EST.D50.M/

EST.W50.M

Temperature, Humidity, Dew Point

Transmitter

CARLO GAVAZZI

Instruction Manual

Instruction Manual

1. Summary

1.1 Features

1. Temperature up to 50°C
2. Humidity up to 100% RH
3. Dew Point -40 to 60°C
4. Remote monitor by RS-485 (Modbus RTU)
5. Optional display (wall type)
6. 2 x analog output 4-20mA or 0-10V
7. Customized monitoring system via software EST Soft A
8. Graph plotting and logging function via software EST Soft A
9. EST Soft A can be download from the Carlo Gavazzi website www.gavazziautomation.com

1.2 Applicable Fields

- Monitoring for HVAC system
- Ventilation ducts
- Environmental control and clean room
- Buildings, factories

2. Security considerations

2.1. Manual Guide

Before using this product, user must read the details of this instruction manual to ensure using this product with the correct steps. This instruction manual is for reference while using/ setting this product and is required to be conserved properly.

Solemn Statement:

1. This product is not to be used in explosion-proof area.
2. Do not use this product in dangerous situation whereby human health & life may be threatened & affected.

2.2. Illustration, Warning & Attention

Carlo Gavazzi will not be held responsible for any accidents and dangerous occurrences resulted from the usage of this product.

Illustration

	This mark is to give advice & warning for the potential dangers which result from obvious wrong/ improper operation steps. (The left mark means “Watch out for electric shock”)
	In order to avoid the dangerous situation, this mark means some special operation/ action is forbidden to implement. (The left mark means “Forbidden to Disassemble”)
	In order to avoid the dangerous situation, this mark means specific action/ operation is required to implement. (The left mark means “General Instruction”)

Warning

	Please implement the wiring operation under power-off status; otherwise it will cause electric shock, or become the root cause of machinery breakdown.
	This product must be operated under rated power supplying value and be operated under the ruled normal operation conditions which described in the instruction manual; otherwise it may cause disasters such as fire accident or be the root cause of machinery breakdown.
	Please install this product under normal ambient pressure. Otherwise it may cause safety problems.

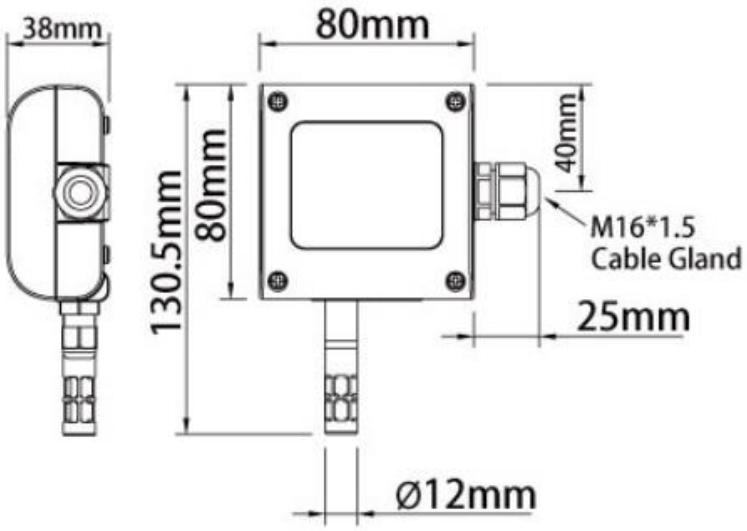
Attention

	In order to be in accordance with all applicable safety standards, the installation & wiring must be performed by qualified installer & professional instruments.
	Please ensure the outlook/ packaging box do not have any damage which result from improper transportation or malfunction which results from lost attachments.
	In order to prevent the product from damages, this product must be used in the proper environment specified in this instruction manual.
	All wiring must comply with the rule of indoor wiring and standard electrical installation rules.
	In order to prevent the interferences from frequency converter etc. and to avoid error signal resulted in this product, please use isolated conducting wire.
	In order to prevent this product from short circuit, please install this product according to the wiring diagram on chapter 5.
	In order to prevent affecting this product's accuracy from external interferences, please do not use two-way wireless devices within 3 meters.
	Do not disassemble this product, otherwise it may cause malfunction.
	During product breakdown, please take safety precaution.
	Please recycle the partial or whole parts while discarding this product.
	While discarding this product, the user must comply with the standard rules for industrial domestic wastes in different country/ location.

