Operation-Manual

THS30X Series (THS301 / 302 / 304 / 307)

Multifunction Temp-Humid Transmitter

Indoor / Duct / Remote / Outdoor

THS301 THS302 THS304 THS307

eYc THS30X

Table of Contents

I. Security considerations

Please read this Specification carefully, prior to use of this, and keep the manual properly, for timely reference.

Solemn Statement：

This product can not be used for any explosion-proof area.

Do not use this product in a situation where human life may be affected.

eYc-tech will not bear any responsibility for the results produced by the operators！

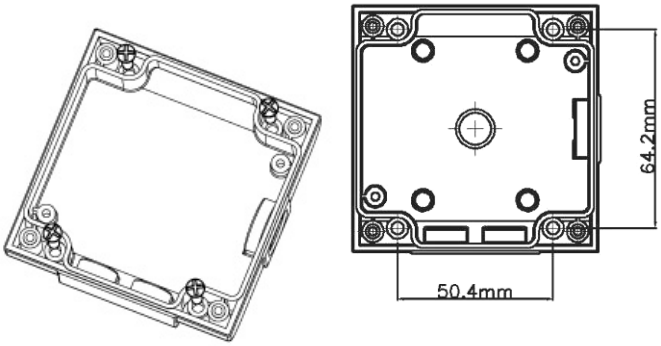
Warning!!

- Installation and wiring must be performed by qualified personnel in accordance with all applicable safety standards.
- This product must be operated under the operating conditions specified in manual to prevent equipment damages.
- Please using the product under the ordinary pressure, or it will influence safe problem.
- This product must be operated under the operating condition specified in this manual to prevent equipment damages.
- This product must be operated under the normally atmospheric condition to prevent equipment damages.
- To prevent products damage, always disconnect the power supply from the product before performing any wiring and installation.
- All wiring must comply with local codes of indoor wiring and electrical installation rules.
- Please use crimp type terminal.
- To prevent personal injury, do not touch the moving part of product in operation.
- It may cause high humidity atmosphere during the product was breakdown. Please take safety strategy.

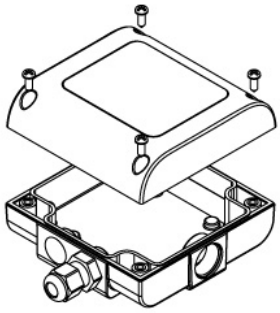
II. Installation

1. Indoor

Wall mount



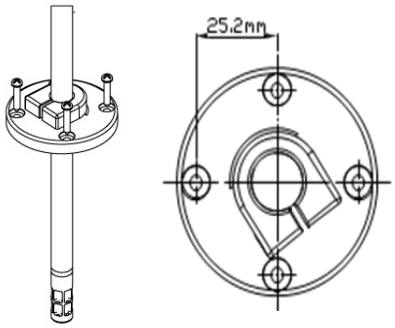
Cover



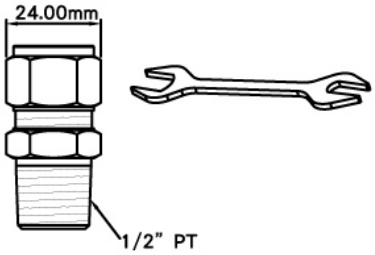
2. Outdoor

Fixed board for wall type

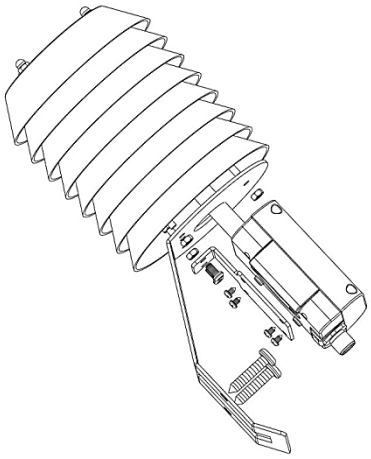
Plastic flange



Installing Fitting thread

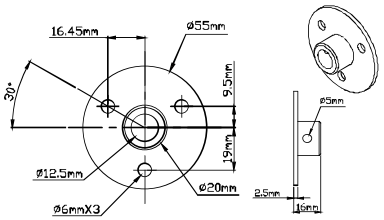
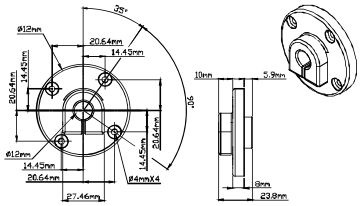
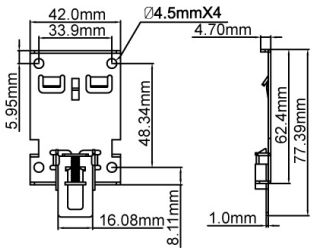
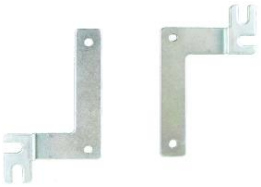
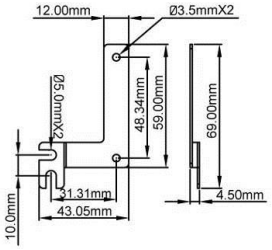
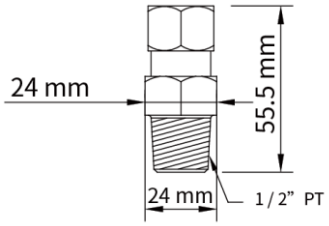


Radiation shield



III. Option accessory

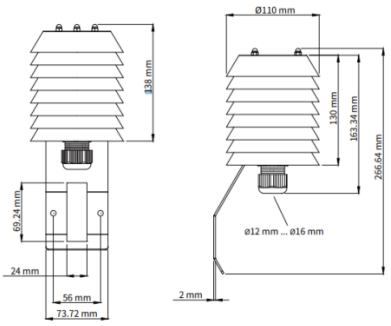
1. Fixed type

Order code	Name	Desciption	Dimension
4415000022 Metal Flange		Material： Stainless Steel 304	
8203104015 Plastic flange (Standard)		Material： PC fire-proof class	
AS-HS-S Fixed board		Material： Stainless Steel 304	
8203104014 Fixed board for wall type(Standard)		Material： SPCC	
8203104012 Fitting thread		Material： Stainless Steel 304	

2. Filter

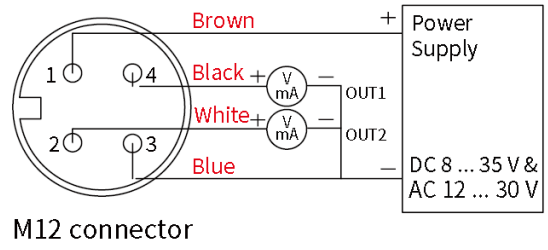
Order code	Name	Desciption	Dimension
8203104010 PC membrane filter		Material：PC fire-proof class+cotton filter Outside diameter：12 mm Length：32 mm	Common filtering effect Max. Temp.：80°C
4425000013 SUS sintered filter		Material：SUS sintered filter Aperture：40 μm Outside diameter：12 mm Length：38 mm	Resist pressure, pollution and corrodent Nice filtering ability Max. Temp.：200°C
8203104011 Metal grid filter with mesh		Material：Metal grid filter with mesh Outside diameter：12 mm Length：32 mm	Common resisting pollution React quickly Endure high Temp. Nice ventilation Max. Temp.：200°C
8203104013 PC membrane filter +Metal mesh		Material：PC fire-proof class+Metal mesh Outside diameter：12 mm Length：32 mm	Fitting in with high humidity environment Max. Temp.：120°C

3. Radiation shield

Order code	Name	Desciption	Dimension
THSA-0304 Radiation shield		Material：UVPC+S.S.	

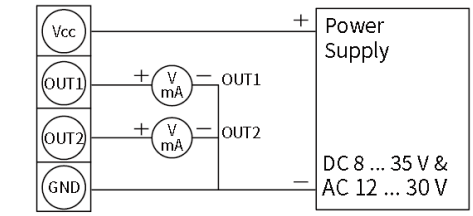
IV. Diagram

1. Analog Diagram



M12 connector

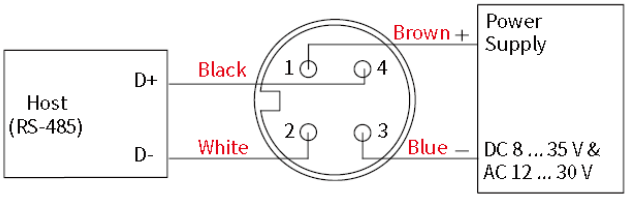
M type(4P)



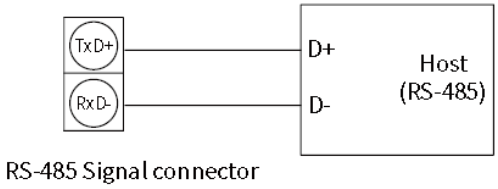
4P terminal

N type

2. RS-485 Diagram



M type(4P)

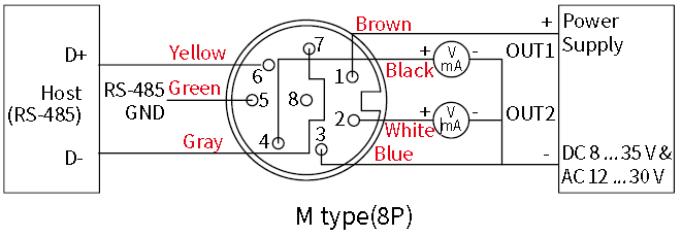


RS-485 Signal connector

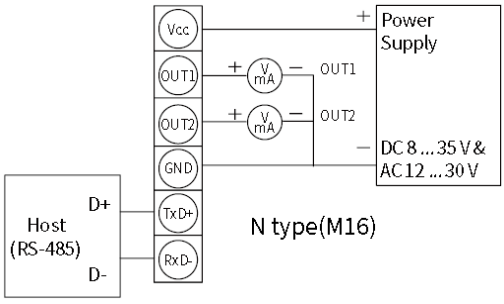
N type

※ When output of ordering code is RS-485(without analog), RS-485 diagram of default setting is M type.

3. Analog + RS-485 Diagram



M type(8P)



N type(M16)

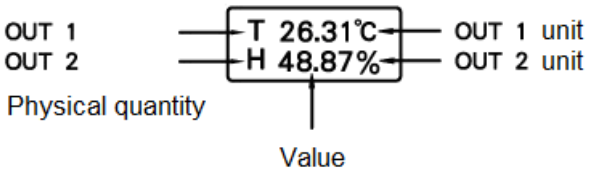
V. Physical Quantity Measuring Range List

Physical quantity	THS301 Indoor	THS302 Duct	THS304 Remote (PVC cable)	THS307 Outdoor (Shield)
Temperature(T)	0 ... 50°C	- 40 ... + 80°C		
Humidity(H)	0 ... 100%RH	0 ... 100%RH		
Dew point(D)	- 40 ... + 50 dp°C	- 40 ... + 60 dp°C		
Frost point(F)	-46 ... 0 fp°C	-46 ... 0 fp°C		
Wet-bulb temp.(W)	0 ... 50°C	0 ... 80°C		
Vapor pressure(E)	0 ... 123 mbar	0 ... 473 mbar		
Mixture ratio(R)	0 ... 86 g/kg	0 ... 546 g/kg		
Absolute humidity(A)	0 ... 82 g/m³	0 ... 290 g/m³		
Specific enthalpy(S)	0 ... 273 kj/kg	0 ... 1526 kj/kg		

※In addition to temperature and humidity, other physical quantities can be set by the UI software(for use with the RS-485 function)

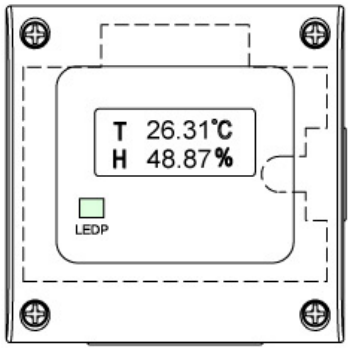
VI. Display and LED instruction

1.1 LCM display



1.2 LED Indication

1. Power：LED P, Green light ON
2. RS-485：LED P, Red light ON
3. LED light position statement：



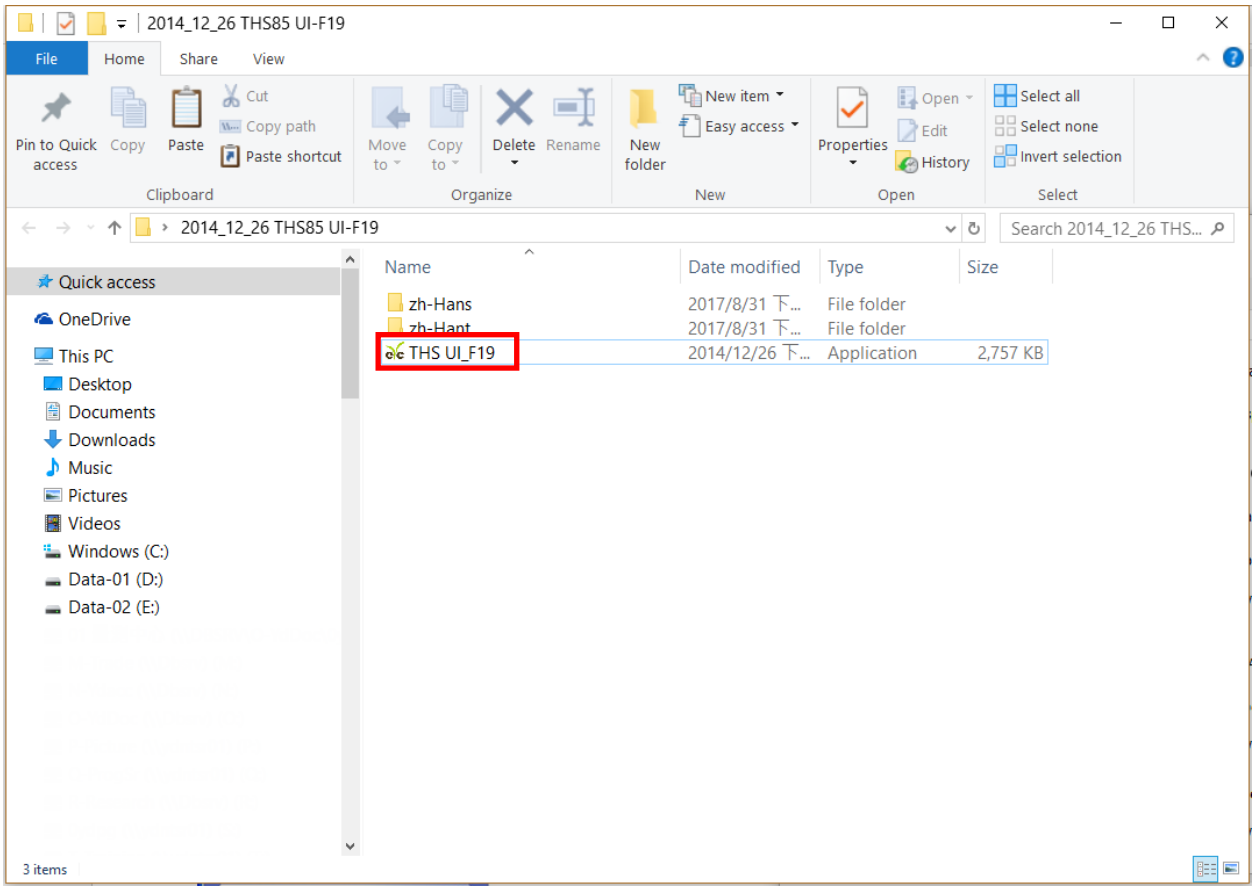
VII. Software and calibration operation step

※ Product calibration requires a standard device to perform

6.1 Application Program statement

1. Free installation program：THS UI_F19.exe

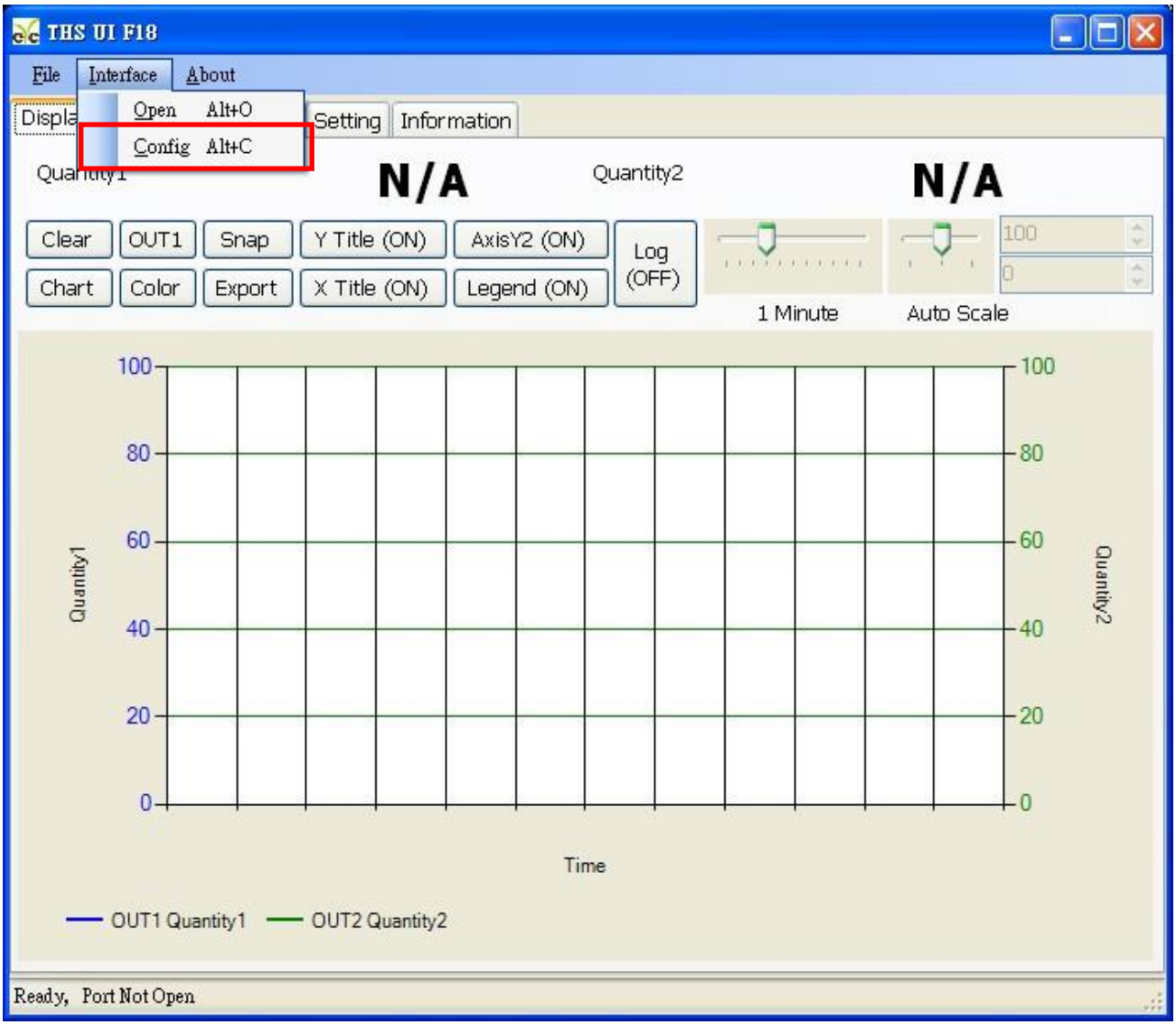
   a. Operating System requirements：Above Windows XP SP2



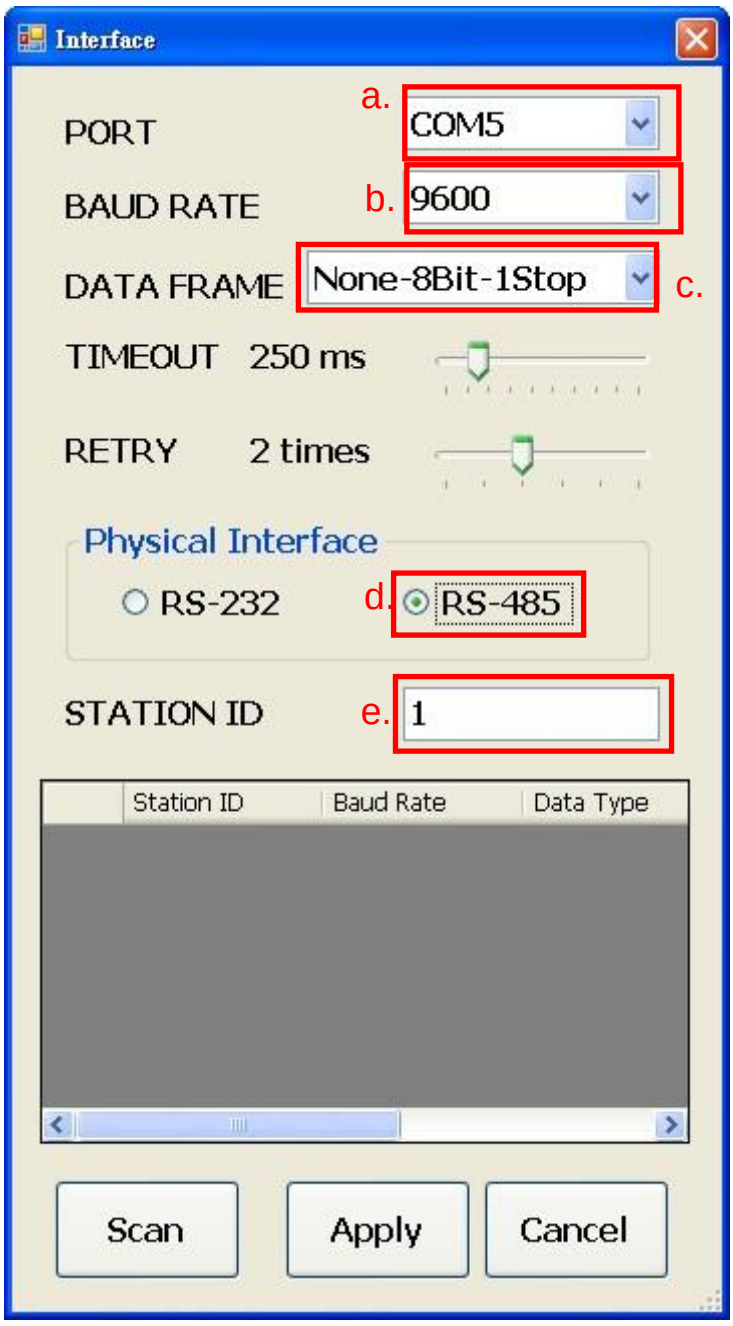
2. Other application program requirements：Above Microsoft Office 2003

6.2 Setting RS-485connection

1. Connect product to PC via RS-485 cable
2. Execute " THS UI "
3. Click " Interface → Config "

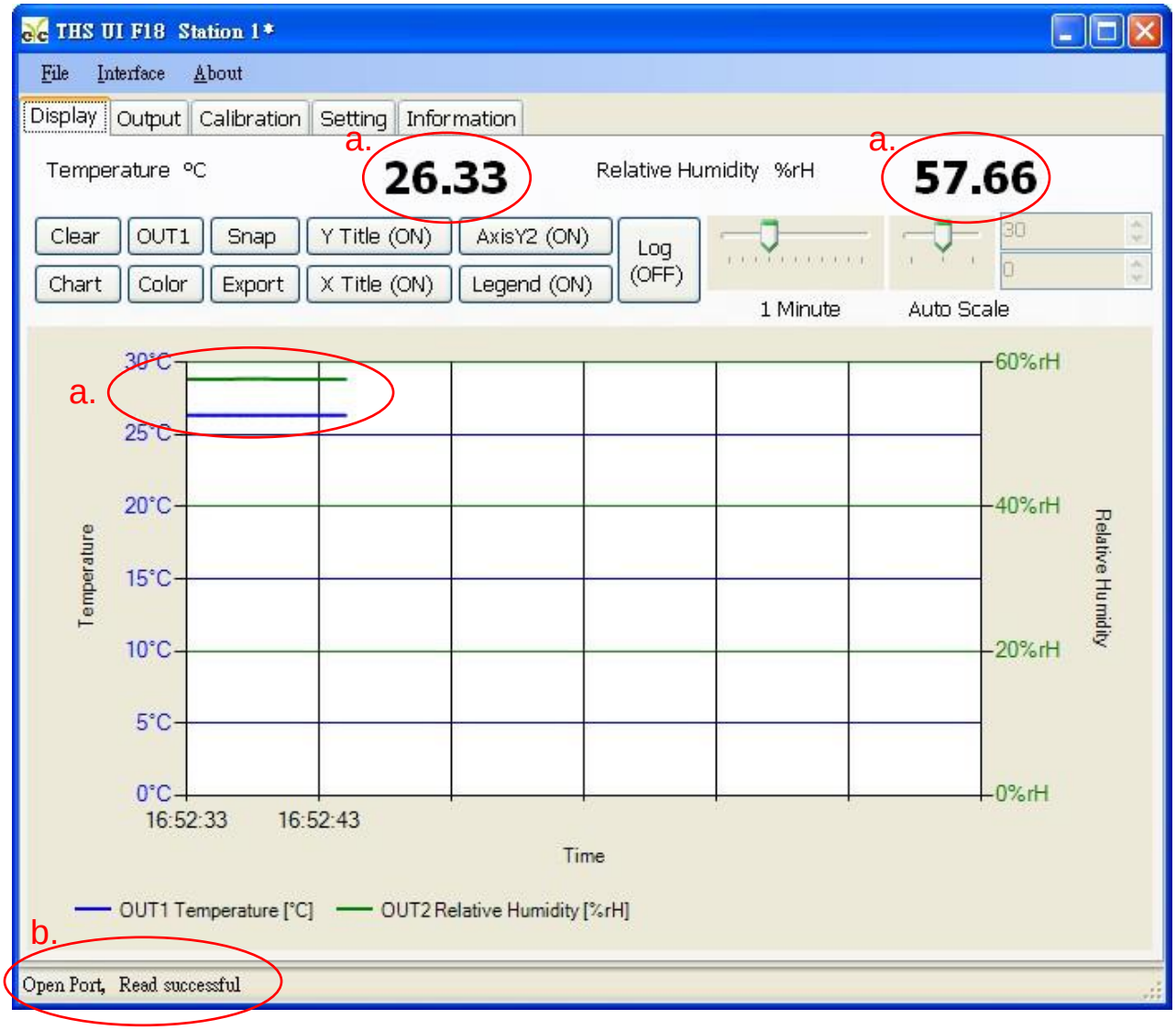


4. Select the corresponding values of com port as fallowing :
   a. Port：Come Port
   b. Baud Rate
   c. Data Frame
   d. RS-485
   e. Station ID(Factory default 1)



