# INSTRUCTION MANUAL

## PEN TYPE HYGROMETER
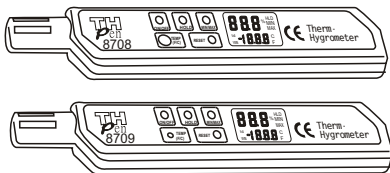


$\mathsf{C}\,\mathsf{\epsilon}$

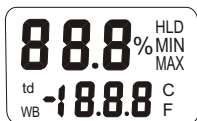**Model: ■8708**
**■8709**
**■8709 KIT**

# INTRODUCTION



Congratulation on your purchase of the Pen type **Thermo-Hygromter**. This is a low cost but easy use to get accurate measurement.

The difference between model 8708 and 8709 is the latter one features self-calibration by using 0033RH/0075RH salt solution to maintain the meter to get accurate reading.

The front panel of 8708 with **TEMP** (F/C) printing, instead 8709 without a button with printing **F/C,CAL**.
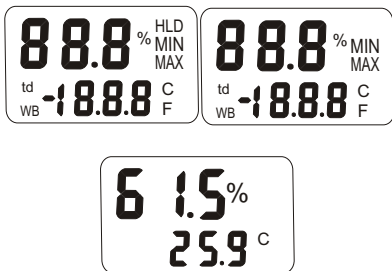
# NORMAL MEASUREMENT



(1) Turn meter on by pressing **ON/OFF** button.
(2) Press **F/C** button to convert reading to desired range. Both temperature and relative humidity measurement will display simultaneously. (**8708**)

## READ BEFORE USE
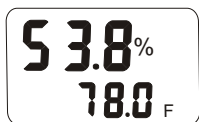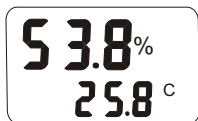
(1) Turn meter on by pressing **ON/OFF** button.
(2) Use a pen tip to press **F/C** key whenever you need to. Press **F/C** to convert reading to desired range. Both temperature and relative humidity measurement will display simultaneously. (**8709**)

## POWER ON THE METER

```
88.8 % HLD MIN MAX
td -18.8.8 C
WB          F
```
```
88.8 % MIN MAX
td -18.8.8 C
WB          F
```

```
61.5 %
25.9 C
```

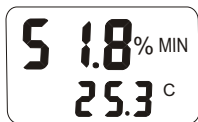(1) Power on the meter by pressing **ON/OFF** button. You will see a full display on the screen ( though you might have seen "**td**","**WB**" shown on the screen, however these icons are only available for other models) , then "**HLD"** icon will disappear in one second ,then after 3 seconds, the meter will start measuring the temperature and humidity and display both readings at the same time.

(2) The default setting of temperature display can be in $^{o}F$ or $^{o}C$. You can press **F/C** button for 2 seconds to change the temperature display from **C** to **F** or vice versa. You may use a pen tip to press **F/C** button whenever convenient.(8709)

$$53.8\%$$
$$25.8 \ C$$

$$53.8\%$$
$$78.0 \ F$$

## MIN/MAX FUNCTION

(1) Press and hold **MIN/MAX** button until **MIN** appears on display. The LCD screen is now showing the minimum humidity and temperature readings in memory.

$$51.8\% \ MIN$$
$$25.3 \ C$$

(2) Press and hold **MIN/MAX** button again until **MAX** appears on display. The LCD screen is now showing the maximum humidity and temperature readings in memory.

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(3) To return to measuring mode of current temperature and humidity, press and hold **MIN/MAX** button until **MIN** or **MAX** disappears from the display.

$$50.0\%_{MAX}$$
$$26.8 \ ^C$$

(4) To clear current **MIN** and **MAX** readings from memory, press and hold **RESET** button until the full display flashes . The meter reading turns to the normal measurement with either **MIN** or **MAX** icon , after about 10 second, the **MIN/MAX** icon will disappear automatically .

$$58.3\%$$
$$26.0 \ ^C$$

## DATA HOLD FUNCTION

Press hold button until "**HLD**" appears in display.  The current reading is now being held and will not change until Hold function is cancelled.  Press **RESET** button to cancel Hold function. Hold function can be used for Humidity and Temperature .

$$60.1\%^{HLD}$$
$$26.2 \ ^C$$

## AUTO POWER OFF

Unit will turn itself off after 20 minutes. (Sleep mode). To override Auto Power Off function (Non-Sleep Mode) press **ON/OFF ,MIN/MAX** keys simultaneously.
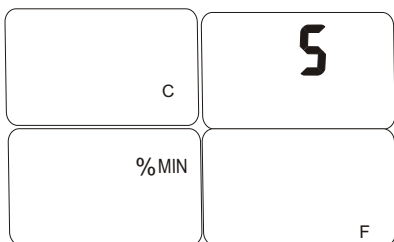After the full display appears release **ON/OFF** button, the display shows "**n**" on the screen. When "**n**" appears then release **MIN/MAX** button. Unit will now be in Non-sleep mode.



