn off the power to this product. Failure to do might cause electric shock or device failure.



Before attaching or detaching the terminal cover for wiring, be sure to turn off the power to the product and all the connected devices. After the wiring work, attach the terminal cover at the original position. Failure to do so might cause electric shock.



If seal connectors or conduits cannot be used, use grommets. Failure to do so might cause electric shock due to touching the terminals.

<b>⚠ CAUTION</b>	
	Use this product under the operating conditions (for temperature, humidity, power, vibration, shock, mounting direction, atmosphere, etc.) listed in the specifications. Failure to do so might cause fire or device failure.
	Installation and wiring must be performed by qualified personnel in accordance with all applicable safety standards.
	All wiring must comply with applicable codes and ordinances.
	To connect the wires to the screw terminals, use crimp terminal lugs that have insulation. Failure to do so might cause short circuit and result in device failure or fire.
	Firmly tighten the terminal screws. Insufficient tightening of the terminal screws might cause overheating or fire.
	Do not disassemble the product. Doing so might cause electric shock or device failure.
	Dispose of the product as industrial waste in accordance with your local regulations. Do not reuse all or part of this product.

**IMPORTANT**

- To use this product properly, follow the instructions described in this manual and the manuals for other devices connected to this product.
- Use the product within the rated operating ranges given in this manual. Failure to do so might cause contact welding and fixed output.

## ■ Dimensions

### ● Insertion thermostat

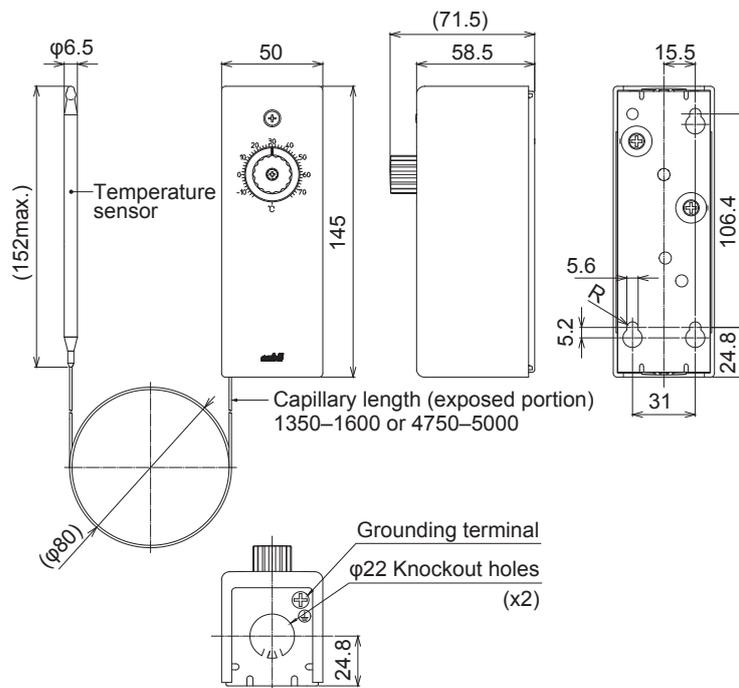


Figure 1. Model TY6800Z, TTY6800Z (mm)

**AB-6600**

● **Auxiliary parts**

< Immersion well >

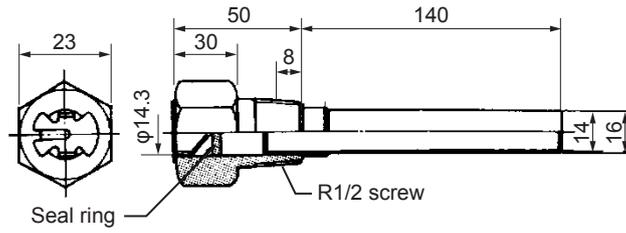


Figure 2. Dimensions of Model 112624AA-J (mm)

< Pressure fitting >

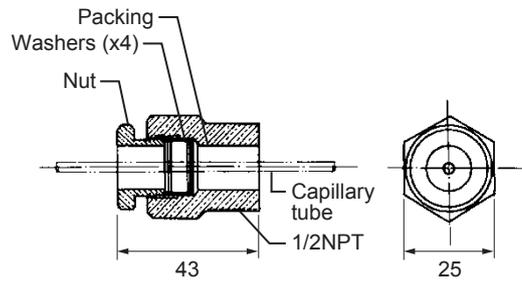


Figure 3. Dimensions of Model 83165370-001 (mm)

< Temperature sensor holder >

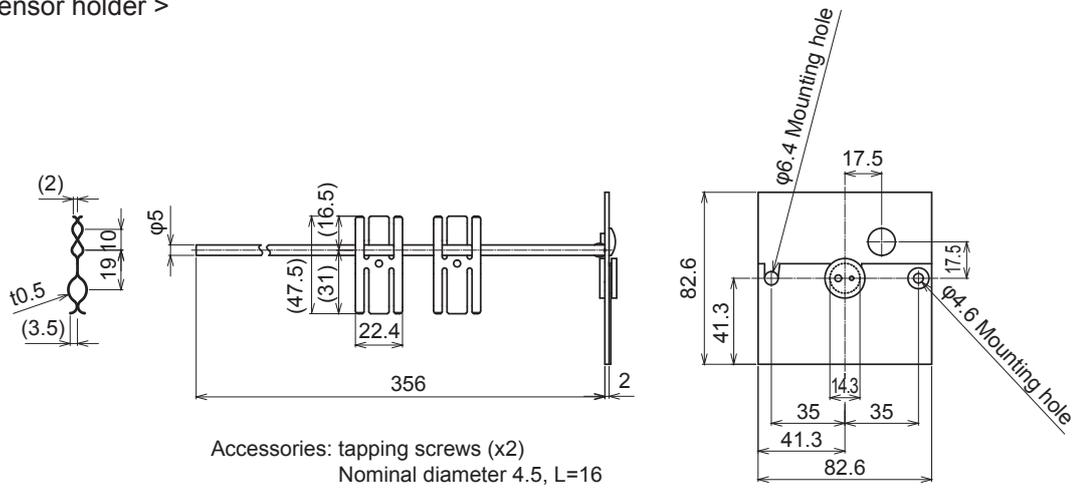


Figure 4. Dimensions of Model DY3002A1011 (mm)

