Shinko

INDUSTRIAL MEASURING INSTRUMENTS

INSTRUCTION MANUAL
FOR
HYGROTHERMO DETECTOR

THD-500-FA

THD-500-FB

Thank you for your purchase of our Hygrothermo Detector THD-500-F series.
This manual is described about the mounting method and the functions of the THD-500-F series.
For your confirmation of the model and specifications of the detector, peruse and understand this instruction manual before starting operation.

Please arrange to give this manual into the hands of the operator who actually uses our product.

＊＊ Before use ＊＊

THD-500-FA and THD-500-FB respectively have interchangeability to the temperature sensor and the humidity sensor by plug-in system. Therefore it makes the maintenance easily.

- **As for the humidity measurement.**

Humidity is well-known as temperature, however, the handling is uneasy. Sometimes, 5%RH or greater of difference is occurred when the measuring point moves only several centimeters. For example, to control 10%RH of humidity is as difficult as to control 1℃ of temperature. Mount the humidity detector selecting the most suitable measuring location.

Humidity sensor will be degraded owing to the working atmosphere, and the life will be greatly different. Avoid mounting the humidity detector in the atmosphere: chlorine gas, hydrogen chloride gas, sulfur dioxide, etc. or the water directly splash on the sensor.

[Surface of the temperature sensor should not be stained too.]
Sensor life is approximately 10000 hours in general atmosphere such as office room.
(If the gases kind, etc. is not clear, consult with us.)

1. Model name

THD－５００－F□□

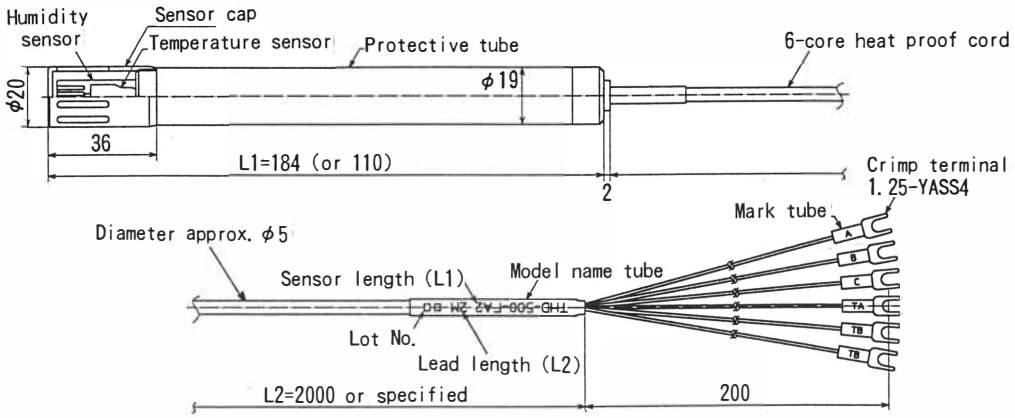
<Length of the protective tube L1>
1: Total length 110mm
2: Total length 184mm

<Type of the temperature sensor>
A: Platinum thin film RTD (TD-S)
B: Semi-conductor integrated type temperature detector (TD-S2)

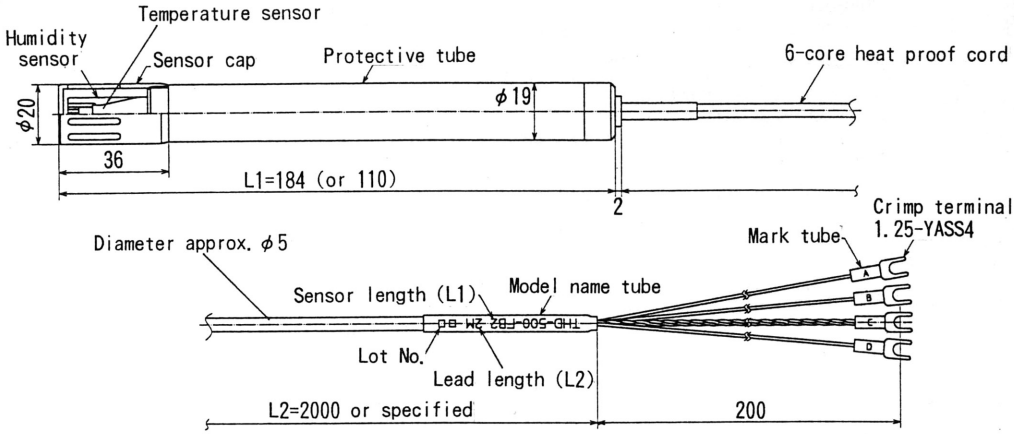
<Type of the humidity sensor>
Capacitance change type humidity sensor (HD-S2)