5. Click " Apply " complete setup

6. Connect successfully
   a. Show value and trend chart of Temperature and Relative Humidity
   b. Show Open port, Read successful



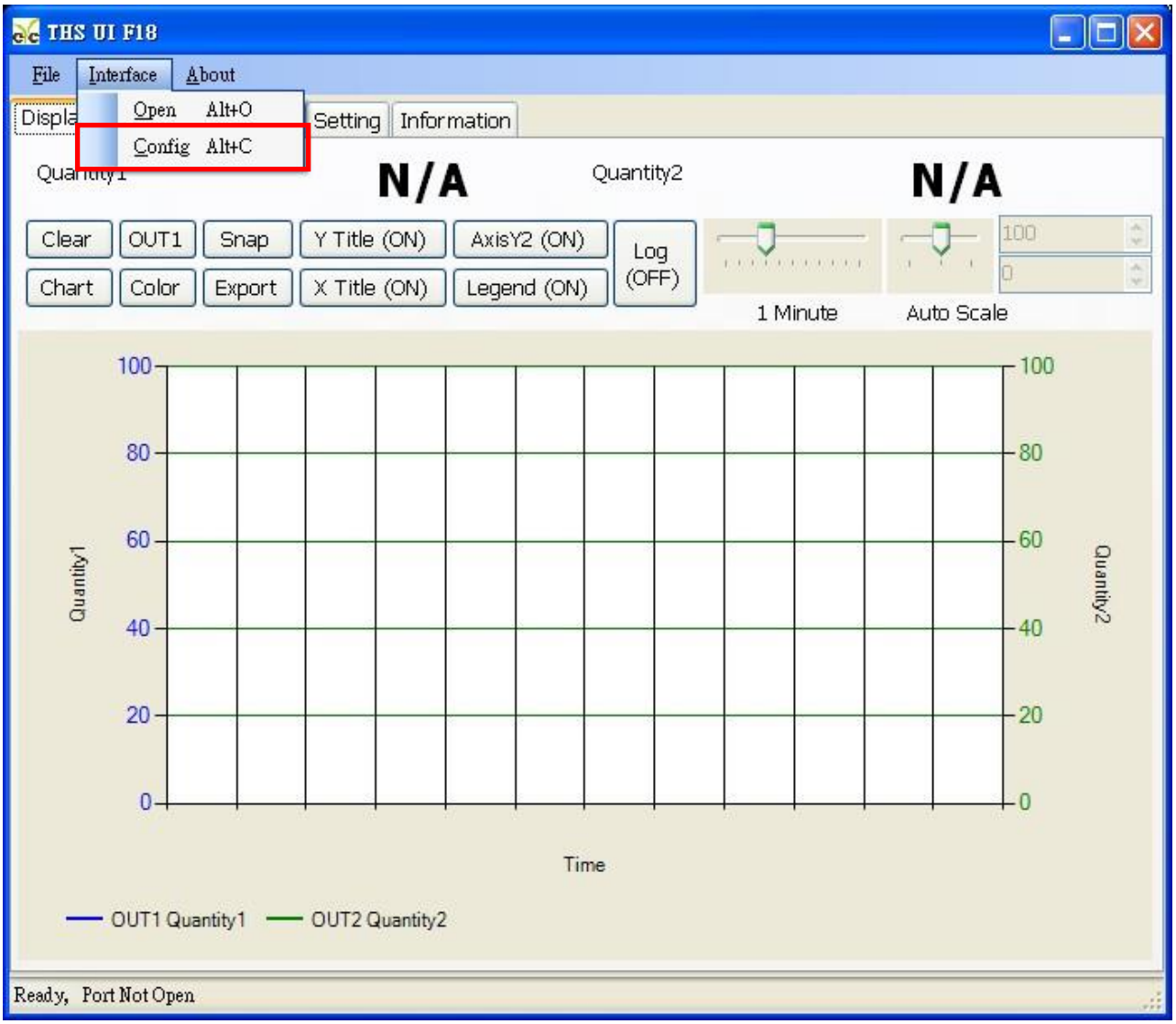
6.3 Scan RS-485 connection

※Use scan function to connect when forgetting the connection information or having more facilities.

(1) Connect the product to PC via RS-485 cable

(2) Execute " THS UI "

(3) Click " Interface → Config "

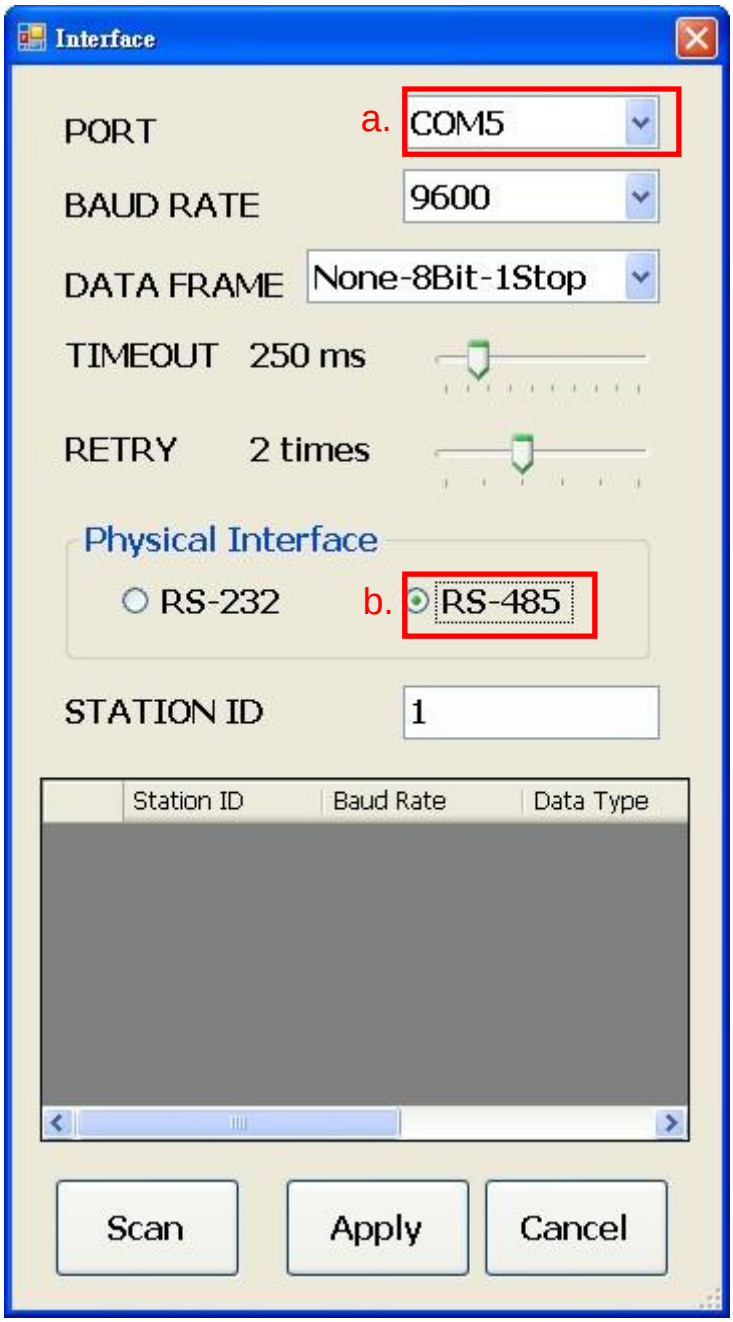


(4) Select the corresponding values of com port as fallowing

a. Port：

b. RS-485

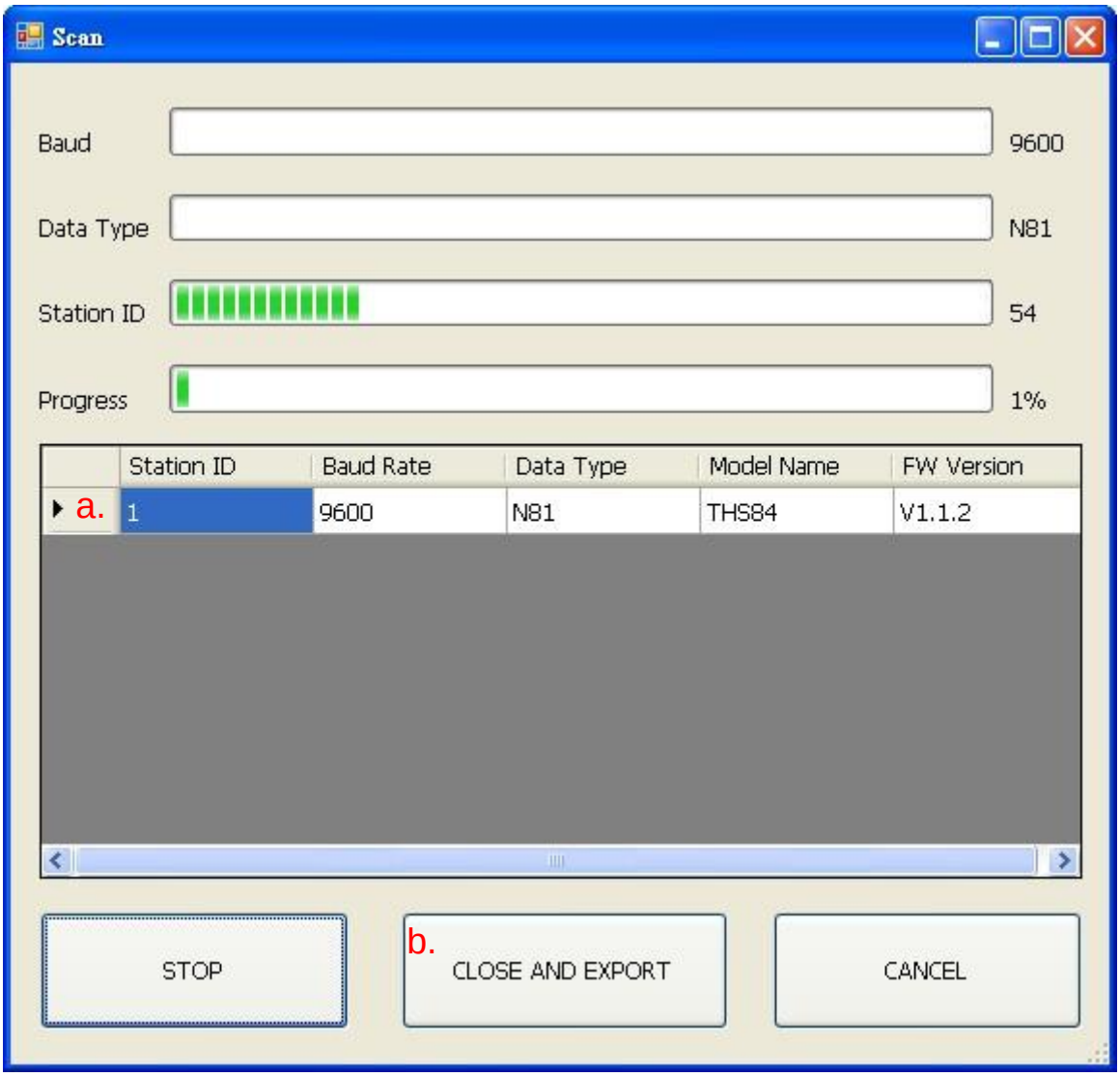
(5) Click " Scan" to execute connection facilities



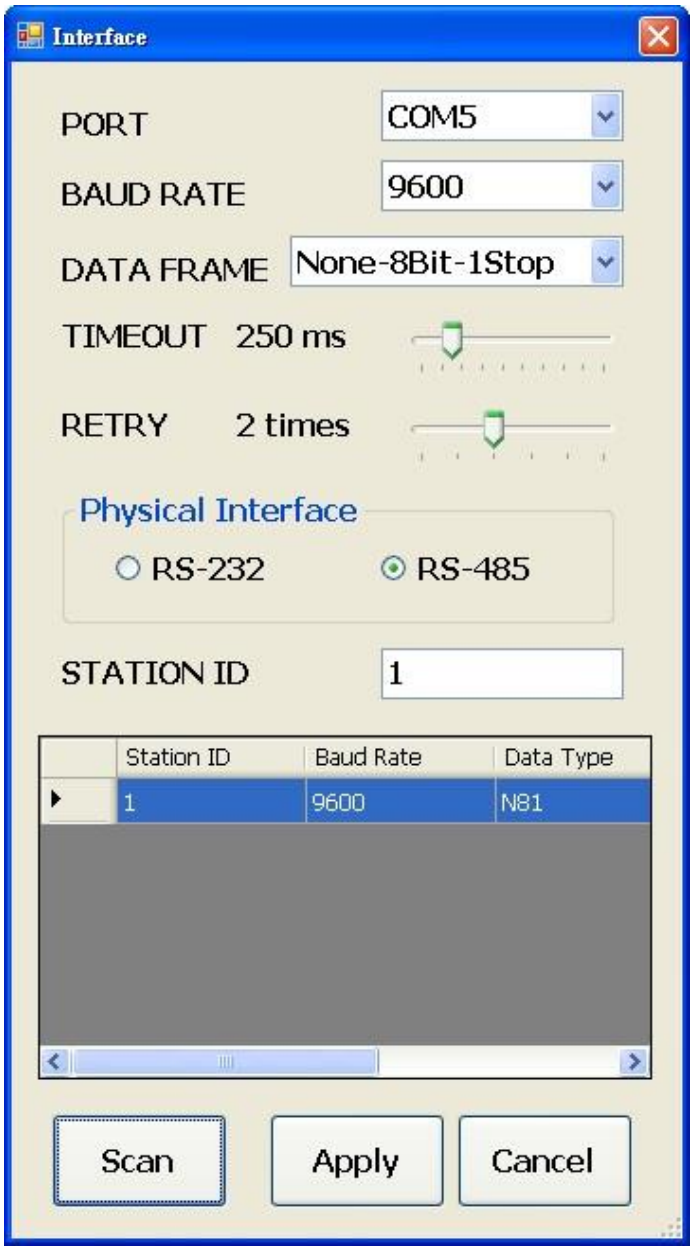
(6) Scan connection facilities and set up

a. Select “Station ID”

b. Click ”CLOSE AND EXPORT”



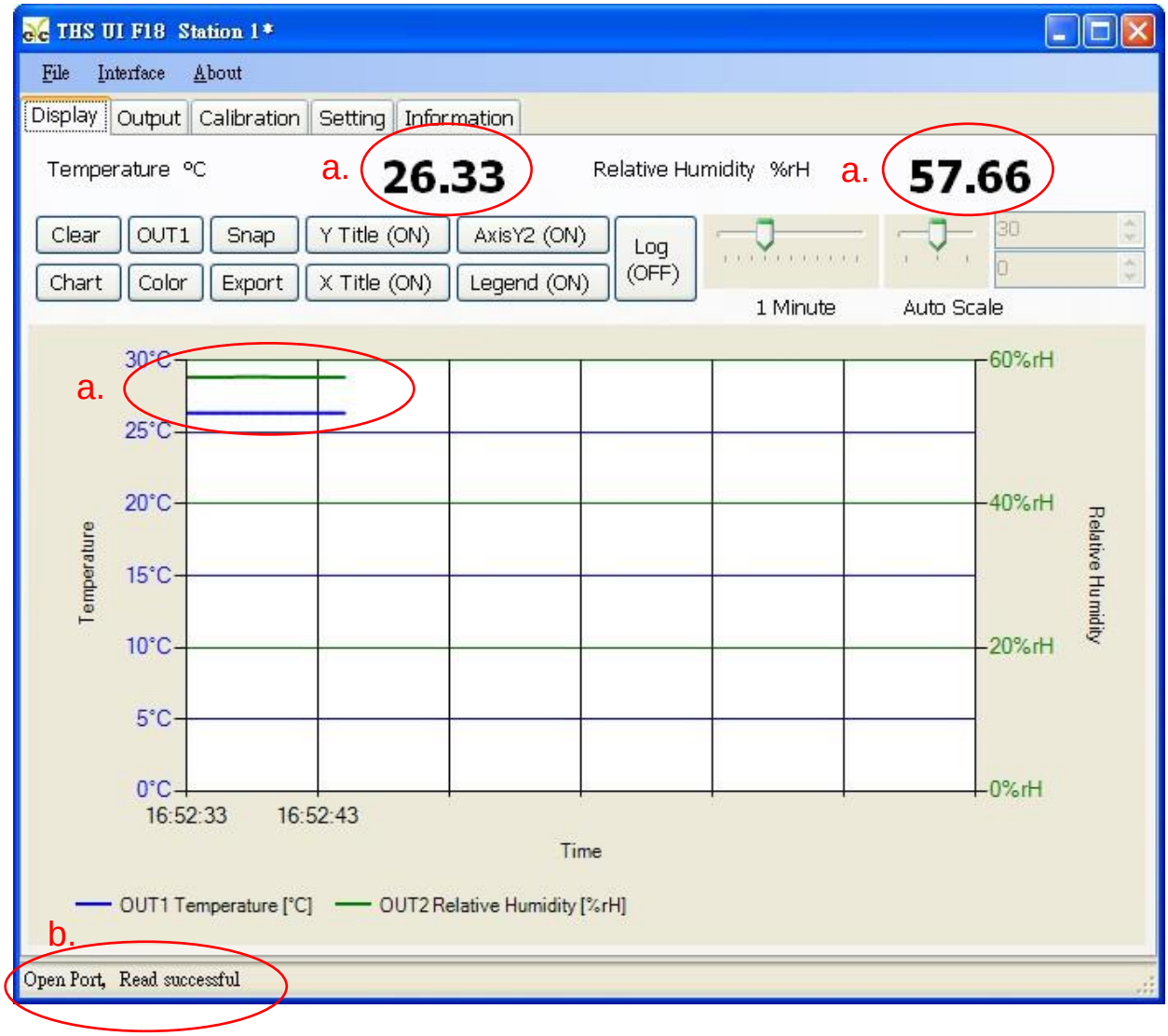
(7) Click “Apply”



(8) Connect successfully

a. Show values and trend chat Temperature and Relative Humidity

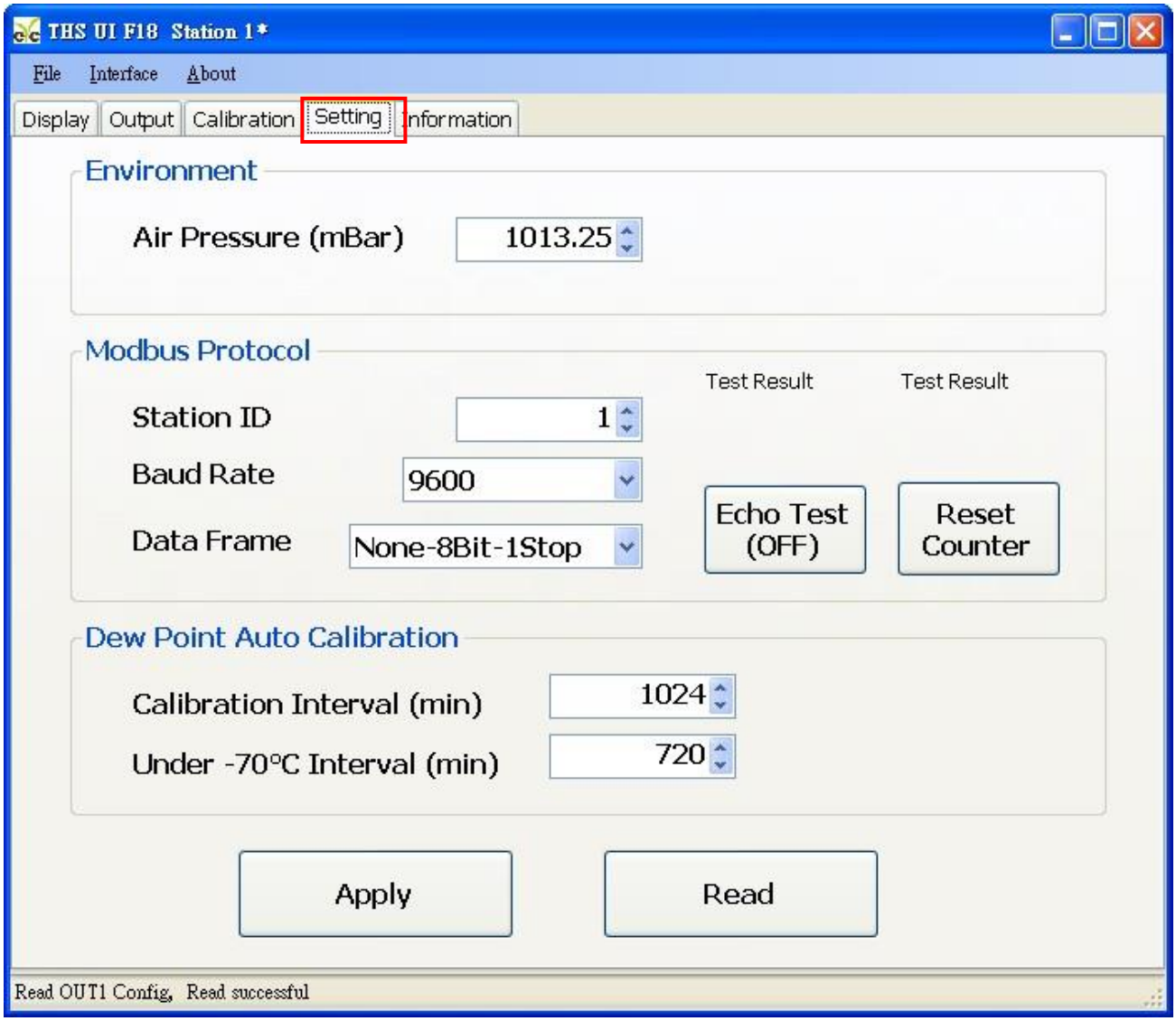
b. Show Open port, Read successful



6.4 Setting RS-485 ModBus Protocol

(1) Setting RS-485 connection step as step 6.1

(2) Click “Setting”

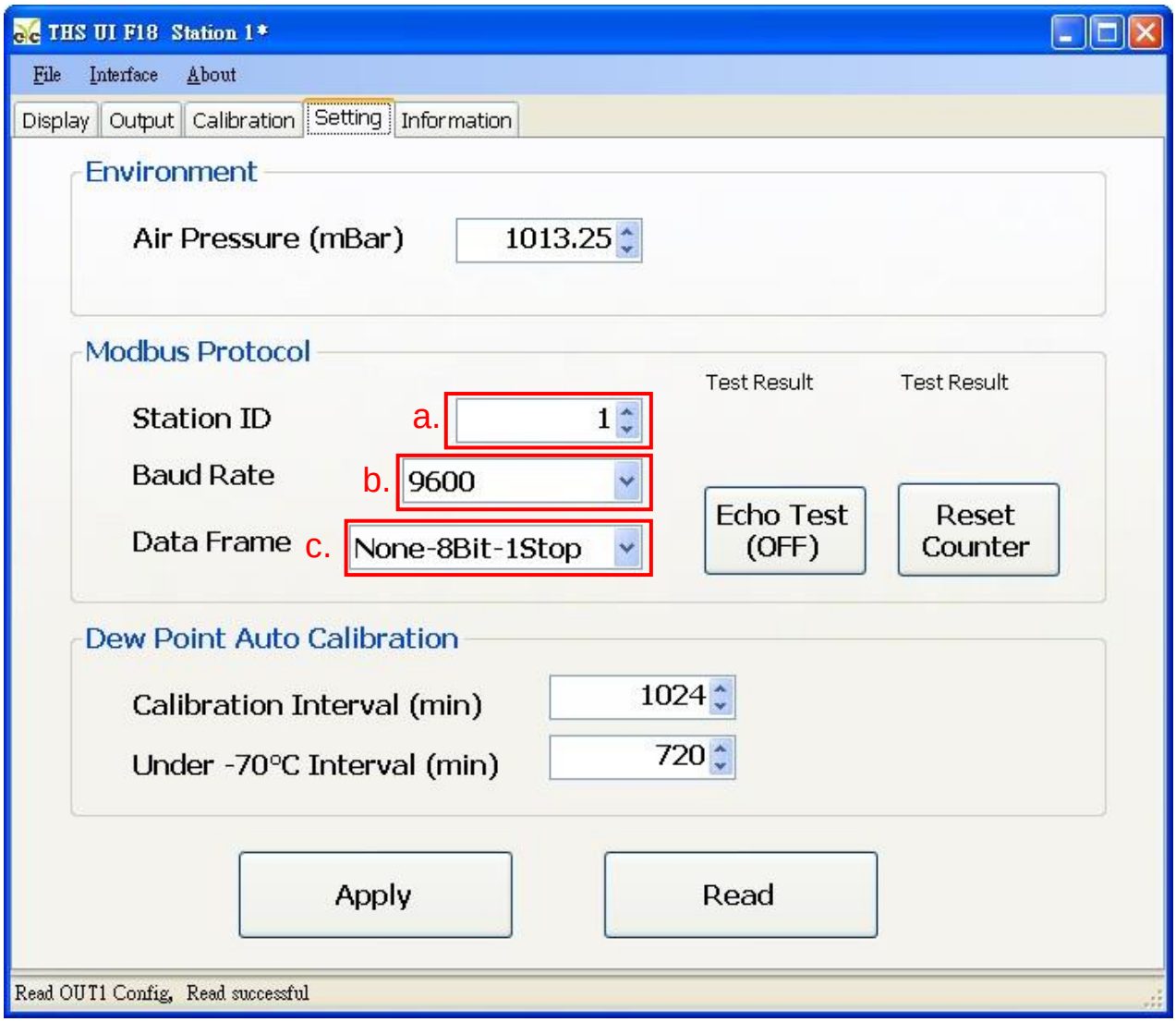


(3) Select Modbus Protocol parameter

a. Station ID：1 ... 247

b. Baud Rate：9600，19200，38400，57600，115200

c. Data Frame：None-8Bit-1Stop，None-8Bit-2Stop，Even-8Bit-1Stop，Even-8Bit-2Stop，Odd-8Bit-1Stop，Odd-8Bit-1Stop

