

**Instruction manual  
for  
Hand-held digital thermo-hygrometer DFT-700-M**

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No. DFT71E2 Feb. 2002

To prevent accidents arising from the use of this product, please ensure the operator using it receives this manual.


## Notes

- This instruction manual should be used according to the specifications described in this manual. If it is not used according to the specifications, it may malfunction or breakdown.
- Be sure to follow the warnings and cautions. If not, serious injury or accidents may occur.
- The specifications of the DFT-700-M and the contents of this instruction manual are subject to change without notice.
- Care has been taken to assure 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 is not liable for any damages or secondary damages incurred as a result of using this product, including any indirect damages.

## Safety precautions

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

The safety precautions are classified into 2 categories: "Warning" and "Caution".

Depending on circumstances, procedures indicated by  Caution may have 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**

- Do not use DFT-700-M (hereinafter DFT) and sensors for human body.
- Do not direct sensors connected to DFT towards human body.  
If sensor pierces human body, it may cause death or serious injury.
- The consequences of swallowing the AA Alkaline batteries attached to DFT are very dangerous.
- Keep DFT, sensors and batteries away from children.

### **Caution**

- Do not touch the sensor measuring part (metal section, etc) after measuring the temperature of hot or cold objects, as this may cause burning or frostbite.
- When inserting batteries to DFT, do not confuse the polarity of the batteries.  
If they are set the wrong way, DFT may breakdown.
- Be sure to remove the batteries from DFT, if it is not used for a long time.  
Otherwise the batteries may leak and result in breakdown or malfunction of DFT.
- Never disassemble, modify or repair the DFT and sensors yourself  
Doing so will make the guarantee for DFT and sensors void.

- Do not drop DFT and sensors, strike them with hard objects, press hard on them, as this may lead to the breakdown or malfunction.
- The heat resistance of DFT, sensor knob and cable section is low unlike sensor measuring part (metal section), so use them in a temperature ranging from 0 to 50°C.
- Do not use them in or near water, which may cause breakdown or malfunction.

Use this instrument in a place with:

- A minimum of dust, and an absence of corrosive gasses
- No acid, alkali, organic solvent, flammable and explosive gasses
- No exposure to direct sunlight and an ambient temperature of 0 to 50°C (32 to 122°F)
- No condensing of the inner assembly due to rapid temperature change
- No water, oil, chemicals or where the vapors of these substances can come into direct contact with the unit.

## 1. Model name

### 1.1 Model name

DFT-700-M

Multi-range input: 4 types of thermocouple (K, R, B, S), RTD (Pt100) and thermo-hygro sensor (THD-700-P) can be designated.

### 1.2 Rated input

#### • Thermocouple input

Input type	Input range		Resolution
K	-199.9 to 1370°C	-199.9 to 2500°F	0.1°C(F) *1
R	0.0 to 1760°C	32.0 to 3200°F	0.1°C(F) *1,*2
B	0.0 to 1820°C	32.0 to 3300°F	0.1°C(F) *1,*2
S	0.0 to 1760°C	32.0 to 3200°F	0.1°C(F) *1,*2

\*1: Resolution 1°C(F), when indication is 1000°C(F) or greater

\*2: When input is R, B or S and indication is out of indication accuracy, 0.1°C(F) is not guaranteed.

#### • RTD input

Input type	Input range		Resolution
Pt100	-199.9 to 850.0°C	-199.9 to 1500°F	0.1°C(F) *3

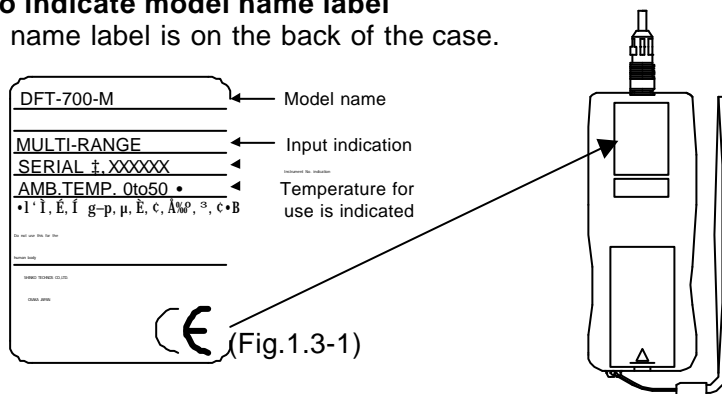
\*3: Resolution 1°F, when indication is 1000°F or greater