## ■ Specifications

Item		Specification	
Differential gap	Model TY6800Z	Two-position control	Approx. 3–11 °C (variable)
	Model TTY6800Z	Two-position, two-step control	Each microswitch's differential gap: fixed to approx. 3 °C Differential between two switches: approx. 2.5–8 °C (variable)
Switching operation		Refer to <i>Figure 13.</i> , <i>Figure 16.</i> , and ■ <i>Operation.</i>	
	Model TY6800Z	When temperature rises, terminal R and W are <b>Closed</b> , terminal R and B are <b>Open</b> . When temperature falls, terminal R and W are <b>Open</b> , terminal R and B are <b>Closed</b> .	
	Model TTY6800Z	When temperature rises, switch 1 terminal R and W are <b>Closed</b> , terminal R and B are <b>Open</b> . Furthermore, temperature rises, switch 2 terminal R and W are <b>Closed</b> , terminal R and B are <b>Open</b> . When temperature falls, switch 2 terminal R and W are <b>Open</b> , terminal R and B are <b>Closed</b> . Furthermore, temperature falls, switch 1 terminal R and W are <b>Open</b> , terminal R and B are <b>Closed</b> .	
Switch contact rating		Motor load	120 V AC      240 V AC
		Operating	8 A      5.1 A
		Startup	48 A      30.6 A
Environment conditions		Operating conditions      Transportation/storage conditions	
		Ambient temp.	0–50 °C      -20–60 °C
		Ambient humidity	Max. 90 % RH (without condensation)      Max. 95 % RH (without condensation)
Temperature sensor	Size	Max. $\phi$ 6.5x152 mm	
	Material	Copper	
	Max. pressure	0.35 MPa	
Capillary tube	Length	Approx. 1.5 m (actual 1.35–1.6 m) Approx. 5 m (actual 4.75–5 m) Note Length of Model TTY6800Z7000 (temperature range: 5–90 °C) is 1.5 m only.	
	Material	Copper	
Installation		Mount the thermostat using the mounting holes on the back side of its case. (See <i>Figure 7.</i> and <i>8.</i> )	
Wiring		Wire to the terminal screws (M4) on the microswitch.	
Weight	Model TY6800Z	0.45 kg	
	Model TTY6800Z	0.5 kg	
Major materials	Cover	Polycarbonate resin, natural gray (Munsell value: N6.8)	
	Case	Cold rolled steel plate (1.2 mm thick) with galvanization	
Accessories		Round machine screws (M4x12), 3 pcs	
		Hexagonal nuts (M4), 3 pcs	
		Grommet (nylon resin, black), 1 pc	
Auxiliary parts (to be ordered separately)		Immersion well	Model 112624AA-J, R1/2 screw, SUS304 (See <i>Figure 2.</i> , AB-4074)
		Pressure fitting	Part No. 83165370-001, 1/2NPT screw, brass (See <i>Figure 3.</i> )
		Temperature sensor holder	Model DY3002A1011, construction material (See <i>Figure 4.</i> , AB-4009)

## ■ Installation

<b>⚠ CAUTION</b>	
	Use this product under the operating conditions (for temperature, humidity, power, vibration, shock, mounting direction, atmosphere, etc.) listed in the specifications. Failure to do so might cause fire or device failure.
	Installation and wiring must be performed by qualified personnel in accordance with all applicable safety standards.

Install the product referring to *Figure 7., 8., and 9.*

- If the temperature sensor is attached at higher position than the main unit, part of the capillary tube should be lower than the main unit. Water made by condensation etc. may enter the main unit to cause a short circuit, fire, or failure.
- If the product is installed outdoors, place it in a plastic box.

Note: The waterproof cover (Model Q615) is not applicable for this product.

### ● Prohibitions for installing this product

Do not install the product in the following environments. Doing so might cause malfunction of the device or device failure in a short period of usage.

- Where special chemicals or corrosive gas (such as ammonia, sulfur, chlorine, ethylenic compound, acids, etc.) exist.
- Where water droplets or excessive damp air exists.
- Where condensation is made on the product.
- Where exposed to direct sunlight or high temperature.
- Where vibrations or shocks are applied.
- Where dust or particles will not easily enter into the product.

### ● Cautions for installing this product

- Mount the the temperature sensor where representative temperature of the measuring object can be measured.
- Do not mount the temperature sensor in locations such as the following. Temperature may not be correctly measured.
  - Where exposed to warm or cold wind directly.
  - Where air stagnates or there is a draft.
  - Where water level changes largely.
  - Where the temperature sensor cannot be securely mounted.
  - Where unauthorized persons can have easy access.
- Secure space around the product for maintenance.

### ● Installation procedure

**IMPORTANT**

- Do not twist or sharply bend the capillary tube.
- Do not leave the cover for the unit and terminals detached.

Mount the thermostat with the screws through 3 mounting holes provided on its rear side to a wall or panel.

Detach the front cover and the terminal cover before mounting the thermostat.

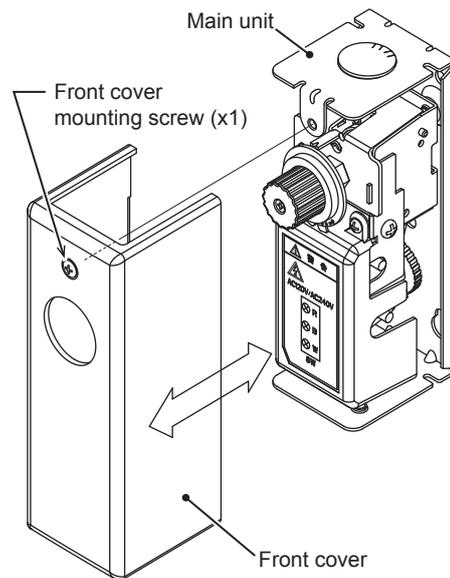


Figure 5. Attaching/detaching the front cover

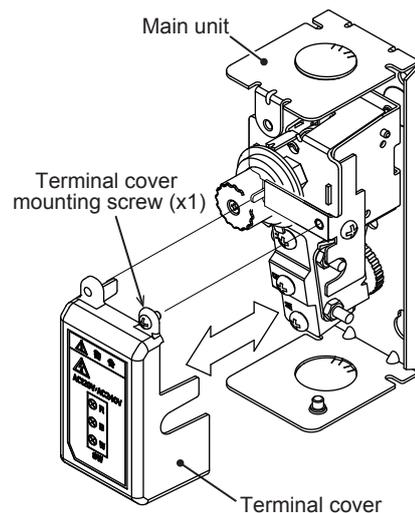


Figure 6. Attaching/detaching the terminal cover

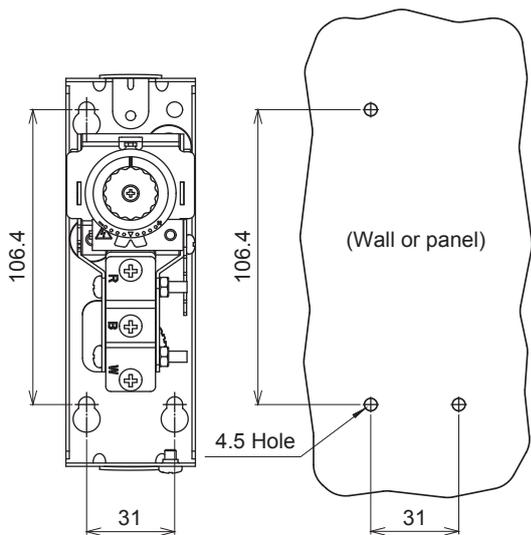


Figure 7. Mounting wall/panel dimensions (mm)