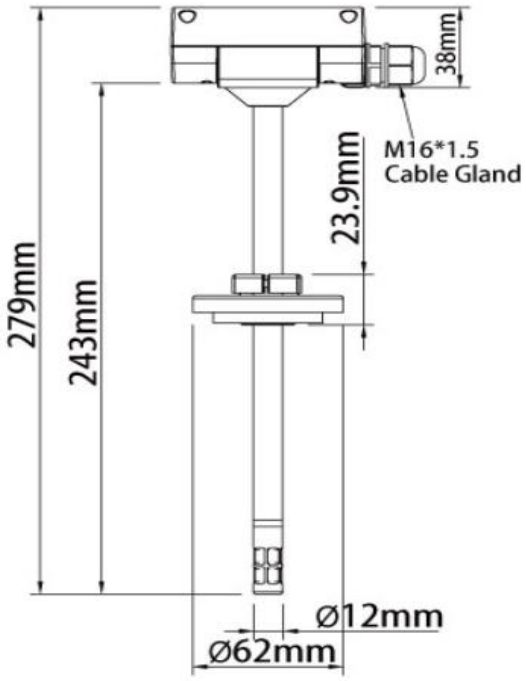
3. Housing & Dimension

3.1 Housing & Dimension

EST.W50.M



EST.D50.M



EST.W50.M

EST.D50.M

4. General Hardware Specifications

Please refer to the datasheet for detail specifications and part no type selection

*Either select humidity or dew point measurement only. Different part no.

EST.W50.M

- Temperature 0 to 50°C
- Humidity 0-100% RH*
- Dew Point -40 to 60°C*
- Power supply 12-30VAC/8-35VDC
- Accuracy temperature +/-0.15°C, humidity +/-2% RH
- Working temperature 0 to 50°C
- Storage temperature -25 to 60°C
- 2 X output 4-20mA/0-10V
- RS485 output as standard
- Optional LCD display with green backlight
- Wall mounting
- Housing PC fire proof class (PC110)
- Electrical connection screw terminals & cable gland
- Protection degree IP65
- Polarity, short circuit, over voltage protection
- CE marking Yes

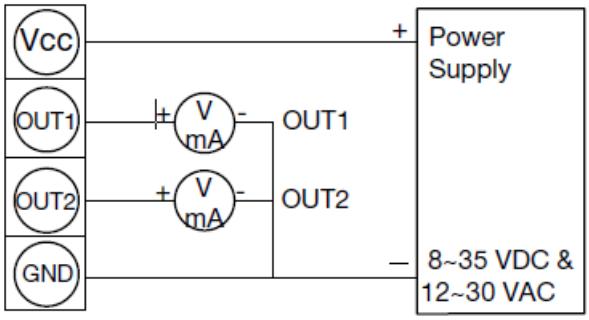
EST.D50.M

- Temperature -40 to 100°C
- Humidity 0-100% RH*
- Dew Point -40 to 60°C*
- Power supply 12-30VAC/8-35VDC
- Accuracy temperature +/-0.15°C, humidity +/-2% RH
- Working housing temperature -20 to 60°C
- Storage temperature -25 to 60°C
- 2 X output 4-20mA/0-10V
- RS485 output as standard
- Duct mounting
- Housing PC fire proof class (PC110)
- Electrical connection screw terminals & cable gland
- Protection degree IP65
- Polarity, short circuit, over voltage protection
- CE marking Yes

5. Signal Connection

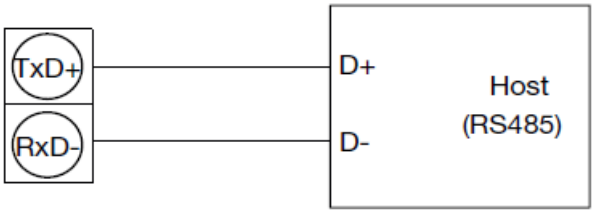
EST.W50.M/EST.D50.M

1. Analog Output Connection Diagram



Analogue Output

2. RS-485 Serial Port Connection Diagram



RS485 Signal connector

6. Software

6.1 Minimum System Requirements

Processor:	Intel Pentium 2.4 GHz or faster
OS:	Windows XP, Windows 7, Windows 10
Memory:	512 MB of RAM
Hard Disk:	1 GB free space (for logging)
Display:	XGA (1024x768)
Serial Port:	2-Wire RS-485

For Windows 10 (computer needs to have ''Microsoft Dot Net Framework 3.5 SP1'' and ''Microsoft Chart Controls for Dot Net Framework 3.5 SP1'' which normally comes preinstalled with the Windows 10. But if not, please download from the official Microsoft Windows website)

https://www.microsoft.com/en-sg/download/details.aspx?id=22
https://www.microsoft.com/en-sg/download/details.aspx?id=14422

6.2 RS-485 Serial Communication

This product uses RS-485 Serial Port Interface to connect with the computer, the hardware communication interface is necessary (not included in this product)

1. If the PC equipped with COM Port. Use Converter (RS-232 to RS-485) to connect with this product.
2. In the PC is not equipped with COM Port. Use Converter (USB to RS-485) to connect with this product.