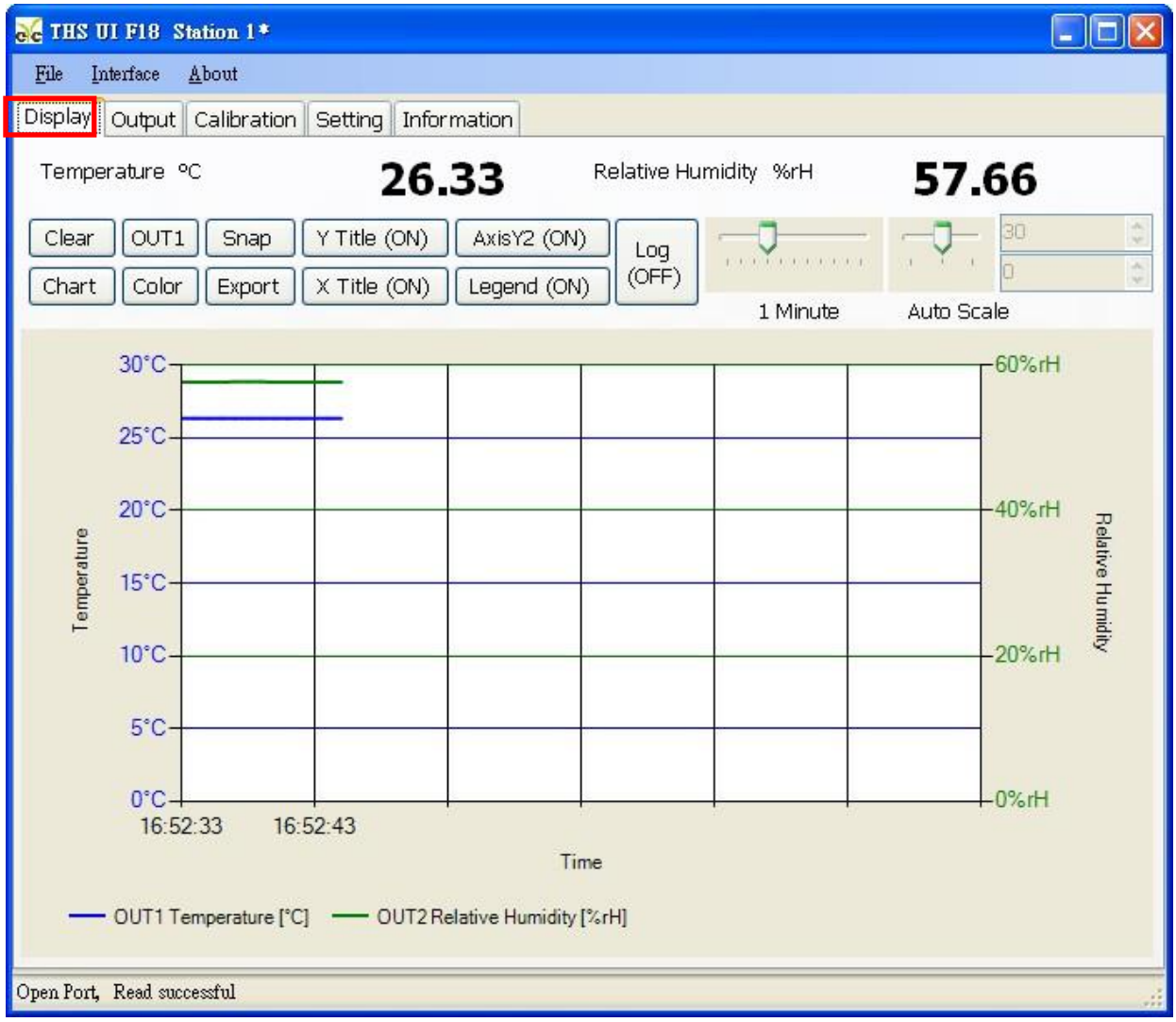


(4) Click “Apply”

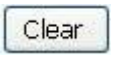
(5) Execute connection as step 6.2 or 6.3 again

6.5 Display and save data

(1) Show data：Click “Display”

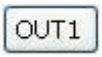


(2) Icon function statements



Clear the chart records

Change the chart style

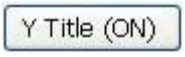


Select the OUTPUT channel

Set line color chosen from OUTPUT

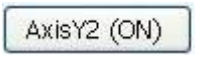
Snap chart

Save the data measuring when the system start connecting before clinking the Export icon

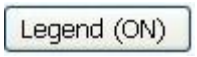


Show/Not show the statement of Y axis

Show/Not show the statement of X axis

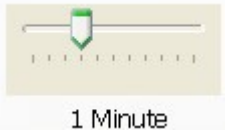


Show/Not show the statement of Y secondary axis



Show/ Not show chart

Show/Not show measuring data



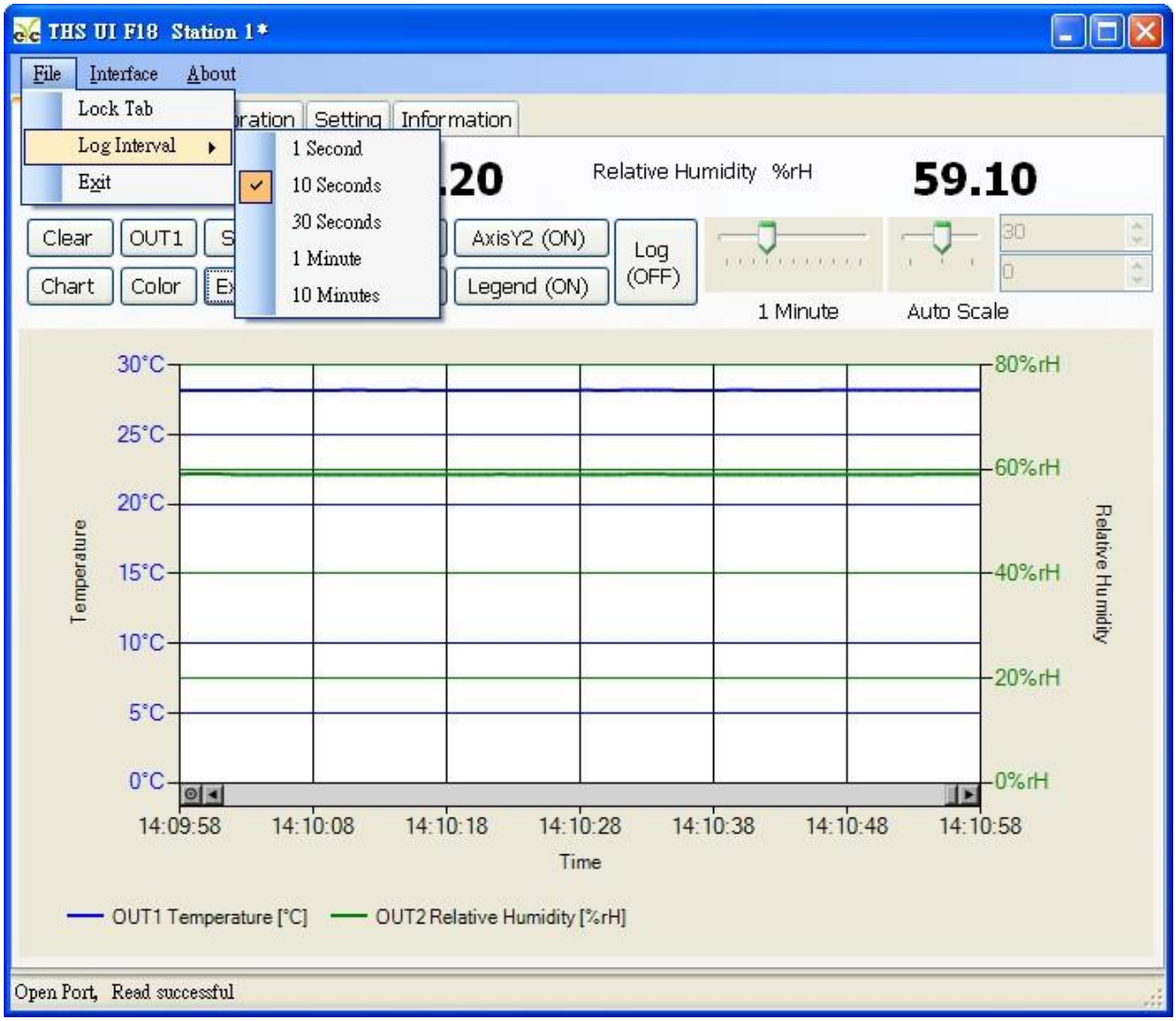
Adjust time range of X axis

Adjust range of Y axis

(3) Setting time interval of record

a. File → Log Interval

b. Select time interval of record



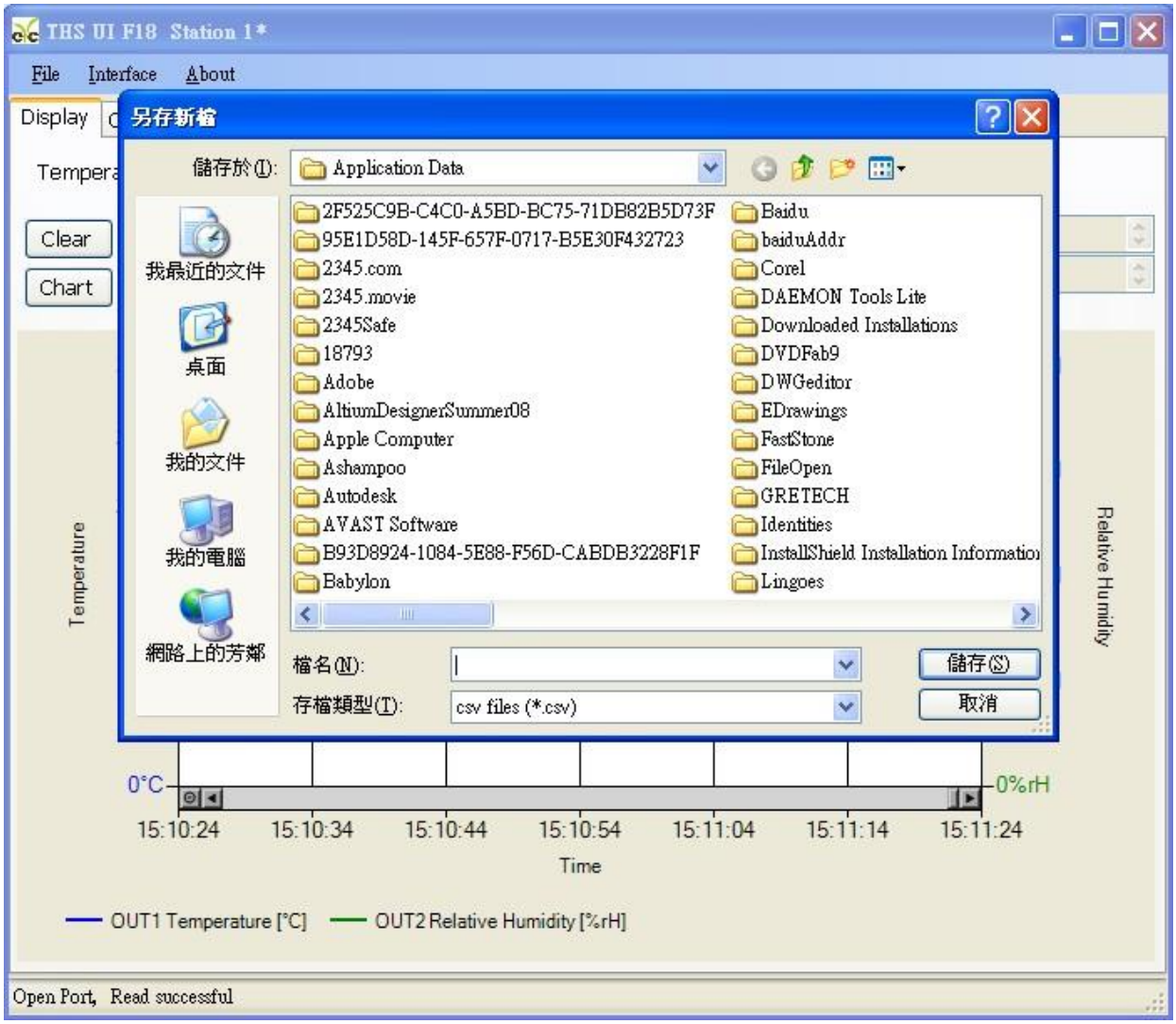
(4) Save/Log measuring data

a. Log measuring range：Save the data measuring when the system start connecting before clinking the Export icon

a-1. Click Display → Export

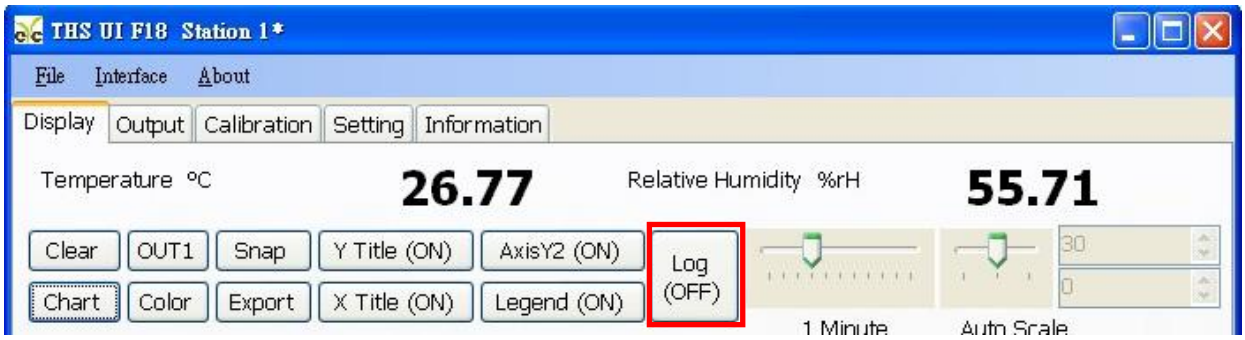
a-2. Appoint path and Key in file name → save

※ If file name is some as the path name, the original file will be covered.



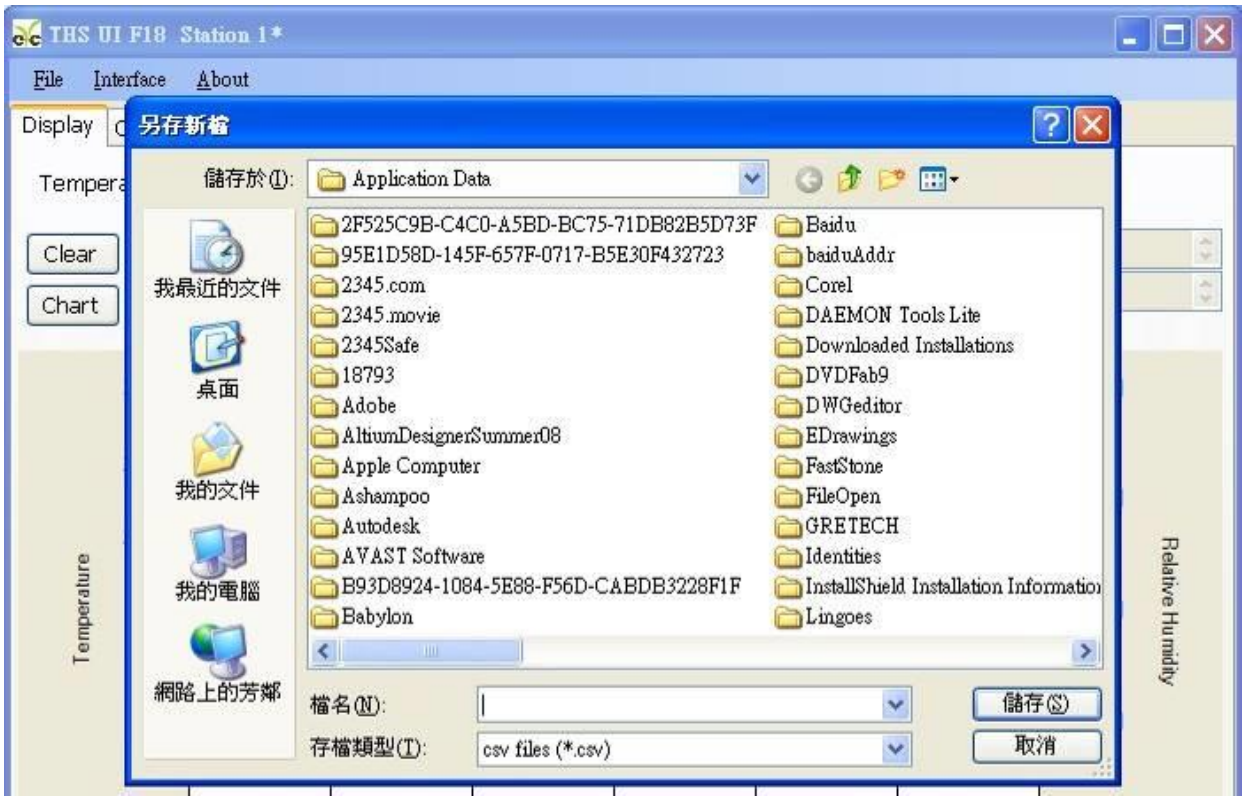
b. Log measuring data：Log the data which is on from start or off

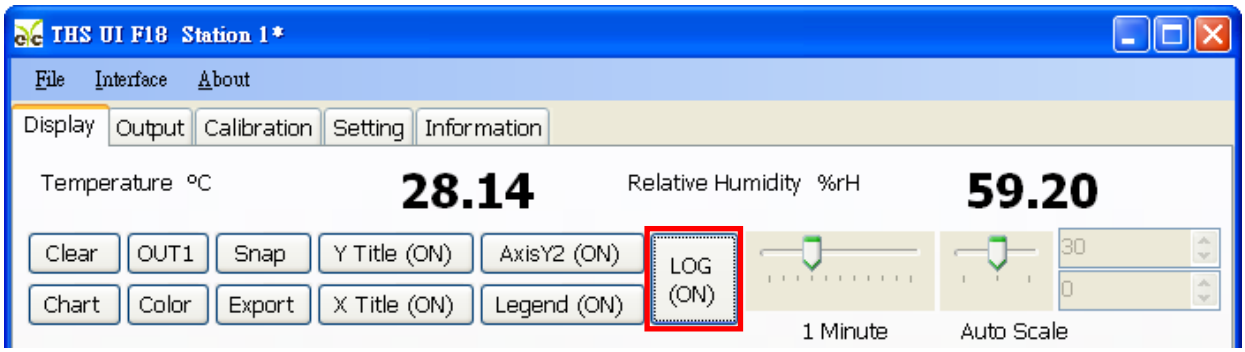
b-1. Display →Log(OFF)



b-1. Appoint path and Key in file name > save > Log(ON)

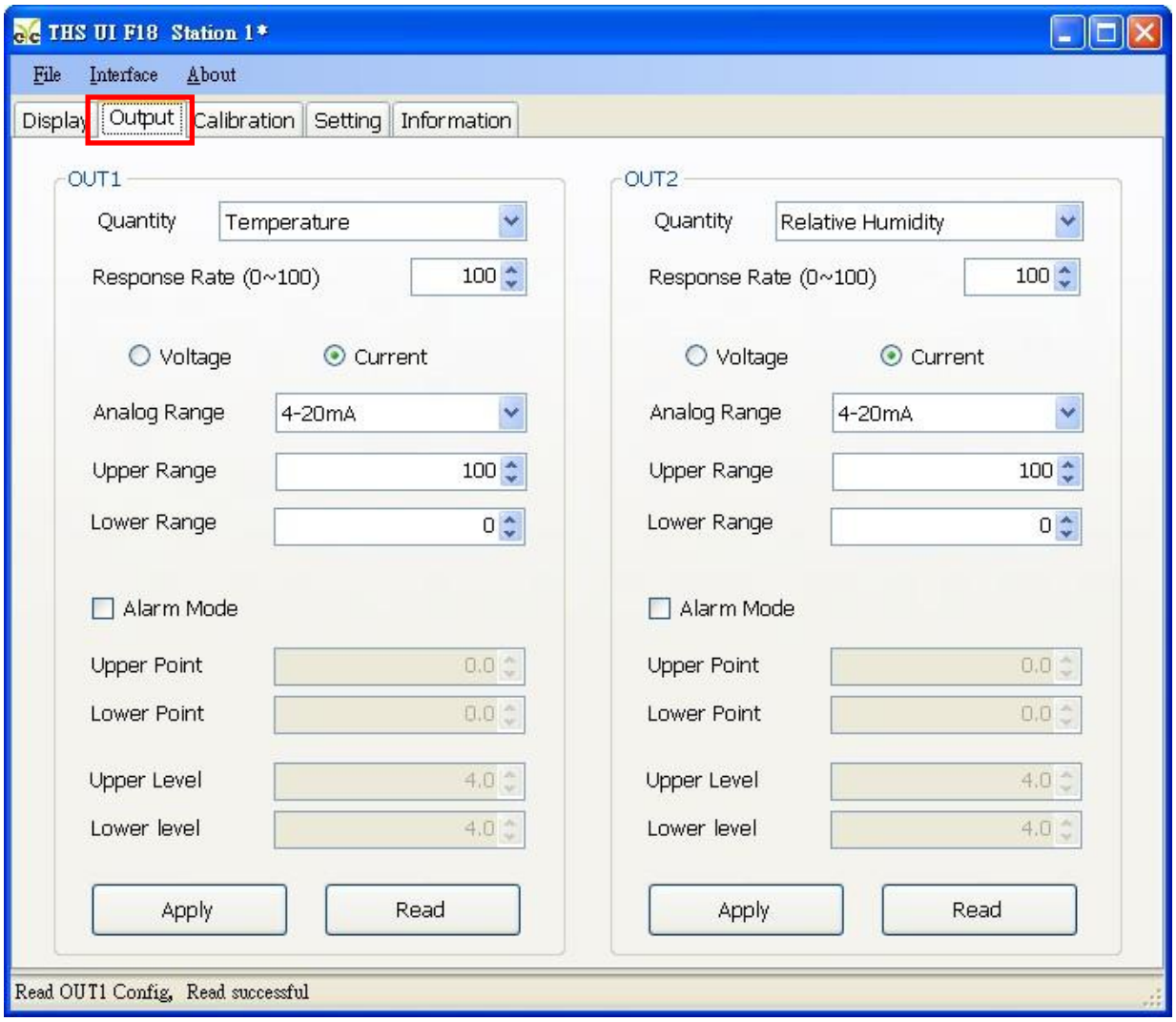
※ If file name is some as the path name, the original file will be covered.