2. External dimension and name of the sections (All dimensions in mm)

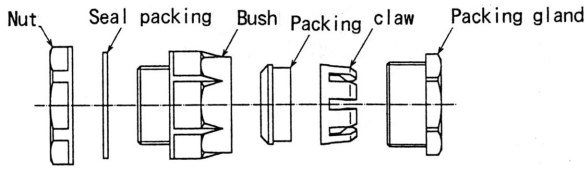
2.1 THD-500-FA



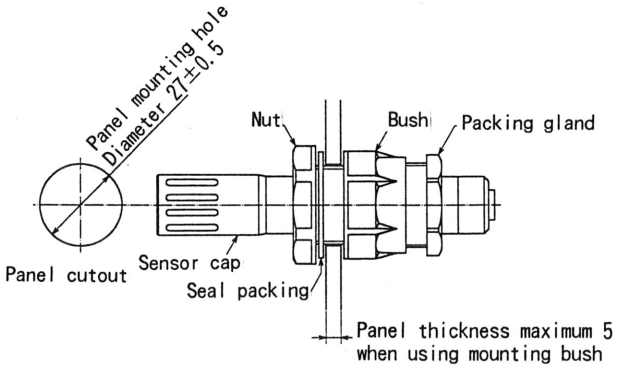
2.2 THD-500-FB



2.3 Name of the mounting bush parts



2.4 Panel cutout and the mounting drawing



3. Mounting

3.1 Mounting environment

Mount the detector in a place with a general atmosphere such as office room, absence of corrosive gases, and where air flow does not stagnate and average humidity can be gotten by the sensor. (Make inquiries to us about indistinctness.)

(1) In an atmosphere much corrosive gases are contained, degradation of Humidity sensor will be quickened and it causes measuring error.
Avoid mounting in a location where these gases are found.

Chlorine gas, Hydrogen chloride gas, Sulfur dioxide gas, Carbon dioxide gas, Nitric acid gas, Ammonia gas, Ethanol gas, Methanol gas, Cigaret smoke, etc.

(2) No water, oil or chemicals and their vapor directly splash to the instrument.

(3) A minimum of dust.

(4) Mount the detector at the location where the ambient temperature is 0 to 50℃ (32 to 122℉) and it does not change suddenly.
In the atmosphere where the dew is condensed, the sensor degradation will be quickened.
It is recommended that the water-proof filter is used in this case.

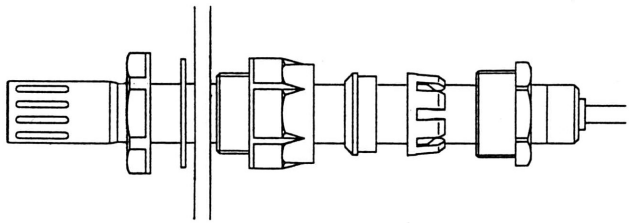
(5) No exposure to direct sunlight.

(6) No mechanical vibrations or shocks.

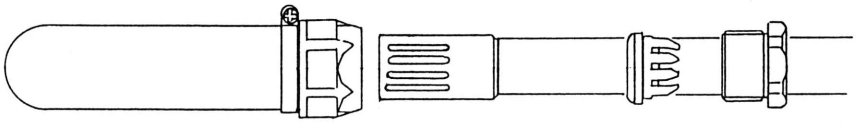
(7) Mount the detector apart from the wire through which large current flows. Connecting wire between the hygrothermo detector and the receiving instrument should not be run adjacent to an AC power supply or the wires to the power supply terminals.