## CHANGE DEFAULT OF TEMPERATURE SCALE

### (**8709** only)

1. Turn off the meter.
2. Press **ON/OFF** button. When LCD displays full readings, press **F/C** button with a pen tip and the LCD shows original temperature default **C** or **F** right down the corner.
3. Press **MAX/MIN** button to switch the default **C** or **F**. Press **F/C** button to save the new temperature scale default and LCD will first show "**S**" then show "**%MIN**" right up the corner. Turn off the meter.
   The procedure is completed.

|  | 5 |
|---|---|
| C |  |
| % MIN | F |

## CHECK AND CALIBRATION

※The carrying case is for not only storage (see FIG1) but also calibration (see FIG2).
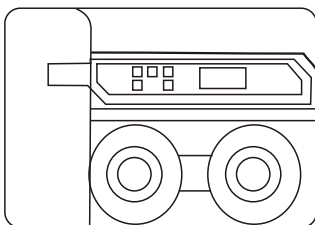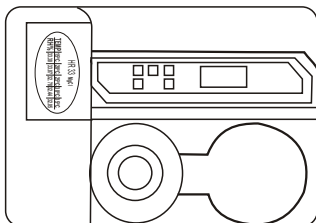
(**8709** only)



**FIG 1**



**FIG 2**

Before checking the humidity 33% or 75% , make sure you purchased model 8709 and salt solution 33% (dark brown bottle) , 75% ( blue bottle ) as well as the carry case, if you purchased model 8708 , it is the model not available for checking or re-calibration .

**NOTE:**
A convenient look-up table has been built in to aid calibration.

HR 33 **MgCl**

| TEMP | 15°C | 20°C | 25°C | 30°C | 35°C |
|------|------|------|------|------|------|
| RH%  | 33.30 | 33.07 | 32.78 | 32.44 | 32.05 |

If different temperatures, say 25°C, the RH of MgCl is 32.78 and in 30°C, the RH is 32.44.
The same reference says 30°C , the RH of Nacl is 75.09 RH% humidity and in 35°C , the RH is 74.87%.
(See the table)

HR75 **NaCl**

| TEMP | 15°C | 20°C | 25°C | 30°C | 35°C |
|------|------|------|------|------|------|
| RH%  | 75.61 | 75.47 | 75.29 | 75.09 | 74.87 |

The relations are recorded in the look-up table.
Once the calibration mode in **ON**, the meter will search the right humidity value according to the current temperature to get more accurate calibration.

## (**8709** only)
### *1.1. CHECK HUMIDITY 33%*

1.1.1. Turn on the meter. Plug unit in 33% salt reference bottle and put unit into the carrying case as shown FIG2. Check the reading on LCD after 40 minutes. If the display reads between 31.5% and 34.5%, that means the meter is accurate. Otherwise, it needs to be recalibrated.
Please calibrate the meter by following calibration instruction 1.3.A.
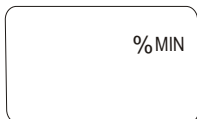
### *1.2. CHECK HUMIDITY 75%*

1.2.1. Turn on the meter. Plug unit in 75% salt reference bottle as you do in step 1.1.1. Check the reading on the LCD after 40 minutes. If the display reads between 73.5% and 76.5%, that means the meter is accurate. Otherwise, it needs to be calibrated. Please calibrate the meter by following calibration instruction 1.3.B.

### *1.3. CALIBRATION*
### A. CALIBRATION FOR RELATIVE HUMIDITY 33%

1. Turn off the meter.
2. Press **ON/OFF** button. When LCD displays full readings, press **F/C** button after plugging the meter in the 33% salt reference bottle for 40 minutes (you have done in 1.a).
3. Press **RESET** button and the LCD shows "**%MIN**."