#### • Thermo-hygro sensor THD-700-P input

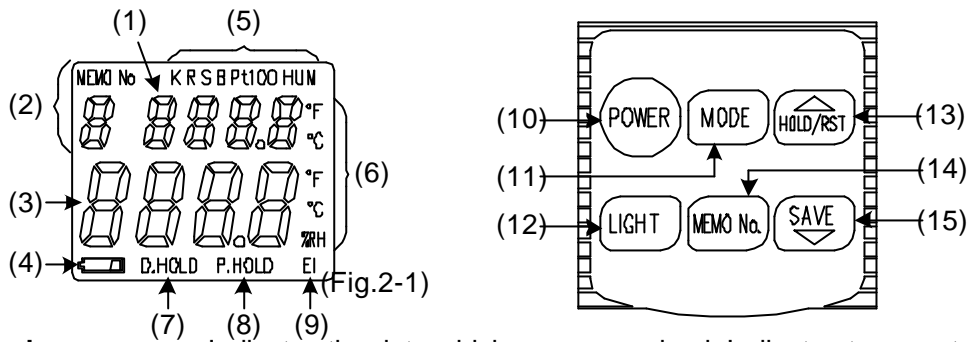
Input type	Input range		Resolution
Temperature sensor	-20.0 to 60.0°C		0.1°C
	-4.0 to 140.0°F		0.1°F
Humidity sensor	0.0 to 100.0%RH		0.1%RH

### 1.3 How to indicate model name label

A model name label is on the back of the case.



## 2. Names and functions of the sections



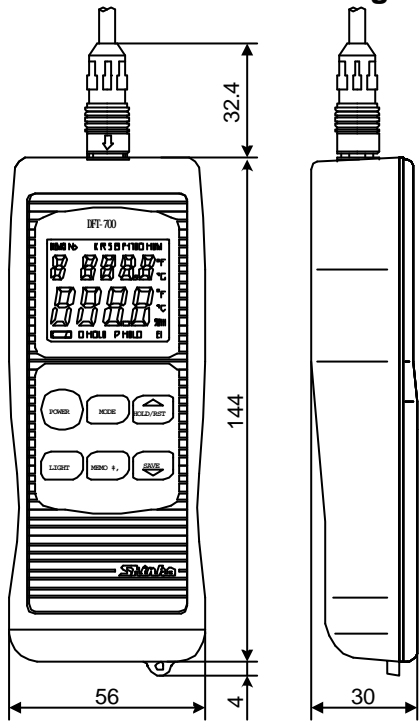
- (1) **Data display** : Indicates the data which was memorized. Indicates temperature data when thermo-hygro sensor is connected.
- (2) **Memory No. display** : Indicates memory number. Indicates memory number at every 1.5 seconds when thermo-hygro sensor is connected.
- (3) **PV display** : Indicates the current value.  
Indicates the humidity data when thermo-hygro sensor is connected.
- (4) **Battery life indication**: Blinks when the battery voltage goes down.
- (5) **Sensor input indication**: Indicates the sensor type which is used.
- (6) **Unit indication** : Indicates the current unit.
- (7) **Data HOLD indication**: Indicates when measuring temperature and humidity is set to indicate and hold on the PV display and Data display
- (8) **Peak HOLD indication**: Indicates when a maximum value of the measuring temperature is set to indicate and hold on the PV display or Data display.  
Indicates a humidity maximum value and temperature at the maximum humidity, when connected to thermo-hygro sensor.
- (9) **Immersion type thermocouple**: Indicates when immersion type thermocouple is selected.
- (10) **POWER key** : Pressing the POWER key turns the power ON, displays lights and enters measuring mode. Pressing the POWER key again turns off the indication.
- (11) **MODE key** : Pressing the MODE key for 1 second turns the measuring mode to the Peak HOLD (P.HOLD) measuring mode and the display indicates “P.HOLD”. Pressing the MODE key again for 1 second reverts the controller mode to the measuring mode and “P.HOLD” on the display goes out.
- (12) **LIGHT key** : Pressing the LIGHT key turns on the backlight which goes out automatically after 10 seconds.
- (13) **HOLD/RST/ key** : In the measuring mode, the data when the HOLD/RST/ key (hereinafter key) is pressed is held by pressing the key, and the “D.HOLD” is lit on the display. Regardless of the abnormal input, the held data is kept on being indicated until Data HOLD is cancelled.  
Pressing the key makes the D.HOLD on the display go out, resets the held data and enters the measuring mode.  
The held data is cleared by pressing the key again.  
In the Peak HOLD (P.HOLD) measuring mode, the held data is cleared by pressing the key and the measured data is indicated when key is pressed.  
In the immersion type thermocouple mode, pressing the key while holding data (blinking) turns the mode to measuring mode.
- (14) **MEMO No. key** : The mode enters the data memory mode by pressing the MEMO No. key, the “MEMO No.” and the data (Maximum 10 [0 to 9]) are indicated on the display. Next “MEMO No.” and the data is indicated pressing the “MEMO No.” key again. When thermo-hygro sensor is connected, current values (Temperature and humidity) memory data are indicated by turns in every 1.5 seconds.

