


Preface

Thank you for purchasing our Hygrothermo Transmitter THD-700-P. This manual contains instructions for the mounting, functions, operations and notes when operating the THD-700-P. To ensure safe and correct use, thoroughly read and understand this manual before using this instrument. To prevent accidents arising from the misuse of this instrument, please ensure the operator receives this manual.

Notes

- This instrument should be used in accordance with the specifications described in the manual. If it is not used according to the specifications, it may malfunction or cause a fire.
- Be sure to follow the warnings, cautions and notices. If they are not observed, serious injury or malfunction may occur.
- The contents of this instruction manual are subject to change without notice.
- Care has been taken to ensure that the contents of this instruction manual are correct, but if there are any doubts, mistakes or questions, please inform our sales department.
- Any unauthorized transfer or copying of this document, in part or in whole, is prohibited.
- Shinko Technos Co., Ltd. is not liable for any damage or secondary damage(s) incurred as a result of using this product, including any indirect damage.

Safety Precautions (Be sure to read these precautions before using our products.)

The safety precautions are classified into categories: "Warning" and "Caution". Depending on circumstances, procedures indicated by  Caution may result in serious consequences, so be sure to follow the directions for usage.



Warning

Procedures which may lead to dangerous conditions and cause death or serious injury, if not carried out properly.



Caution

Procedures which may lead to dangerous conditions and cause superficial to medium injury or physical damage or may degrade or damage the product, if not carried out properly.



Warning

Turn the power supply to the instrument off before wiring or checking.

Working on or touching the terminal with the power switched on may result in severe injury or death due to electrical shock.



Caution

- Never disassemble, modify or repair THD-700-P (hereafter, THD). Any tampering of the THD will void the warranty.
- Do not drop, shock or apply heavy load. Doing so may lead to malfunction or jam.
- Avoid setting this instrument directly on or near flammable material.

[Ensure the mounting location corresponds to the following conditions.]

- A minimum of dust, and an absence of corrosive gases
- No acid, alkali, organic solvent, flammable and explosive gases
- No mechanical vibrations or shocks
- No exposure to direct sunlight, an ambient temperature of 0 to 50°C (32 to 122°F) that does not change rapidly
- An ambient non-condensing humidity of 90 %RH or less
- No large capacity electromagnetic switches or cables through which large current is flowing
- No water, oil, chemicals or the vapors of these substances can come into direct contact with the unit.



Caution with Respect to Export Trade Control Ordinance

To avoid this instrument from being used as a component in, or as being utilized in the manufacture of weapons of mass destruction (i.e. military applications, military equipment, etc.), please investigate the end users and the final use of this instrument. In the case of resale, ensure that this instrument is not illegally exported.

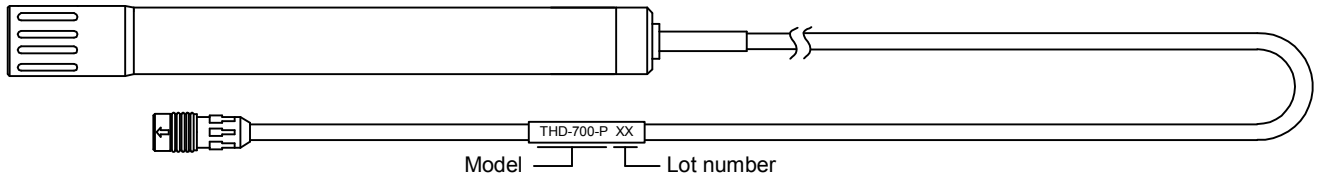
1. Model

1.1 Model

THD-700-P (Hygrothermo Transmitter): Probe for exclusive use with DFT-700-M

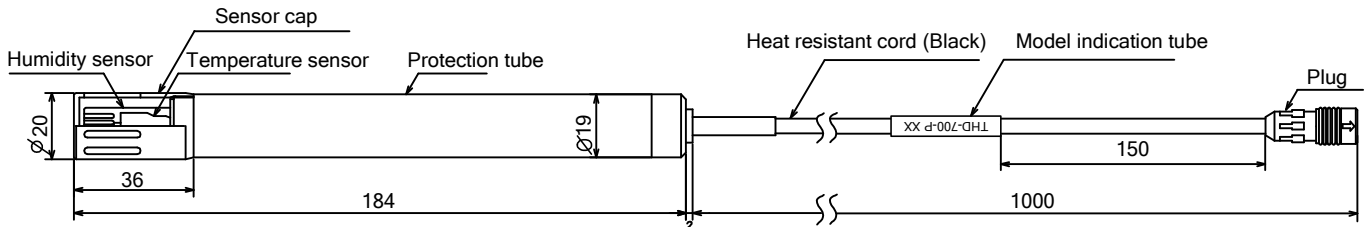
1.2 Model Label

Model and lot number are indicated on the model indication tube. (Fig. 1.2-1)



