

Insertion Thermostat (Proportional)

Model TY9800Z

General

Models TY9800Z is an insertion proportional thermostat applicable to air in duct and liquid in tank and pipe.

With Model TY9800Z, Yamatake's actuator ACTIVAL™ or Model MY3000 multi-purpose control motor is combined and automatically controlled.

Features

- Liquid temperature sensor:
Liquid with high expansion coefficient is filled in the temperature sensor. This liquid temperature sensor detects even slight temperature changes and operates the potentiometer through diaphragm, setting mechanism, and lever mechanism.
- Temperature setting and proportional band adjustment:
Temperature is set with the setting knob on the front surface of the thermostat. Proportional band is adjusted with the proportional band adjusting wheel inside the main unit (stat).



Model Numbers

Model number	Temperature setting range (°C)	Allowable max. temperature of temperature sensor (°C)	Allowable min. temperature of temperature sensor (°C)	Capillary length (m)
TY9800Z2000	-15 to 45	55	-40	1.5
TY9800Z2010	-15 to 45	55	-40	6.0
TY9800Z3000	15 to 75	90	-40	1.5
TY9800Z3010	15 to 75	90	-40	6.0
TY9800Z4000	65 to 125	138	-40	1.5

Note:

The thermostat Model TY9800Z is combined with a Yamatake's actuator: ACTIVAL™ series or the multi-purpose control motor (Model MY3000) series.

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 Yamatake's sales representative. Yamatake Corporation will not bear any responsibility for the results produced by the operators.

WARNING



- DANGER: To prevent the risk of severe or fatal electrical shock, always disconnect power source before performing any wiring.



- Do not disassemble the product except when removing the cover to wire or replacing the product. Equipment damage or electrical shock may occur.



- Make sure all the wires are tightly connected. Burn injury due to heat generation or equipment malfunction may result.

CAUTION



- Installation must be performed by qualified personnel in accordance with all applicable safety standards.



- This product must be operated within its operating ranges specified in this manual. Failure to comply will cause equipment damages.



- Installation must be carried out according to the operating conditions specified in this manual to prevent equipment damages.



- In addition to this manual, refer to specifications and instruction manuals of the equipment to be combined with this product.



- All wiring must comply with local codes of indoor wiring and electric installation rules.



- For the product installation, avoid an atmosphere containing chemical specialties and corrosive gases, or a location at high temperature, with high humidity, where water drops, or with vibration.



- For inspection and maintenance, follow the instructions as specified in this manual. Failure to comply will cause equipment damages.



- To prevent equipment damages, do not remodel the product.



- Do not incinerate this product for waste disposal (the housing produces toxic gas when incinerated). Do not recycle all or part of this product, either.



- Dispose of this product as industrial waste in accordance with the local regulations.

Trademark information:

ACTIVAL is a trademark or registered trademark of Yamatake Corporation in Japan or in other countries.

Specifications

Item		Specification	
Proportional band		Adjustable between approx. 2 °C and 20 °C	
Potentiometer resistance		Nominal 135 Ω	
Electric ratings		24 V AC	
Environmental conditions	Operating conditions	Temperature: 0 °C to 52 °C Humidity: 90 %RH or less (non-condensing)	
	Transport/storage conditions	Temperature: -20 °C to 60 °C Humidity: 95 %RH or less (non-condensing)	
Temperature sensor (Note: Do not use the sensor in freezing environment.)		Size	Max. φ12 mm × 130 mm
		Material	Copper
		Allowable pressure	Max. 343 kPa (without auxiliary part)
Capillary tube		Length	Approx. 1.5 m or 6 m
		Material	Copper
Installation of the stat (main unit)		Multi-directional installation: Mounting holes are provided on the rear side of the stat. See Fig. 6.	
Wiring		Connection to the screw terminals	
Weight		480 g	
Material		Cover: Polycarbonate resin Case: Cold rolled steel plate (1.2 mm thick) with galvanization	
Accessories		3 round machine screws (M4 × 12) 3 hexagonal nuts (M4) * Both for the stat (main unit) installation	
Auxiliary parts (Separate order is required.)		Immersion well	Part No. 112624AA-J (See Fig. 2.) Refer to AB-4074 Specifications/Instructions manual.
		Pressure fitting	Part No. 83165370-001 (See Fig. 3.)
		Temperature sensor holder	Part No. DY3002A1001 (See Fig. 4.) Refer to AB-4009 Specifications/Instructions manual
		Water-proof enclosure	Part No. Q615A1004 (See Fig. 5.)