If the MEMO No. key is pressed for 2 seconds, data memory mode is cancelled and the mode reverts to the normal measuring mode.

**(15) SAVE/ key**

: When the "MEMO No." is lit on the display, the measured value indicated on the PV display or each HOLD value is memorized by pressing the SAVE/ key (hereinafter key). When thermo-hygro sensor is connected, the current values (temperature and humidity) are indicated by turns at every 1.5 seconds.

**3. External dimension drawing**



(Fig. 3-1)

**4. Preparation for the measurement**

**4.1 How to insert (remove) the batteries**

Explanation written below is based on the condition that the power supply to DFT is OFF. Such being the case, if the power supply to DFT is ON, turn the power OFF by pressing the POWER key.

1. Push the battery cover up in the direction indicated by the arrow (1) then swing the cover open in the direction indicated by arrow (2). The battery cover opens. (Fig.4.1-1)

2. When inserting the batteries

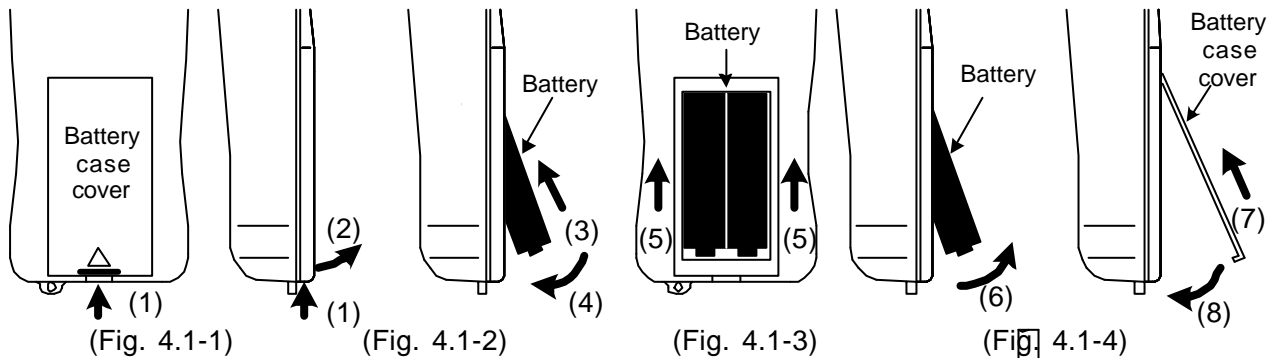
Insert the batteries to the direction as shown in the battery case. Insert as indicated by (3) and then swing them in (4). (Fig.4.1-2) If batteries are inserted correctly, "DFT-700" is indicated on the LCD display for 5 seconds and then returns to the power switches OFF.

When removing the batteries

After making sure that power is OFF, push + side of the batteries up in the direction indicated by (5) then swing them in the direction indicated by (6) and remove them. (Fig.4.1-3)

3. After setting batteries in the battery case, insert the case cover in the direction indicated by (7) then swing it closed (8). Hold the battery case cover until a "Click" is heard.

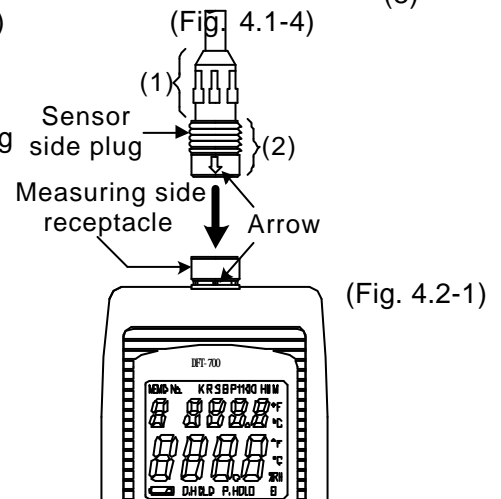
**\* Even if batteries are changed, each setting value and memory data are not erased.**



**4.2 How to connect sensors**

Insert the sensor side plug (hereinafter plug) to the measuring side receptacle (hereinafter receptacle).

When inserting the plug, hold the (1) section of the plug.  
When pulling the plug, hold the (2) section of the plug.