(Fig. 1.2-1)

2. Name of Sections, External Dimensions (Scale: mm)



(Fig. 2-1)

3. Measurement

3.1 Measurement Environment

Select a site where air stream is profluent, free of corrosive gases, and where average humidity can be measured.

(Contact our sales office if you have questions.)

- In the presence of corrosive gas, deterioration of the humidity sensor may be hastened, leading measurement error.
Select a site where there is an absence of chloric, hydrochloric, sulfur dioxide, carbon dioxide, nitric acid, ammonia, ethanol, methanol gases, and free of cigarette smoke.
- Select a site where water, oil, chemical or their vapors are not in direct contact.
- Select a site with a minimum of dust.
- Select a site away from direct sunlight, and no rapid temperature change with an ambient temperature 0 to 50°C (32 to 122°F).
- Select a site absent of mechanical vibrations or shocks when THD is fixed.
- Select a site where humidity is in a range of 5 to 90 %RH. [Set the waterproof filter (THF-500) in a condensing environment, otherwise sensors may deteriorate.]

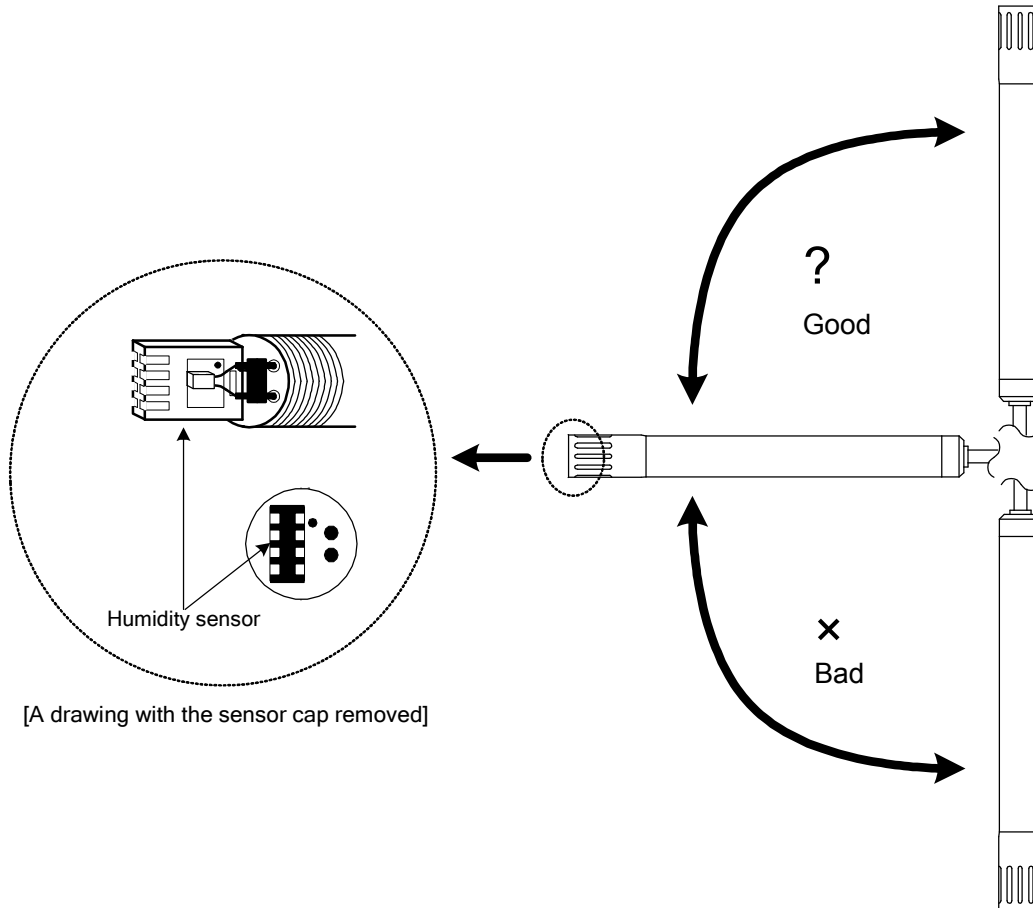
3.2 When Measuring with the THD-700-P Fixed