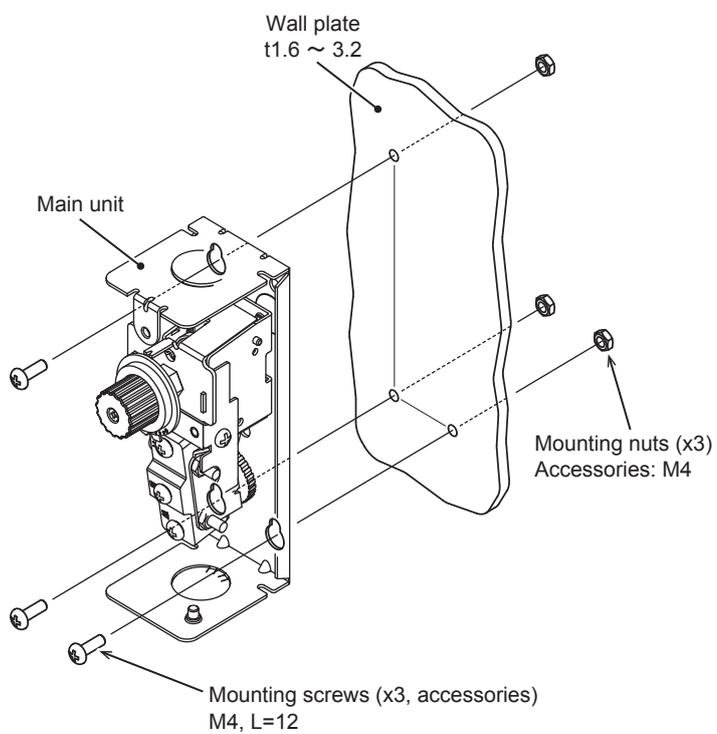
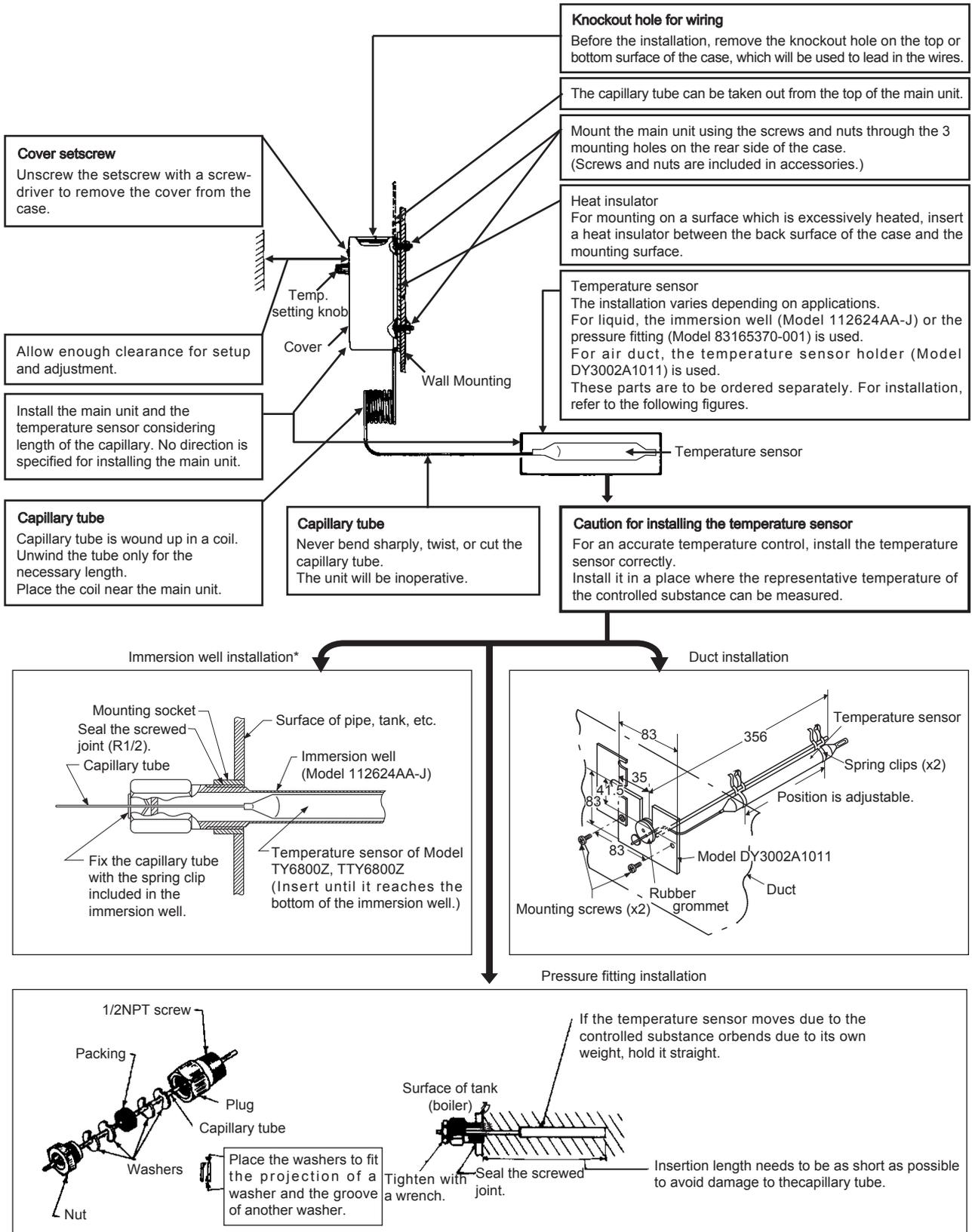


Figure 8. Installation procedure



Note: If the immersion well is used, fill the well with special grease to improve response performance of the temperature sensor. (Ex. For the stainless steel immersion well, response performance will be improved by approx. 15 %.) For the special grease, the silicon grease, G-30M (Shin-Etsu Chemical) or equivalent, is recommended.