3.2 Mounting method

- When mounting, it is recommended to use the accessory mounting bush, and take care to the mounting direction of the THD-500-F□ and the humidity sensor. (Refer to the next page)



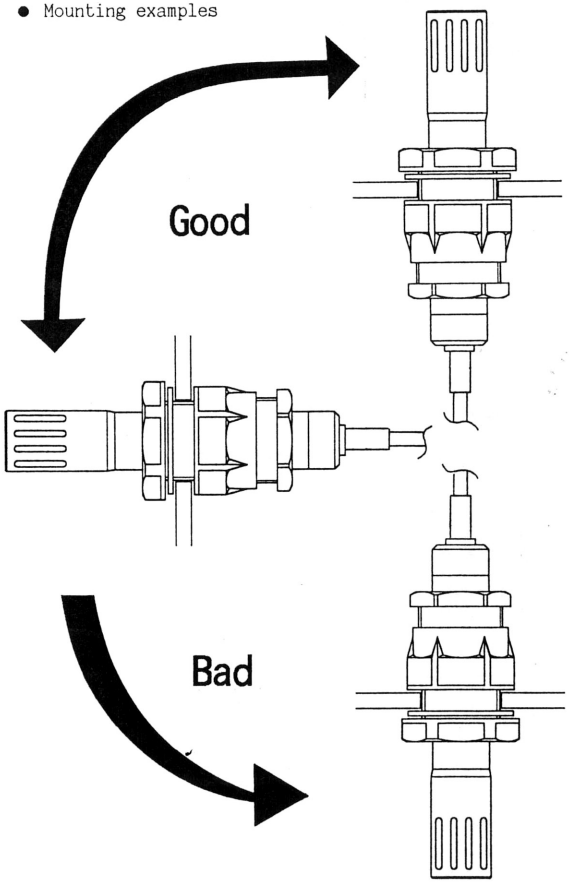
- Water-proof filter (THF-500) is available to the THD-500-FA and THD-500-FB.
Refer to the instruction manual of the Water-proof filter when mounting.



3.3 Mounting directions

Mounting direction of the THD-500-FA or THD-500-FB should be from horizontal to vertical (the sensor parts up). If it is mounted the other direction (the sensor parts down), water can immerse into the detector from the gap and it causes trouble.

- Mounting examples



Notice

Mount the detector THD-500-F so that the sensor side can be between horizontal and top, or water will immerse into the sensor part, and it causes the sensor to be degraded.

4. Wiring connection

4.1 Terminals

<THD-500-FA>

[Color]

A	Red	: Power supply to Humidity, 5Vdc (+)
B	Yellow	: Humidity output, 0 to 1Vdc (correspond to 0 to 100%RH)
C	Green	: Common to Humidity output and Power supply (−)
TA	Brown	: Temperature output, Pt100
TB	White	
TB	Black	