6.3 Setting Port No. & Transmission Rate

1. RS-485 serial communication interface running with Modbus Protocol
2. Usable Port No. range: 1 to 247.
3. On the same wiring, the Port No. must to be different.
4. The maximum devices which connected to RS-485 interface restricted to 32 devices.
5. Five selectable transmission rate (Baud Rate): 9600 / 19200 / 38400 / 57600 / 115200 bps.

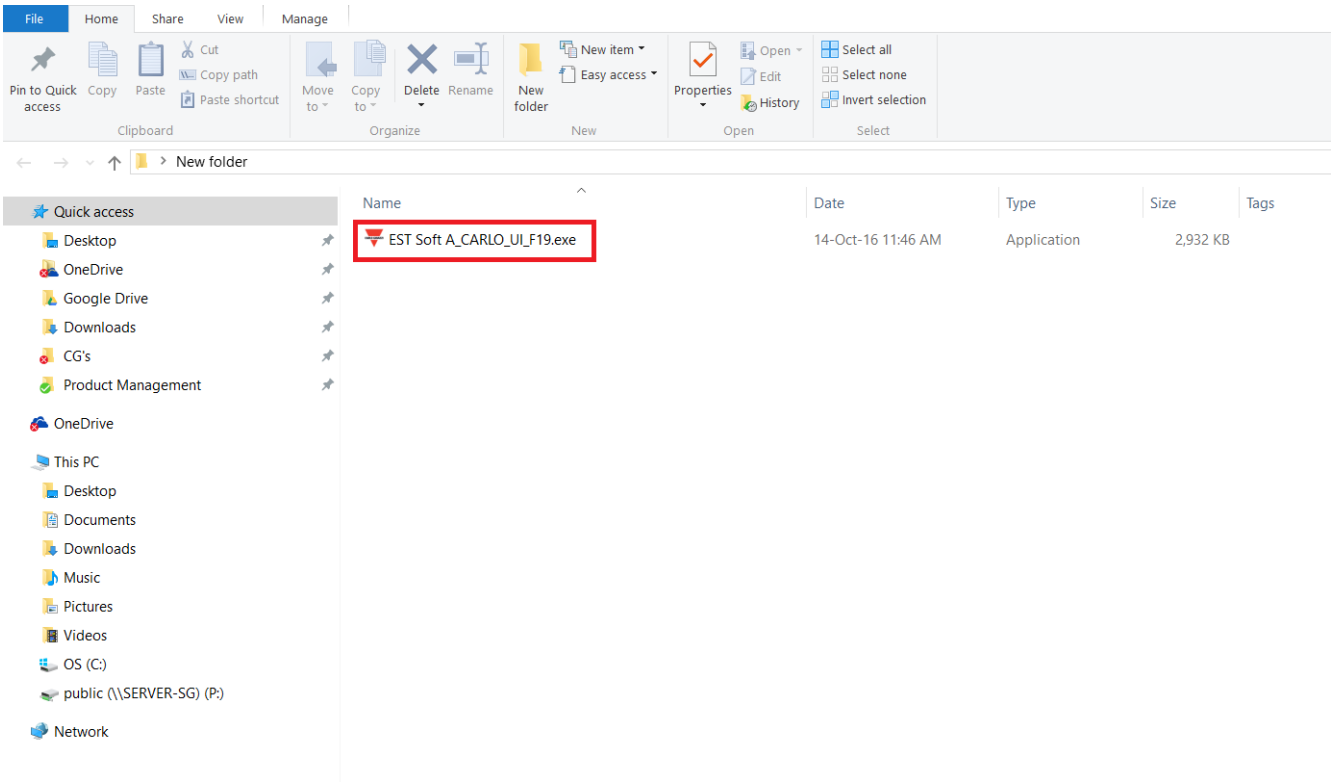
7. Installing and Using the Software EST Soft A