Dimensions

Model TY9800Z

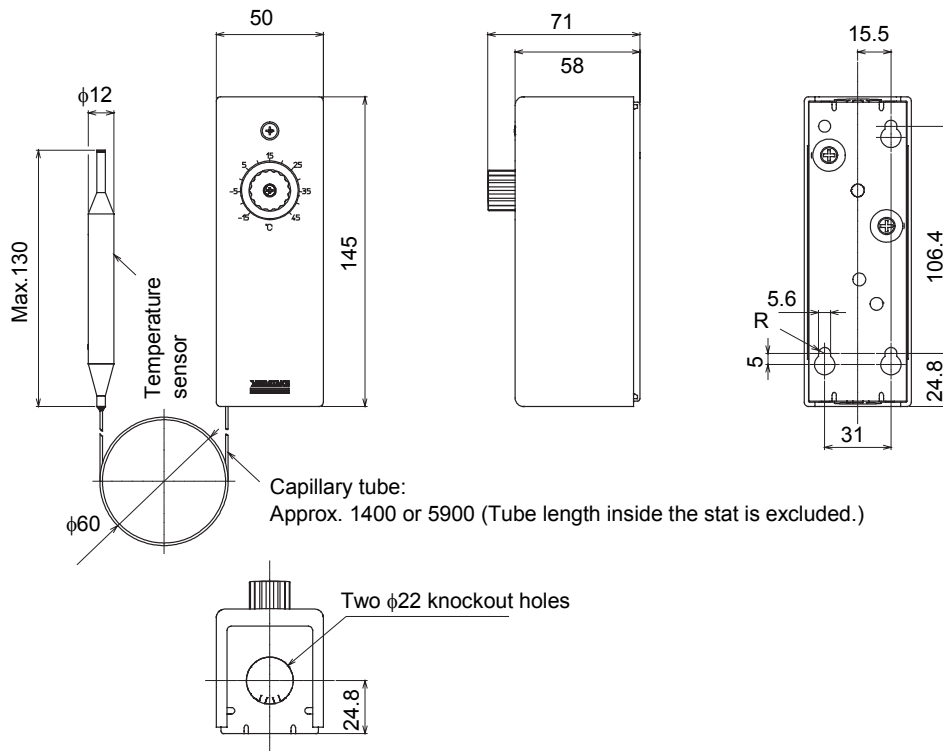


Figure 1. Dimensions of Model TY9800Z (mm)

Installation

For Model TY9800Z installation, install the stat (main unit) first. Follow the procedure shown in Figs. 6 to 8.

⚠ CAUTION

- ❗ Do not install the product under the following conditions:
 - Atmosphere containing chemical specialties and corrosive gases (e.g., ammonia, sulfur, chlorine, ethylene compound, acid, etc.).
 - Location with high humidity or where water drops.
 - Location in high temperature or exposed to direct sunlight.
 - Location exposed to warm or cold air.
 - Location where air stagnates or in a draft.
 - Location with vibration.
- ❗ To prevent malfunction, do not distort (twist, flatten, or the like) or break the temperature sensor.

The stat (main unit) is installed with the screws through 3 mounting holes provided on its rear side.

The temperature sensor is inserted into the duct, pipe, or tank with or without the immersion well (Part No. 112624AA-J). Refer to AB-4074 for the details of the immersion well.

⚠ CAUTION

- ❗ Do not twist or sharply bend the capillary tube.
- ❗ Do not leave the cover uncovered.

Stat (main unit) installation

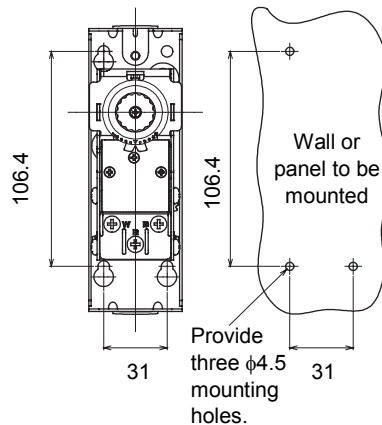


Figure 6. Mounting dimensions (mm)