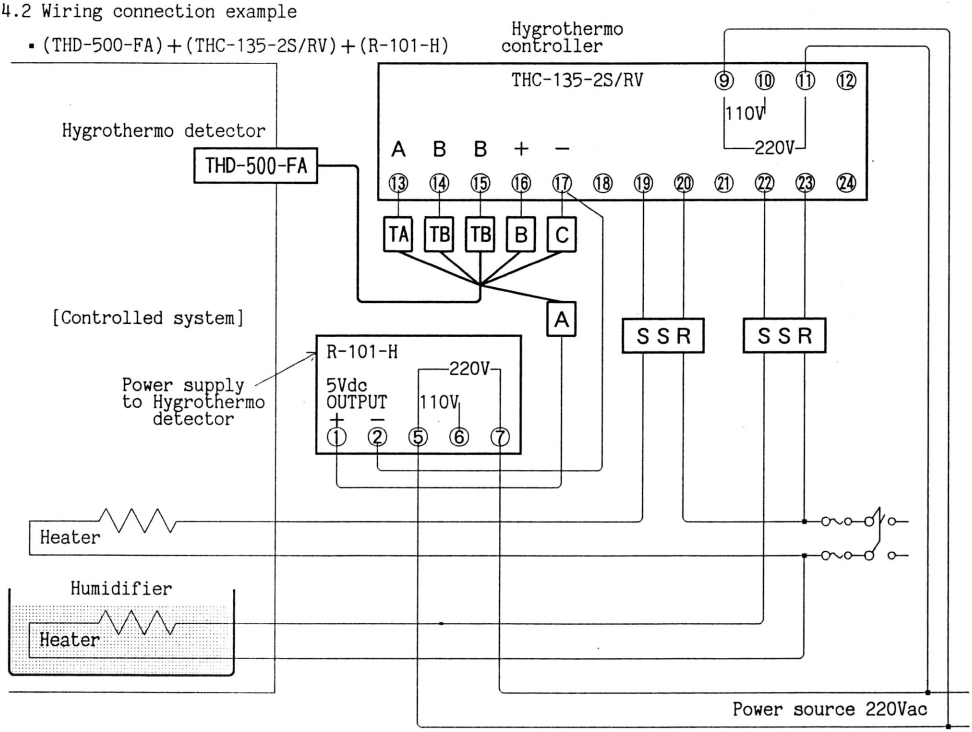
<THD-500-FB>

[Color]

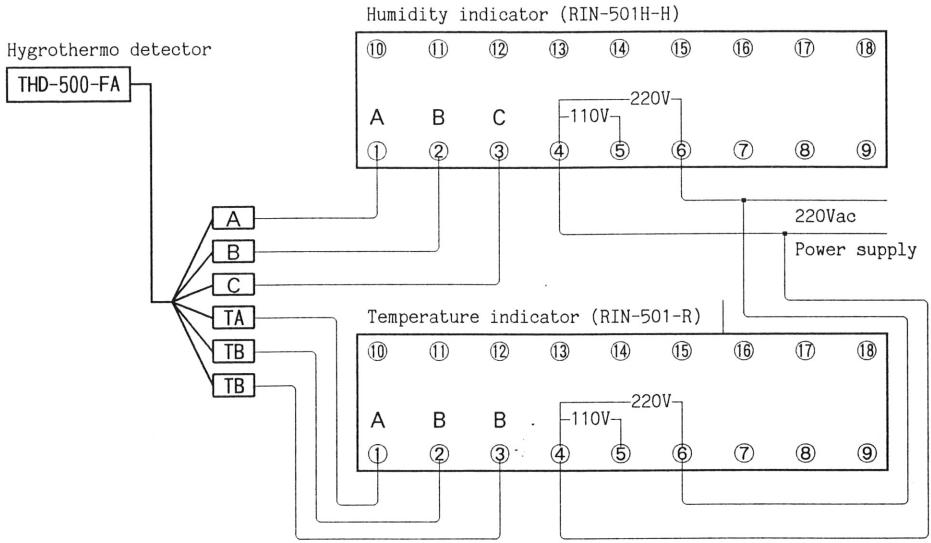
A	Red	: Power supply to Temperature and Humidity, 5Vdc (+)
B	Yellow	: Humidity output, 0 to 1Vdc (correspond to 0 to 100%RH)
C	Green/Black/White	: Common to Temp. Humi. input and Power supply (−)
D	Brown	: Temperature output, 0 to 1Vdc (correspond to 0 to 100℃)

4.2 Wiring connection example

▪ (THD-500-FA)+(THC-135-2S/RV)+(R-101-H)