7.1 Execute “EST Soft A”

1. Free installation file：EST Soft A.exe

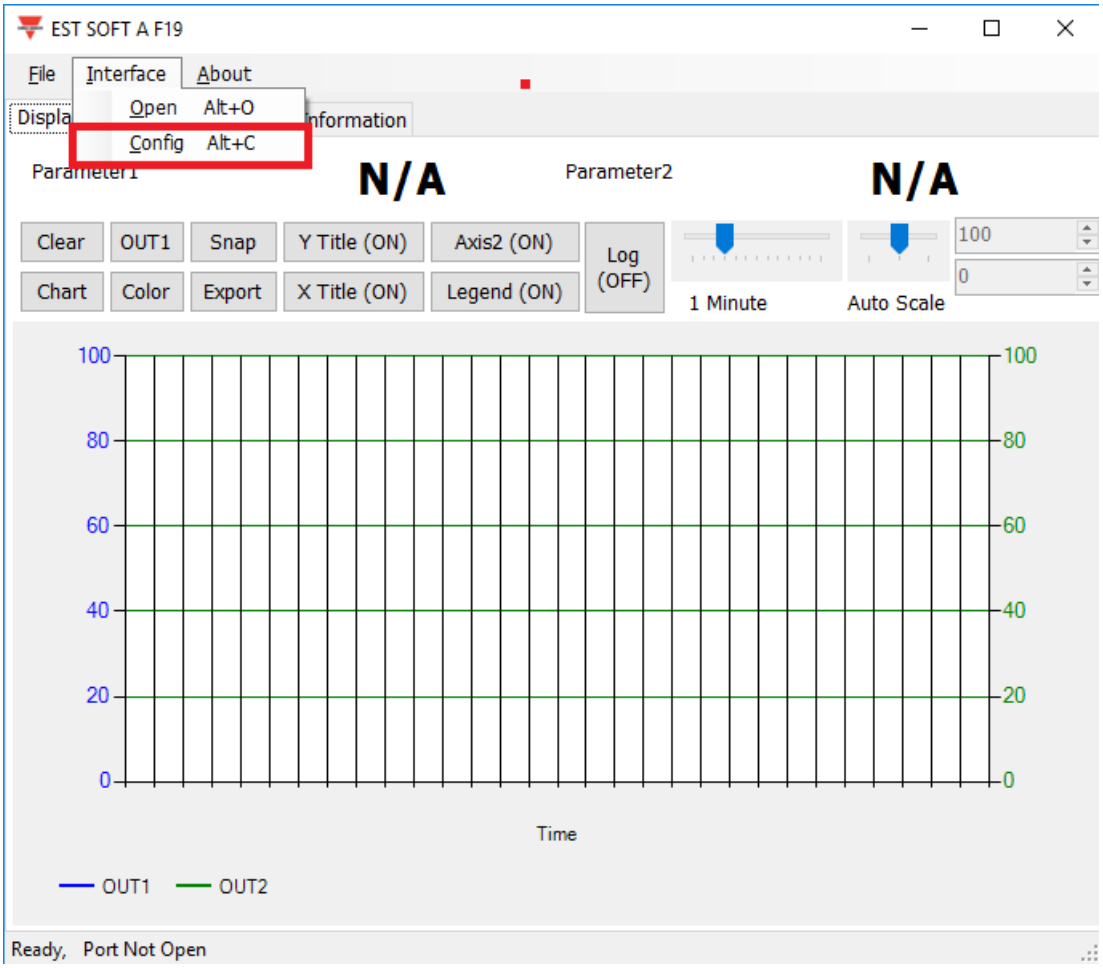
   a. O.S Requirement: Windows XP or above.