When measuring temperature and humidity with the THD-700-P fixed, conduct measurements within a range of 90 degrees (between horizontal and upright). Otherwise, water may immerse from the slit between the sensor cap and the protection tube, which may cause a malfunction of the sensor.

(Fig. 3.2-1)

When THD-700-P is used horizontally, fix it in a way as in the drawing below (when viewing from the slit of the sensor cap)

Mount the waterproof filter (THF-500) at the sensor part under the condensation environment.



(Fig. 3.2-1)

4. Connection

To connect this transmitter to the DFT-700-M, refer to the Instruction Manual for the DFT-700-M.

5. Exchanging Temperature and Humidity Sensors

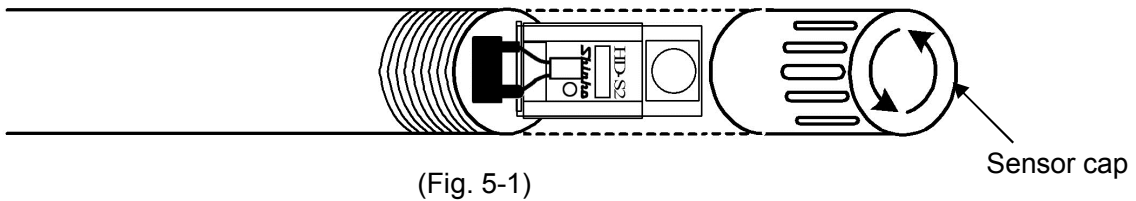
Caution

- Do not use sensors other than temperature sensor TD-S and humidity sensor HD-S2.
- Keep the socket and sensor terminal clean.
If the socket and sensor terminals are stained, it is unable to measure correctly due to imperfect contact.
- Do not add extra force to the sensor or touch it with wet hands.
- Do not clean the sensor.

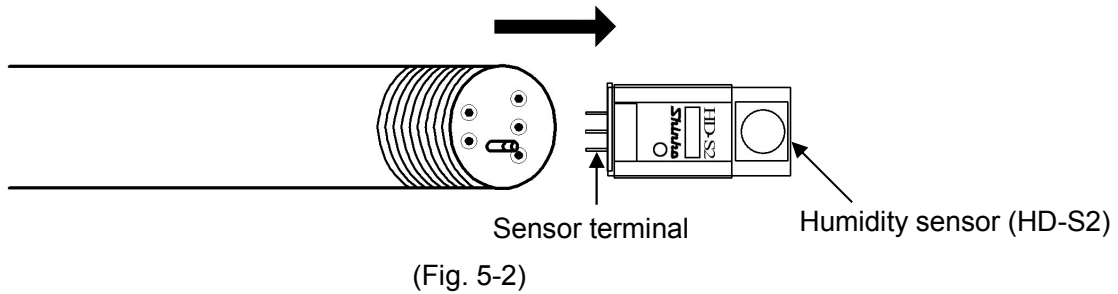
● **How to change temperature and humidity sensors**

Hygrothermo transmitter (THD-700-P) is described as THD in the following explanation.

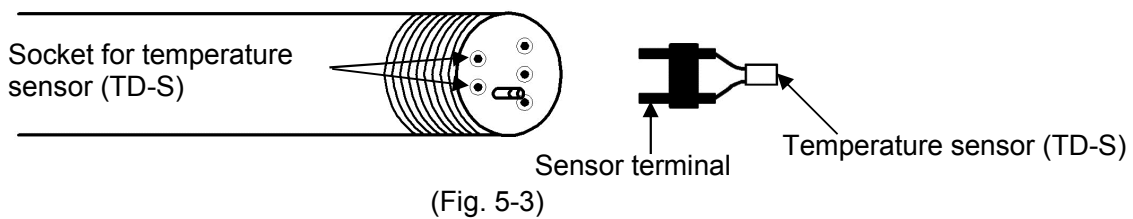
- (1) Rotate the THD sensor cap in the direction shown by the arrow (counterclockwise), then withdraw it vertically.