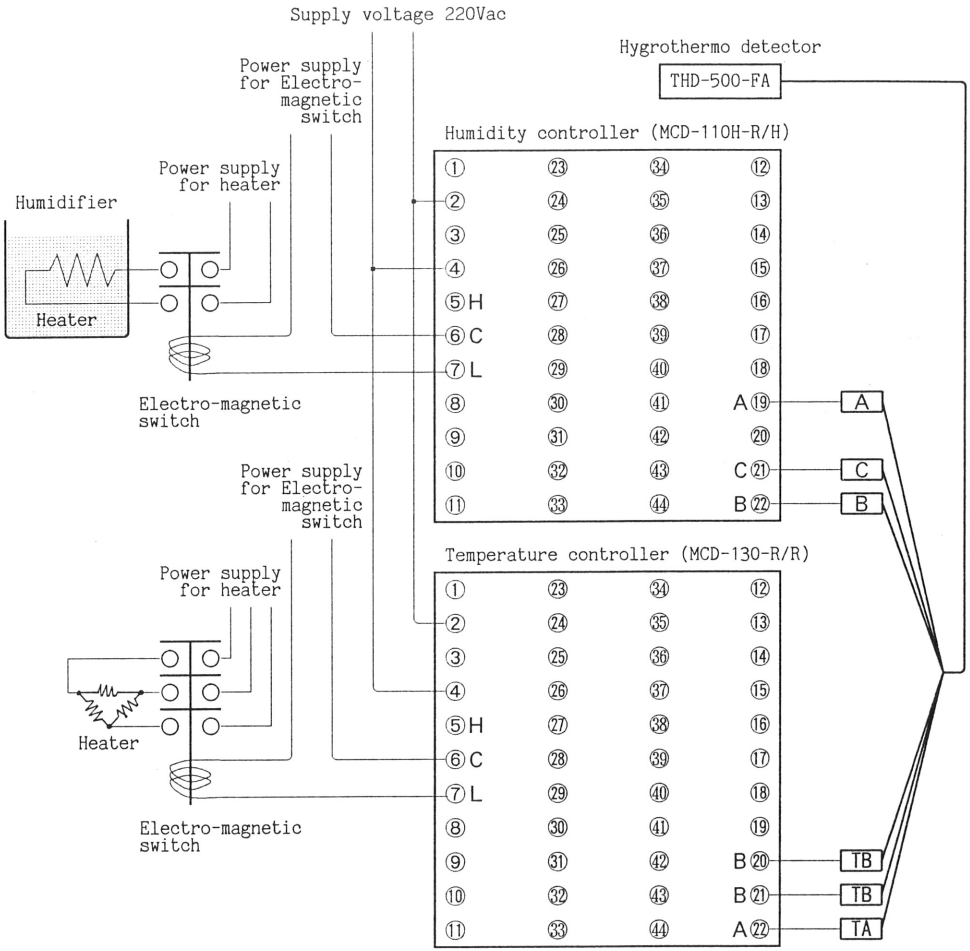


- In case of Hygrothermo indicator (THD-500-FA)+(RIN-501H-H)+(RIN-501-R)