   b. Double click on “EST Soft A.exe” to launch the software



7.2 Connect to PC via RS-485

1. Connect this product to PC via RS-485 communication interface devices
2. Click “Interface > Config”



3. Select the corresponding values of com port as following:

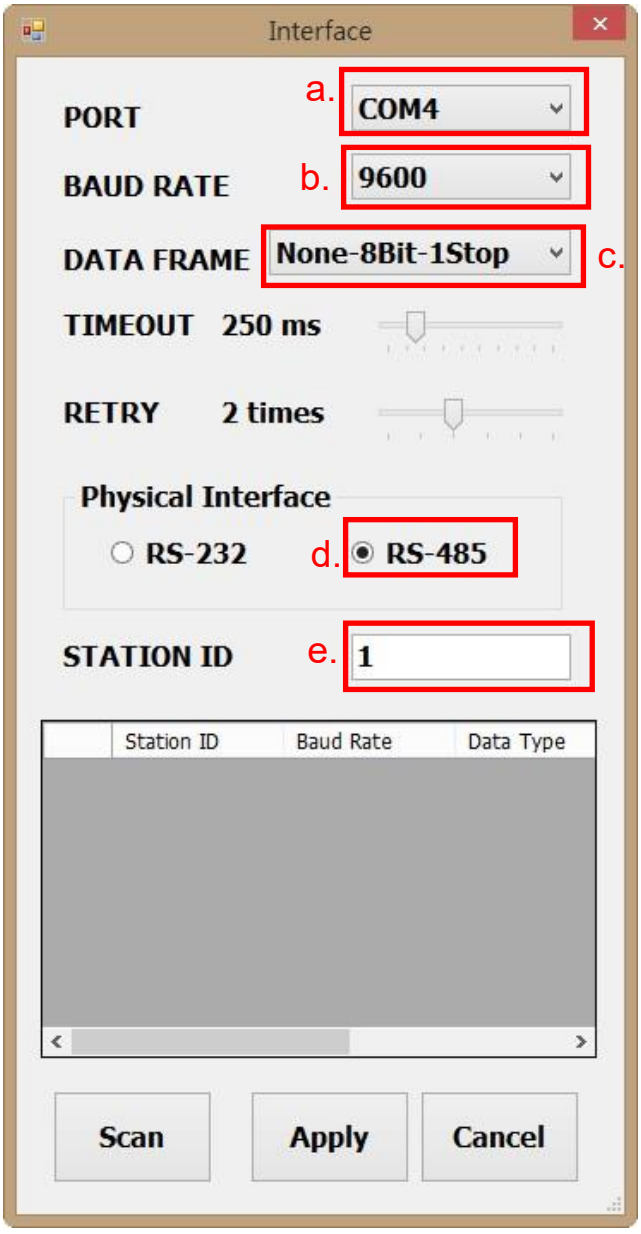
a. Port No of your computer used

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-2Stop,

d. Physical Interface: RS-485

e. Station ID (factory default 1)