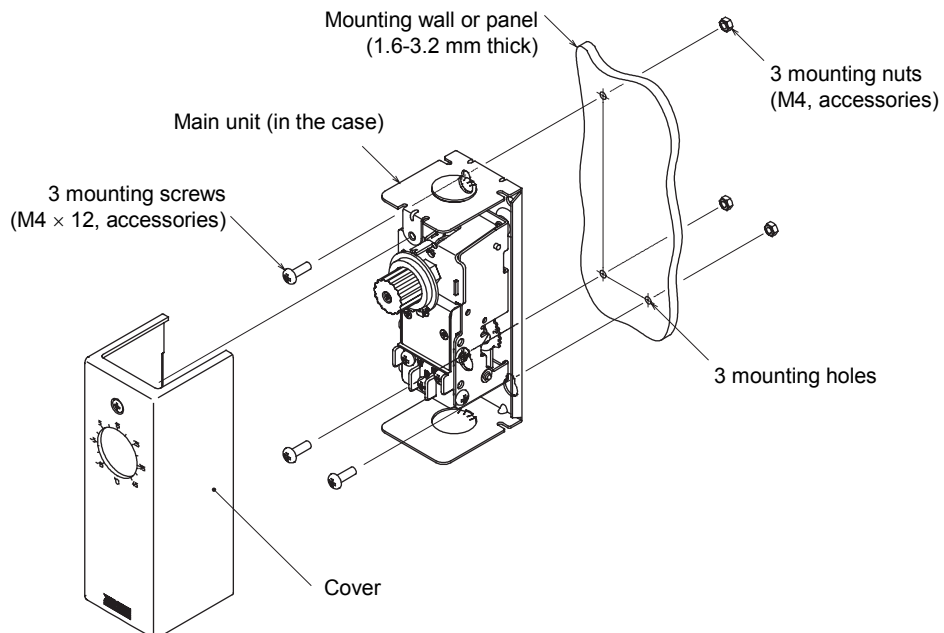
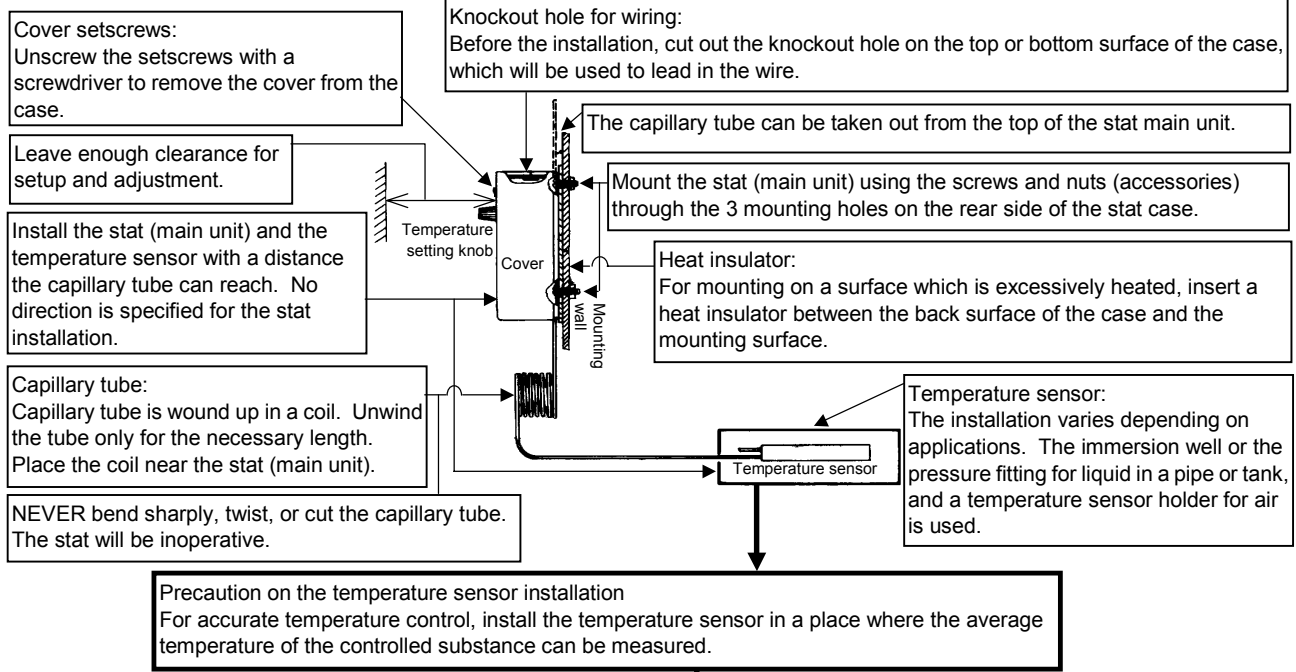
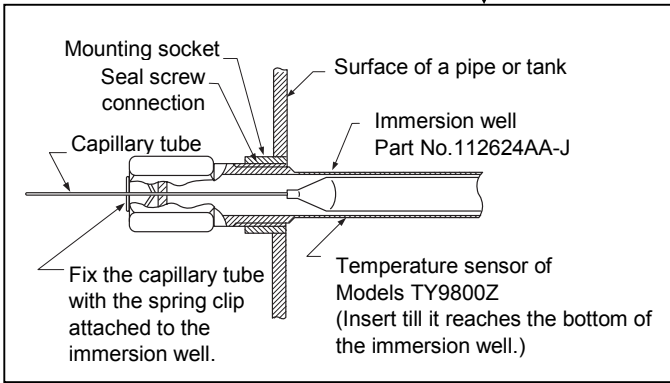