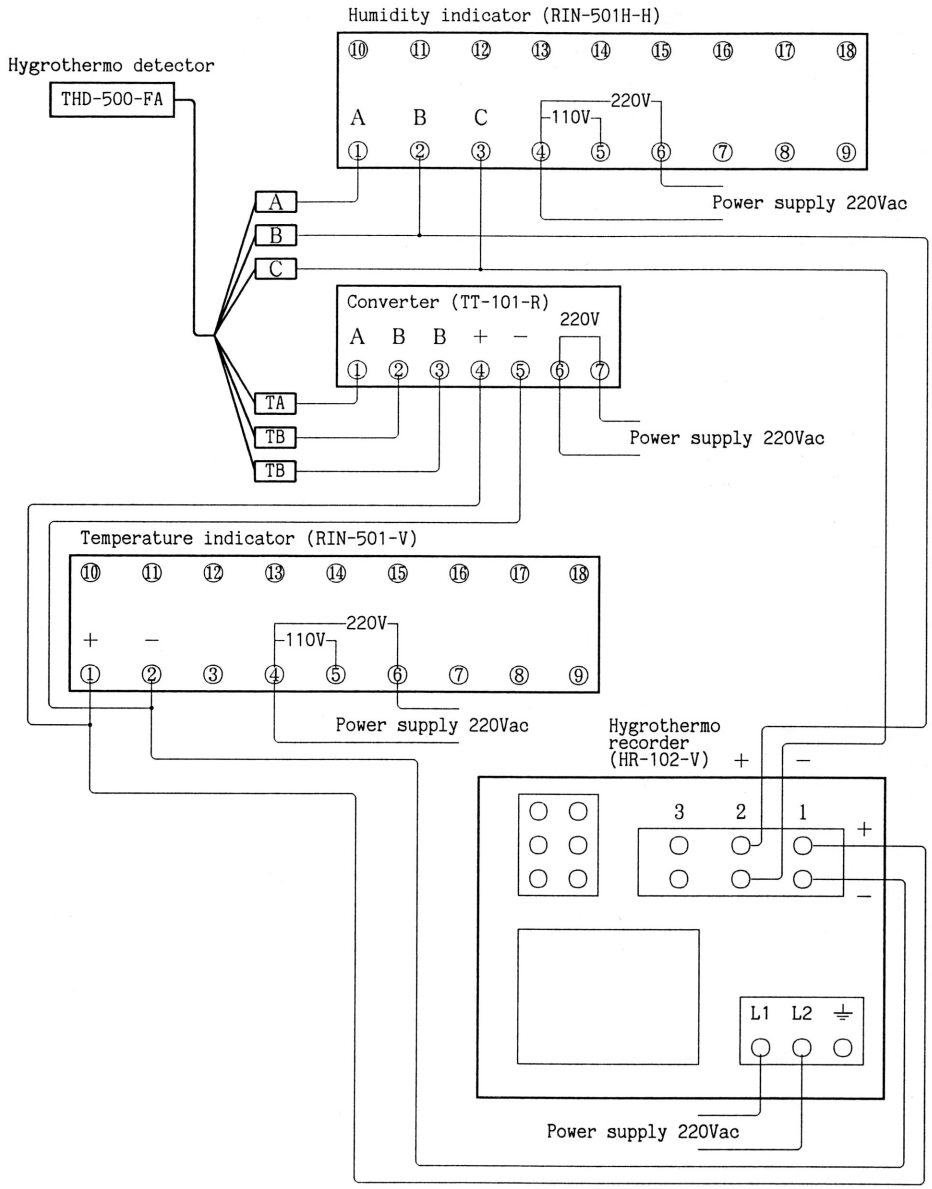
Notes:
- Power source (5Vdc) for humidity sensor is built-in the Humidity indicator RIN-501H-H.
- There are 2 TB terminals for the temperature signal. Connect them to the terminals ② and ③ of the Temperature indicator respectively.

- In case of Hygrothermo controller (THD-500-FA)+(MCD-110H-R/H)+(MCD-130-R/R)



Notes:
- Power source (5Vdc) for humidity sensor is built-in the Humidity controller MCD-110H-R/H.
- Input signal terminal of the Humidity controller MCD-110H-R/H is not arranged in order A, B, and C.
- As to the input signal of the Temperature controller MCD-130-R/R, the terminals A, B and B should correspond to TA, TB and TB.

- In case of Hygrothermo recorder(THD-500-FA)+(RIN-501H-H)+(TT-101-R)+(RIN-501-V)+(HR-102-V)



Notes:
- Power source (5Vdc) for humidity sensor is built-in the Humidity indicator RIN-501H-H.
- Input signals of the Hygrothermo recorder are 0 to 1Vdc for both temperature and humidity.
- Input signals of the Temperature indicator RIN-501-V is applied from the converter TT-101-R.