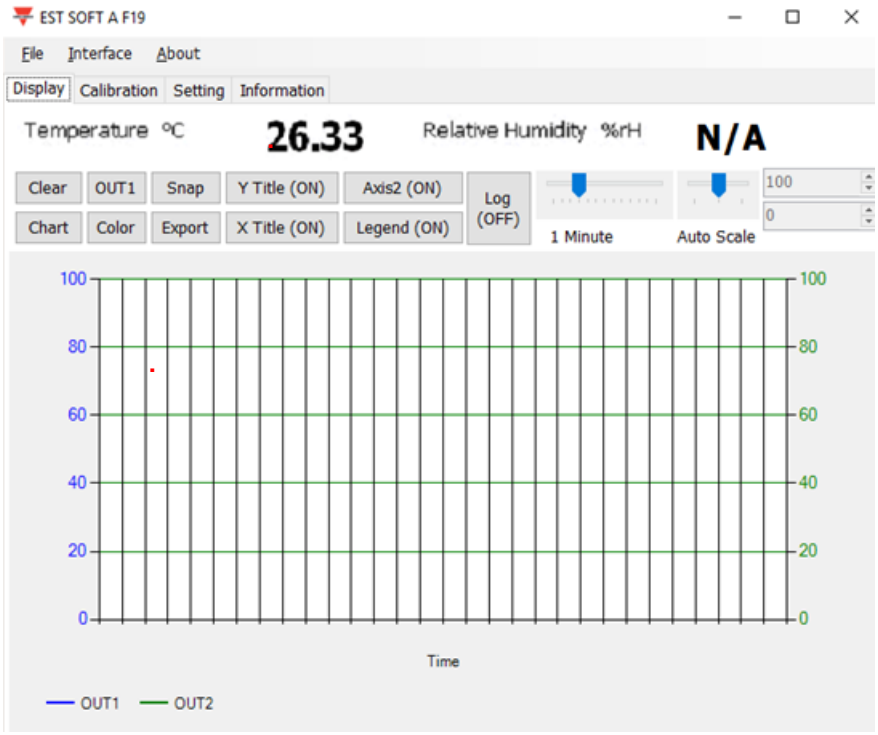
4. Click ‘’Apply’’ to save the setting

5. Or click ‘’Scan’’ to scan for devices connected to the same system

6. If connection is successful, this window will appear：

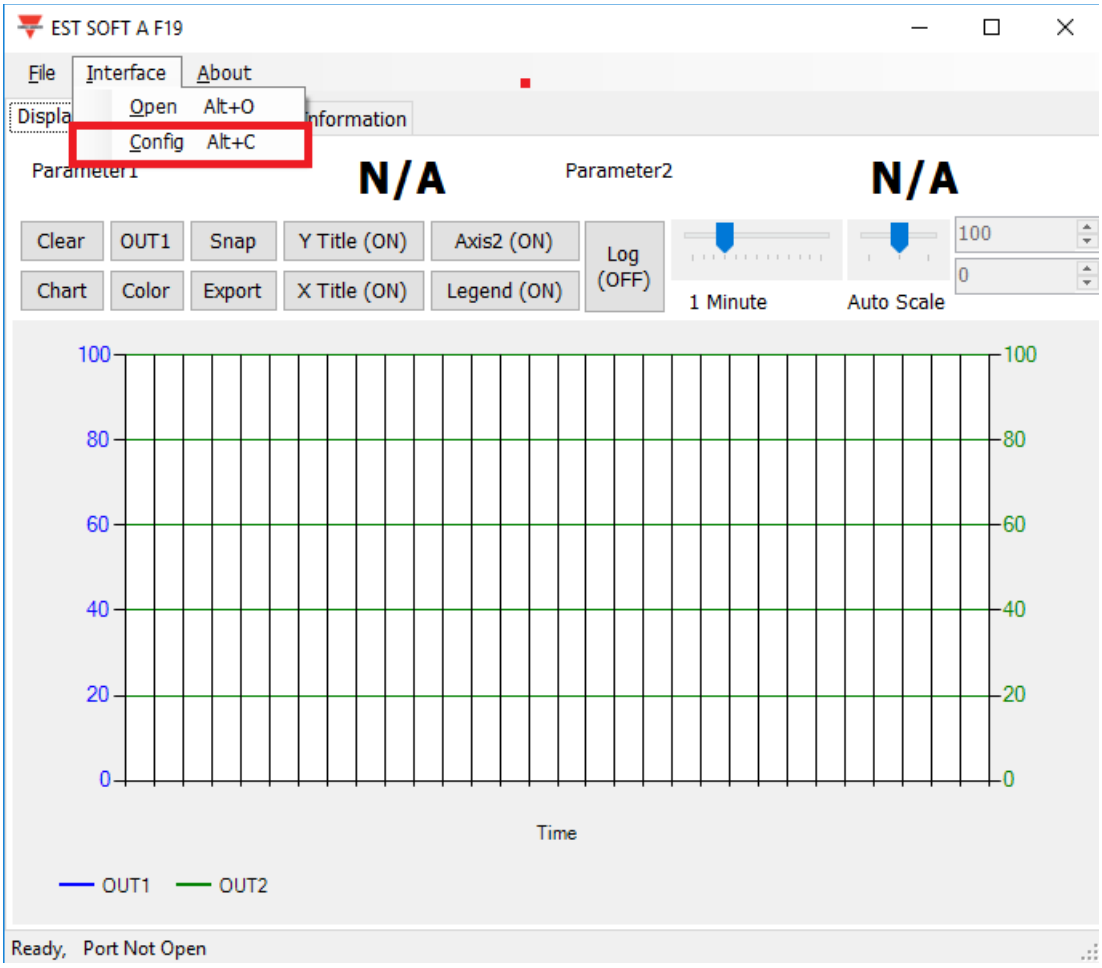