(Fig. 4.2-1)

### 4.3 Setup

Press POWER key while the MODE key is being pressed, when power to the instrument is OFF  
 As function setting mode items are indicated, set up the specification setting.  
 However, if factory adjusted values are going to set, it is unnecessary to implement the setup.  
 After specification setting is complete, power is turned off automatically.

#### [Measuring mode]

Power OFF

MODE + POWER

#### [Function setting mode]

##### [Auto-Power-Off function selection]

AUF 0  
10

- Selects the Auto-Power-Off time with the  $\leftarrow$  or  $\rightarrow$  key
- Selection item: Not used ( - - ), 10 min. ( 10 ), 30 min. ( 30 ), 60 min. ( 60 )
- Factory adjusted: 10 minutes

MODE

##### [Sensor selection]

4En4  
t

- Selects sensor type with the  $\leftarrow$  or  $\rightarrow$  key.  
Sensor type: Thermocouple (K, R, B, S), RTD (Pt100), and Thermo-hygro sensor (HUM) [6 types]
- Selection item: K ( t ), R ( r ), B ( b ), S ( 4 ), Pt100 ( Pf ) and HUM ( HUñ )
- Factory adjusted: K

MODE

##### [Temperature unit selection]

c-F  
c

- Selects the temperature unit with the  $\leftarrow$  or  $\rightarrow$  key  
Sensor type: Thermocouple (K, R, B, S), RTD (Pt100), Thermo-hygro sensor (HUM) [6 types]
- Selection item: °C ( c ) and °F ( F )
- Factory adjusted: °C

MODE

##### [Decimal point indication selection]

dP  
AUF 0

- Selects the use of decimal point 999.9°C(F) or lower with the  $\leftarrow$  or  $\rightarrow$  key.
- Selection item: With decimal point ( AUF 0 ), Without decimal point ( nonE )
- Factory adjusted: With decimal point

MODE

##### [Immersion type thermocouple measuring mode selection]

EI  
nonL

- Selects whether immersion type thermocouple can be used or not with the  $\leftarrow$  or  $\rightarrow$  key.
- Not indicated when RTD (Pt100) or Thermo-hygro sensor is selected in the [Sensor selection]
- Selection item: Normal measuring mode ( nonL ), Immersion type thermocouple measuring mode ( EI )
- Factory adjusted: normal measuring mode

MODE

##### [Time setting]

TIME  
0  
P. HOLD EI

- Sets the measuring time after timer starts with the  $\leftarrow$  or  $\rightarrow$  key.
- However, when measuring time is set to 0, Peak HOLD works.
- Indicates only when [Immersion type thermocouple measuring mode selection] is selected.
- Setting range: 0 to 60 seconds
- Factory adjusted: 0 seconds

MODE

##### [Timer start temperature setting]

TEMP  
500  
P. HOLD EI

- Sets the timer starting temperature with the  $\leftarrow$  or  $\rightarrow$  key.  
Starts timer at the setting temperature. However, when 0 is set in the Time setting, Peak HOLD activates and the setting becomes ineffective.
- Indicates only when [Immersion type thermocouple measuring mode] is selected.
- Setting range: 500°C to input scale high limit value or 900°F to input scale high limit value
- Factory adjusted: 500°C

MODE

#### 4.4 Site selection for measurement

Use this instrument in a place with:

- A minimum of dust, and an absence of corrosive gasses
- No acid, alkali, organic solvent, flammable and explosive gasses
- No exposure to direct sunlight, and an ambient temperature of 0 to 50°C (32 to 122°F)
- No condensing of the inner assembly due to rapid temperature change
- No water, oil, chemicals or where the vapors of these substances can come into direct contact with the instrument.

### 5. Measuring

#### 5.1 Normal measuring mode

(1) Turn the power ON by pressing the POWER key.

(2) When measuring temperature, let the temperature sensor for DFT-700 (hereinafter sensor) contact the measured object or insert to it.

When measuring temperature and humidity, put the Thermo-hygro sensor (THD-700-P) where measuring is to be carried out.

(3) Data HOLD function

While the sensor measures the temperature, temperature data currently indicated on the display is held by pressing the  key

While the thermo-hygro sensor (THD-700-P) is measuring temperature and humidity, thermo-hygro data currently indicated is held indicating "D.HOLD" on the display by pressing the  key.

(Temperature is indicated on the Data display and humidity is indicated on the PV display.)

Press the  key again to cancel the Data HOLD. When Data HOLD is cancelled the indication "D.HOLD" is put out and the mode reverts to the normal measuring mode.