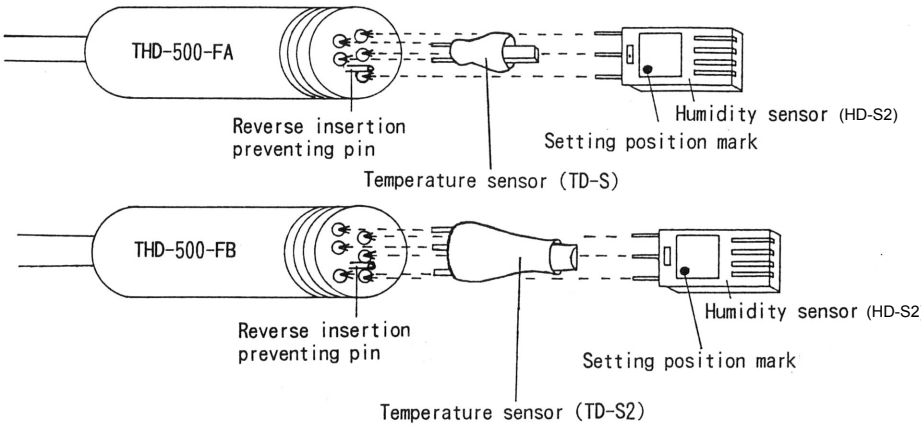
5. Sensor exchange

- Exchanging procedure

(1) Turn the power supplied to such as receiving instrument off when exchanging.
(2) Remove the sensor cap by turning to the left (counter clockwise).
(3) Pull the humidity sensor (HD-S2) or the temperature sensor (TD-S or TD-S2) out from the socket.
(4) Insert new humidity sensor (HD-S2) or temperature sensor (TD-S or TD-S2) to the socket as shown below illustration.

Notice

- Humidity sensor or temperature sensor has the polarity, if it is incorrectly inserted, the function does not work, and the sensor will be damaged. Accordingly measurement will be disabled.
- Do not disassemble the sensor, since it will cause trouble.



Notes:
- Do not mount the sensor excepting TD-S or TD-S2 for temperature and HD-S2 for humidity.
- Do not apply excessive force to the sensor, and do not touch the sensor with wet hands or chemicals sticked. [Especially the lead wire.]
- Do not clean the sensor, or it will be degraded.
- The humidity sensor for exchange is common to our Hygrothermo detector (HD-500 series and THD-500 series). Both sensors for temperature and humidity are interchangeable, therefore, adjustment is not required when exchanged.

Repair parts
- For the THD-500-FA
  Temperature sensor (TD-S)
  Humidity sensor (HD-S2)
- For the THD-500-FB
  Temperature sensor (TD-S2)
  Humidity sensor (HD-S2)

6. Specifications

6.1 THD-500-FA

Name	: Hygrothermo detector
Model	: THD-500-FA
Measuring range	: Temperature, 0 to 50℃ Humidity, 5 to 95% RH
Type of sensor	: Temperature, Platinum thin film RTD, (Pt100 B class) Humidity, Capacitance change type
Dimension	: Full length 110mm or 184mm (specified when ordering) Refer to the external dimension (page 3)
Mounting method	: Panel fixing type using bush
Material	: Protective tube, Aluminium, painted Color, Black Cap, Polyacetal Color, Black Bush to mount, Polyacetal Color, Mauve Lead wire, Heat proof rubber 2m (Standard)
Accuracy	: Temperature, ±(0.3 + 0.005|t|)℃ (Pt100 B class) : Humidity, ±5%RH (at 5 to 45 ℃)
Response	: Temperature, 35s (63.2% response) Humidity, Within 1 minute (Time to reach 90% of 30←→80%RH)
Hysteresis	: Humidity, ≒ 0% RH (stability time, 20 minutes)
Output	: Temperature, 3-wire system 100Ω at 0℃ (Pt100 B class) Humidity, 0 to 1Vdc (Correspond to 0 to 100%RH) (Output impedance 100Ω)
Applicable temperature range	: 0 to 50 ℃ (non-condensing)
Storage environment	: −20 to 60℃, 5 to 90%RH (non-condensing)
Supply voltage	: 5Vdc (Within ±5%) (Current consumption, approx. 5mA)
Weight	: 130g when Full length 110mm, Lead length 2m. 150g when Full length 184mm, Lead length 2m.
Accessories	: Instruction manual 1 copy Panel mounting bush 1 set (30g)