a. Shows the current measured values

b. Shows “Open port, Read successful” in status bar

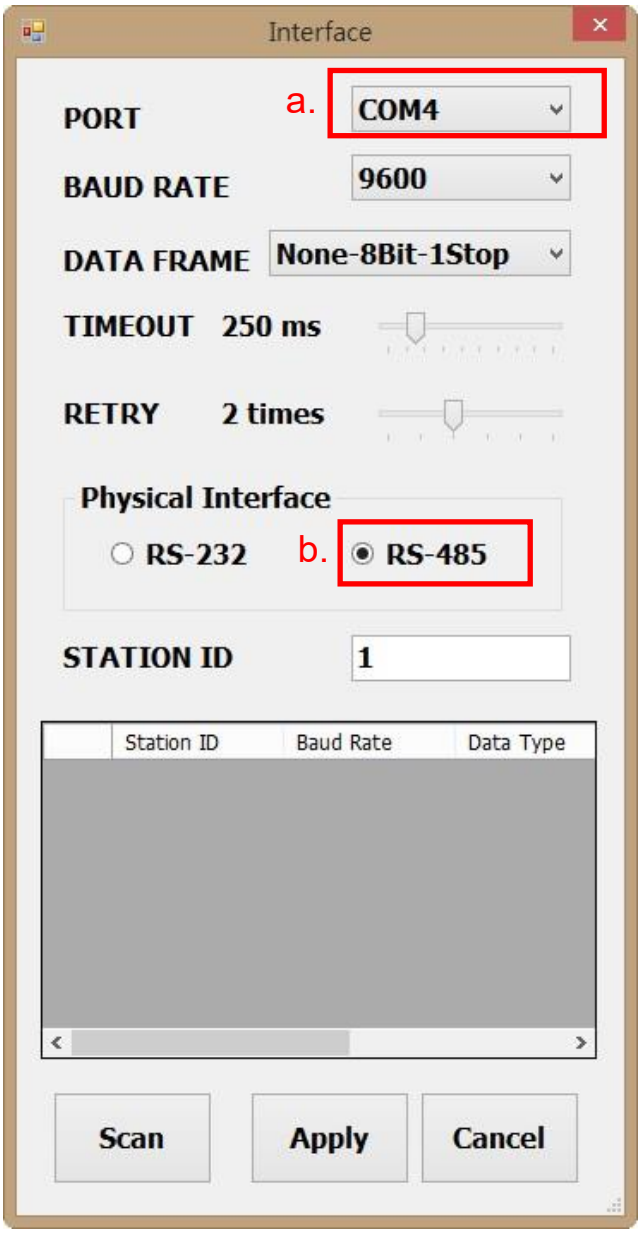


7.3 Scan RS-485 connection

1. You can also scan for existing devices that are already connected on the RS485 line by going to the configuration page