Figure 9. Installation

■ Wiring

 WARNING	
	If this product is connected to a system, be sure to implement safety measures. Failure to do might cause fire.
	Be sure to ground the product with ground resistance of less than 100 Ω. Improper grounding might cause electric shock or malfunction.
	Before wiring or maintenance, be sure to turn off the power to the product. Failure to do so might cause electric shock.
	Before detaching the terminal cover, be sure to turn off the power to the product and all the connected devices. After wiring, be sure to attach the terminal cover at the original position Failure to do so might cause electric shock.
	If seal connectors or conduits cannot be used, use grommets. Failure to do so might cause electric shock due to touching the terminals.

 CAUTION	
	Installation and wiring must be performed by qualified personnel in accordance with all applicable safety standards.
	All wiring must comply with applicable codes and ordinances.
	To connect the wires to the screw terminals, use crimp terminal lugs that have insulation. Failure to do so might cause short circuit and result in device failure or fire.
	Firmly tighten the terminal screws. Insufficient tightening of the terminal screws might cause overheating or fire.

<p><b>IMPORTANT</b></p> <ul style="list-style-type: none"> <li>• To use this product properly, follow the instructions described in this manual and the manuals for other devices connected to this product.</li> <li>• In the final step, connect the power supply to the product. If you touch the terminals mistakenly, an accident or damages might be caused.</li> <li>• Connect appropriate loads, which satisfy the contact rating specified in the specifications, to the terminals.</li> <li>• If timer, auxiliary relays, etc. are used for additional features, select reliable parts and implement them in circuits correctly.</li> <li>• Correctly supply power, voltage and frequency, to the devices as specified in their specifications.</li> <li>• After wiring, check that wires are correctly wired. Incorrect wiring may cause device damage or malfunction.</li> <li>• Remove the knockout holes being careful not to leave protrusions or burrs. Failure to do so might damage the wires or cause injury.</li> </ul>
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● **Attaching the grommet (accessory part)**

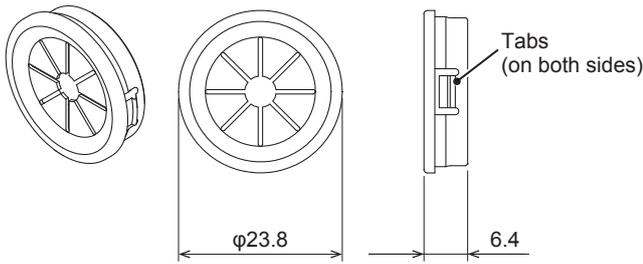


Figure 10. Grommet (mm)

If the knockout hole on the bottom is used and seal connectors are not used, attach the included grommet to the openings as shown in Figure 11. The grommet prevents a finger from entering into the opening in order not to cause electric shock.

Note: Before wiring, attach the grommet.

- (1) Insert the grommet in the knockout hole as illustrated in Figure 12.
- (2) Push the grommet until the tab clicks.
- (3) Ensure the grommet is firmly inserted.

Note: Do wirings through the grommet following the instructions in this manual.

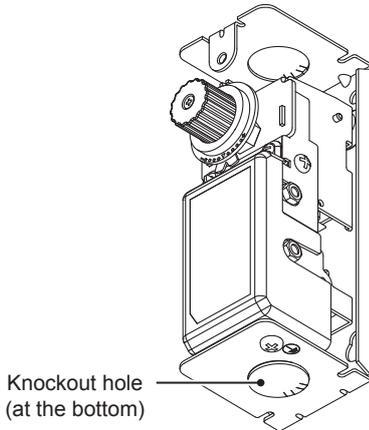


Figure 11. Knockout hole for attaching the grommet

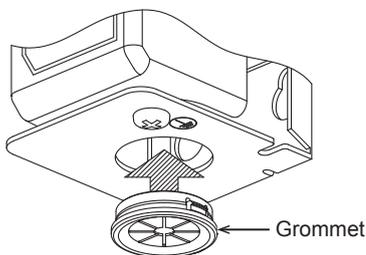


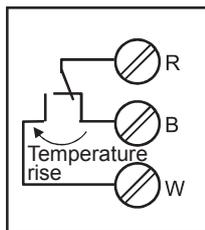
Figure 12. Attaching the grommet

● **Wiring method**

It is recommended using cable glands for wiring. If cable glands are not used, hold the wires near the product in order to reduce tension from the wires.

- (1) According to the position of cable inlet/outlet, open a knockout hole.
- (2) Remove the protrusions or burrs at the opening.  
Note: There are two knockout holes prepared for wiring at the top and bottom of the product.
- (3) Check the electric wires to use.
  - High insulation performance
  - Enough current capacity
- (4) Pull in the wires through the knockout hole, connect the wires to the screw terminals (marked R, B, and W) on the microswitch using the round terminals (M4 size).
- (5) Ground the product.
- (6) Connector other devices and power supply.
- (7) Check that the wires are correctly connected.

● Model TY6800Z



When temperature rises, terminal R and W are **Closed**, terminal R and B are **Open**.

Note:  denotes a screw terminal.

Figure 13. Switch configuration

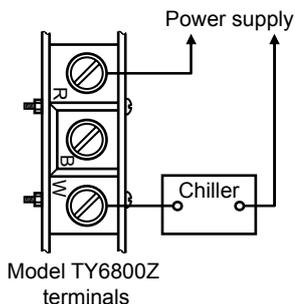


Figure 14. Example of cooling control

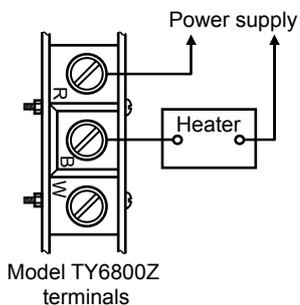
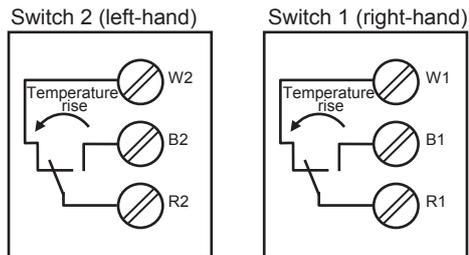


Figure 15. Example of heating control

● Model TTY6800Z



As temperature rises, switch 1 (right-hand) operates first, and then switch 2 (left-hand) operates.