Figure 7. Stat (main unit) installation

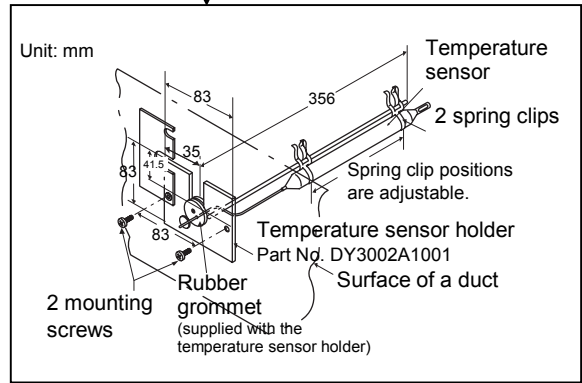
Notes for installation with parts identification



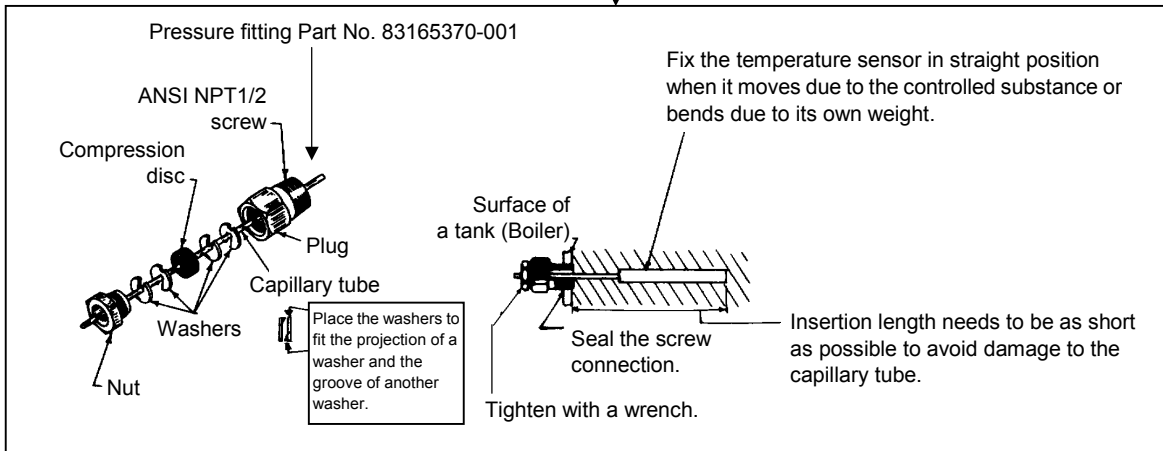
Temperature sensor installation



Temperature sensor installation into immersion well



Temperature sensor installation with temperature sensor holder into a duct



Temperature sensor installation with pressure fitting into a tank

Figure 8. Installation

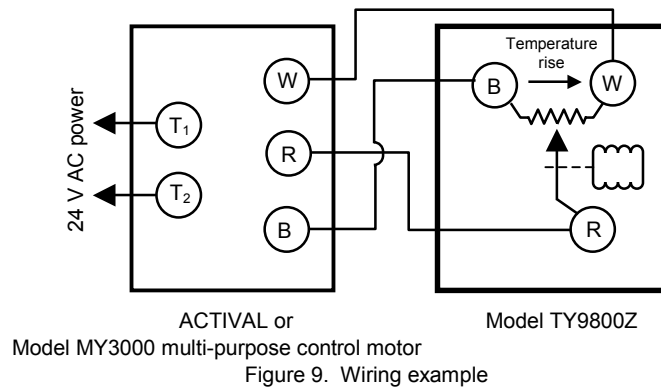
Wiring

Connect wires in accordance with local codes of wiring and electric installation rules.