6.6 Choose parameter of Output

(1) Click “Output”



(2) Select relative parameters from Output1 and Output2

a. Output style

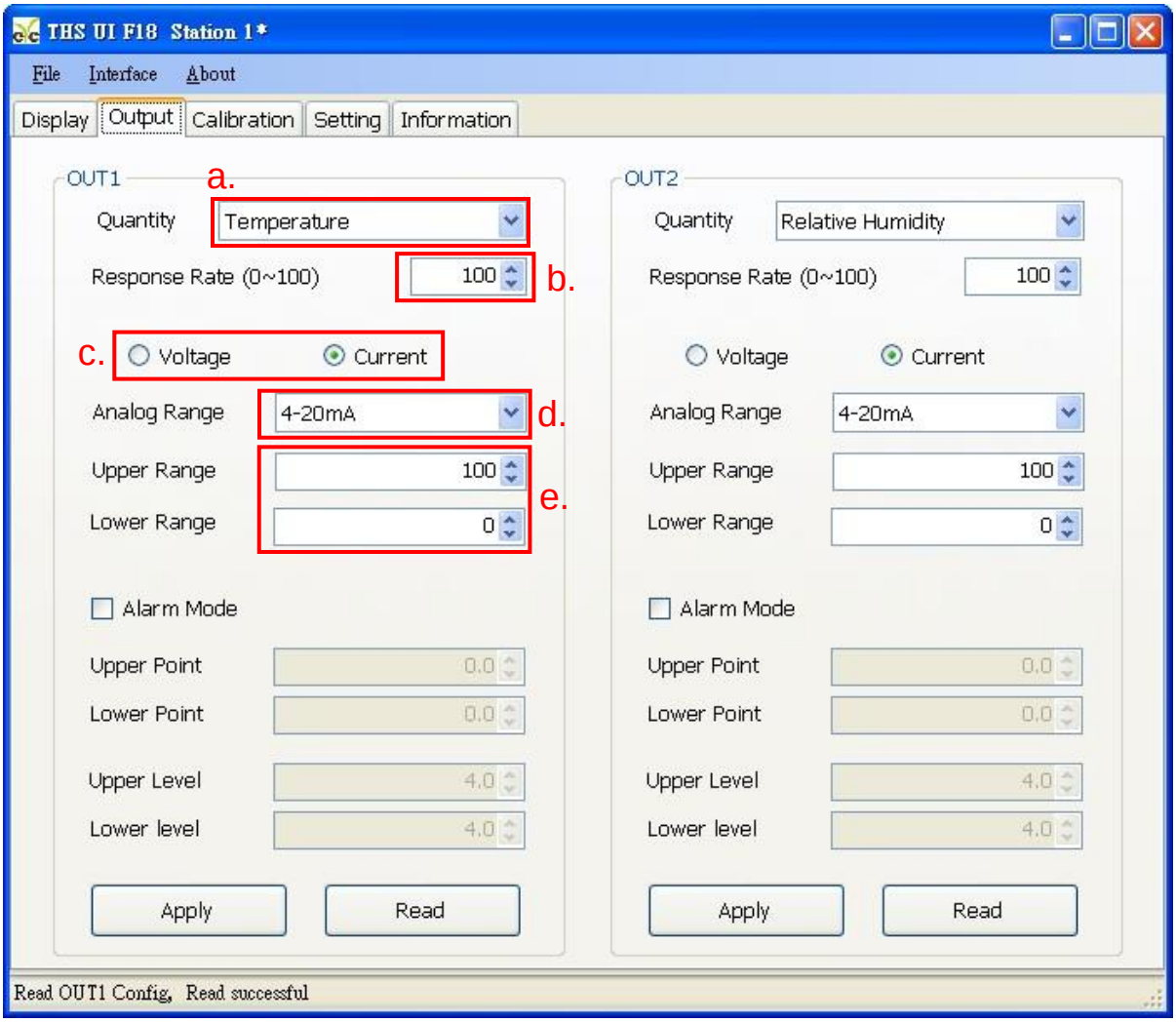
b. Responding time

c. Voltage or currant Output

d. Voltage or current analog range

e. Upper and Lower point of Output

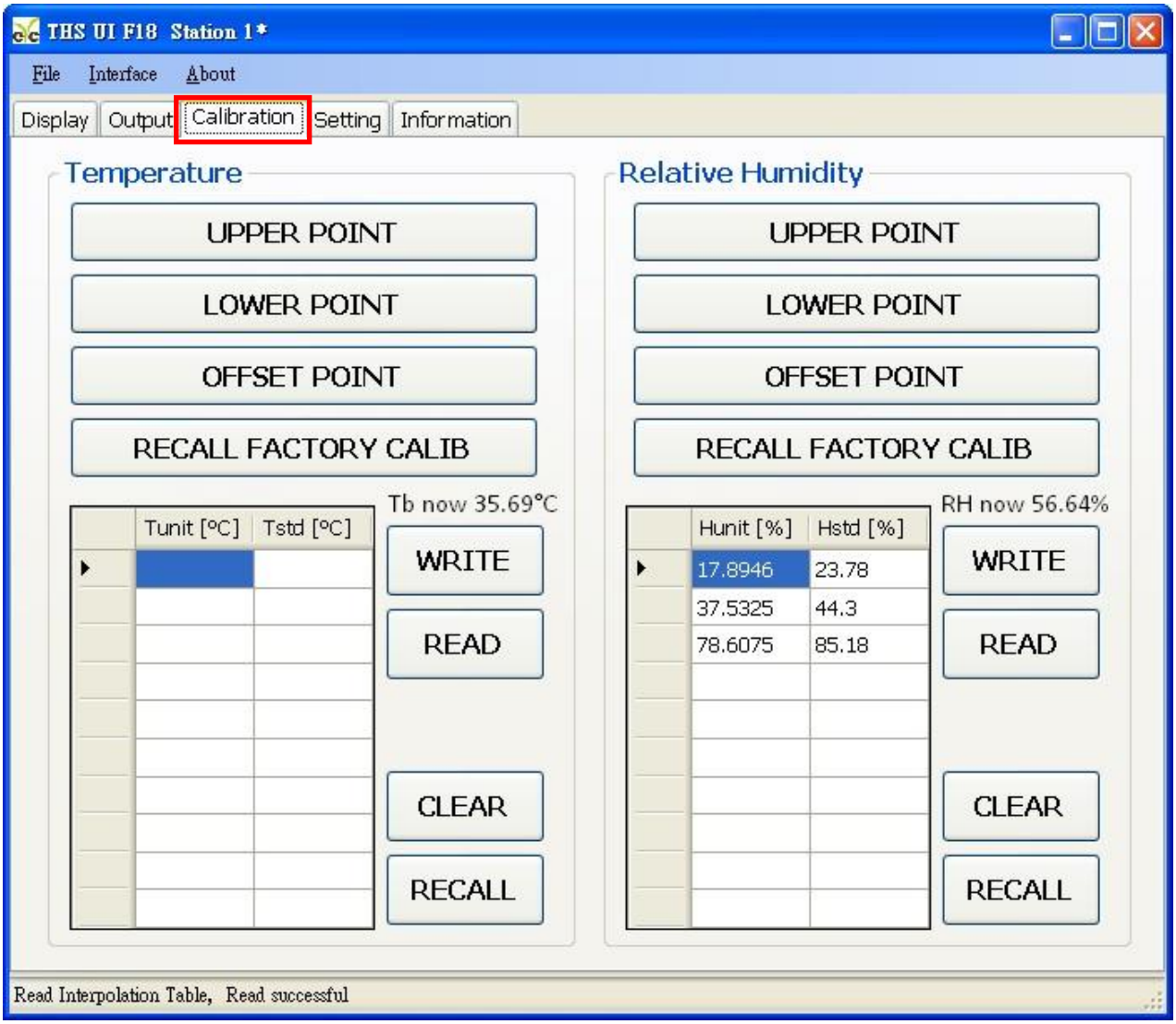
(3) Click “Apply”



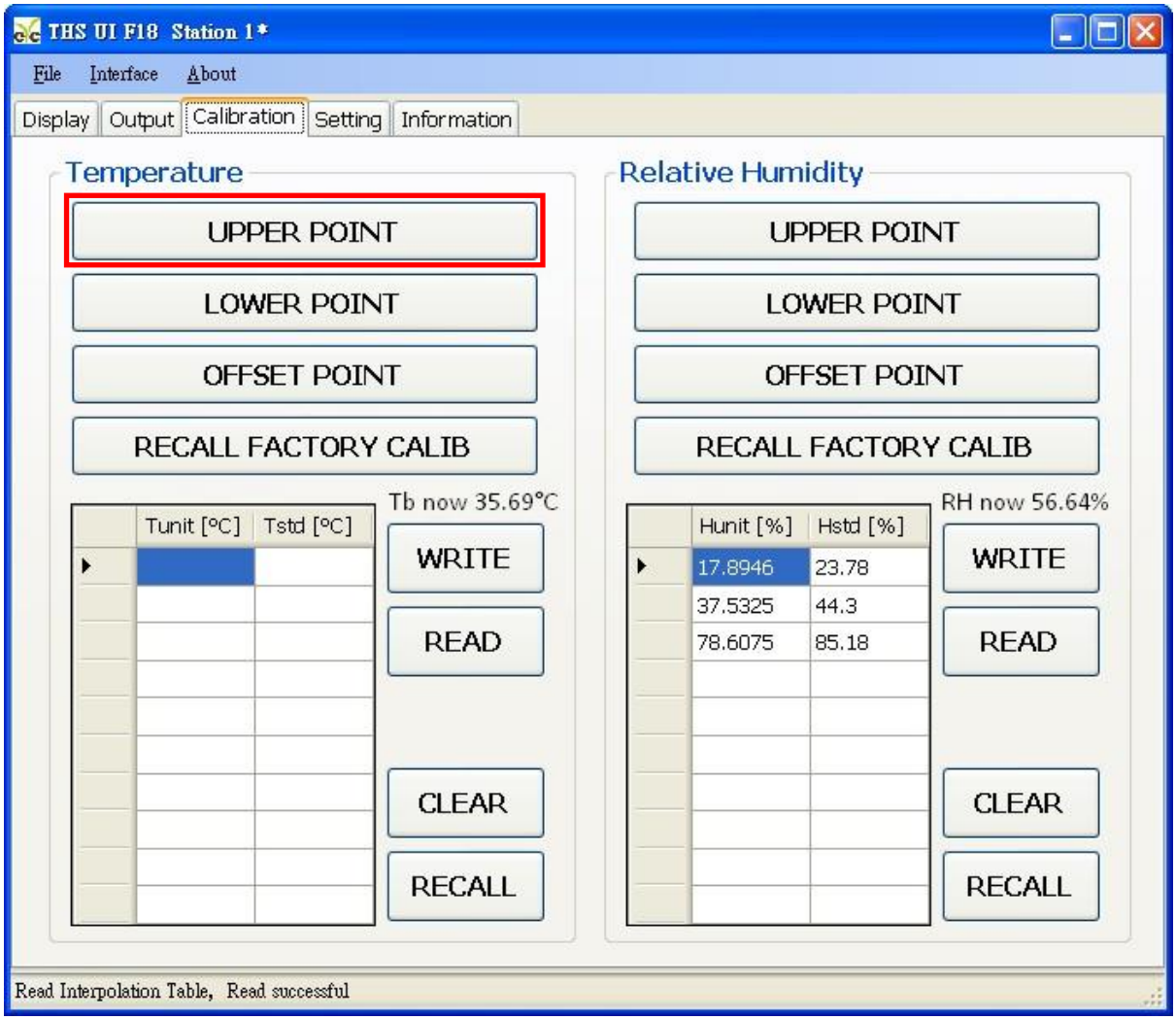
6.7 Temperature Calibration with two points

(1) Calibrate upper point of temperature

a. Click “Calibration”

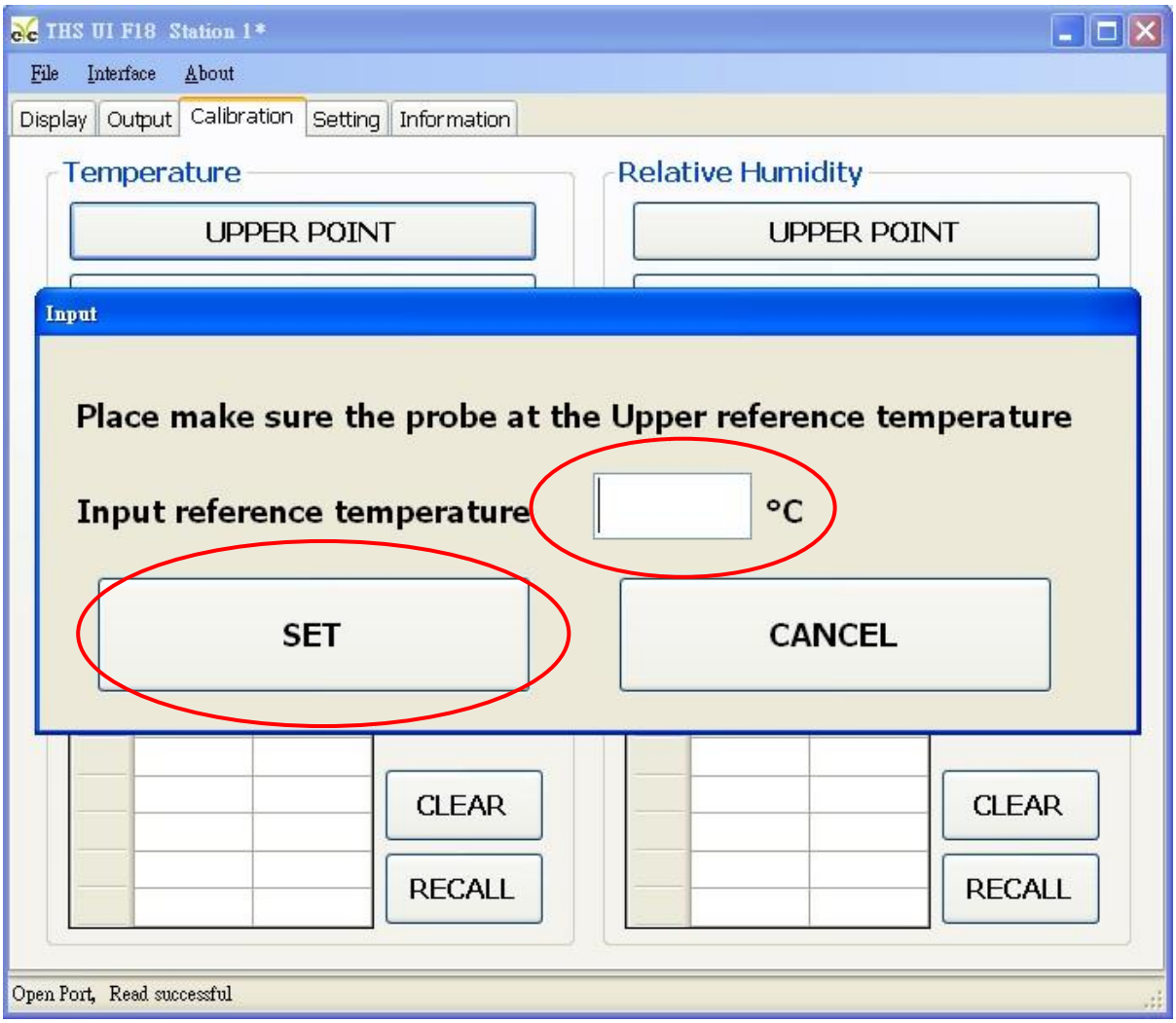


b. Put the product in the temperature control box, and adjust the upper point of temperature (ex: 100°C)
c. Wait the temperature of control box is becoming stable
d. Click Temperature → UPPER POINT



e. Input the reference temperature, then click ”SET”

f. That calibrating upper point temperature is done.



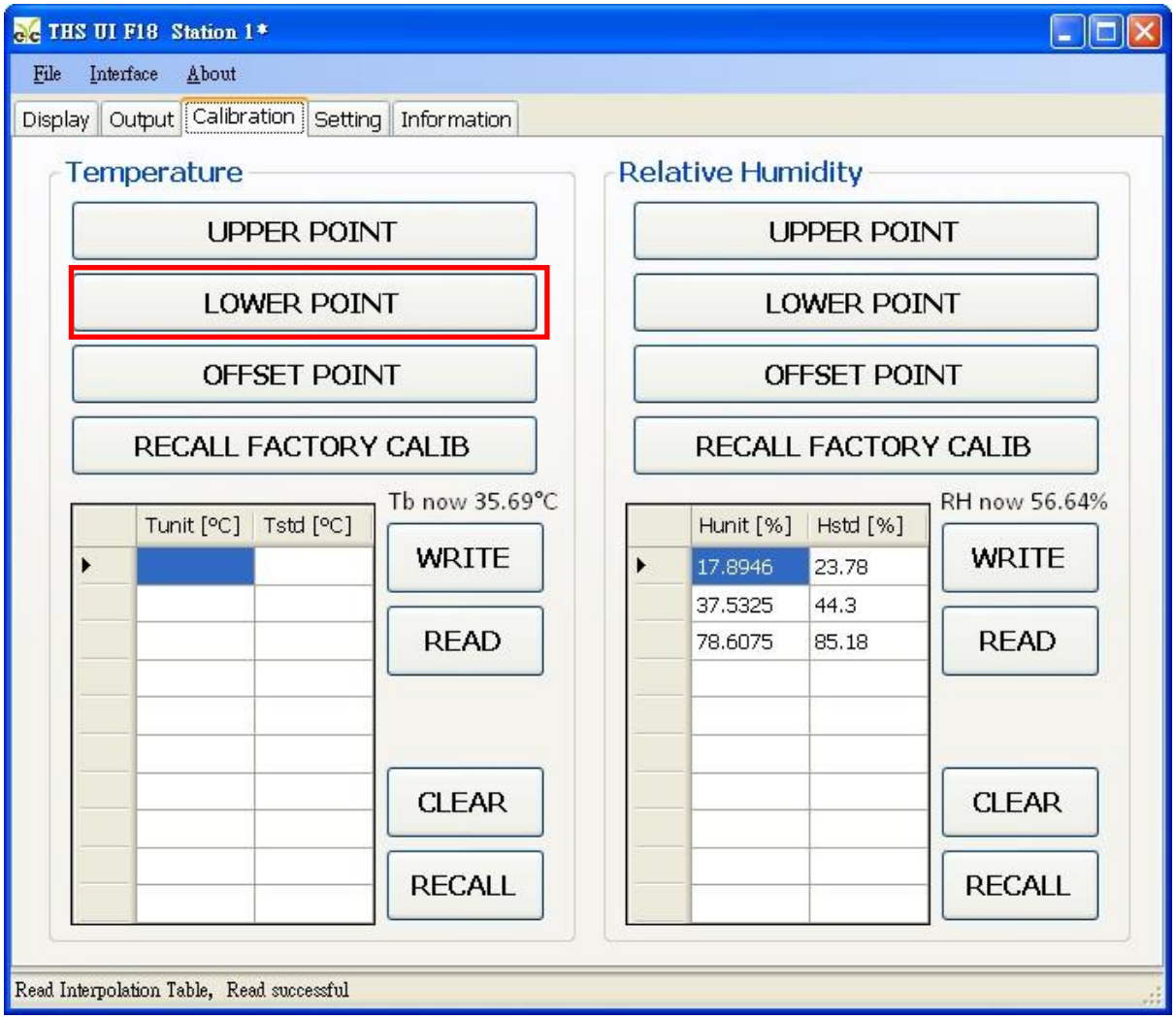
(2) Calibrate lower point of temperature

a. Put the product in the temperature control box, and adjust the lower point of temperature (ex：0°C)

b. The difference temperature between Upper and Lower point must be at least 30°C.

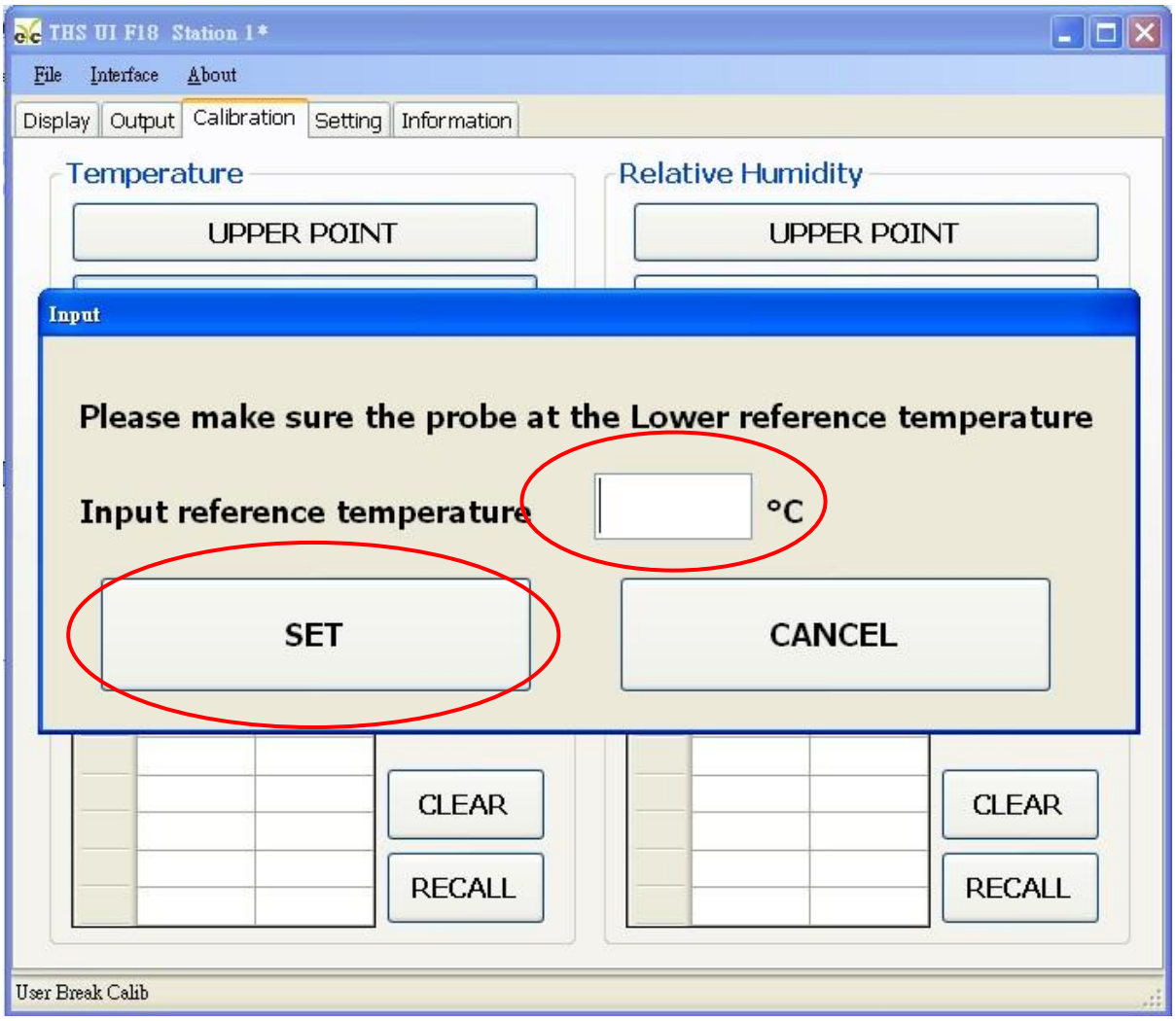
c. Wait the temperature of control box is becoming stable

d. Click Temperature → LOWER POINT



e. Input reference temperature, then click ”SET”

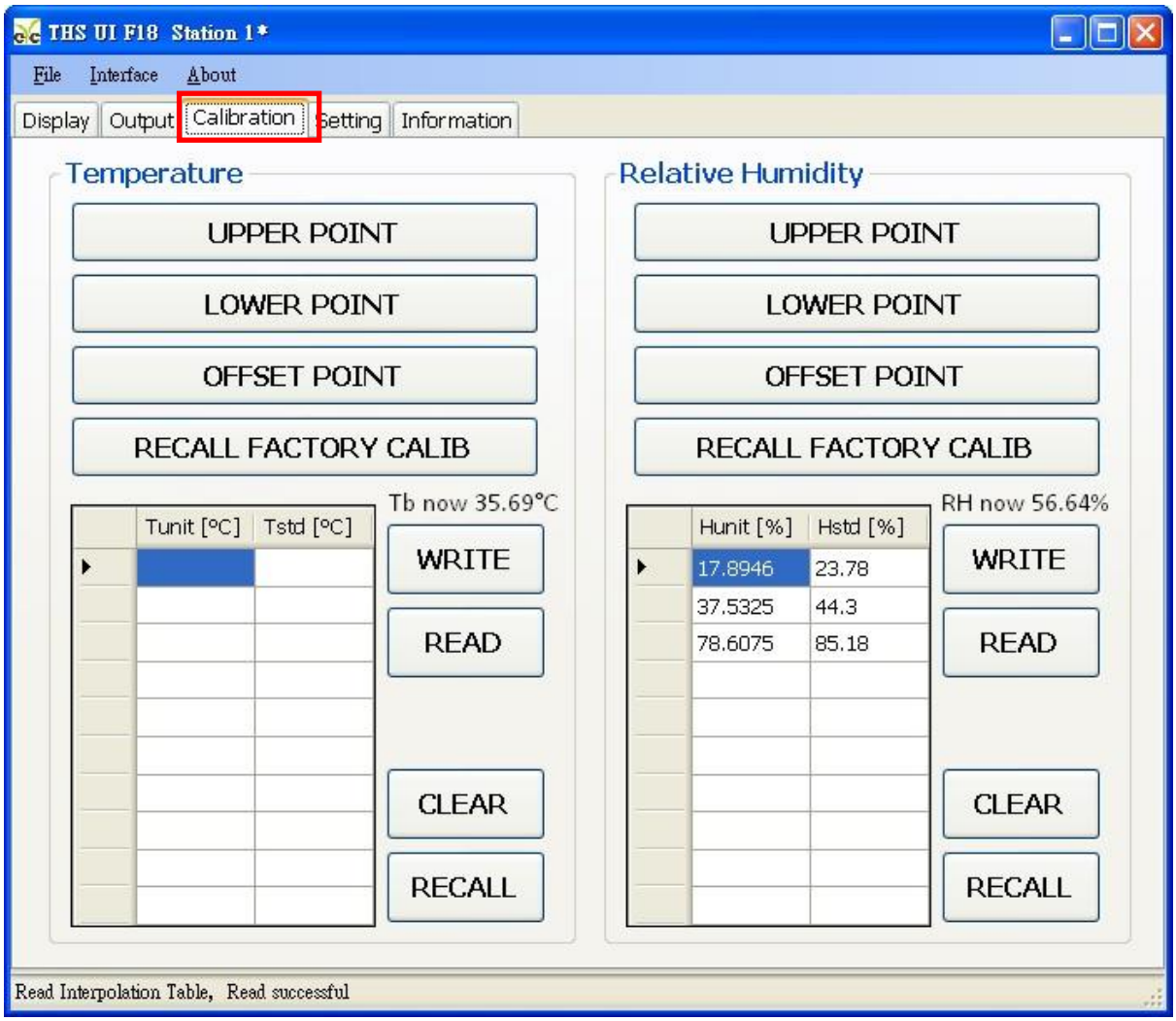
f. That calibrating lower point temperature is done.