Note:  denotes a screw terminal.

Figure 16. Switch configuration

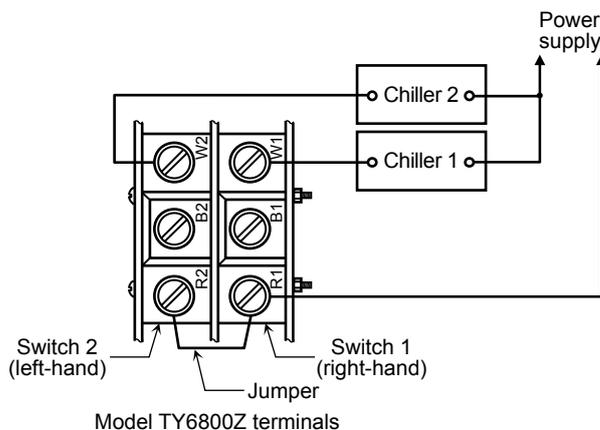


Figure 17. Example of cooling two-step control

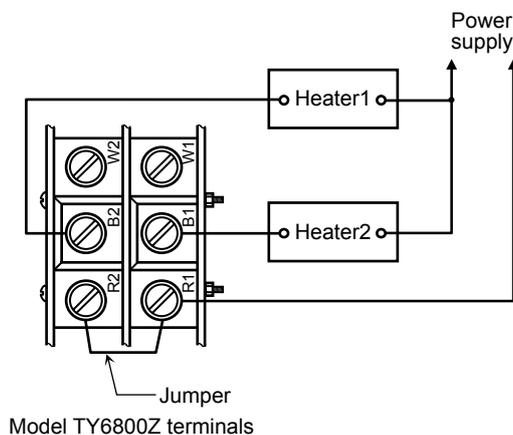
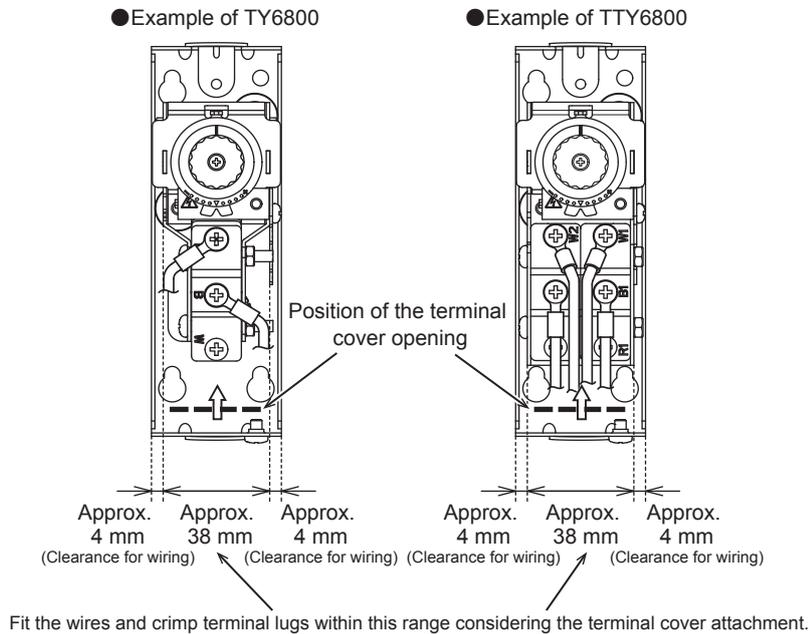


Figure 18. Example of heating two-step control

- To wire between the microswitch and the screw terminals, lay the wires from the terminals to the microswitch through the bottom inside of the box.
- Connect the wires to the screw terminals using the round screw terminals (M4 size) as shown in Figure 19.

Note: If the wiring was done improperly, the terminal lugs or wires may interfere each other and the terminal cover cannot be attached.

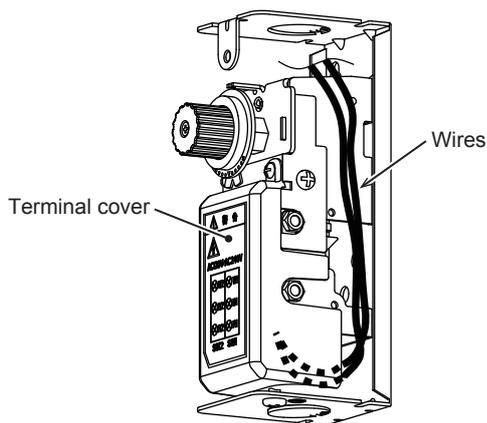


Note: Insert the wires through bottom of the terminal cover opening and lay the wires in direction as illustrated by the arrow.

Figure 19.

- If the knockout hole on the top of box is used, lay the wires along the inside wall of the box and connect the wires to the microswitch from the bottom side.

● Example of wiring from the top side of box



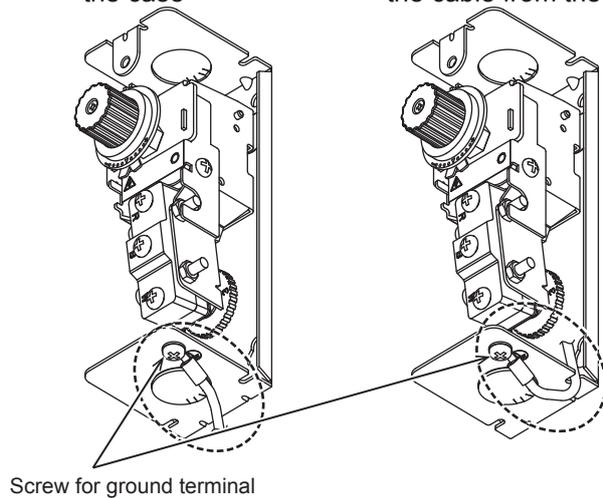
Lay the wires along the inside wall of the box and connect the wires to the microswitch terminals from the bottom side of the terminal cover. Also the opposite side of the box illustrated in Figure 20. is applicable.

Figure 20.

- Wire to the ground terminal (earth) as shown in Figure 21.

● Grounded outside the case

● Grounded by pulling the cable from the case



Note: Detach the terminal screw and connect the ground wire using an insulated round crimping terminal (M4 size)..

Note: Common for Model TY6800Z, TTY6800Z.

Figure 21.

## ■ Settings

**IMPORTANT**

- According to the thermal load, be careful to specify the differential gap so as not to cause huntings. Failure to do so might start and stop the devices frequently and cause device failure.
- Specify the differential gap appropriately, not too wide. Failure to do so might cause contact failure.