A knockout hole for wiring is provided on the both top and the bottom surfaces of the stat main unit. Through the holes, lead the wires into the case, and connect them to the screw terminals R, B, and W.

⚠ CAUTION

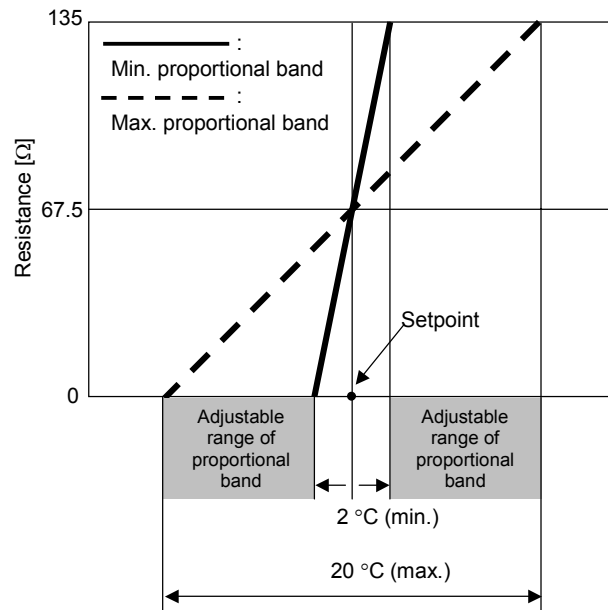
• Before the installation, wiring, and setting of Model TY9800Z, be sure to disconnect it from the power source.



Setting and Adjustment

After installing and wiring the thermostat, set the temperature (setpoint) and adjust the proportional band.

Fig. 10 shows setpoint and its proportional band. Setpoint is positioned at the middle of the proportional band.



Adjusting the proportional band

Turn the proportional band adjusting wheel until the pointer points to your desired value on the scale of the proportional band.

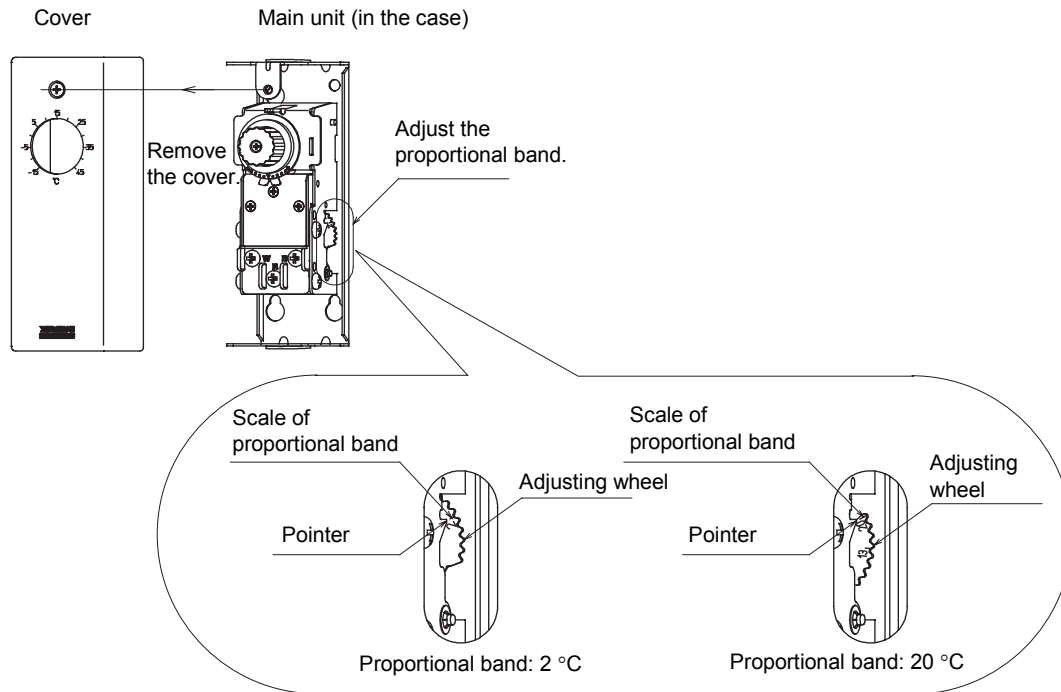


Figure 11. Adjusting proportional band

Inspection and Maintenance

Be sure to perform operation check once every half year.

YAMATAKE

Specifications are subject to change without notice.

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