6.8 Humidity Calibration with two points

(1) Calibrate Upper point of humidity

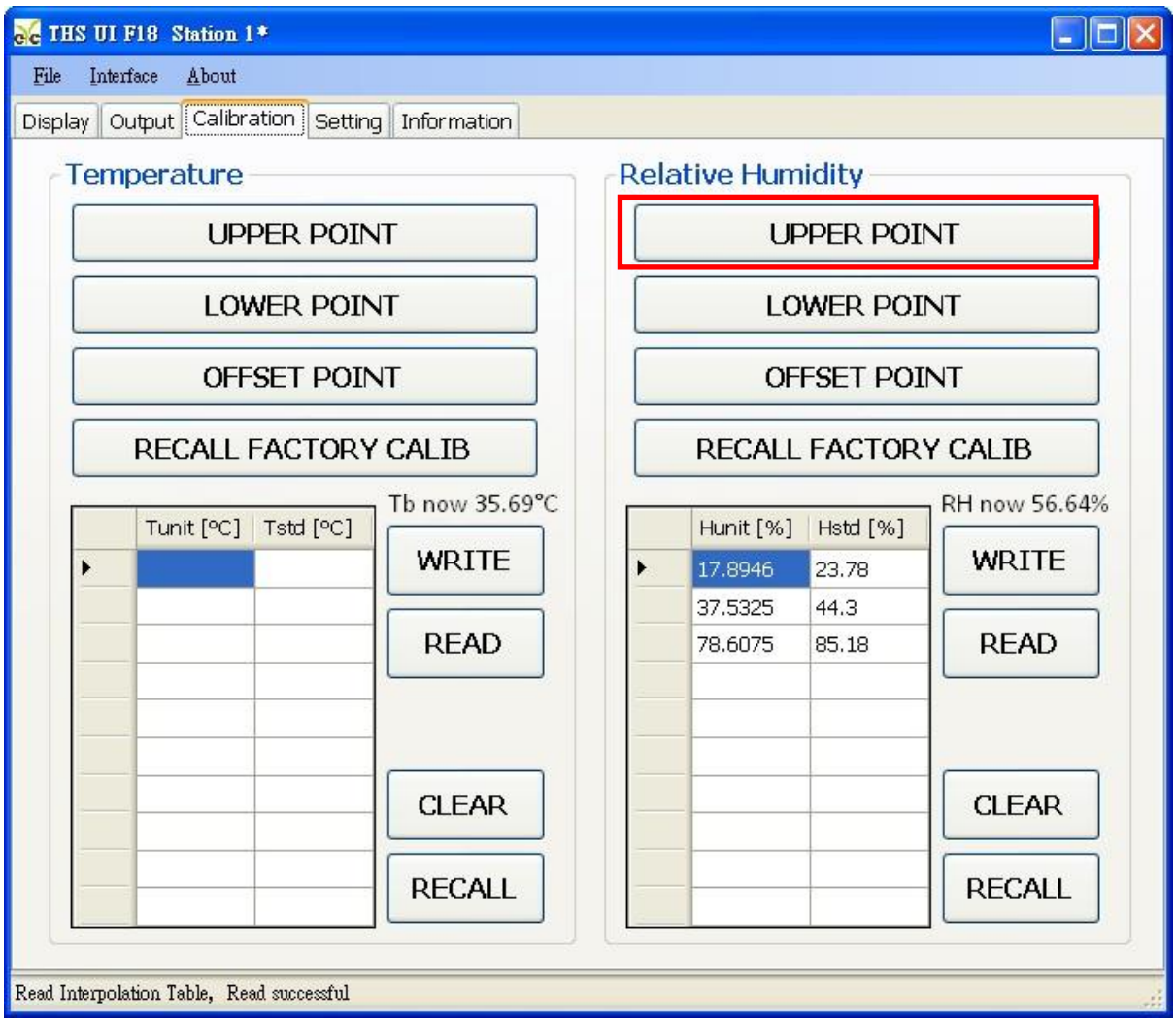
a. Click “Calibration”



b. Put the product in the humidity control box, and adjust upper point of humidity (ex：RH 80%)

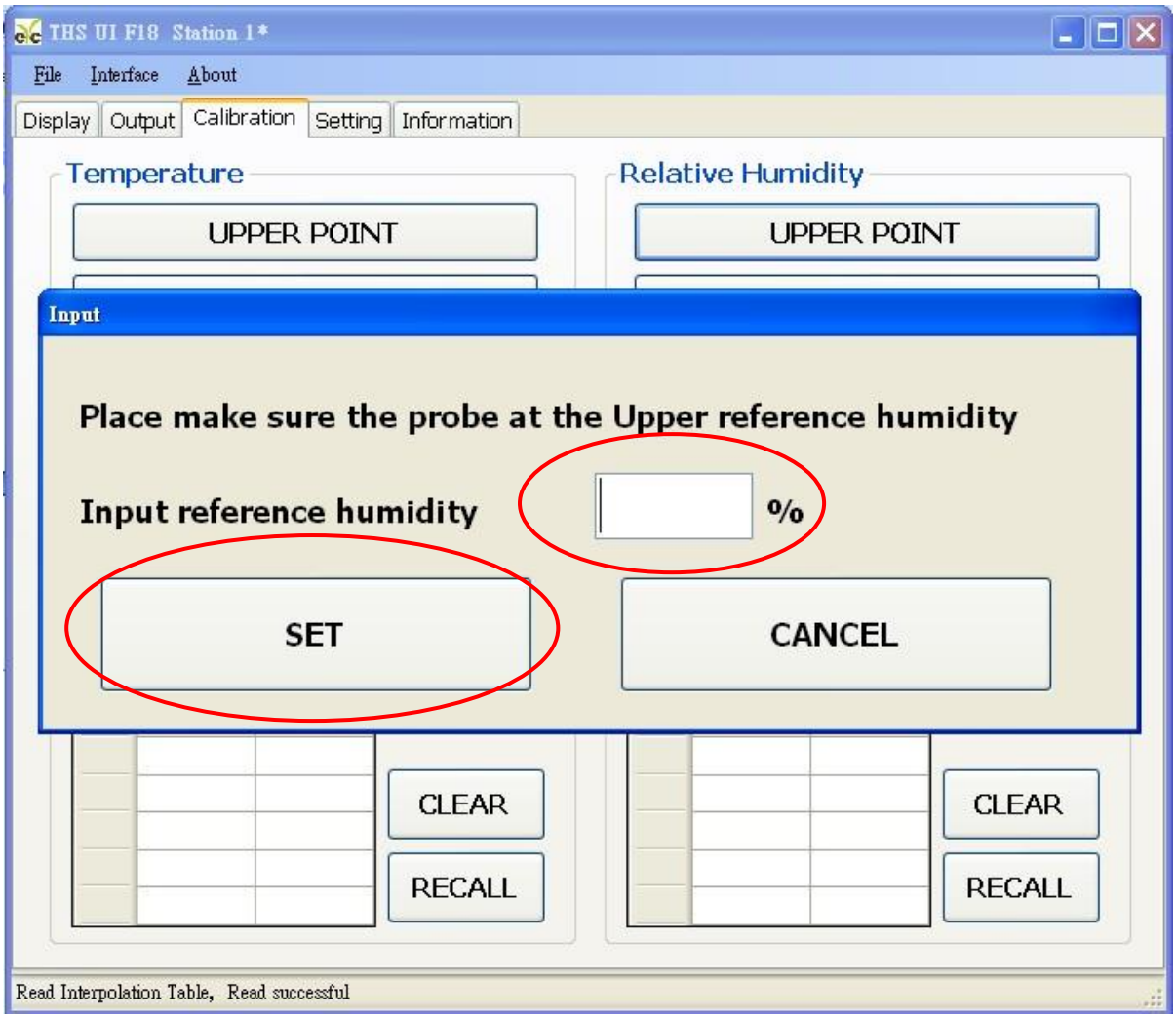
c. Wait the humidity of control box is becoming stable.

d. Click Relative Humidity → UPPER POINT



e. Input reference humidity, then click ”SET”

f. That calibrating upper point humidity is done

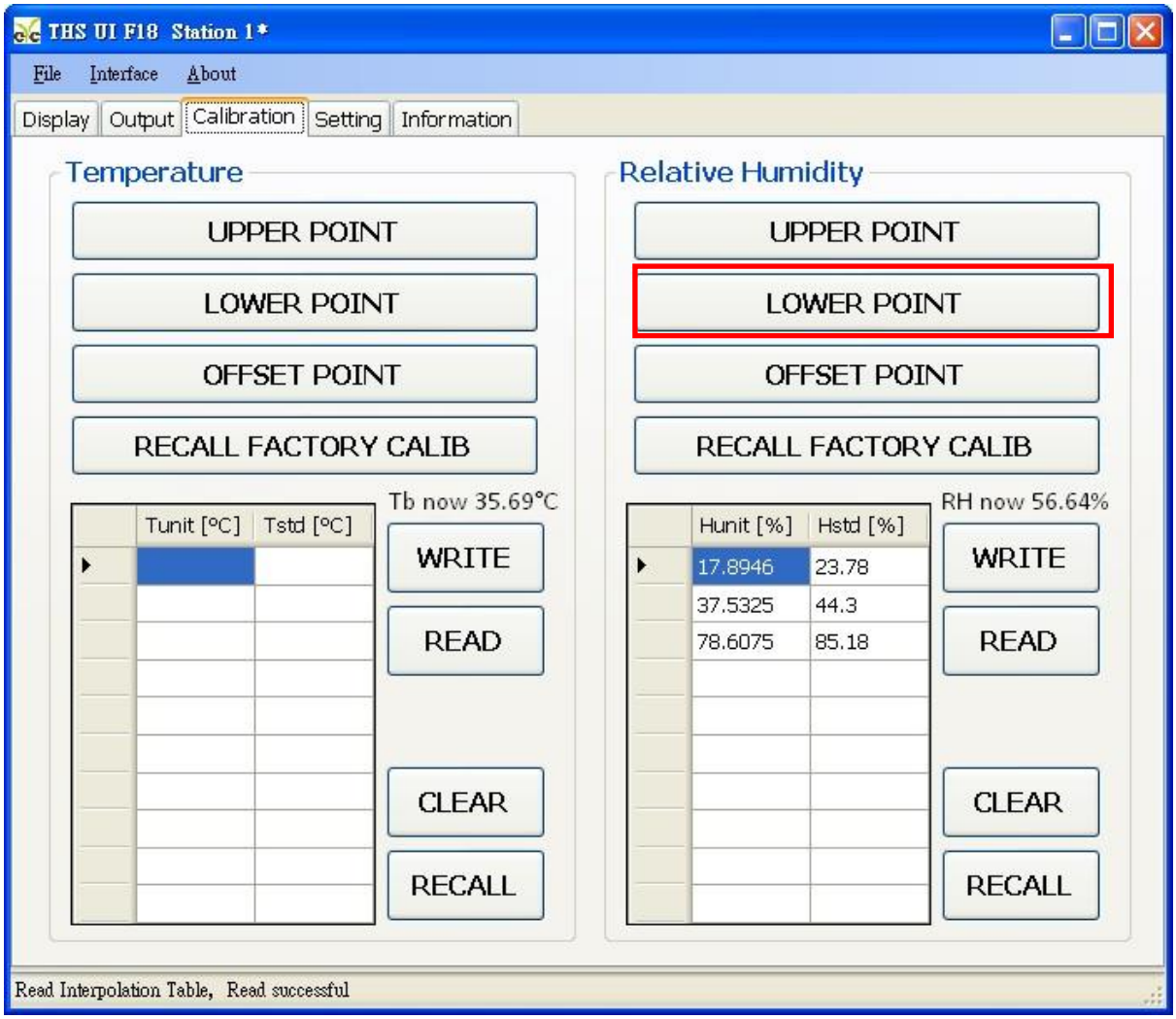


(2) Calibrate humidity lower point

a. Put the product in the humidity control box, and adjust lower point of humidity (ex：RH 20%)

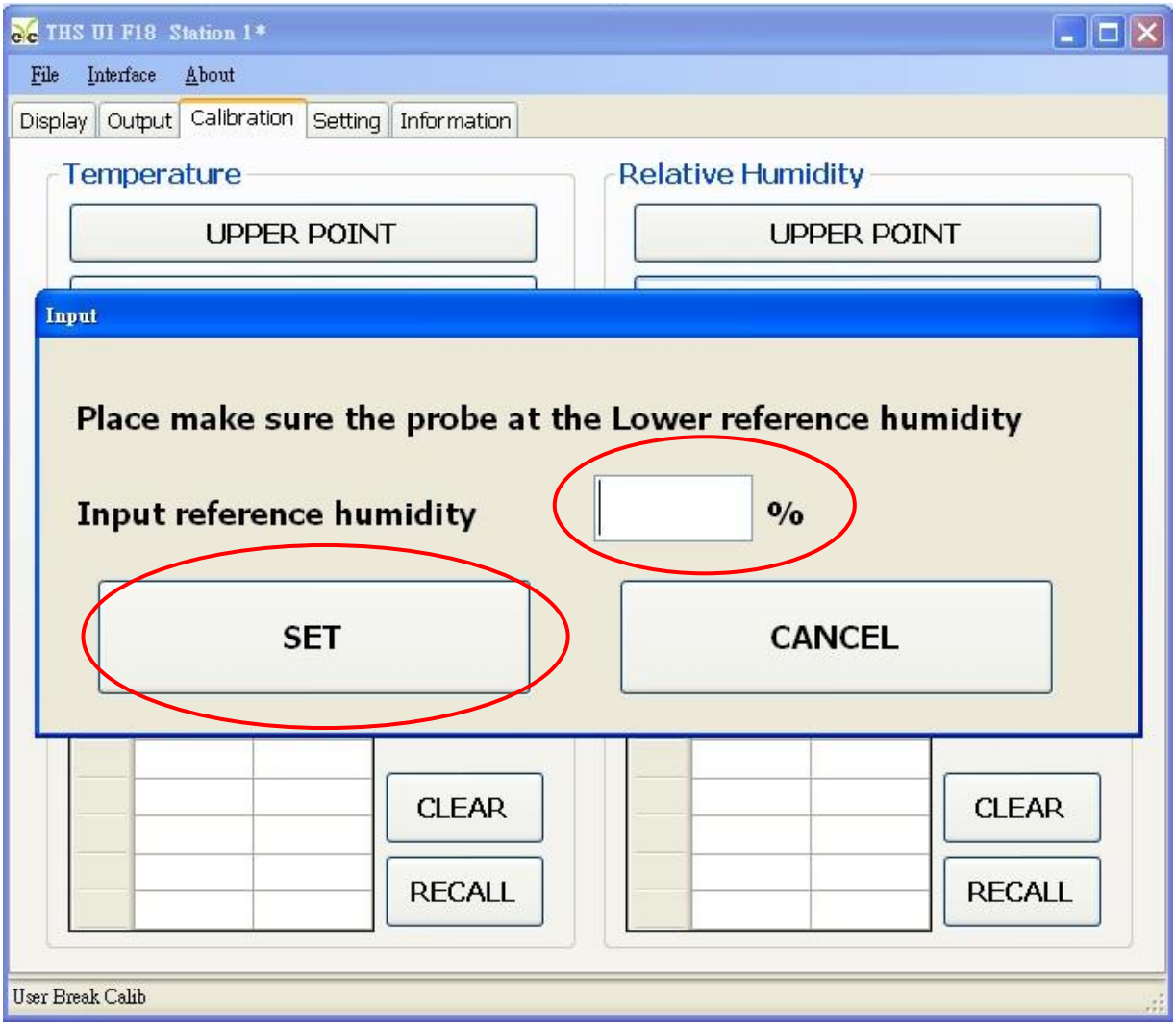
b. Wait the humidity of control box is becoming stable.

c. Click Relative Humidity → LOWER POINT



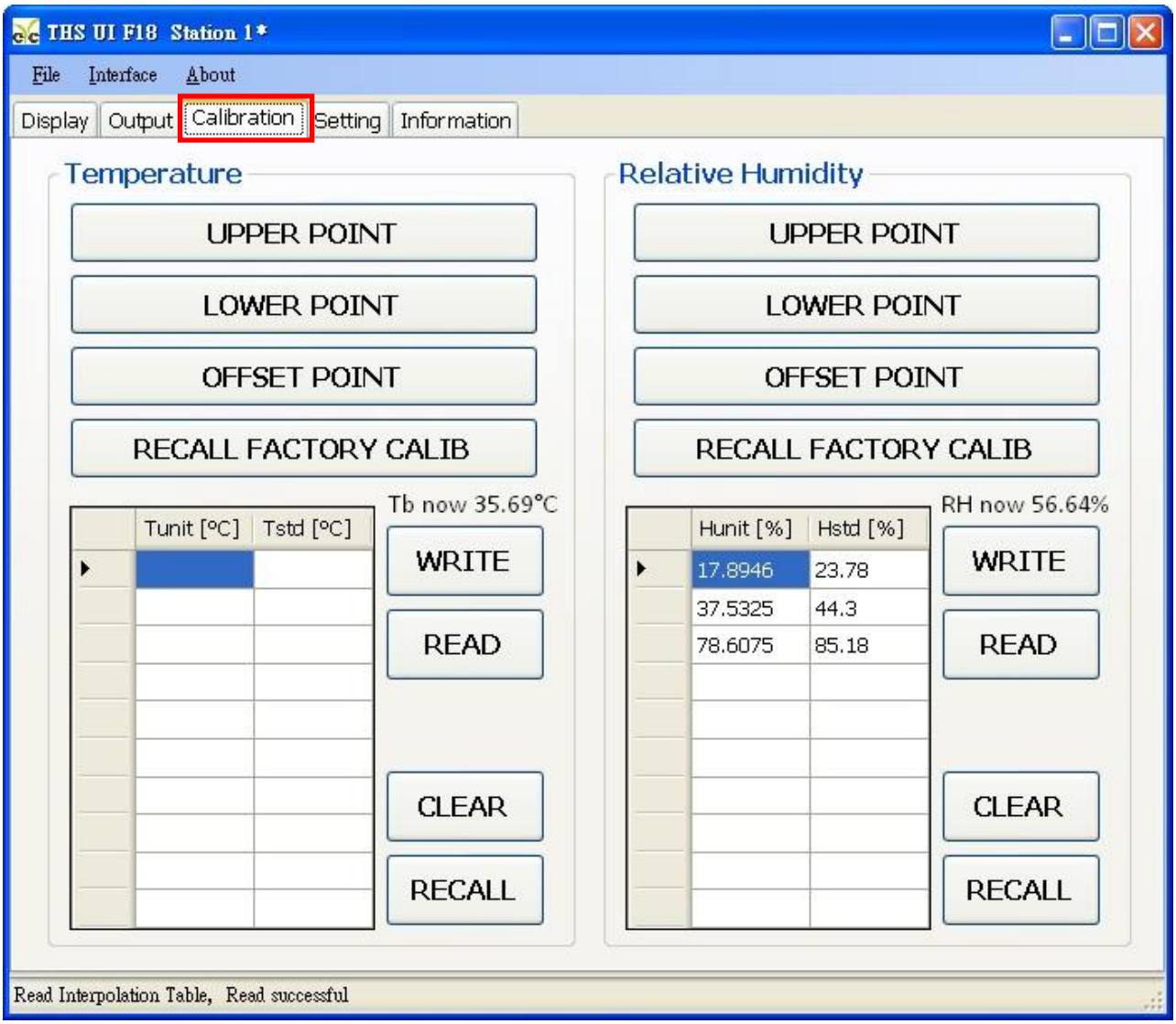
d. Input reference humidity, then click ”SET”

e. That calibrating lower point humidity is done



6.9 Temperature Calibration with signal points

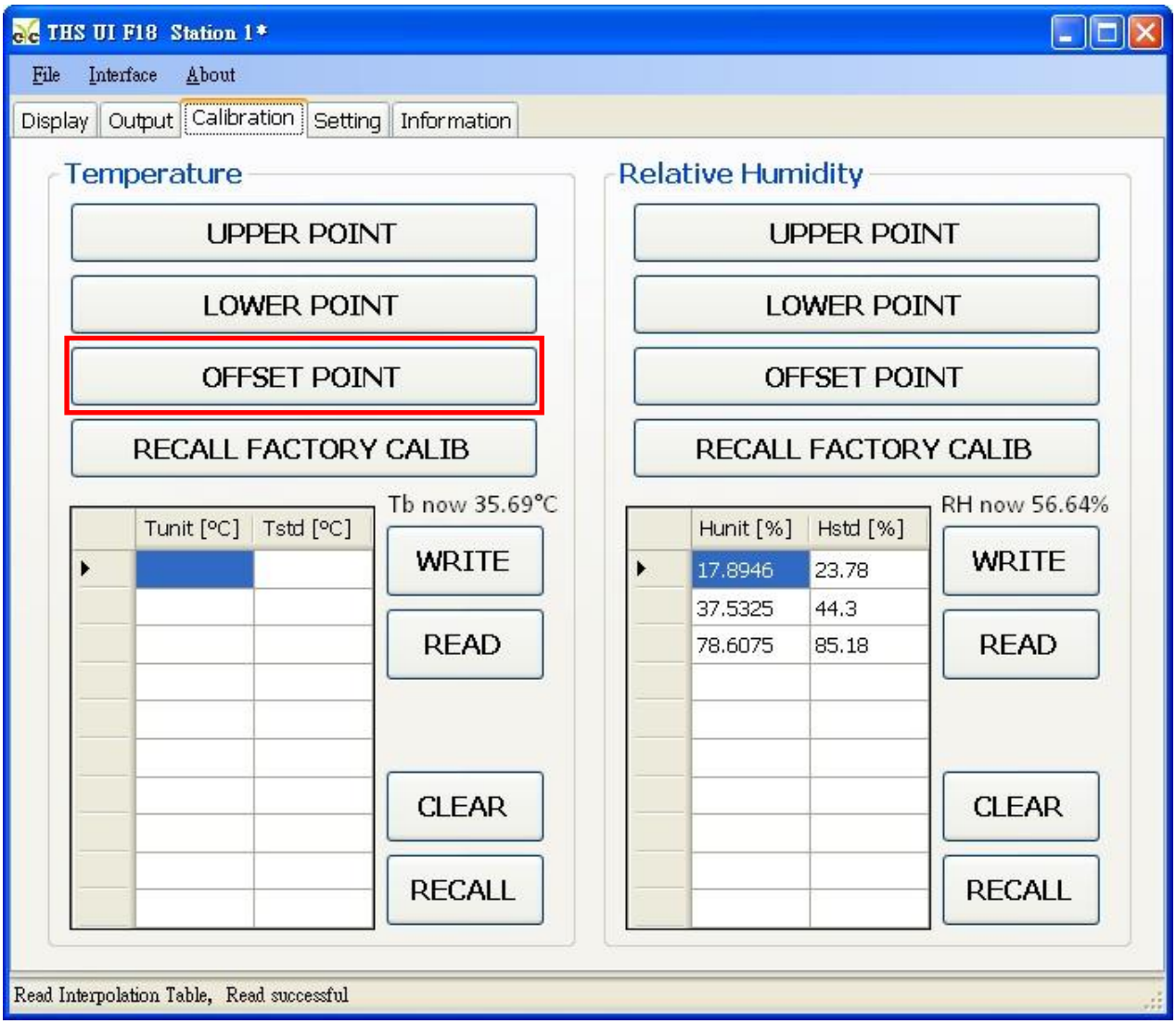
(1) Click “Calibration”



(2) Put the product in the temperature control box, and adjust the temperature point which you want to calibrate (ex：50°C)

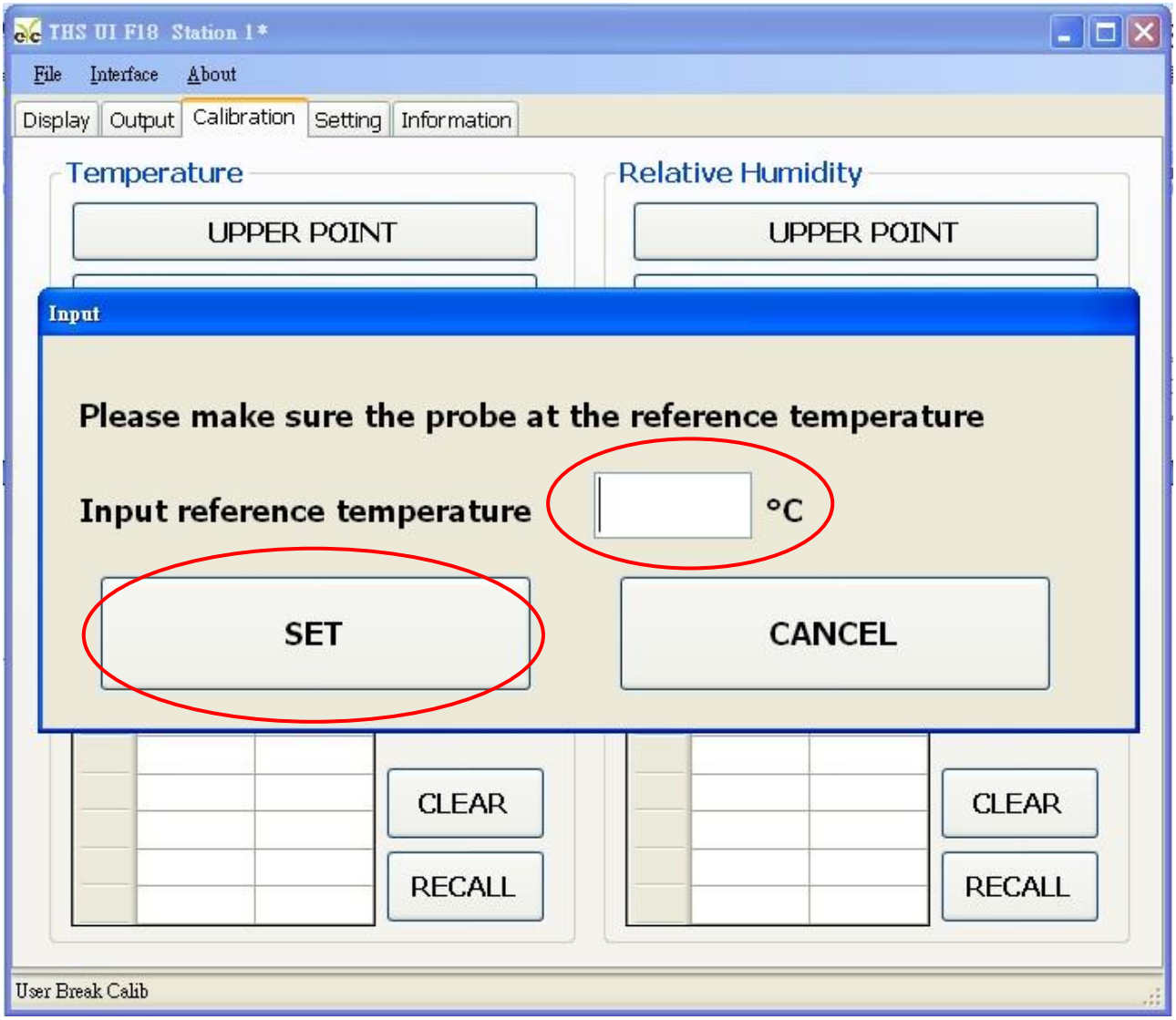
(3) Wait the temperature of control box is becoming stable