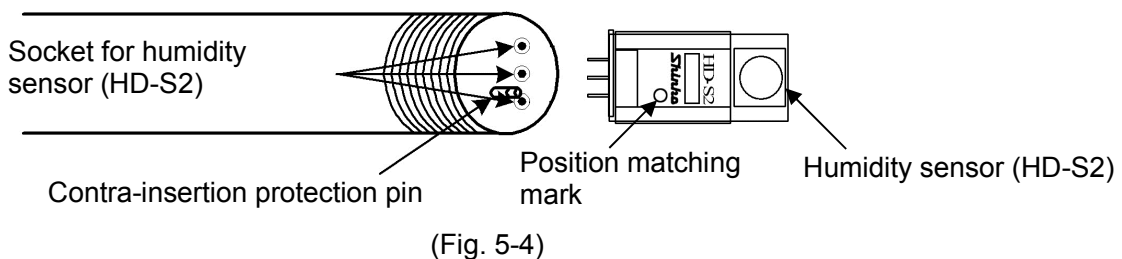
- (2) Pull out the deteriorated temperature sensor (TD-S) or humidity sensor (HD-S2) in the direction shown by the arrow.



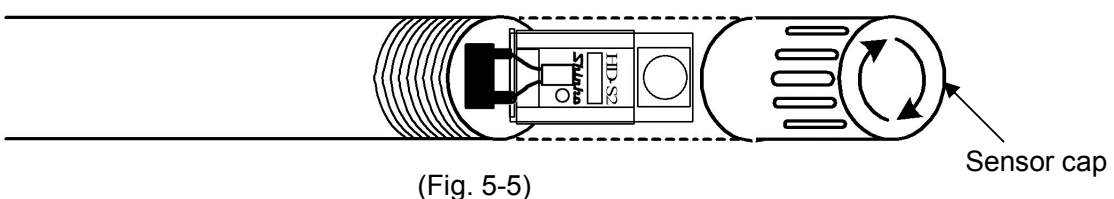
- (3) Mount the new temperature sensor (TD-S) vertically into the temperature sensor socket. There is no polarity for the temperature sensor (TD-S). Touching the temperature sensor part may cause errors.



- (4) Insert the new humidity sensor (HD-S2) vertically into the socket for the humidity sensor. As humidity sensor (HD-S2) is polarity sensitive, so be sure to match the Position matching mark on the sensor with the Contra-insertion protection pin on the socket.



- (5) Insert the THD sensor cap vertically, and rotate it in the direction shown by the arrow (clockwise).



6. Specifications

6.1 Standard Specification

Name:	Hygrothermo transmitter
Model:	THD-700-P
Measuring range:	Temperature: 0.0 to 50.0°C Humidity: 5 to 90 %RH
Type of elements:	Temperature: Platinum thin film RTD (JIS Pt100 B class) Humidity: Electrostatic capacity change type
Accuracy:	Temperature: $\pm(0.3 + 0.005[T])^{\circ}\text{C}$ (JIS C1604-1989 B class) (T: Measured temperature) Humidity: $\pm 5\% \text{RH}$ (Within a range of 5 to 45°C) Max. $\pm 8\% \text{RH}$ (Outside the range of 5 to 45°C)

Response characteristics:

Temperature: 35 seconds (63.2% response)
 Humidity: Approx. 20 seconds (Time to reach 90% of the humidity value when the humidity shifts between 30 \longleftrightarrow 85 %RH.)
 However, airflow 5 l/min (0.16 m/s) (Waterproof filter attached to the sensor chip)

Hysteresis:	Humidity: Approx. 0 %RH (Stabilization time: 20 minutes)
Output:	Temperature: 3-wire type 100 Ω at 0°C (JIS C1604-1989 B class) Humidity: 0 to 1 V DC (Corresponds to 0 to 100 %RH.)