(4) Peak HOLD function

While the sensor is measuring temperature, "P.HOLD" is indicated on the display and the maximum value of the temperature data currently indicated is held by pressing the MODE key for 1 second. While thermo-hygro sensor (THD-700-P) is measuring temperature and humidity,

"P.HOLD" is indicated on the display and the maximum value of humidity data currently indicated and temperature data when humidity data is maximum are held.

(Temperature is indicated on the Data display and humidity is indicated on the PV display.)

When this function is selected, the indicated values are not renewed as long as temperature and humidity do not exceed the currently indicated values.

Press the MODE key again for 1 second to cancel the Peak HOLD function.

"P.HOLD" on the display is put out and the mode reverts to the measuring mode.

(5) Memory function

A maximum of 10 (0 to 9) pieces of data can be memorized and indicated again.

- Indicated data memorization and calling

1) Press the MEMO No. key.

When the sensor is measuring temperature, the memory number "MEMO No. 0", memory data and the data currently measured are indicated on the display and the mode turns to the memory mode.

When the thermo-hygro sensor (THD-700-P) is measuring temperature and humidity, the memory number "MEMO No. 0" and memory data are indicated on the display for 1.5 seconds.

After 1.5 seconds the memory number "MEMO No. 0" and memory data are turned off, then the current thermo-hygro data is indicated. (These indications repeat at every 1.5 seconds.)

Data which is not memorized is represented as " - - - - ".

2) Press the  key (hereinafter ) while the data is indicated.

The data when the  key is pressed is memorized at the memory number "MEMO No. 0" currently indicated.

3) The next memory number "MEMO No. 1" is indicated by pressing the MEMO No. key again.

Keep pressing the MEMO No. key until the memory number to call is indicated.

- Memory mode cancellation

Press the MEMO No. key for 2 seconds or more to cancel the memory mode.

"MEMO No. " on the display is turned off and the memory mode is cancelled.

- Memory data elimination
  - 1) Press the POWER key in measuring mode to turn the power off of DFT.
  - 2) Press the POWER key holding the MEMO No. key.  
(Press the MEMO No. key until the measuring mode comes up.)  
Eliminates all the data memorized by memory function.

(6) Backlight function

When it is too dark to see the LCD display, press the LIGHT key.  
A backlight is lit. (A backlight turns off automatically in 10 seconds.)

## 5.2 Immersion type thermocouple measuring mode

(1) Turn the power on by pressing the POWER key.

(2) If it is in the measuring mode, change the mode to the immersion type thermocouple measuring mode referring to 4.3 Setup section. "EI" is indicated at the right bottom of the display if it is in the immersion type thermocouple measuring mode.

However, even if it is changed to immersion type thermocouple measuring mode, when 0 is set in the time setting, the mode is still Peak HOLD measuring mode and "P.HOLD EI" is indicated at the right bottom of the display.

(3) Temperature measuring starts.

- When "EI" is indicated at the right bottom of the display

When temperature exceeds the value which was preset by timer start temperature setting, the timer starts. After it starts, when the time that was preset has passed, the temperature data is held and starts blinking. (When Auto-Power-Off is set, at this moment time for Auto-Power-Off starts counting. Unless DFT is operated within a preset time, power is automatically turned off.) Press the key to cancel the blinking indication. A blinking indication is cancelled and the current temperature is indicated.

However, even if blinking is cancelled, when the indicated temperature is higher than the value that was set in the timer start temperature setting, EI function does not work.

To start EI function again, be sure to let the indicated temperature be  $-5^{\circ}\text{C}$  ( $10^{\circ}\text{F}$ ) or lower.

- When "P.HOLD EI" is indicated at the right bottom of the display.

This is Peak HOLD (P.HOLD) measuring mode. (When Auto-Power-Off is set, power is automatically turned off unless DFT is operated within a preset time.)

To cancel Peak HOLD (P. HOLD), press the key.

The held data is cleared after pressing the key and the measured value is indicated when the key is pressed.

(4) Memory function

A maximum of 10 (0 to 9) pieces of data can be memorized and be indicated again.

Memorization of the indicated data and calling.

1) Press the MEMO No. key.

When temperature is being measured, memory number "MEMO No. 0", memory data and the data which is being measured are indicated on the display and the mode switches to memory mode.

Data which is not memorized is represented as "----".

2) Press the key while the data is indicated.

The data when key was pressed is memorized at the memory number "MEMO No. 0" which is currently indicated.

3) Next memory number "MEMO No. 1" is indicated by pressing the MEMO No. key again.

Keep pressing the MEMO No. key until the memory number to call is indicated.

Cancellation of the memory mode

Press MEMO No. key for 2 seconds or more to cancel the memory mode.

The "MEMO No." is put out and the memory mode is cancelled.