(4) Click Temperature → OFFSET POINT



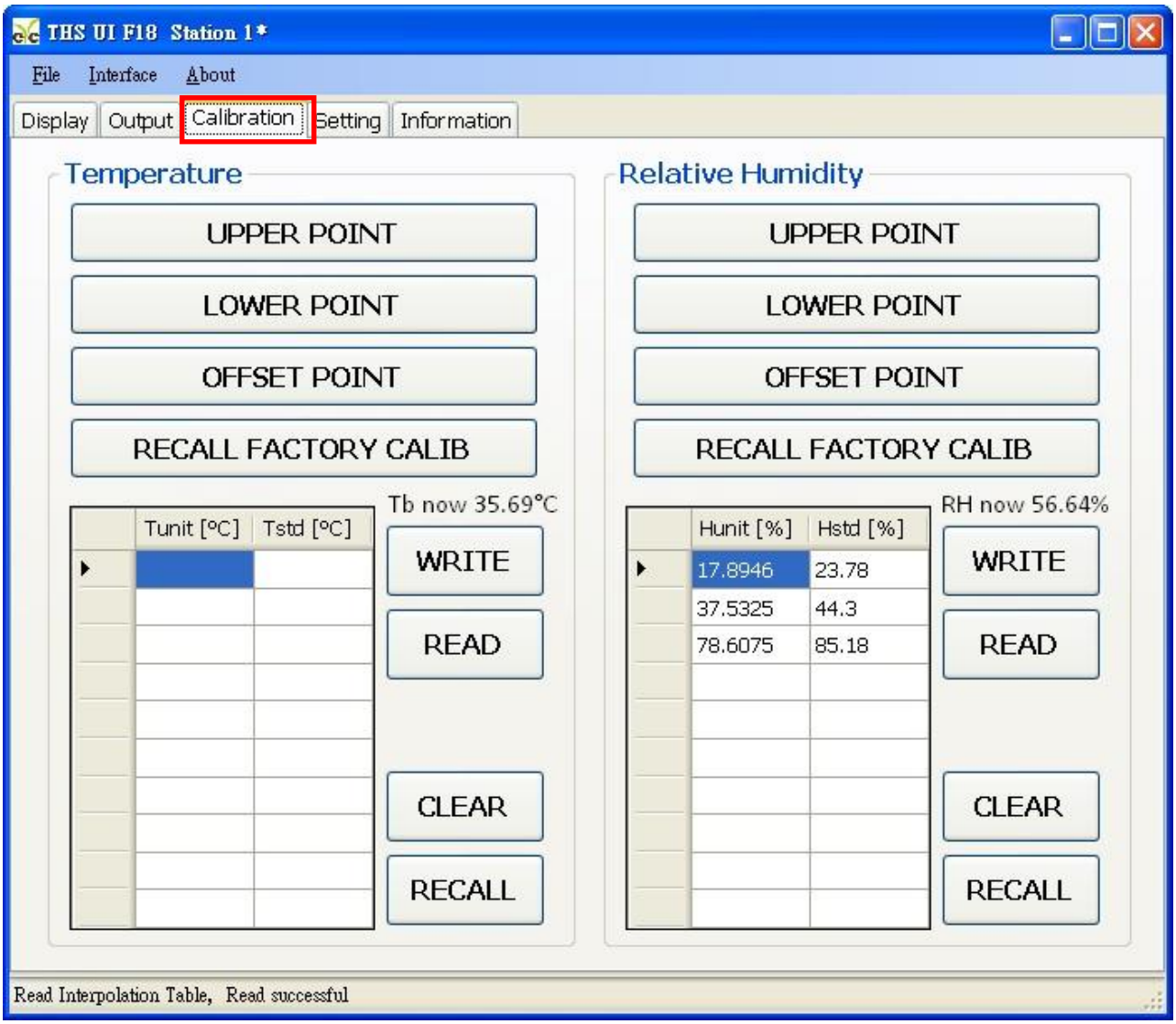
(5) Input the reference temperature, then click ”SET”

(6) That calibrating upper point temperature is done



6.10 Humidity Calibration with signal point

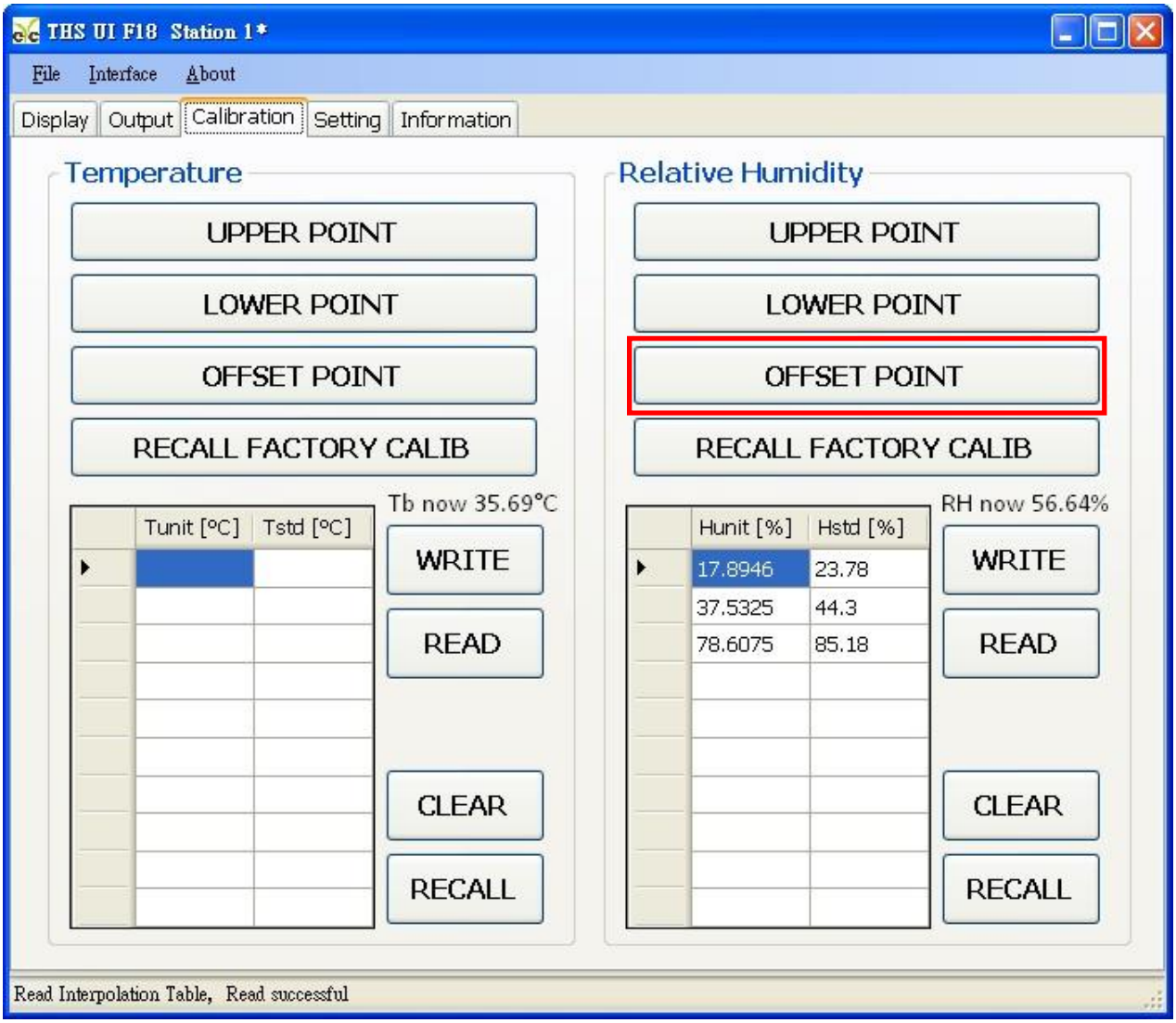
(1) Click ”Calibration”



(2) Put the product in humidity control box, then adjust the humidity point which you want to calibrate (ex: 50%RH)

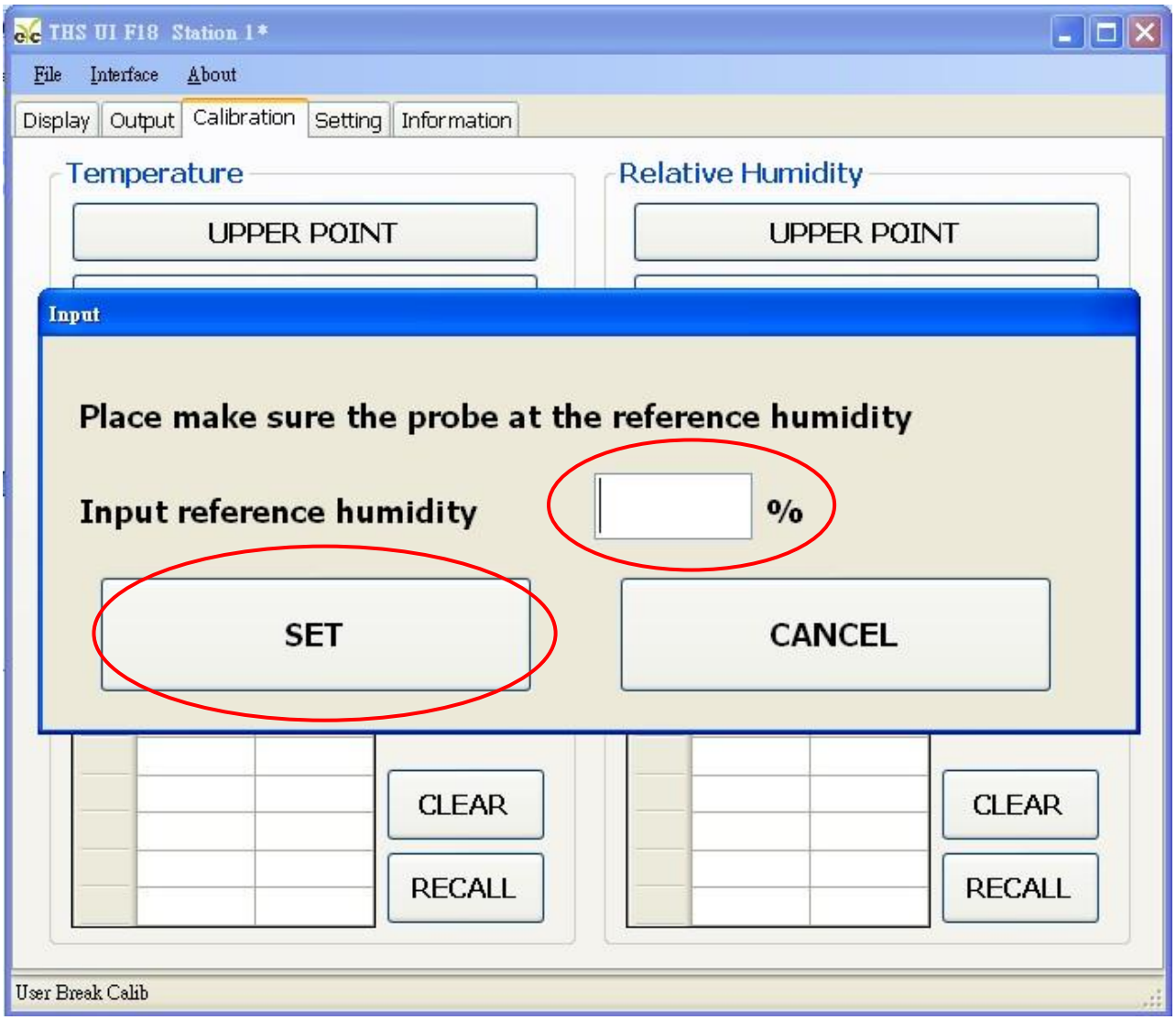
(3) Wait the humidity of control box is becoming stable

(4) Click Relative Humidity → OFFSET POINT



(5) Input reference humidity, then click ”SET”

(6) That calibrating signal point humidity is done



6.11 Restore factory setting of signal/two point(s)

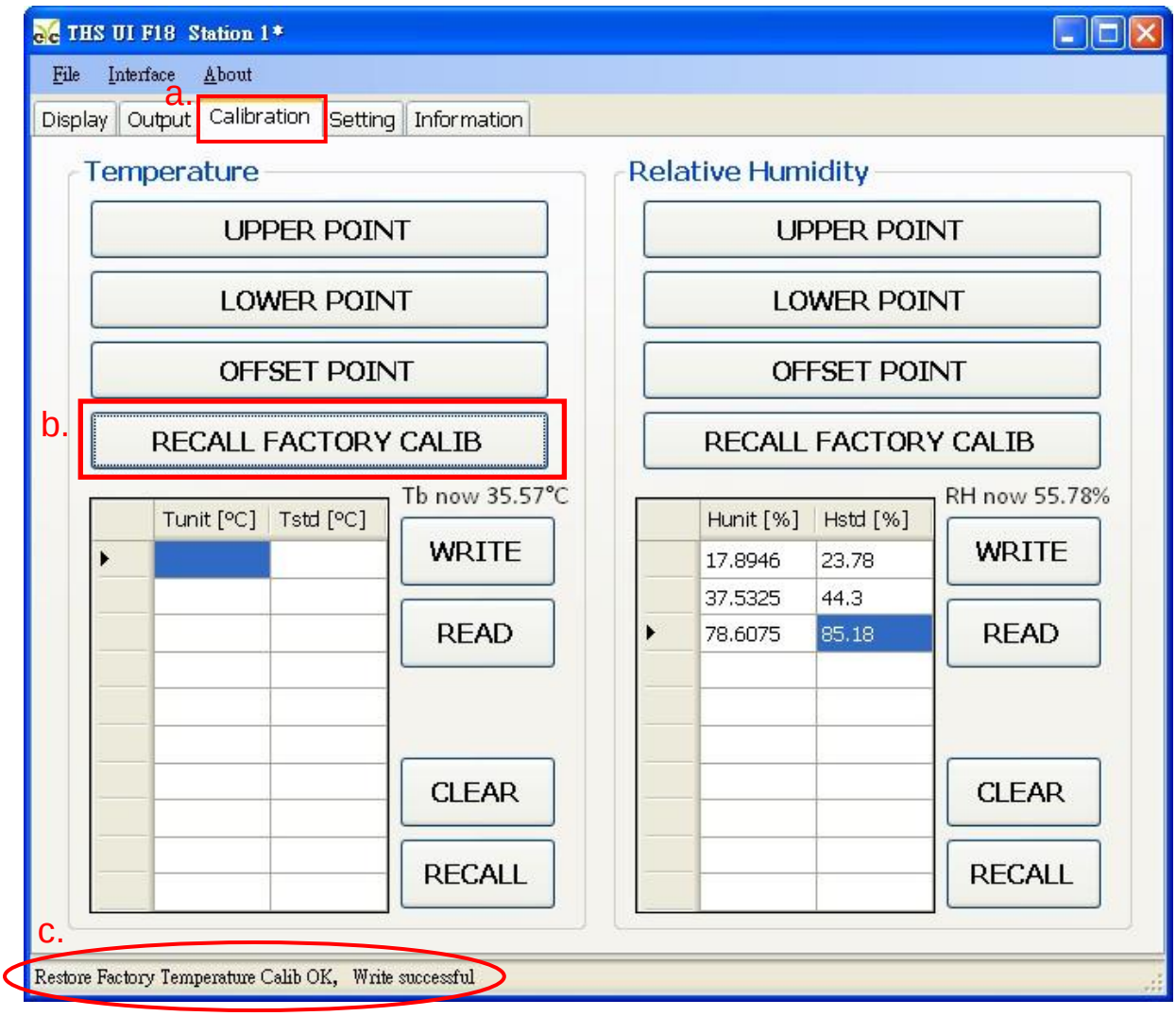
(1) Restore factory setting temperature

a. Click “Calibration”

b. Click temperature → RECALL FACTORY CALIB

c. Show ”Restore Factory Temperature Calib OK, Write successful”

d. That restore temperature of factory setting is done



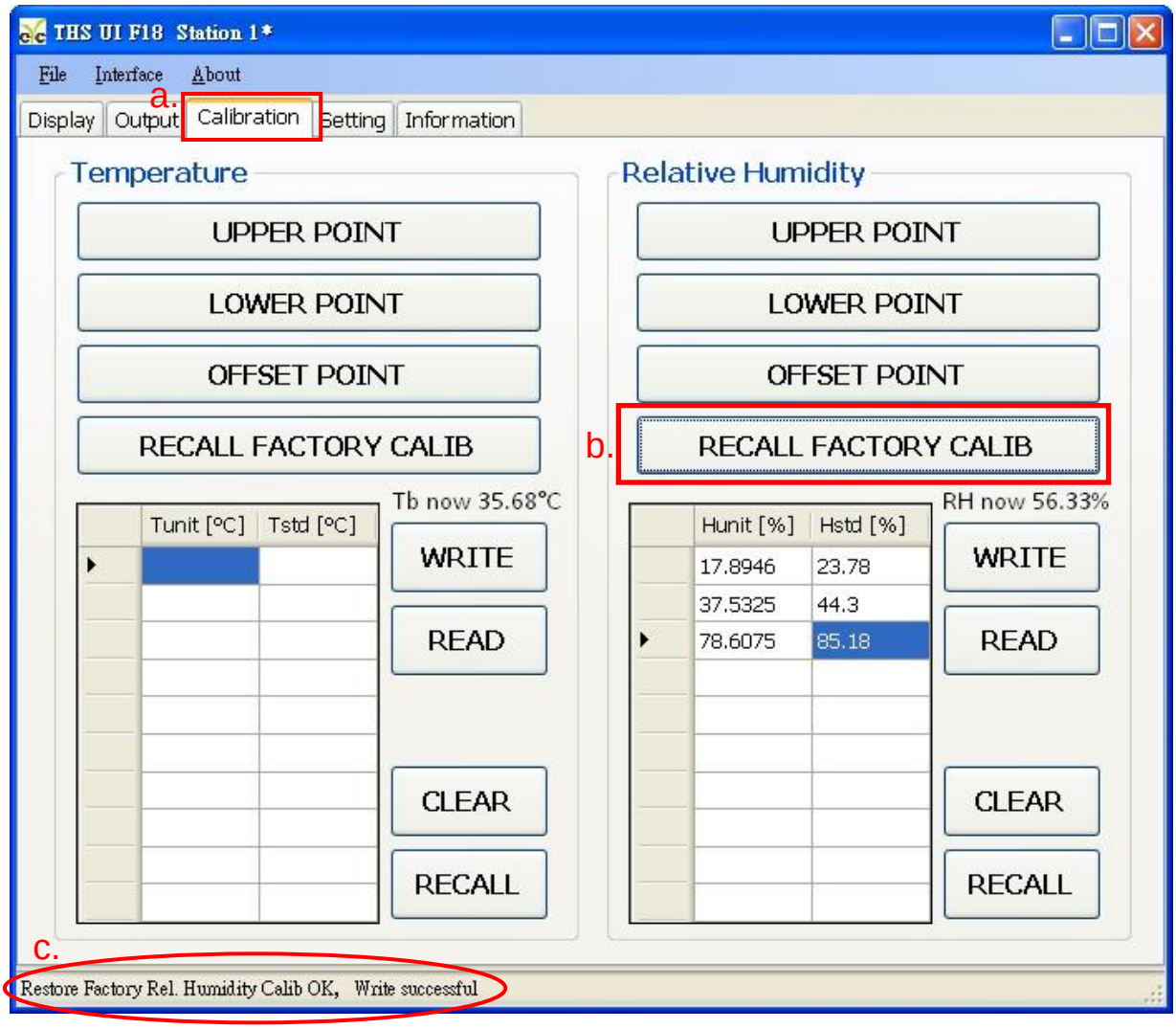
(2) Restore humidity of factory setting

a. Click “Calibration”

b. Clock Relative Humidity → RECALL FACTORY CALIB

c. Show ”Restore Factory Rel. Humidity Calib OK, Write successful”

d. That restore humidity of factory setting is done

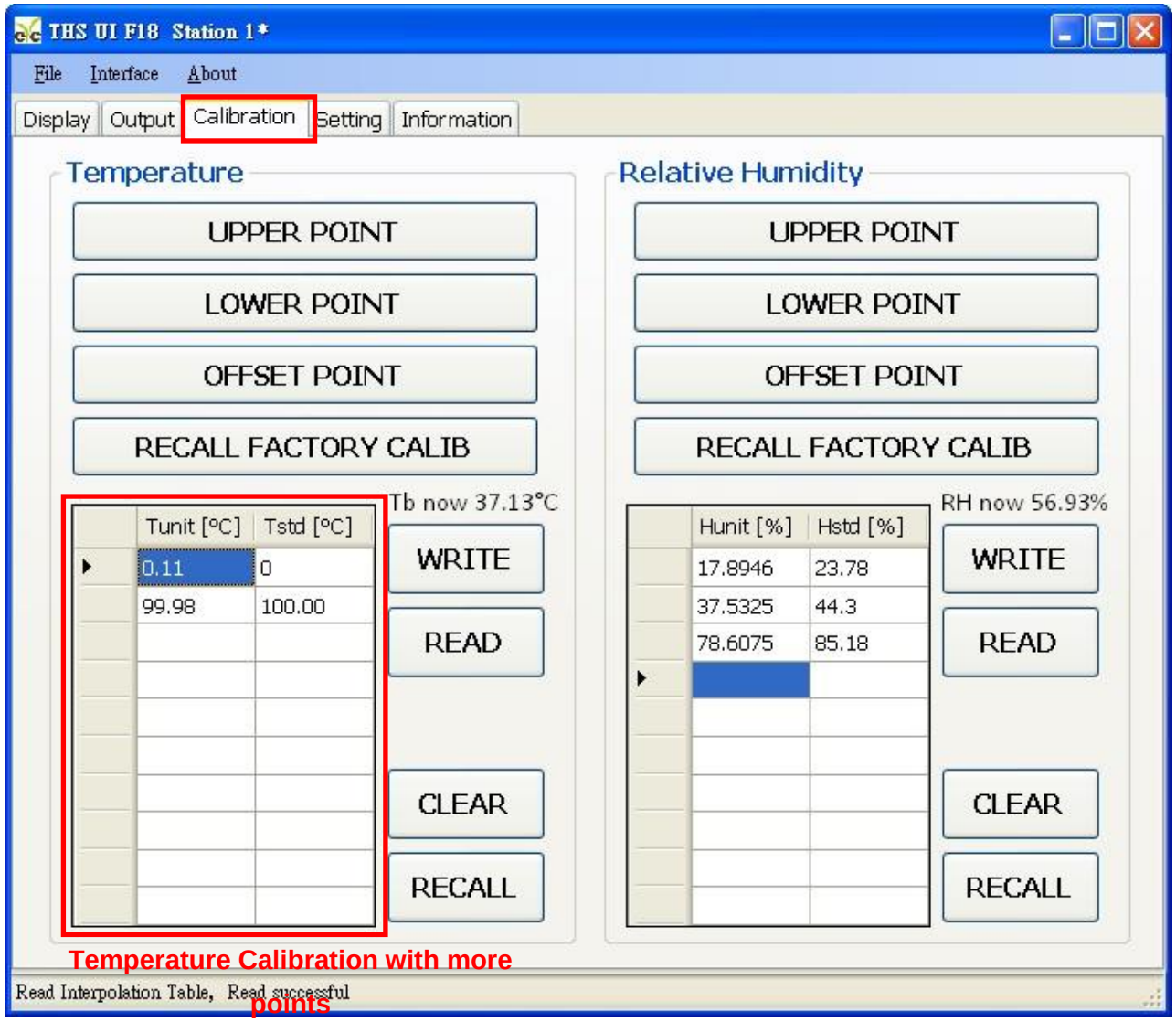


6.12 Temperature Calibration with more points

※ Because of that the product has high accuracy and using this calibration way can influence linear accuracy, we do not suggest to use this calibration way.

(1) Click “Calibration”

Statement：The existing value is record of more points of calibrating which was executed by factory when operators log in Calibration page at the first time.