Material:	Protection tube: Coated aluminum, Color: Black Sensor cap: Polyacetal, Color: Black Lead wire: Heat resistant cord, 1 m
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External dimensions: See Section "2. Name of Sections, External Dimensions".

Operating range:	Temperature: 0 to 50°C Humidity: 5 to 90 %RH (Non-condensing, no icing)
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Storage environment:	Temperature: -20 to 60°C Humidity: 5 to 90 %RH (Non-condensing, no icing)
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Supply voltage:	Within 5 V DC $\pm 5\%$ (Supplied from DFT-700-M)
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Weight:	Approx. 130 g
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Accessories:	Instruction manual: 1 copy
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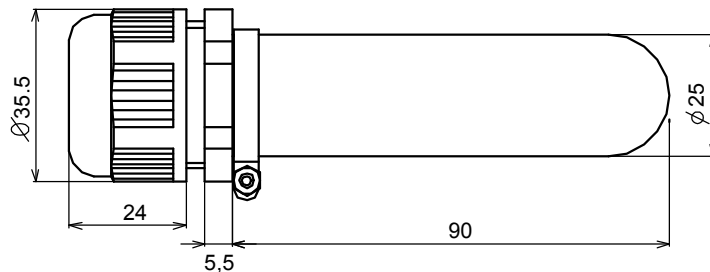
6.2 Supplementary

Waterproof filter

Model: THF-500 (Common to THD-500 series)

Material: Fluorine resin (Impermeability of water or dust, and designed not to clog)

External dimensions:



(Fig. 6.2-1)

6.3 Replacement Parts

- Temperature sensor: TD-S (Common to THD-500 series), Compatible
 Can be used immediately without calibration after replacing.
- Humidity sensor: HD-S2 (Common to THD-500 series), Compatible
 Can be used immediately without calibration after replacing.

7. Troubleshooting

In order to maintain accuracy, inspect or exchange the sensor part once a year depending on the degree of pollution (the atmosphere in which THD is used).

Also make sure that the temperature sensor (TD-S) and humidity sensor (HD-S2) are securely connected to the socket before checking the items in the following table.

● In the case of temperature measurement

Problem	Possible Cause and Solution
[- - -] is flashing on the DFT-700-M Data Display.	<ul style="list-style-type: none"> • Is THD-700-P plug securely connected to the DFT-700-M receptacle? Connect the THD-700-P plug securely. • Is temperature sensor broken? Replace the sensor with a new one. • Is there imperfect contact to the temperature sensor? When temperature sensor terminal is unusable, replace the temperature sensor with a new one. Ask our sales office to repair when the contact at the socket side is unusable.
An irregular or unstable value is indicated on the DFT-700-M Data Display.	<ul style="list-style-type: none"> • Please refer to the Instruction Manual (Troubleshooting) for the DFT-700-M.

● In the case of humidity measurement

Problem	Possible Cause and Solution
The value on the PV Display of DFT-700-M does not change.	<ul style="list-style-type: none"> • Is THD-700-P plug securely connected to the DFT-700-M receptacle? Connect the THD-700-P plug securely. • Is humidity sensor broken? Replace the humidity sensor with a new one. • Is there imperfect contact to the humidity sensor? When humidity sensor terminal becomes unusable, replace the humidity sensor with a new one. Ask our sales office to repair when the contact at socket side is unusable.
An abnormal value (high humidity) is indicated on the DFT-700-M PV Display.	<ul style="list-style-type: none"> • Is humidity sensor wet? (Condensation) Dehydrate the humidity sensor. • Are inorganic salt and the like adhered to the humidity sensor? Replace the humidity sensor with a new one.
An abnormal value (low humidity) is indicated on the DFT-700-M PV Display.	<ul style="list-style-type: none"> • Is dust attached to the humidity sensor? Replace the humidity sensor with a new one. • Is humidity sensor deteriorated after repetitions of condensation? Replace the humidity sensor with a new one.
The response of the DFT-700-M PV Display is very slow.	<ul style="list-style-type: none"> • Is the measuring site of THD-700-P or wind speed at the measuring site proper? Change the measuring site of the THD-700-P to the proper one.

When condensation occurs, 90 %RH or higher output is kept until the condensation stops. [This is responsible for the deterioration of the humidity sensor (HD-S2).]

If problems occur other than those mentioned above, please inform our sales office or branch office.

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