Set the temperature setpoint and adjust the differential gap.

### ● Differential gap setting for Model TY6800Z

Turn the differential gap adjustment dial to set the gap temperature by matching the temperature scale to the V-shape slit.

Shipping default of the differential gap is 3 °C (minimum). Turn the adjustment dial clockwise to increase the differential gap (max. 11 °C).

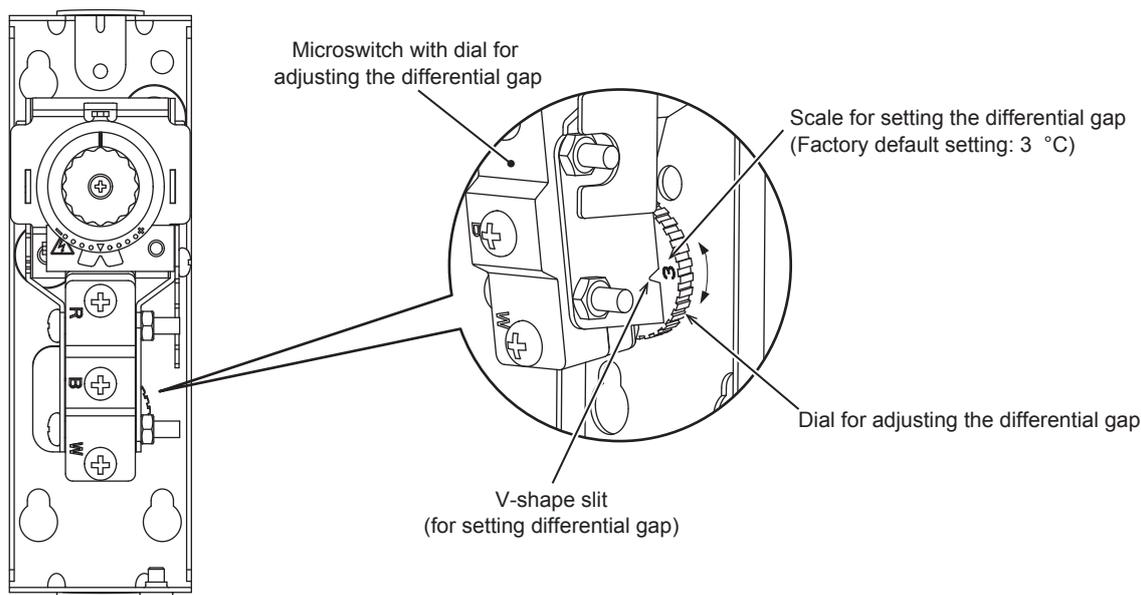


Figure 22. Differential gap setting for Model TY6800Z

### ● Differential between two switches setting for Model TTY6800Z

To set the differential between two switches, turn the adjustment gear using a flathead screwdriver. Hook the screwdriver blade to the slit on the adjustment gear and turn the gear.

Shipping default of the differential between two switches is 2.5 °C (minimum). Turn the adjustment gear counterclockwise to increase the differential between two switches. Maximum value is 8 °C.

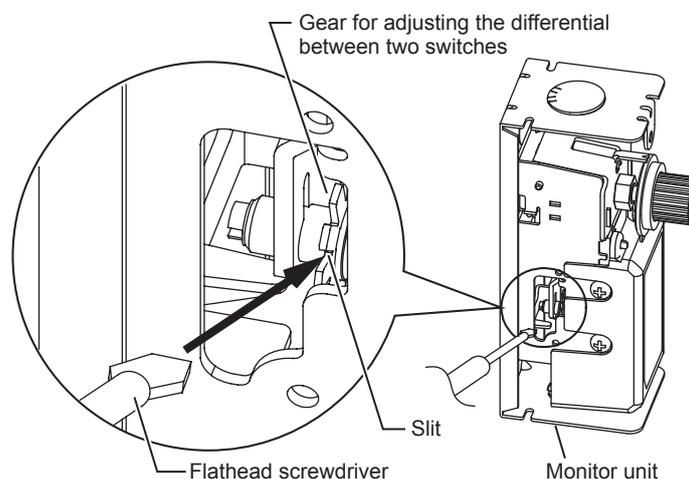


Figure 23. Differential between two switches

## ■ Operations

Set a desired temperature (refer to *Settings*) and power on the thermostat to run it automatically.

### ● Model TY6800Z

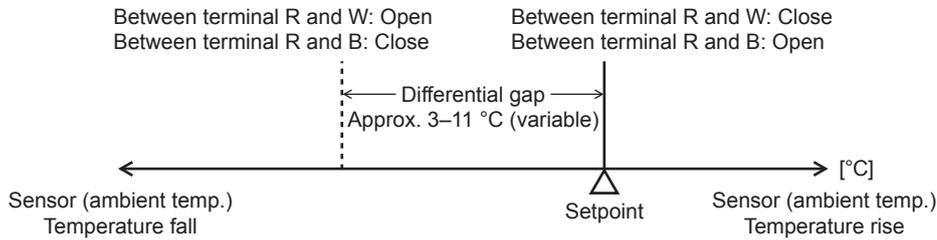


Figure 24. Setpoint and differential gap for Model TY6800Z

### < Cooling control >

Based on the cooling control system shown in *Figure 14. Example of wiring for cooling*, operation of Model TY6800Z thermostat is described assuming the temperature setpoint:  $-5\text{ }^{\circ}\text{C}$ , differential gap:  $3\text{ }^{\circ}\text{C}$ .

- (1) When the temperature of the controlled target rises to the setpoint ( $-5\text{ }^{\circ}\text{C}$ ), the internal switch works to close the terminal R and W, and then the chiller starts.
- (2) When the temperature of the controlled target falls to  $-8\text{ }^{\circ}\text{C}$ , that is setpoint ( $-5\text{ }^{\circ}\text{C}$ ) minus the differential gap ( $3\text{ }^{\circ}\text{C}$ ), the internal switch works to open the terminal R and W, and then the chiller stops.
- (3) The operations (1) and (2) described above are repeated automatically to control the temperature at the setpoint ( $-5\text{ }^{\circ}\text{C}$ ).