6.2 THD-500-FB

Name	: Hygrothermo detector
Model	: THD-500-FB
Measuring range	: Temperature, 5 to 60℃ Humidity, 5 to 95% RH
Type of sensor	: Temperature, Semiconductor integrated type temperature detector Humidity, Capacitance change type
Dimension	: Full length 110mm or 184mm (specified when ordering) Refer to the external dimension (page 3)
Mounting method	: Panel fixing type using bush
Material	: Protective tube, Aluminium, painted Color, Black Cap, Polyacetal Color, Black Bush to mount, Polyacetal Color, Mauve Lead wire, Heat proof rubber 2m (Standard)
Accuracy	: Temperature, ±0.5℃ (at 25℃) : Humidity, ±5%RH (at 5 to 45℃)
Response	: Temperature, 1min (63.2% response) Humidity, Within 1 minute (Time to reach 90% of 30←→80%RH)
Hysteresis	: Humidity, ≒ 0% RH (stability time, 20 minutes)
Output	: Temperature, 0 to 1Vdc (Correspond to 0 to 100℃) (Output impedance 100Ω) Humidity, 0 to 1Vdc (Correspond to 0 to 100%RH) (Output impedance 100Ω)
Applicable temperature range	: 0 to 50℃ (non-condensing)
Storage environment	: −20 to 60℃, 5 to 90%RH (non-condensing)
Supply voltage	: 5Vdc (Within ±5%) (Current consumption, approx. 5mA)
Weight	: 130g when Full length 110mm, Lead length 2m. 150g when Full length 184mm, Lead length 2m.
Accessories	: Instruction manual 1 copy Panel mounting bush 1 set (30g)

Note: The temperature sensor TD-S2 is not available for the measurement 5℃ or less.

7. When troubled

< Warning >

Turn the power supplied to the instruments OFF before internal checking or sensor exchanging. There is possibility of Electric Shock which can cause severe injury.

Check or exchange the sensor once a year to maintain normal measurement in general usage. The frequency of checking or exchanging differs from the working environment. Make sure whether the sensors are set to the socket surely or not before checking about below.

Observation	Action
Hygrothermo detector does not output.	• Check the sensors whether they are connected to the socket sufficiently or not. ➡ Set the sensor surely if it is not fixed. • Check the socket connection whether it is corroded or not. ➡ Change the socket if it is corroded. [ask us to repair] • Check the sensors whether they are broken or not. ➡ Exchange the sensor if it is broken.
Receiving instrument does not function.	• Check the receiving instrument referring to the instruction manual. ➡ Ask us to repair.
Receiving instrument responds slowly.	• Check the mounting location of the THD-500-F□ whether it is properly mounted or not. ➡ Change the location to appropriate place if it is not proper.
Receiving instrument shows high humidity abnormally.	• Check the sensor if it is wetting or condensing. ➡ Dry the sensor when it is wetting or condensing. • Check the sensors whether they are broken or not. ➡ Exchange the sensor if it is broken. • Check the sensor whether inorganic salt is found or not. ➡ Exchange the sensor if it is found.
Receiving instrument shows low humidity abnormally.	• Check the sensors whether they are soiled by dust or not. ➡ Exchange the sensor if it is soiled. • Sensor degradation is considered by repetition of condensing. ➡ Exchange the sensor.
Receiving instrument is unstable.	• Check the external AC source whether it is influenced by noise or not. ➡ Separate the instrument from the noise source and ground the instrument surely if it is influenced. • Check the connecting wire if it is tied together with the power line or these are inserted in the same conduit. ➡ Separate the connecting wire from the power line when it is not separated.

Note: When condensing, the humidity sensor will output approx. 90%RH or greater of the value until the dew disappears. (Repetition of condensing causes sensor degradation.)

- If occurred anything not clear, make inquiries to our agency or your shop where purchased.

MEMO

Shinko

INDUSTRIAL MEASURING INSTRUMENTS

• • • Inquiry • • •

For any inquiry of this detector, after checking the following as to the detector, please contact your shop where purchased, or our agency.

[Example]

Model THD-500-FA1

In addition to the above, let us know the details of malfunction, if any, and the operating conditions specifically on job site.

SHINKO TECHNOS CO.,LTD.

OVERSEAS DIVISION

Head Office: 2-5-1, Senbahigashi, Minoo-city, Osaka, Japan

URL : http://www.shinko-technos.co.jp/e/ Tel: +81-72-727-6100

E-mail : overseas@shinko-technos.co.jp Fax: +81-72-727-7006

No.THD52E3 2018.12