(2) Put the product in the environment of temperature which you want to calibrate

(3) Wait the environment of temperature is becoming stable

(4) Retain the factory setting：

a. Input the value which you want to calibrate in the Temperature area (ex：25°C)

a-1. Tunit [°C] Value which product shows

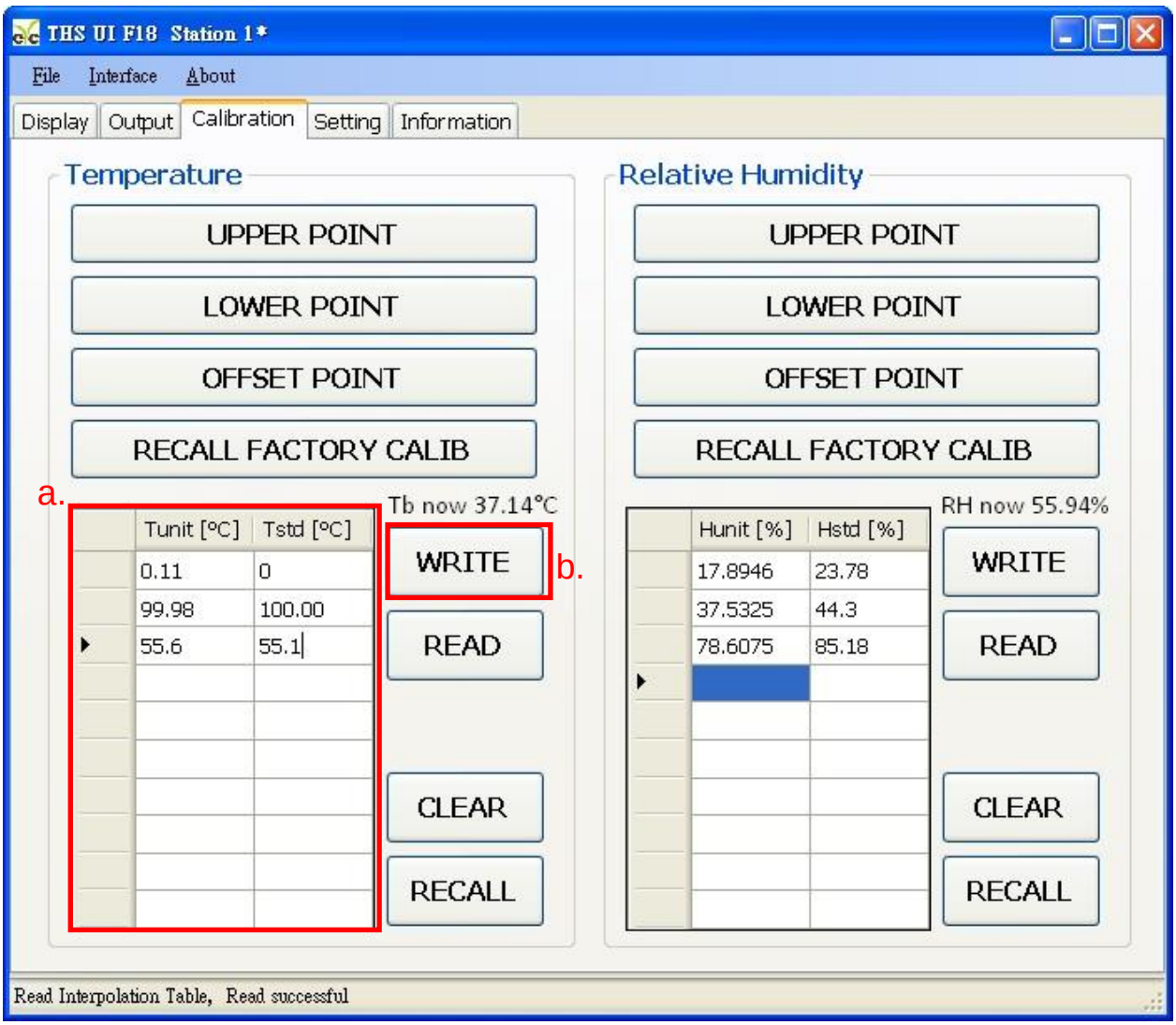
a-2. Tstd [°C] Standard calibration value

※1：Please enter calibration points in the blank, 10 points maximal

※2：The interval between two points should be 10°C above

※3：Execute step 6 when you want to repeat the calibration points and factory setting points or the temperature is less than 10°C

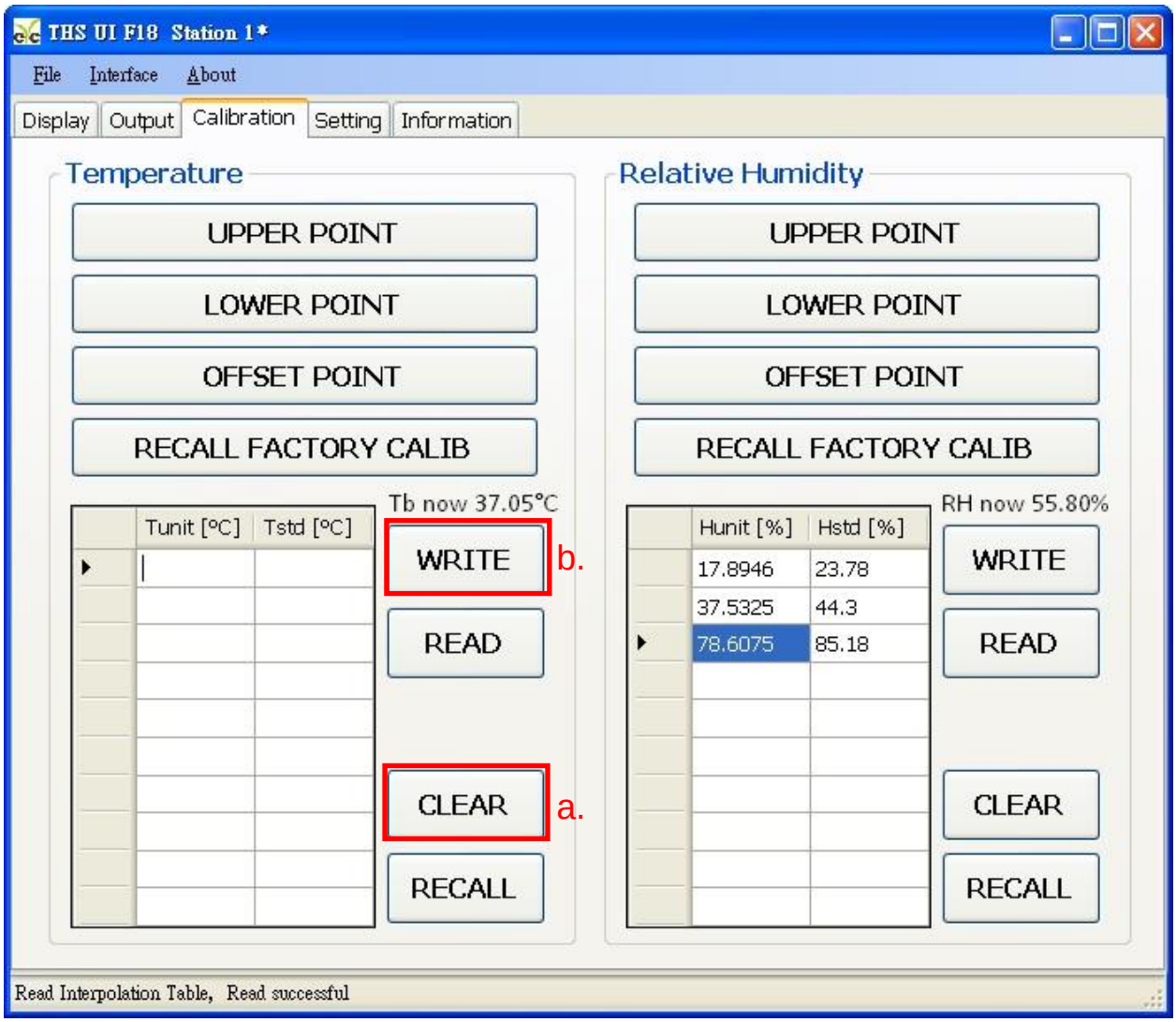
b. Click Temperature → WRITE



(5) Delete factory setting：

a. Click Temperature → CLEAR(Clear data)

b. Click Temperature → WRITE(Clear factory setting)



c. Input the value which you want to calibrate

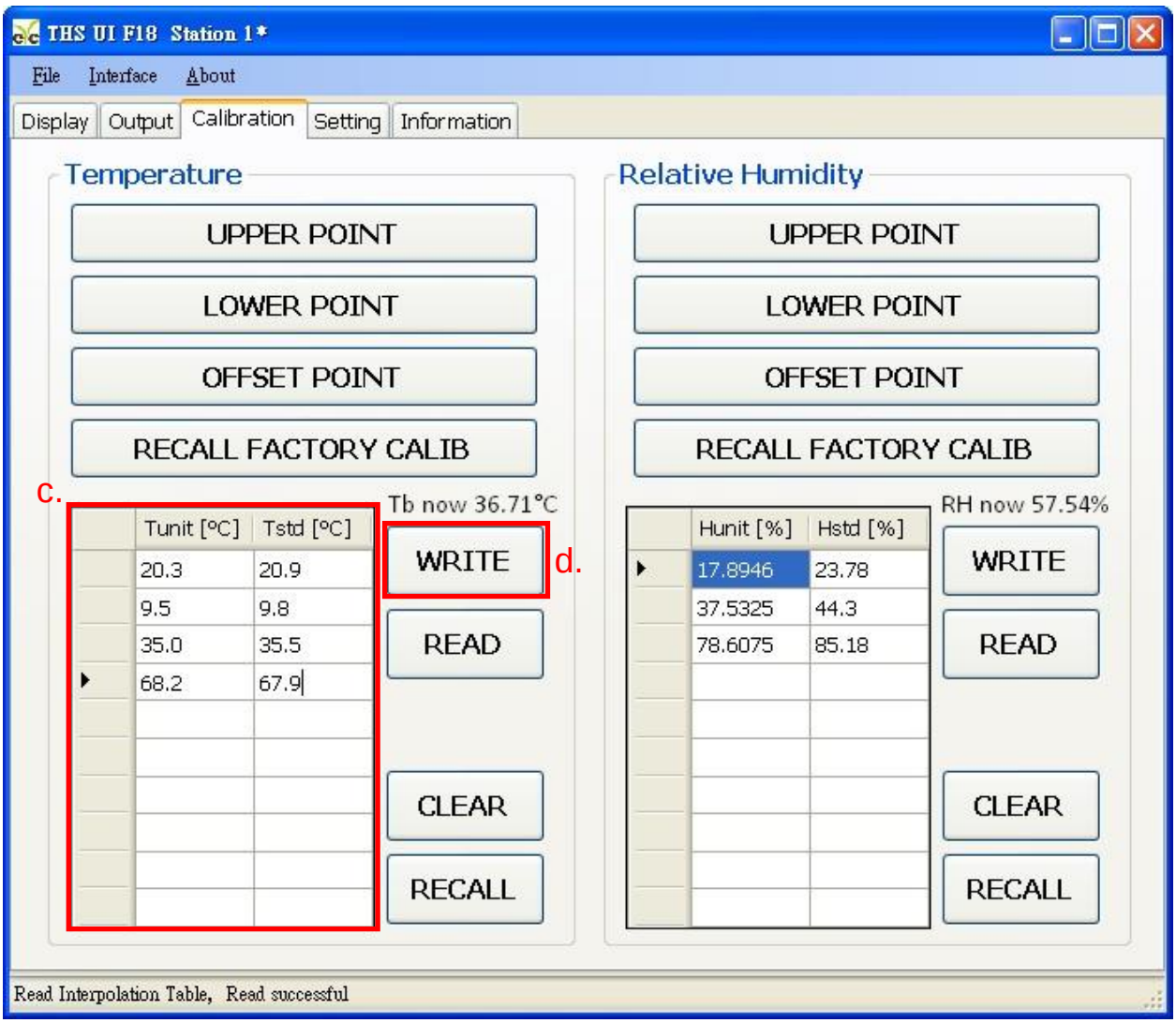
c-1. Tunit[°C]：Value which product shows

c-2. Tstd[°C]：Standard value of calibration

※1：Please enter calibration points in the blank, 10 points maximal

※2：The interval between two points should be 10°C above

d. click Temperature → WRITE

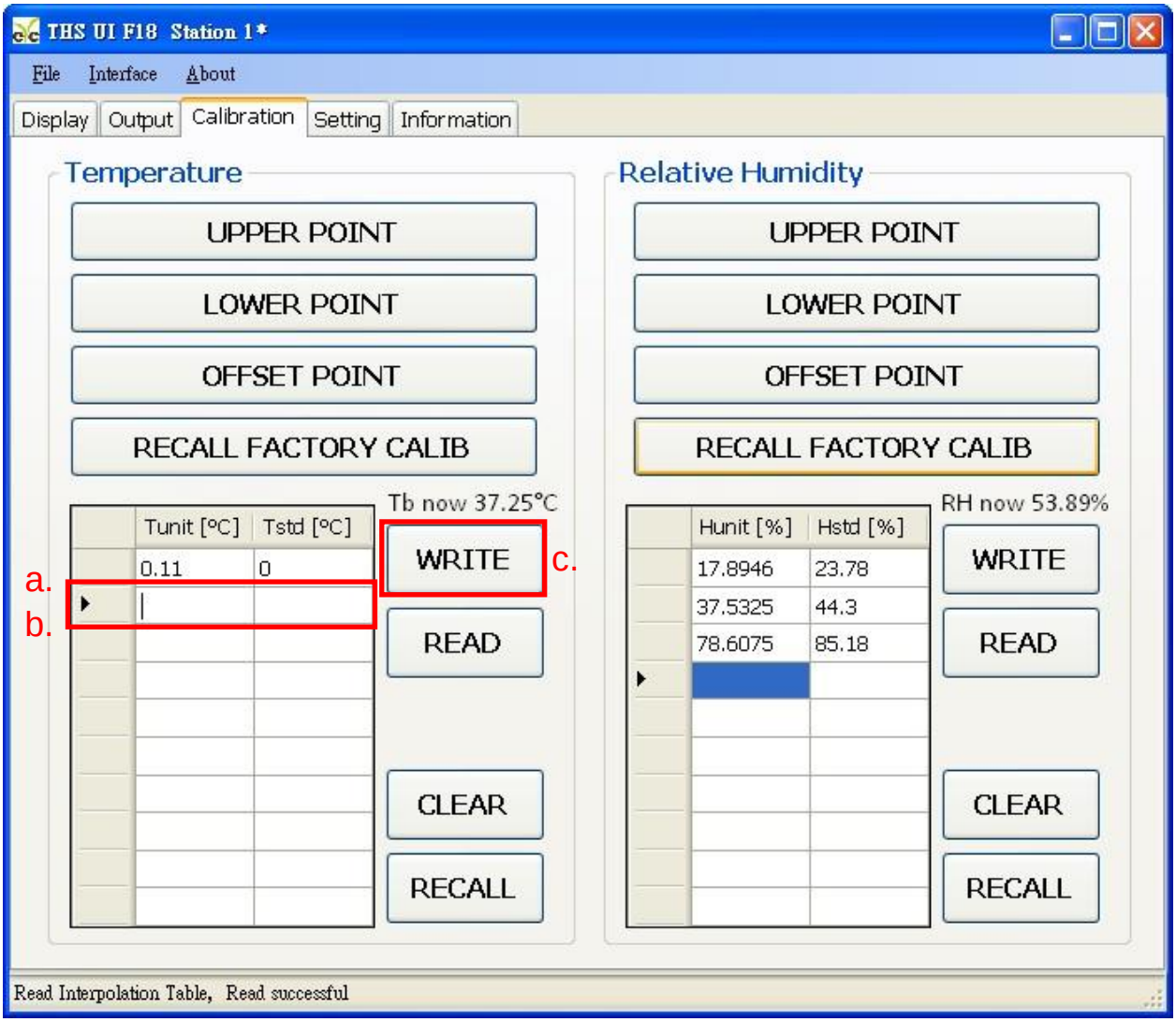


(6) Retain the part of factory setting：

a. Click left keyboard twice on the mouse on the factory setting which you want to delete

b. Click delete icon of Keyboard or right keyboard of mouse to clear data

c. Click Temperature → WRITE(Clear factory setting)

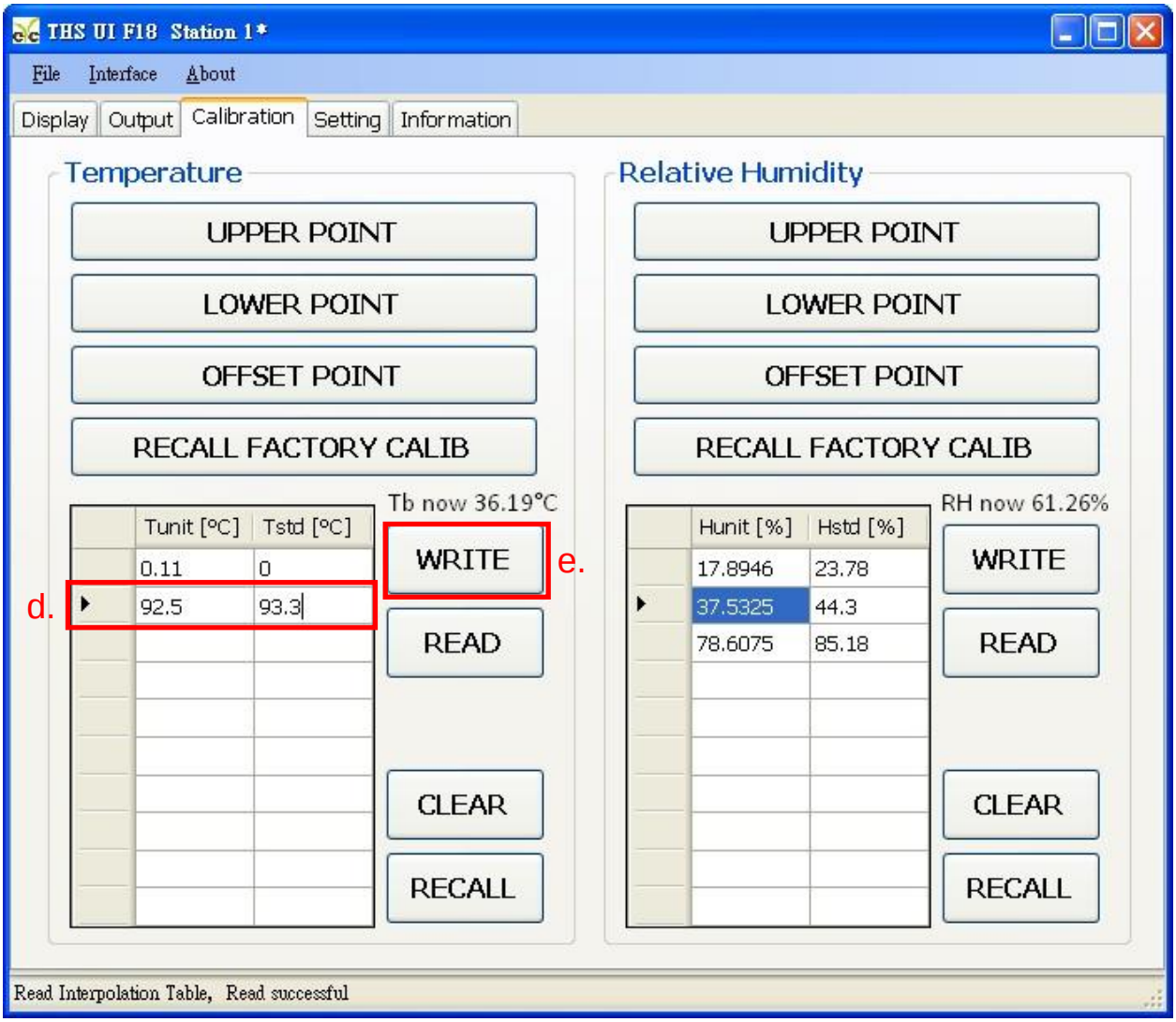


d. Input the value which you want to calibrate

d-1. Tunit[%]：Value which product shows

d-2. Tstd[%]：Standard value of calibration

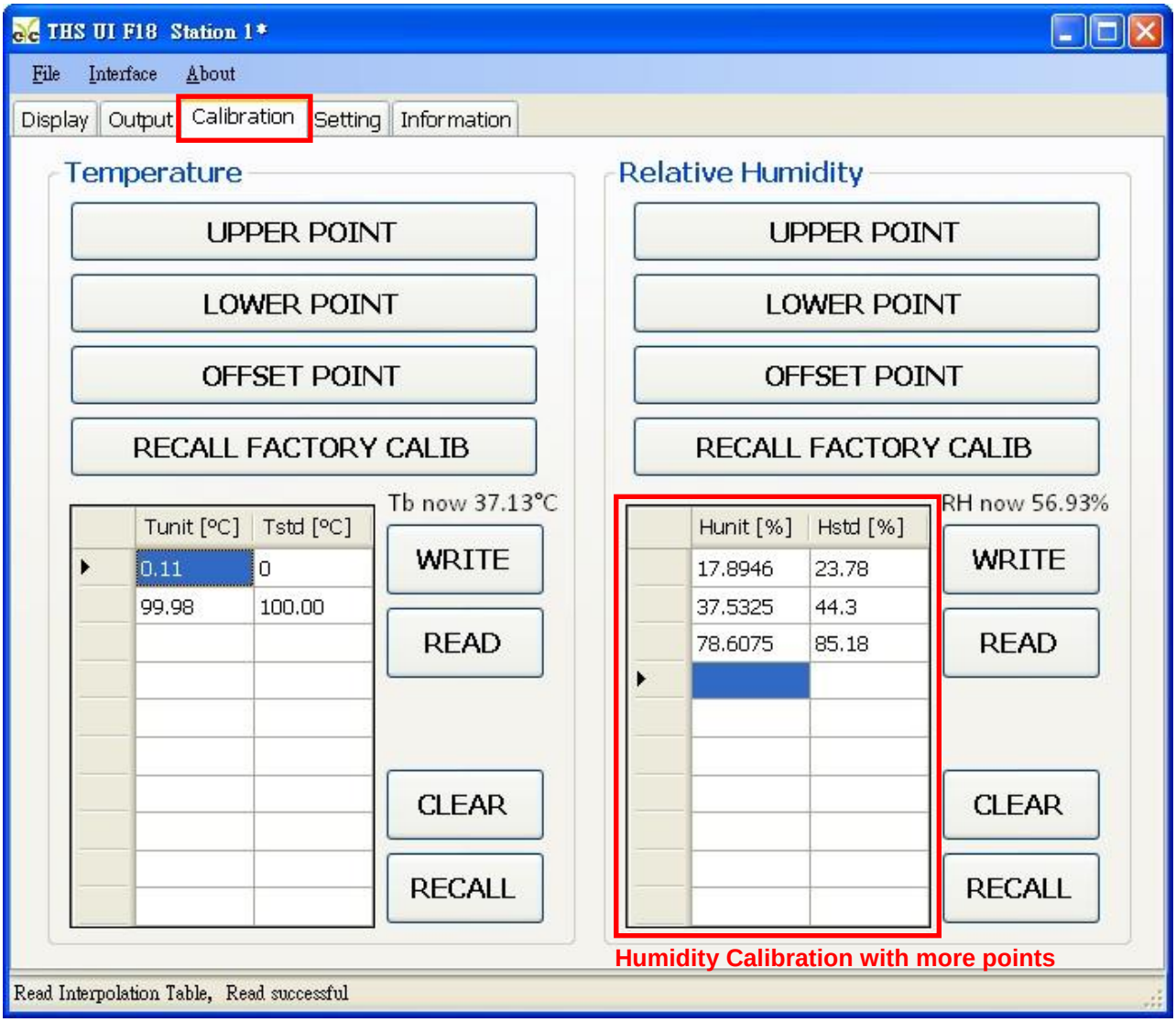
e. click Temperature → WRITE



6.13 Humidity Calibration with more points

1. Click “Calibration”

Statement：The existing value is record of more points of calibrating which was executed by factory when operators log in Calibration page at the first time.