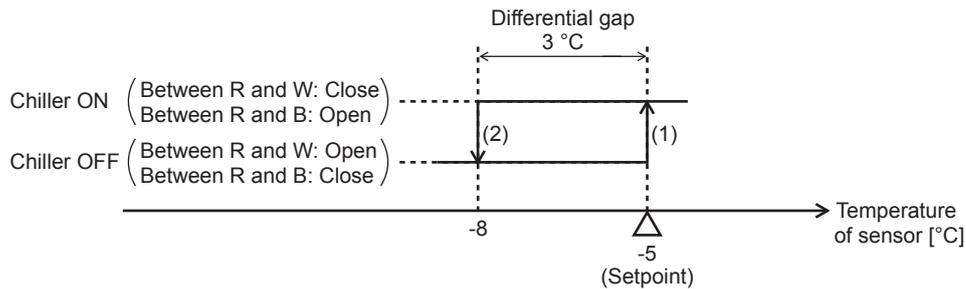


Figure 25. Example of cooling control for TY6800Z

### < Heating control >

Based on the cooling control system shown in *Figure 15. Example of wiring for heating*, operation of Model TY6800Z thermostat is described assuming the temperature setpoint:  $50\text{ }^{\circ}\text{C}$ , differential gap:  $3\text{ }^{\circ}\text{C}$ .

- (1) When the temperature of the controlled target falls to  $47\text{ }^{\circ}\text{C}$ , that is setpoint ( $50\text{ }^{\circ}\text{C}$ ) minus the differential gap ( $3\text{ }^{\circ}\text{C}$ ), the internal switch works to close the terminal R and W, and then the heater starts.
- (2) When the temperature of the controlled target rises to the setpoint ( $50\text{ }^{\circ}\text{C}$ ), the internal switch works to open the terminal R and W, and then the heater stops.
- (3) The operations (1) and (2) described above are repeated automatically to control the temperature at the setpoint ( $50\text{ }^{\circ}\text{C}$ ).

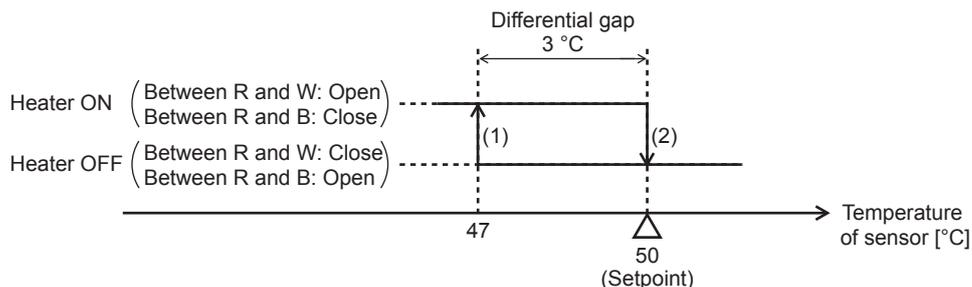


Figure 26. Example of heating control for TY6800Z

Note: If the chiller's compressor motor, solenoid valve and heater, and solenoid valve start and stop very frequently, in another words the devices start and stop very frequently, adjust the differential gap large by turning the adjustment dial in Model TY6800Z.

● **Model TTY6800Z**

As shown in Figure 27. Setpoint and differential gap for Model TTY6800ZE, the differential gap of each switch is fixed to 3 °C.

A dial for setting the setpoint is placed above the switch 1. Differential between two switches can be set approx. in 2.5–8 °C range.

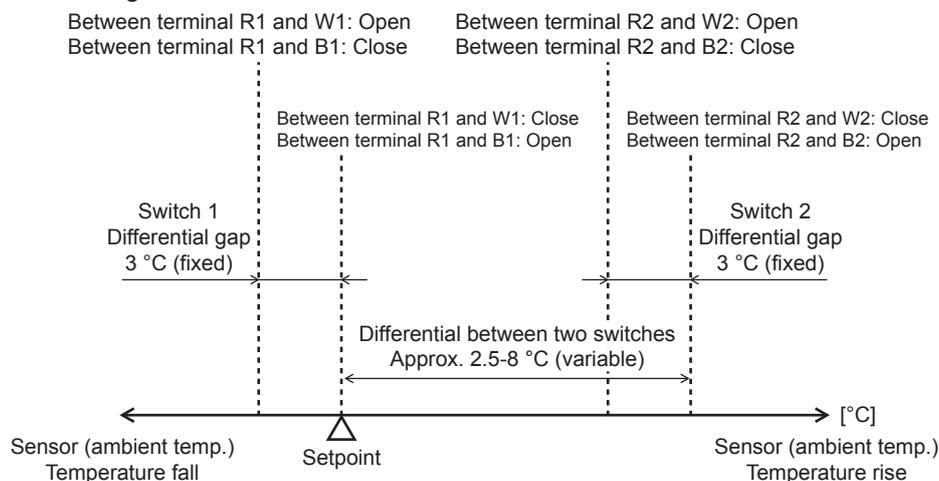


Figure 27. Setpoint and differential gap for Model TTY6800Z

< Cooling two-step control >

Based on the cooling control system shown in Figure 17. Example of wiring for cooling two-step control, two chillers are installed. Operation of Model TTY6800Z thermostat is described assuming the temperature setpoint: -10 °C, differential gap: 3 °C, differential between two switches: 8 °C.

- (1) When the temperature of the controlled target rises to the setpoint (-10 °C), the switch 1 works to close the terminal R1 and W1, and then the chiller 1 starts.
- (2) Along with operation of chiller 1, when the temperature of the controlled target falls to -13 °C, that is setpoint (-10 °C) minus differential gap (3 °C), the switch 1 works to open the terminal R1 and W1, and then the chiller 1 stops.
- (3) Although the chiller 1 keeps operating, if the temperature of the controlled target keeps rising and it reaches -2 °C, that is setpoint (-10 °C) plus the differential between two switches (8 °C), the switch 2 works to close the terminal R2 and W2, and then the chiller 2 starts.
- (4) Along with operation of chiller 1 and chiller 2, when the temperature of the controlled target falls to -5 °C, that is chiller 2 triggered temperature (-2 °C) minus the differential gap (3 °C), and then the chiller 2 stops. Only the chiller 1 operates.
- (5) When temperature of the controlled target falls further to -13 °C, that is setpoint (-10 °C) minus the differential gap (3 °C), and then the chiller 1 stops.
- (6) When the temperature of the controlled target rises again, the steps from (1) will be carried out automatically.