Elimination of the memorized data

1) Press the POWER key in the measuring mode and the power to DFT is turned OFF.

2) Press the POWER key while the MEMO No. key is being pressed.

(Press the MEMO No. key until the mode turns to the measuring mode.)

All the data that was memorized by memory function is erased.

(5) Backlight function

When it is too dark to see the LCD display, press the LIGHT key.

A backlight is lit. (A backlight is put out in 10 seconds automatically.)

\* Note

In the case of immersion type thermocouple measuring mode, Data HOLD [D.HOLD] function does not work.

## 6. Other functions

### • Automatic cold junction temperature compensation (Only thermocouple input)

Detects the temperature at thermocouple and connecting terminal of this instrument and constantly keeps the reference junction status at 0°C or 32°F

### • Auto-Power-Off

In order to keep batteries from consuming the power of DFT, it is turned off automatically unless operation is carried out within the preset time. However, when the measuring is carried out in immersion type thermocouple measuring mode (when timer is active), power to the DFT is automatically turned off unless DFT is operated within the preset time after timer action is over. (Data on the PV display blinks.)

### • Auto-range

When the PV indication changes from 999.9 to 1000°C(F), resolution automatically changes from 0.1°C(F) to 1°C(F)

### • Immersion type thermocouple measuring mode (EI)

In the case of immersion type thermocouple measuring mode, if temperature exceeds the preset timer start temperature, the timer starts countdown, and the data is indicated on the PV display at the same time with the Time-up and the indication blinks.

(HOLD value indicates the value at the Time-up regardless of sensor burnout.)

However, after blinking is cancelled or power is turned on, if the indicated temperature is higher than the value preset in timer start temperature setting, EI function does not work.

To start EI function again, be sure to set the indication temperature -5°C(10°F) or lower.

### • Decimal point place indication switch

It is possible to set the use of decimal point for 999.9°C(F) or less.

However, if it is set not to use decimal point, resolution turns from 0.1°C(F) to 1°C(F)

### • Battery life warning indication

When the battery voltage lowers, the battery life warning indication blinks and indicates that it is time to change batteries.

### • Input burnout indication

#### [Overscale]

In the case of thermocouple and RTD input, "----" blinks on the PV display if the sensor is burnt out or the value exceeds the rated scale maximum value.

(Immersion type thermocouple measuring mode [EI] does not have this function.)

However, while Data HOLD, its value is indicated by priority.

#### Thermo-hygro sensor (THD-700-P) input:

In the case of temperature sensor (TD-S), if the sensor is burnt out or the value exceeds the rated scale maximum value, "----" blinks on the data display.

In the case of humidity sensor (HD-S), if the value exceeds the rated scale maximum value, "----" blinks on the PV display.

When humidity sensor is burnt out, "----" blinks or "0.0" is indicated on the PV display.

However, while Data HOLD, its value is indicated by priority.

#### [Underscale]

In the case of thermocouple and RTD input, if the value goes below the rated scale minimum value "----" blinks on the PV display.

However, while Data HOLD, its value is indicated by priority.

#### Thermo-hygro sensor (THD-700-P) input:

In the case of the temperature sensor (TD-S), if the value goes below the rated scale minimum value "----" blinks on the Data display

In the case of the humidity sensor (HD-S), if the value goes below the rated scale minimum value "0.0" is just indicated on the PV display.

However, while Data HOLD, its value is indicated by priority.

When sensor is burnt out in the immersion type thermocouple measuring mode (EI), "----" blinks on the Data display.

### • Temperature unit selection

Temperature unit °C or °F can be selected.

### • Memory backup

Backups the memory data when changing batteries

### • Memory data clearing

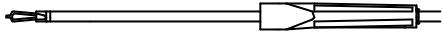
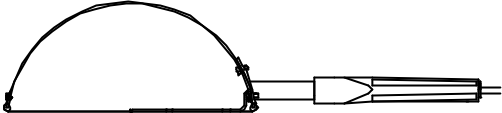
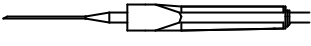
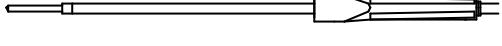
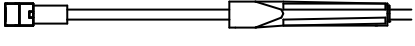


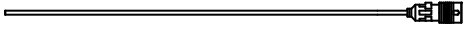
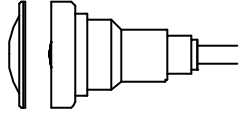
If the power is turned on while the MEMO No. key is being pressed, all the data that is memorized reverts to the factory adjusted value "----".