Humidity Calibration with more points

2. Put the product in the environmental of humidity which you want to calibrate
3. Wait the environmental of humidity is becoming stable
4. Retain the factory setting：

a. Input the value which you want to calibrate in the Relative Humidity area

a-1. Hunit[%]：Value which product shows

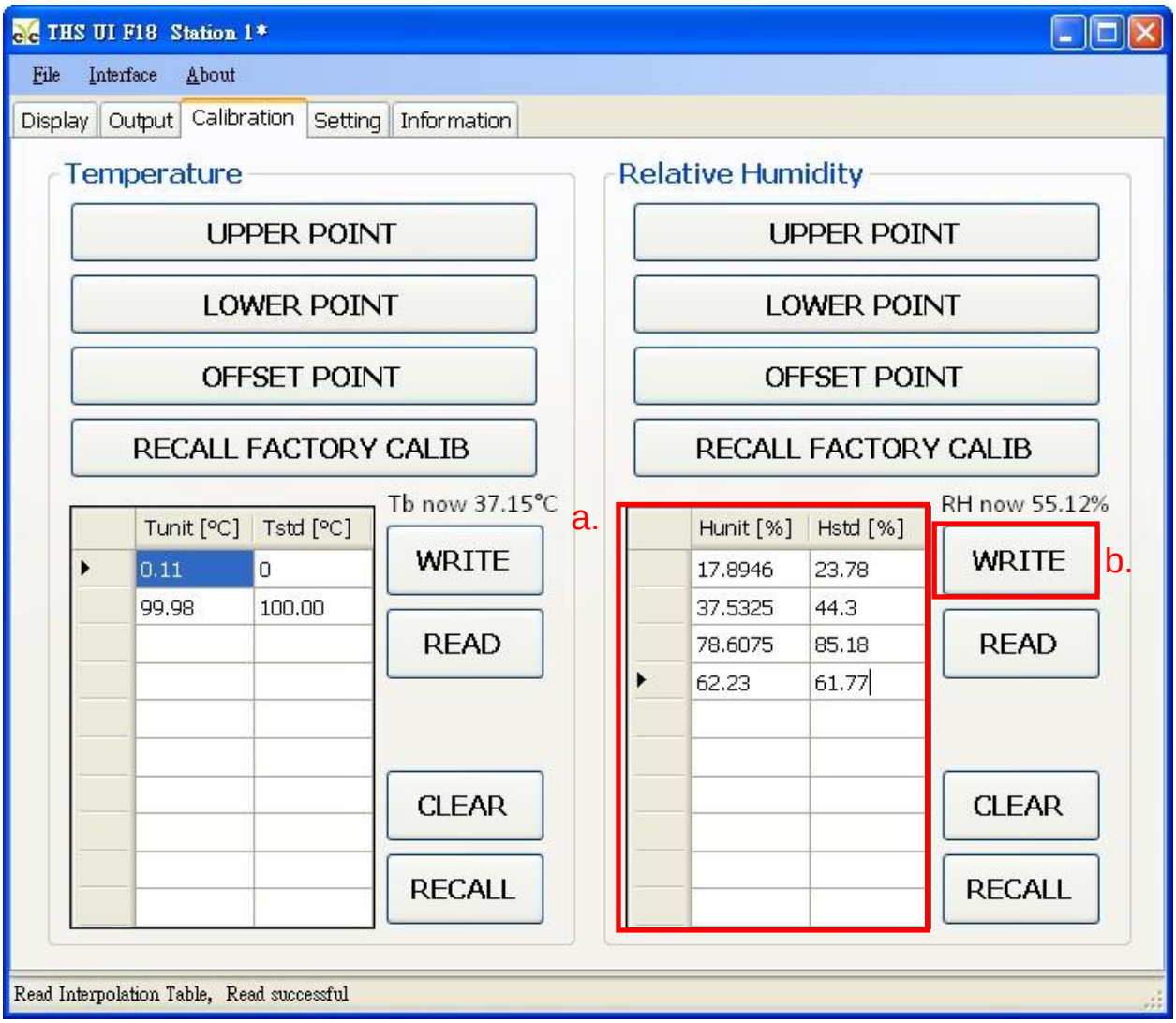
a-2. Hstd[%]：Standard value of calibration

※1.Please enter calibration points in the blank, 10 points maximal

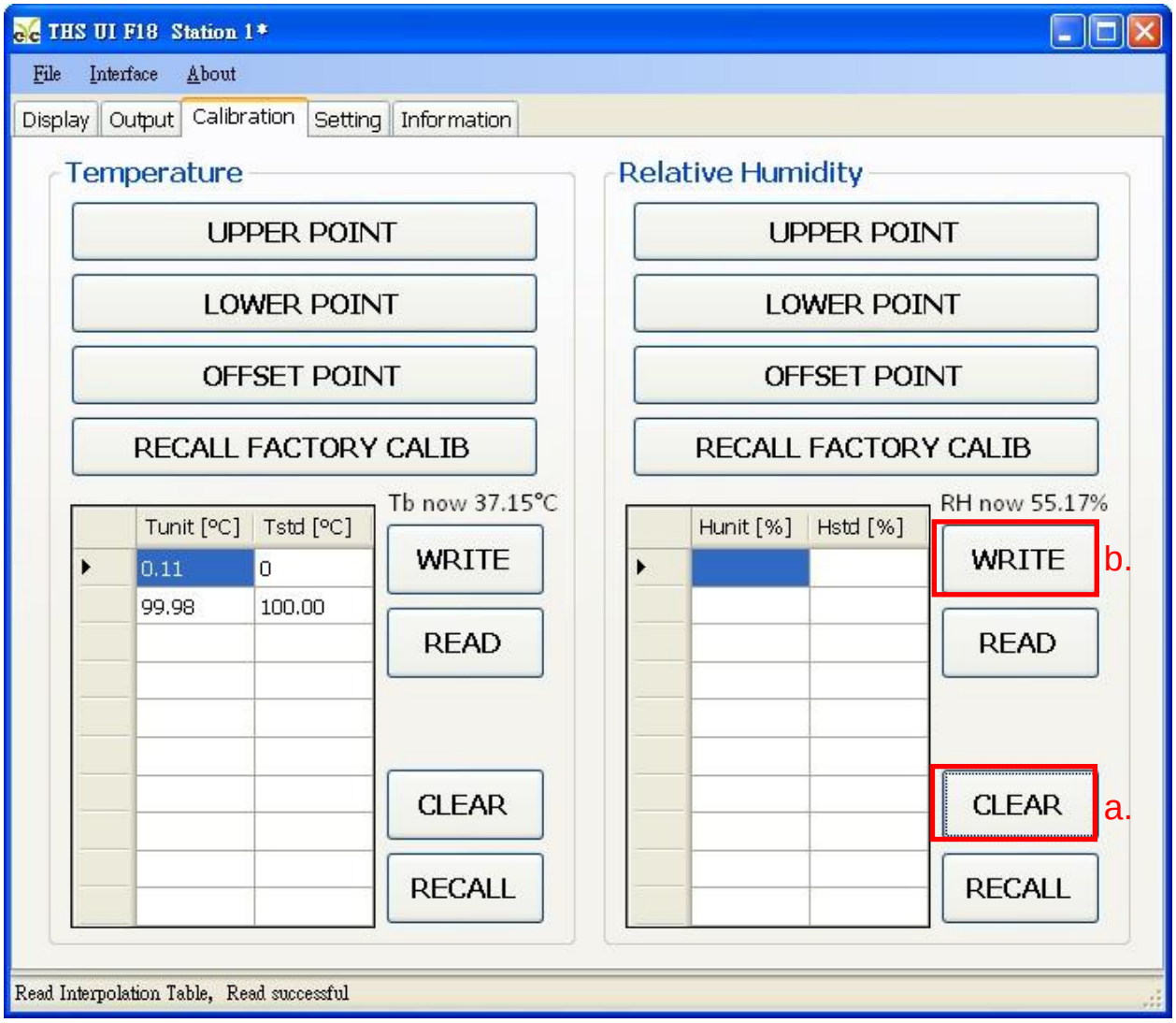
※2.The interval between two points should be 10% above

※3.Execute step 6 when you want to repeat the calibration points and factory setting points or the humidity is less than 10%

b. Click Temperature → WRITE



5. Delete factory setting：
   a. Click Relative Humidity → CLEAR(Clear data)
   b. Click Relative Humidity → WRITE(Clear factory setting)



c. Input the value which you want to calibrate in the Relative Humidity area

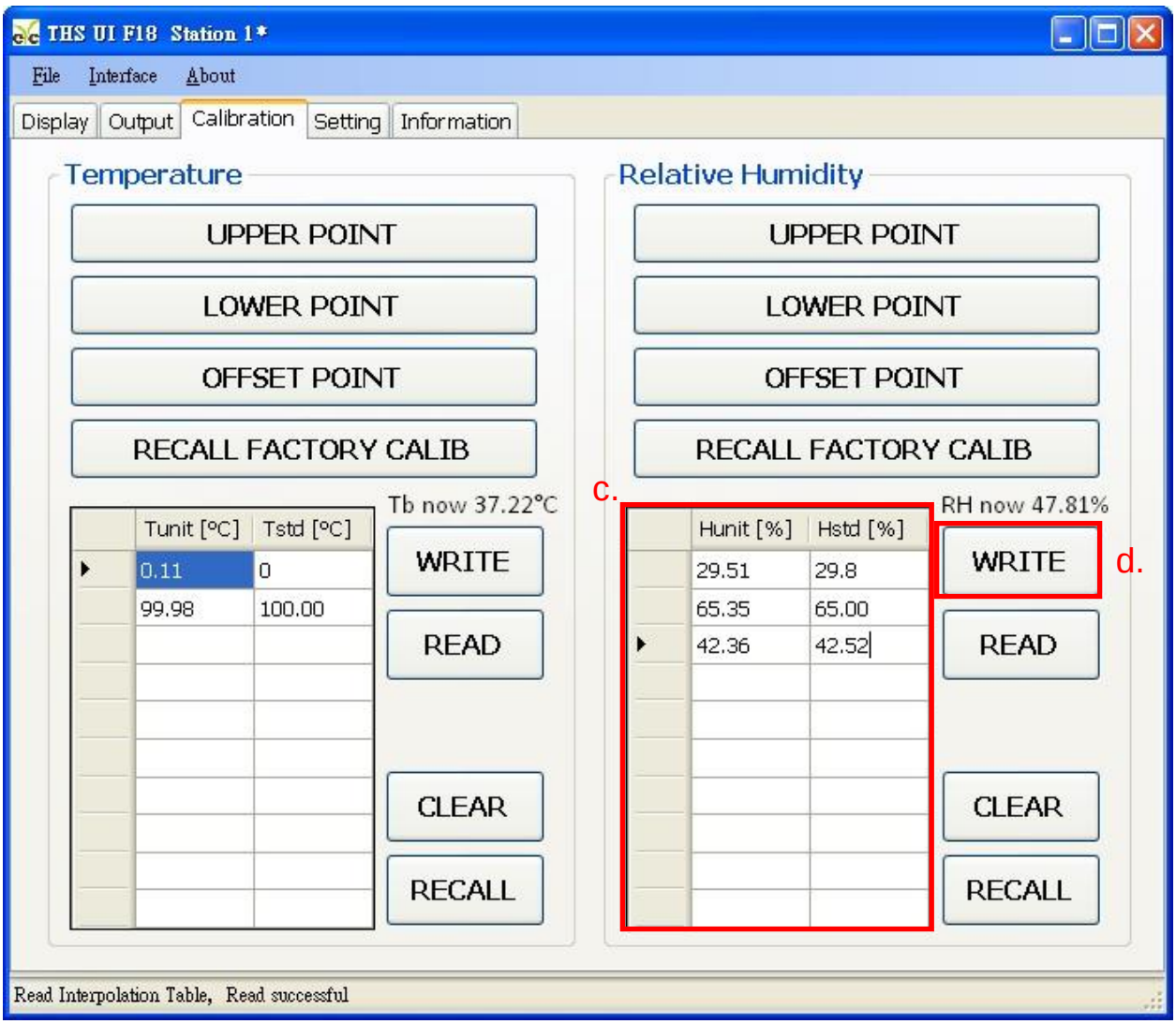
c-1. Hunit[%]：Value which product shows

c-2. Hstd[%]：Standard value of calibration

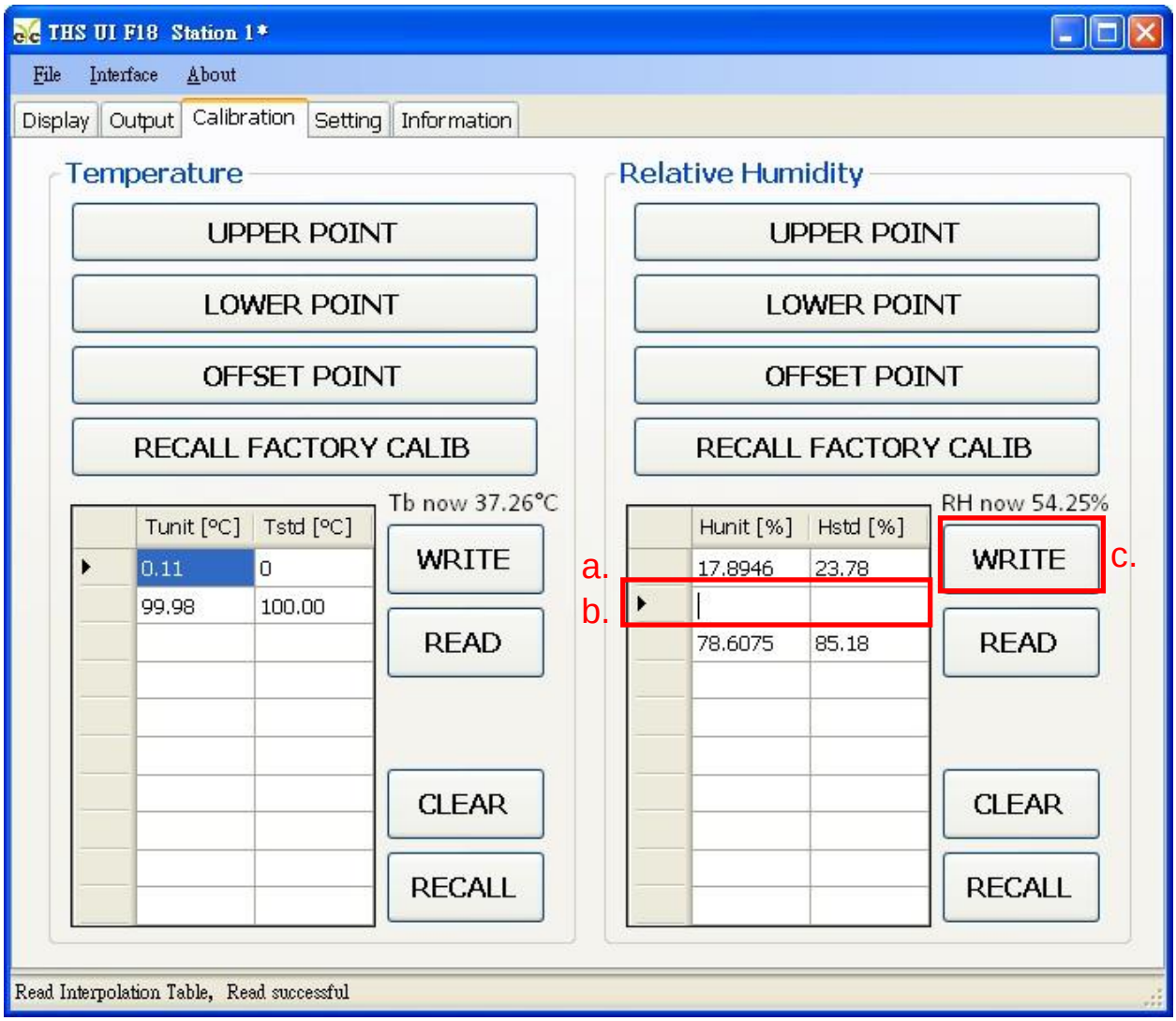
※1.Please enter calibration points in the blank, 10 points maximal

※2.The interval between two points should be 10% above

d. Click Relative Humidity → WRITE



6. Retain the part of factory setting：
   a. Click left keyboard twice on the mouse on the factory setting which you want to delete
   b. Click delete icon of Keyboard or right keyboard of mouse to clear data
   c. Click Relative Humidity → WRITE (clear factory setting)

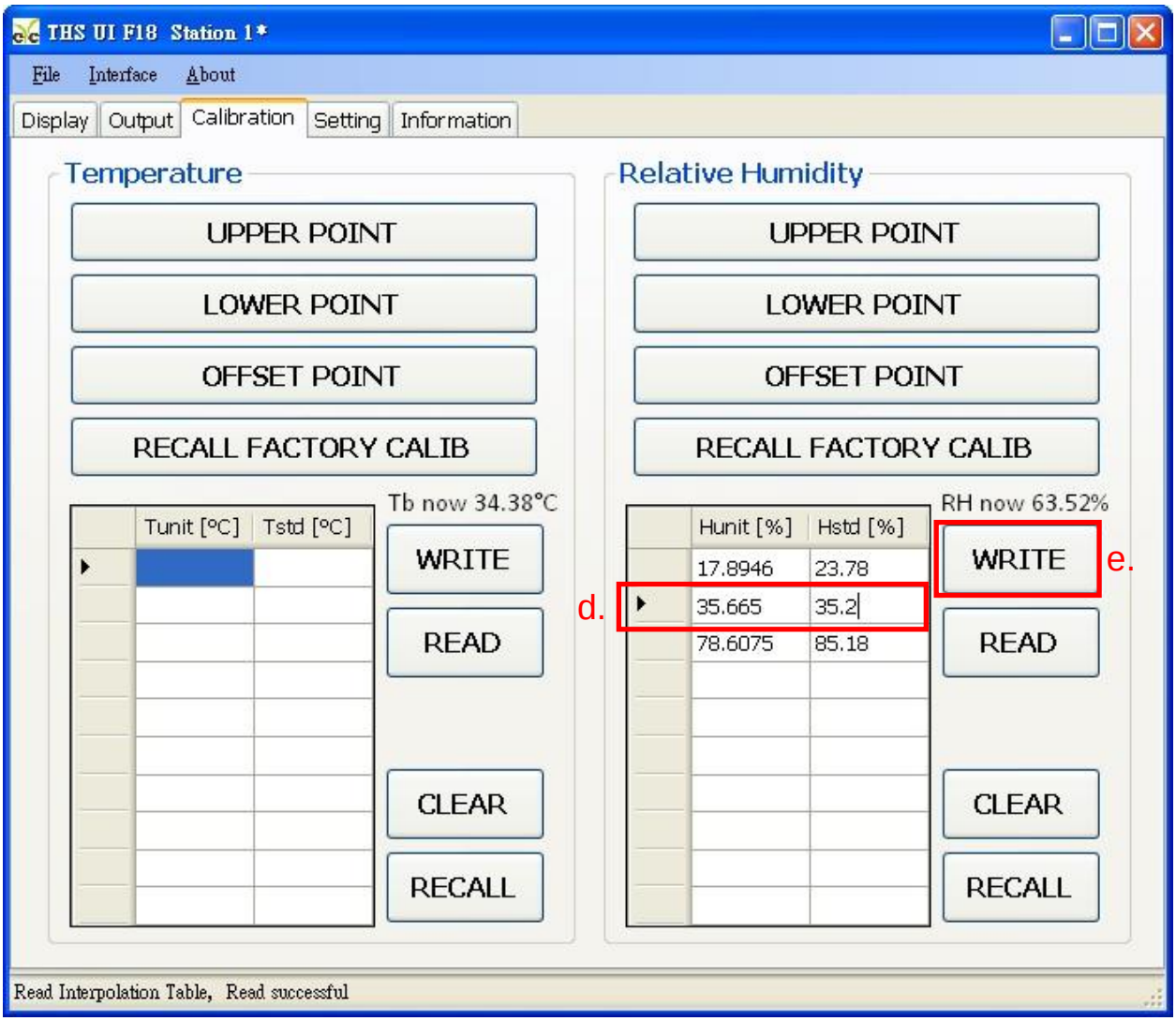


d. Input the value which you want to calibrate in the Relative Humidity area

d-1. Hunit[%]：Value which product shows

d-2. Hstd[%]：Standard value of calibration

e. Click Relative Humidity → WRITE



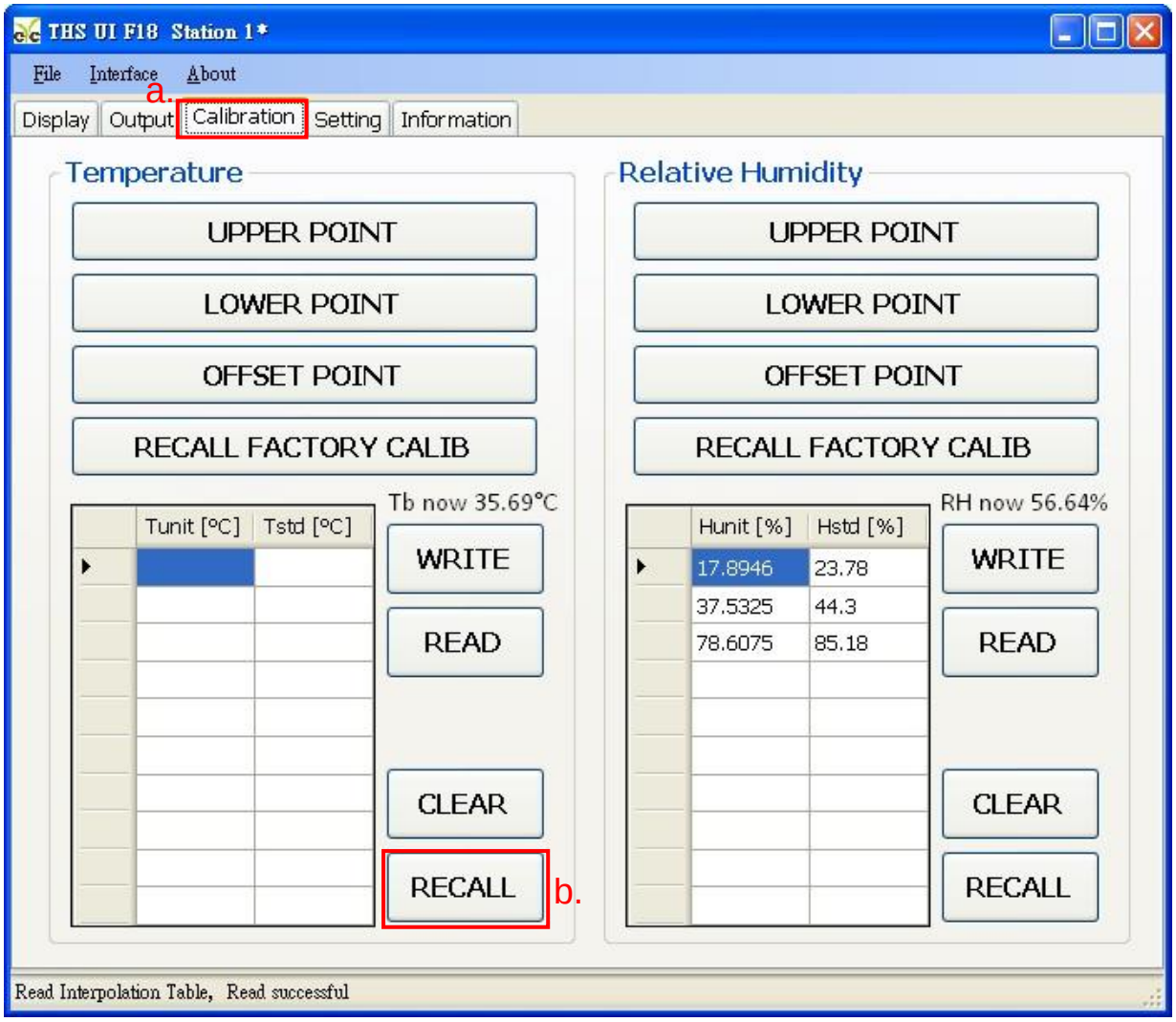
6.14 Restore factory setting of more points

1. Recall temperature of factory setting

a. Click “Calibration“

b. Click Temperature → RECALL

c. That restore more point’s temperature of factory setting is done

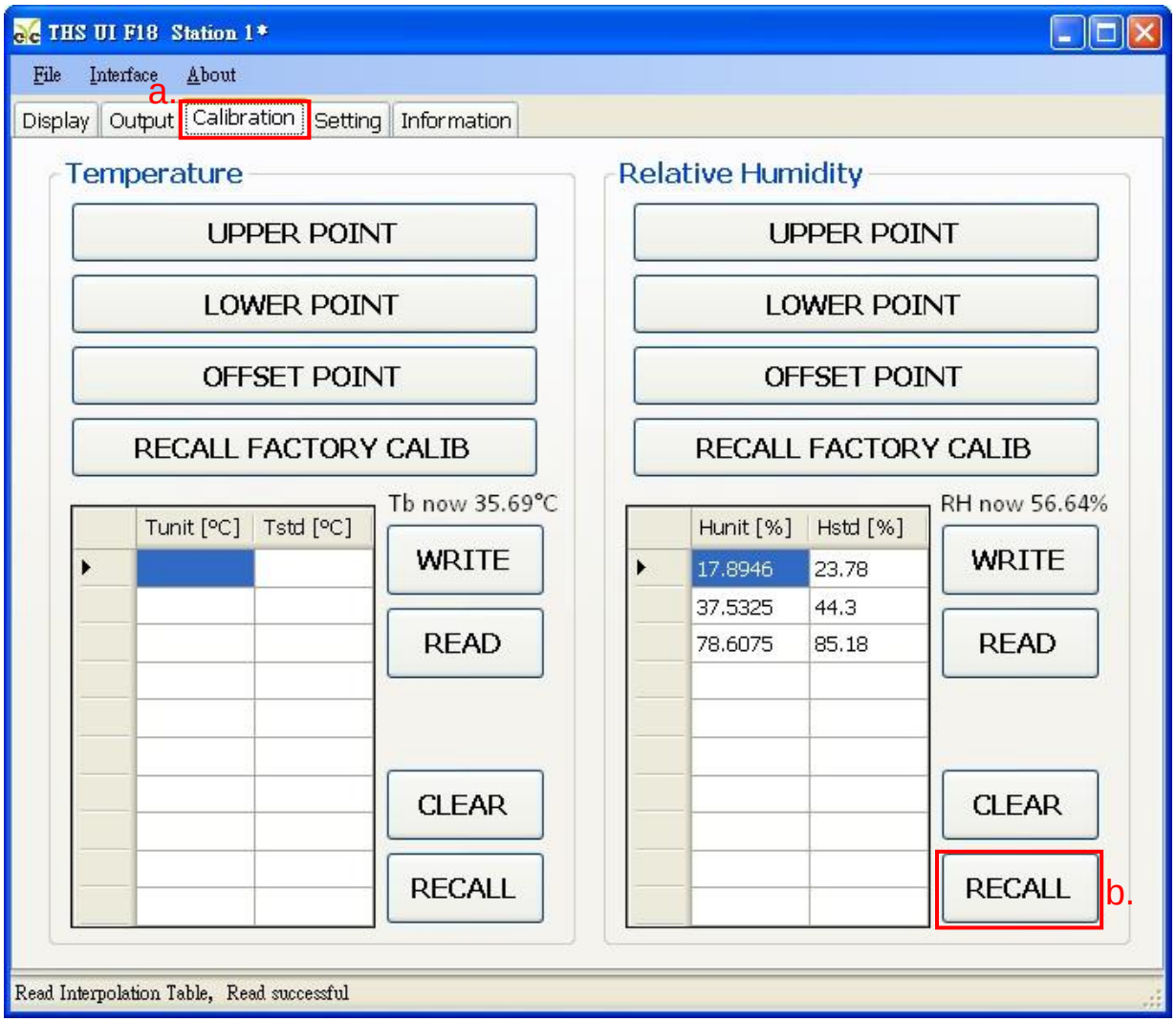


2. Recall the factory setting of more points of humidity

a. Click “Calibration“

b. Click “Relative Humidity“ → RECALL

c. That restore humidity of factory setting is done



VIII. Inspection and maintenance

1. Maintenance

Since this product is inspected and calibrated for high accuracy at the factory before shipment, no calibration on the installation site is necessary when this product is installed. For inspection and maintenance follow the instructions below：

a. Periodic inspection

Periodically inspect this product for its sensing accuracy, and clean the cover.

Set the period between inspections based on atmospheric dust and other contaminants in the installation environment.

b. Sensor maintenance

Do not damage sensor surface during maintenance process.

c. Troubleshooting

If any problem occurs during operation, refer to the table below for appropriate solutions.

2. Troubleshooting：

Problem	Cleck items	Soluations
●No output ●Unstable output	●Disconnected wiring ●Loose wiring ●Power supply voltage ●Sensor damages	●Re-perform wiring ●crew on terminal tightly or replace wires ●Replace the sensor
●Slow response to output ●Errow in output	●Moisture / condensation on the product ●Check installed location ●Check dust and contamination on the sensor	●Remove the sensor and filter. Dry power-off state sensor in clean air seasoning ●Refer to the section ●Cleaning the filter ●Changing the filter ●Calibrate ●Replace the sensor

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