4. Press **F/C** button to save the cali-
   bration value of 33%. The LCD
   shows "**S**" for 2 seconds and then
   the "**%MAX**" shows right up the
   corner of LCD.

```
                        % MIN
```

5. Turn off the meter. The calibration
   of 33% is completed.

```
               5
```

```
                        %
                         MAX
```
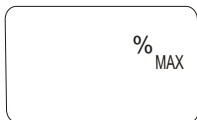
## B . CALIBRATION FOR
##  RELATIVE HUMIDITY 75%

1. Turn off the meter.
2. Press **ON/OFF** button. When LCD
   displays full readings, press **F/C**
   button after plugging the meter in
   the 75% salt reference bottle for 40
   minutes.( you have done in 1.2.1)
3. Press **RESET** button twice and the
   LCD shows "**%MAX**" .

```
                              %
                               MAX
```

4. Press **F/C** button to save the
   calibration value of 75%. The LCD
   will show "**S** " for 2 seconds and
   then resume normal measurement

5. Turn off the meter. The calibration
   of 75% is completed.

## AUTO CALIBRATION

a.              (**8709** only)

   If you want to calibrate the meter
   without checking the accuracy,
   Please plug the meter probe into
   the 33% salt bottle and then power
   on the meter by pressing **ON/OFF**
   button and the **F/C** button at the
   same time.

b.

   When LCD screen shows a full
   display, release the **ON/OFF** button.
   You will see the display of "**C**"
   and "**F**" at the lower right corner of
   LCD screen, then release the **F/C**
   button. The LCD will display only
   the default setting of temperature
   unit, **C** or **F**.

   Press **RESET** key and you will see
   a "**% MIN**" display on the right
   upper corner. Please leave the
   meter in the bottle for at least 40
   minutes and the meter will start the
   auto calibration process.

c. When the calibration for 33% is done, you will see a "**MIN**" and "**MAX**" display on the LCD screen. Please remove the meter probe from the 33% salt bottle and plug it into the 75% salt bottle. Then press the **MIN/MAX** button, you will see a "**% MAX**" display on the LCD. Then leave the meter in the 75% bottle for another 40 minutes. When the calibration for 75% is completed, the meter will be back to normal measuring mode for temperature and humidity. You can then remove the meter from the 75% bottle.

## CHANGE BATTERY

(1) Turn off the meter , then use a coin to open the battery cover.
(2) Put the battery (CR2032) whose "**+**" faces out into the battery compartment and place the battery cover back and lock it with a coin.

## MATERIAL SUPPLIED

The package supplied with a standard :
1) The unit
2) Battery CR2031 x1
3) Operation manual

Optional accessory : ( model 8708,8709)
a) 33% Salt solution
b) 75% Salt solution
c) Carrying Case

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## SPECIFICATION

Size: 17.5cm × 4.2cm × 1.6cm
Battery: (1) 2032 Life-150hrs.

Sensor: Electronic Capacitance
Ploymer Film Sensor

Accuracy:±5% from 5 to 95%RH
at $25^{o}C \pm 1^{o}C$ from~
10 to $45^{o}C$

Resolution:$0.1^{o}C/ 0.1^{o}F$

※ Remember Low Batteries will
tend to give inaccurate readings,
so make sure you have good
batteries.
※Please do not immerse probe
into liquids as this will cause
permanent damage to the
sensor.

## WARRANTY

The meter is warranted to be free from
defects in material and workmanship
for a period of one years from the date
of purchase.

This warranty covers normal operation
and does not cover batteries, misuse,
abuse, alteration, tampering, neglect,
improper maintenance, or damage
resulting from leaking batteries.

Proof of purchase is required for
warranty repairs.

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## RETURN AUTHORIZATION

Authorization must be obtained from the supplier before returning items for any reason .

When requiring a RA (Return Authorization) , please include data regarding the defective reason, the meters are to be returned along with good packing to prevent any damage in shipment and insured against possible damage or loss .

## CE APPROVAL

**The meter conforms to the following standards:**
**\* EN 50081-1/1992 :** EN 55022
**\* EN 50082-1/1997 :** EN 55024
(EN 61000-4-2/-3/-8, ENV 50204)
, the meter complies with the essential protection requirements of Council Directive 89/336/EEC on the approxi- mation of the laws of the Member States relating to electromagnetic compatibility.

| ETS Germany | EMC tested |
|---|---|

| ETS Germany | RF tested |   | ETS Germany | LVD tested |
|---|---|---|---|---|

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