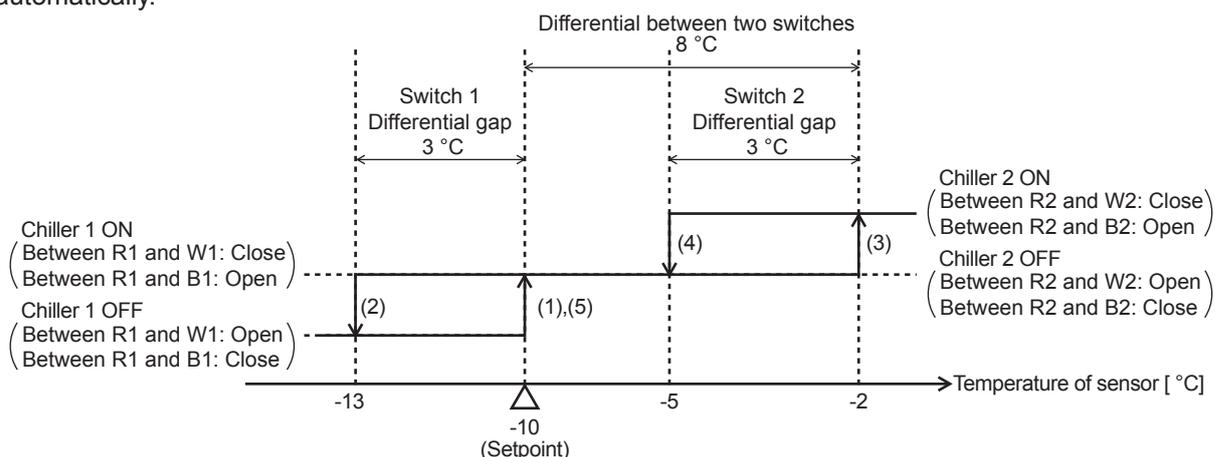


Figure 28. Example of cooling two-step control

< Heating two-step control >

Based on the heating control system shown in *Figure 18. Example of wiring for heating two-step control*, operation of Model TTY6800Z thermostat is described assuming the temperature setpoint: 50 °C, differential gap: 3 °C, differential between two switches: 8 °C.

- (1) When the temperature of the controlled target falls to 55 °C, that is setpoint (50 °C) plus the differential between two switches (8 °C) minus the differential gap (3 °C), the switch 2 works to close the terminal R2 and W2, and then the heater 1 starts.
- (2) Along with operation of heater 1, when temperature of the controlled target rises to 58 °C, that is setpoint (50 °C) plus the the differential between two switches (8 °C), and then the heater 1 stops.
- (3) Although the heater 1 keeps operating, if the temperature of the controlled target keeps falling and it reaches 47 °C , that is setpoint (50 °C) minus the differential gap (3 °C), the switch 1 works to close the terminal R1 and W1, and then the heater 2 starts.
- (4) Along with operation of heater 1 and heater 2, when temperature of the controlled target rises to 50 °C, the switch 1 works to open the terminal R1 and W1, and then the heater 2 stops. Only the heater 1 operates.
- (5) When the temperature of the controlled target rises further to 58 °C, that is setpoint (50 °C) plus the differential between two switches (8 °C), and then the chiller 1 stops.
- (6) When the temperature of the controlled target falls again, the steps from (1) will be carried out automatically.

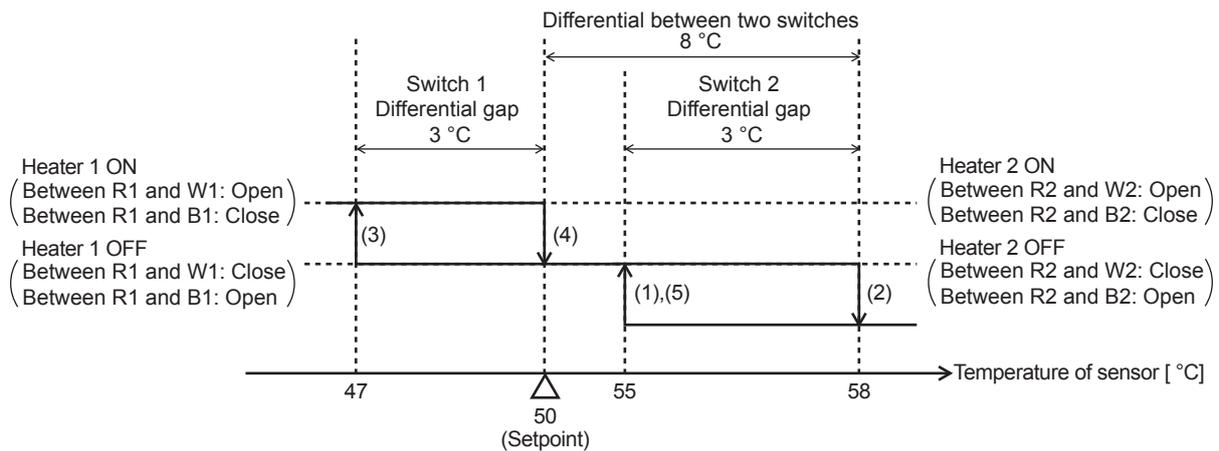


Figure 29. Example of heating two-step control

● Operation check

**IMPORTANT** • Because of delayed response of the sensor, the differential gap may seem to be large.  
As necessary, adjust the mounting location, etc. to eliminate delayed response.

- (1) Turn on the power to the product.
- (2) Turn the setting knob to the setpoint.
- (3) Check that the control target equipment normally runs or stops as intended.
- (4) Turn off the power to the product.

## ■ Maintenance

⚠ WARNING	
	If this product is connected to a system, be sure to implement safety measures. Failure to do might cause fire.
	Be sure to ground the product with ground resistance of less than 100 Ω. Improper grounding might cause electric shock or malfunction.
	Before wiring or servicing, be sure to turn off the power to this product. Failure to do might cause electric shock or device failure.
	Before attaching or detaching the terminal cover for wiring, be sure to turn off the power to the product and all the connected devices. After the wiring work, attach the terminal cover at the original position. Failure to do so might cause electric shock.
⚠ CAUTION	
	Do not disassemble the product. Doing so might cause device failure.

Determine the appropriate cycle of maintenance and inspection, taking into consideration the environmental conditions, frequency of use, etc.

If use is only occasional, inspection before every use is recommended.

Maintain and inspect the product following the procedures below.

- (1) Wipe dirt and dust on the temperature sensor and capillary tube using a soft clean cloth or toothbrush so that the element can be effectively exposed to the air.
- (2) Check that the temperature sensor is not deformed, flattened, or damaged.
- (3) In the same way as (1), wipe the setting knob and the terminal posts of the microswitch and the nearby parts.
- (4) Check that the terminal screws are firmly tightened.
- (5) Check that the wires are well insulated.

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*Specifications are subject to change without notice.*

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