## 7. Sensors

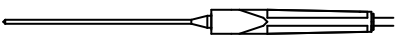
Use the DFT-700-M specific sensors (Sold separately) below.

We are ready to manufacture the sensors other than the ones described below to customize your needs, so please consult the agency or the shop where you purchased this instrument.

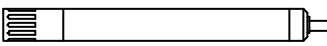
### 7.1 Thermocouple (K)

Model	Drawing	Main objects	Max.
PCE-701		For measuring general surface temperature	400°C
PCE-702		For measuring surface temperature of roll	400°C
PCE-704		For measuring temperature of liquid and interior	400°C
PCE-706		For measuring temperature of liquid and interior	400°C
PCE-707		For measuring general surface temperature	400°C
PCE-707L		For measuring general surface temperature	400°C
PCE-H7		Exclusive use tip for PCE-707, 707L (for exchange)	400°C
PCE-709		For measuring temperature of liquid and interior	400°C
PCE-700-M		For measuring surface temperature of mold, etc. (Magnet type)	300°C

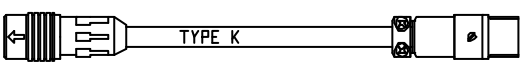
### 7.2 RTD (Pt100)

Model	Drawing	Main objects	Max.
PCR-701		For measuring temperature of liquid and interior	400°C

### 7.3 Thermo-hygro sensor

Model	Drawing	Range
THD-700-P		Temperature: 0 to 50°C Humidity : 20 to 90.0%RH

### 7.4 Conversion plug

Model	Drawing	Note
PCE-CP7		Temperature sensor for DFT-600 (K thermocouple) can be used.

## 8. Specifications

<b>Name</b>	Hand-held digital thermo-hygrometer
<b>Model</b>	DFT-700-M
<b>External dimension</b>	56 x 144 x 30mm (W x H x D) [excluding protruding portion]
<b>Display</b>	Electric field effect type liquid crystal (with backlight)
<b>Input</b>	Thermocouple: K, R, S 100 $\Omega$ or less, B 40 $\Omega$ or less RTD: Pt100 3-wire system Thermo-hygro sensor THD-700-P RTD Pt100 3-wire system Humidity sensor 0 to 1Vdc (0 to 100%RH corresponding)
<b>Indicating accuracy</b>	Thermocouple input: Within $\pm 0.2\%$ of FS $\pm 1$ digit however, R, S thermocouple 0.0 to 100.0 $^{\circ}\text{C}$ (0.0 to 200.0 $^{\circ}\text{F}$ ): Within $\pm 6.0^{\circ}\text{C}$ ( $\pm 12.0^{\circ}\text{F}$ ) B thermocouple 0.0 to 300.0 $^{\circ}\text{C}$ (0.0 to 600.0 $^{\circ}\text{F}$ ): Accuracy is not guaranteed. RTD input: Within $\pm 0.1\%$ of FS $\pm 1$ digit Thermo-hygro sensor input: Temperature $\pm 0.3^{\circ}\text{C}$ (excluding sensor error) Humidity $\pm 0.3\%$ RH (excluding sensor error)
<b>Input sampling period</b>	0.4 seconds
<b>Standard function</b>	Automatic cold junction temperature compensation (Only thermocouple input), Automatic-POWER-OFF, Auto-range, EI (Immersion type thermocouple measuring mode), Decimal point indication switch, Battery life warning indication, Input burnout (Overscale, Underscale), Temperature unit selection, Multi-range input, Memory backup, Memory data clearing, Dust-proof, Drip-proof (IP65)
<b>Supply voltage</b>	3Vdc Size AA alkaline batteries (LR6) 2
<b>Continuous duty</b>	Thermocouple and RTD input Approx. 200 hours (Without using backlight) in normal temperature Thermo-hygro sensor input Approx. 100 hours (Without using backlight) in normal temperature
<b>Ambient temperature</b>	0 to 50 $^{\circ}\text{C}$
<b>Storing temperature</b>	-20 to 60 $^{\circ}\text{C}$
<b>Material</b>	case: Resin
<b>Color</b>	case: Dark gray
<b>Panel</b>	Membrane sheet
<b>Weight</b>	Approx. 90g (Accessories are excluded. )
<b>Accessories</b>	Instruction manual, Alkaline battery (LR6) AA size 2, Wrist strap 1 Vinyl cover 1
<b>Products sold separately</b>	Various sensors for the DFT-700

## 9. Troubleshooting

Check the following after confirming the power to this instrument is turned on.

Phenomena	Presumed causes and solutions
<p>In the case of thermocouple and RTD input</p> <ul style="list-style-type: none"> <li>• PV display or Data display blinks “-----”</li> </ul> <p>In the case of thermo-hygro sensor input</p> <ul style="list-style-type: none"> <li>• “-----” is blinking on the Data display</li> <li>• “-----” is blinking or “ 00” is kept indicated on the PV display</li> </ul>	<ul style="list-style-type: none"> <li>• Temperature sensor of thermocouple or RTD are burnt out. Replace the old sensor with a new one.</li> <li>• Temperature sensor (TD-S) is burnt out Replace the Temperature sensor (TD-S) with a new one.</li> <li>• Humidity sensor (HD-S) is burnt out. Replace the Humidity sensor (HD-S) with a new one.</li> <li>• Sensor plug connection to the measuring receptacle is imperfect. Connect the sensor plug to the receptacle properly.</li> </ul>
<p>Indication of the PV display or Data display does not change.</p>	<ul style="list-style-type: none"> <li>• Data HOLD (D.HOLD) or Peak HOLD (P.HOLD) is set. Cancel the Data HOLD (D.HOLD) or Peak HOLD (P.HOLD)</li> <li>• Humidity sensor (HD-S) of Thermo-hygro sensor (THD-700-P) is out of order. Replace the humidity sensor with a new one.</li> </ul>
<p>Indication of the PV display or Data display is abnormal or unstable.</p>	<ul style="list-style-type: none"> <li>• Sensor input designation is incorrect. Set the correct sensor input.</li> <li>• °C/F unit is incorrect. Set the correct temperature unit.</li> <li>• AC is leaking from the measured object to thermocouple or RTD. Stop AC leakage.</li> </ul>
<p>“Error” is indicated on the PV display.</p>	<ul style="list-style-type: none"> <li>• Internal memory is abnormal. Contact our sales representatives or the shop where you purchased this instrument.</li> </ul>
<p>Unable to set immersion type thermocouple measuring mode (EI)</p>	<ul style="list-style-type: none"> <li>• RTD (Pt100) or Thermo-hygro sensor (HUM) is selected in the sensor selection. Select thermocouple (K, R, B, S) in the sensor selection.</li> </ul>
<p>Auto-Power-Off function does not work.</p>	<ul style="list-style-type: none"> <li>• In Auto-Power-Off mode, Auto-Power-Off invalid “- -” is selected. Set the time (10, 30, 60 minutes) in Auto Power OFF mode.</li> </ul>

- If you have any trouble, do not hesitate to contact our sales representatives or the shop where you purchased this instrument.

## 10. DFT-700 sensor



### Warning

- DFT-700 temperature sensor is used for temperature measurement. Never use it except for the purpose of temperature measurement.
- Please adjust the DFT-700-M input to the sensor type.
- When sensor type does not match the input type, reliable measured value cannot be obtained
- Sensor type is written at the cord terminal e.g. “K, Pt100” along with high limit measuring temperature.
- Reliable measured value cannot be obtained when temperature is measured where electricity is running.
- Never use sensor for human body. (e.g. Taking temperature, etc.)
- Do not touch the sensor measuring part (metal section, etc) protection tube after measuring the temperature of hot or cold objects, as this may cause burning or frostbite.
- Be sure to turn the power OFF of DFT-700-M, when DFT-700 thermo-hygro sensor (hereinafter THD-700-P) is attached or detached from DFT-700-M.
- Do not attach or detach THD-700-P in wet place or with wet hands because it may cause electric shock.



### Caution

- The maximum temperature written in the table is the limit temperature of the measuring part. Use such as grip, cord, etc in an ambient temperature (0 to 60°C) except for the measuring part.
- When it is used in a high temperature atmosphere, which may cause breakdown or ignition.
- When measuring under -50°C atmosphere, sensor elasticity deteriorates and sensor becomes fragile.
- Do not use this in a place with electric noise such as high magnet field and high frequency, or DFT-700-M and sensor may breakdown or be damaged.
- Do not use this in a place with corrosive atmosphere such as acid, alkali, etc, because that may hasten the sensor degradation and be responsible for breakdowns.
- Do not cool down the measuring part quickly such as soaking in water after measuring. That may cause breakdown.
- Do not drop sensor and THD-700-P, strike them with hard objects, press hard on them, as this may lead to the breakdown or malfunction.
- Use THD-700-P within the proper conditions (temperature, humidity and atmosphere, etc.)

## 11. DFT-700 sensor guarantee and liability limit

Since sensors for temperature or humidity measurement is consumable, it is not guaranteed.

Contact our shop or sale office if any flaw during manufacturing or malfunction due to the accident during shipment.

Shinko Technos is not liable for any damages after using sensors.

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