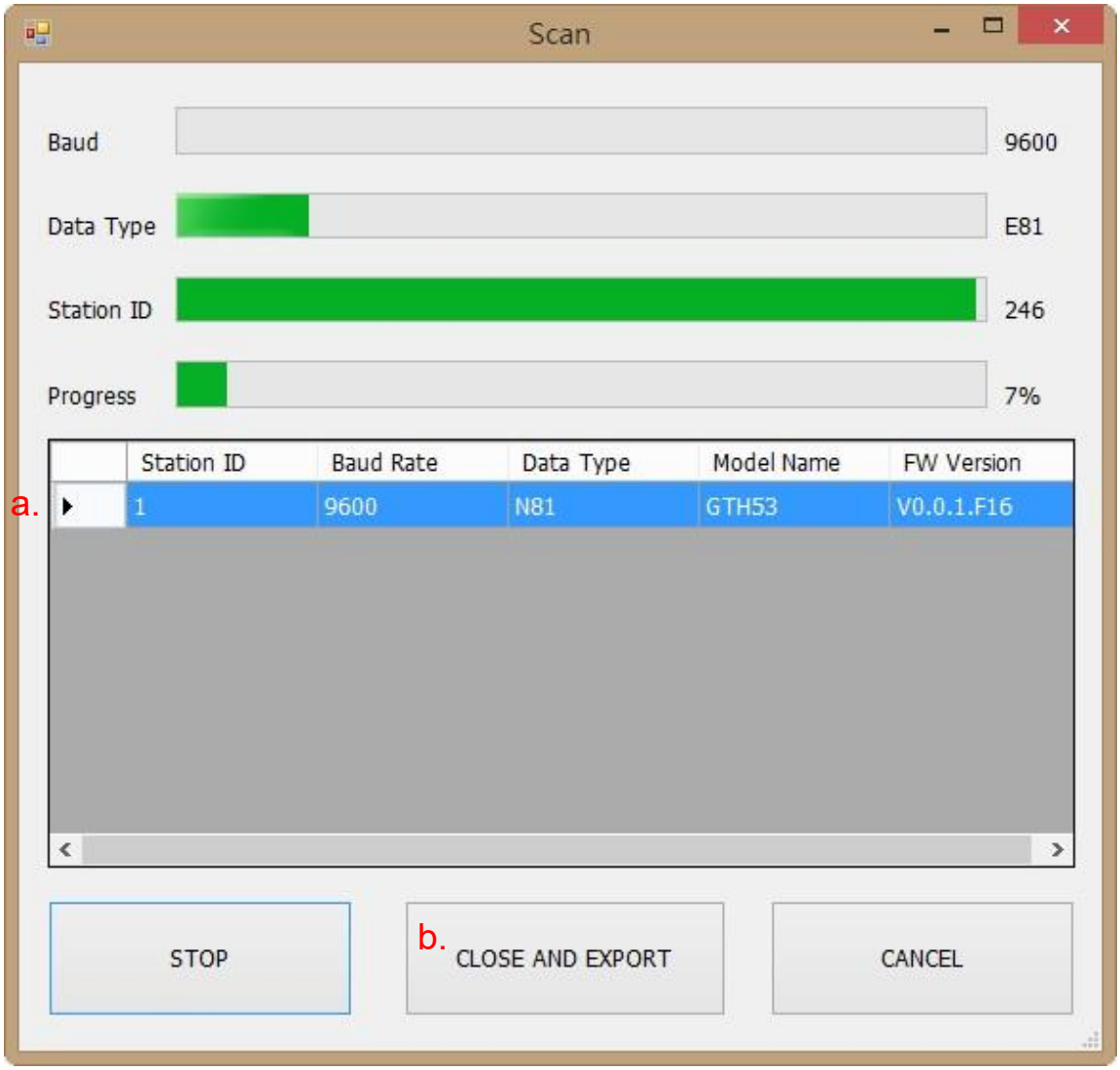


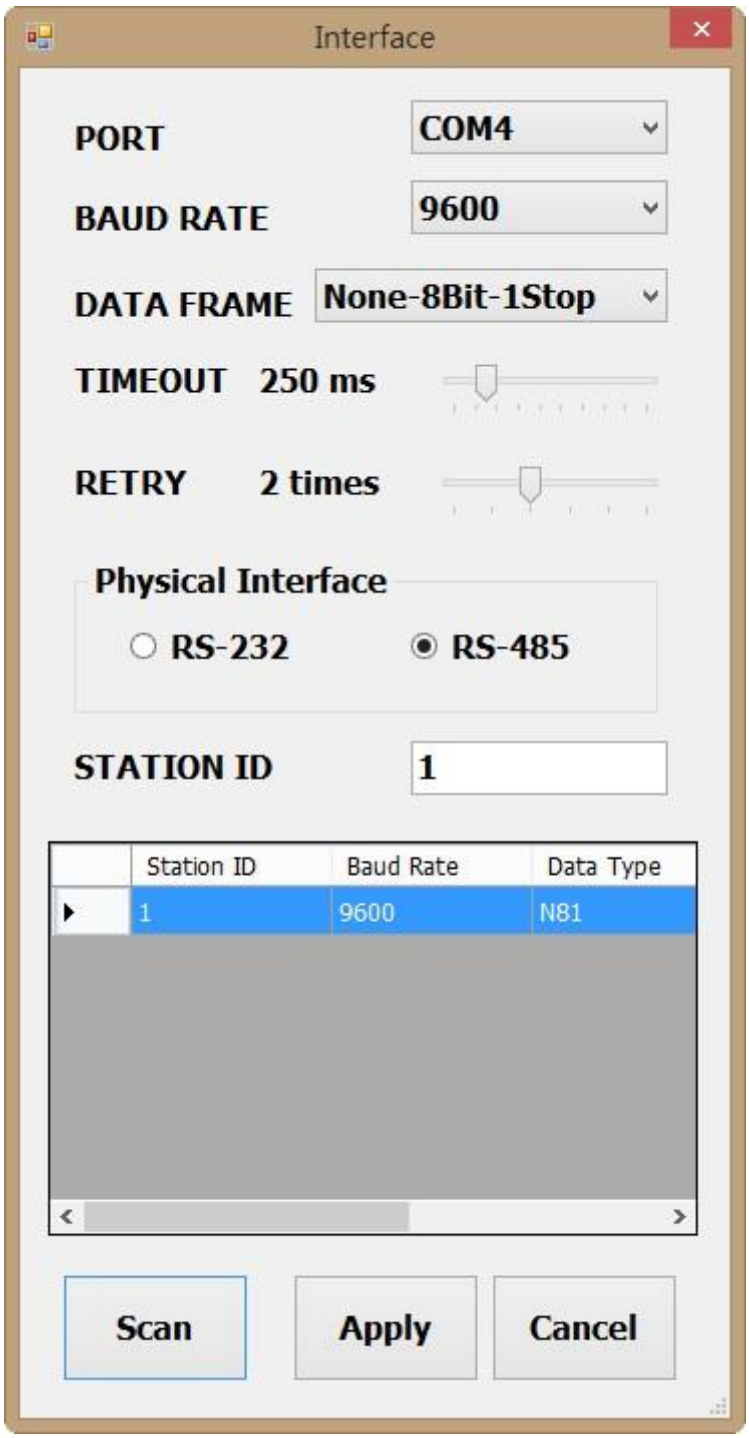
2. Select the corresponding values of com port as following
   a. Port No of your computer used
   b. Physical Interface: RS-485



3. Click ‘’Scan’’ to start scanning for connected devices

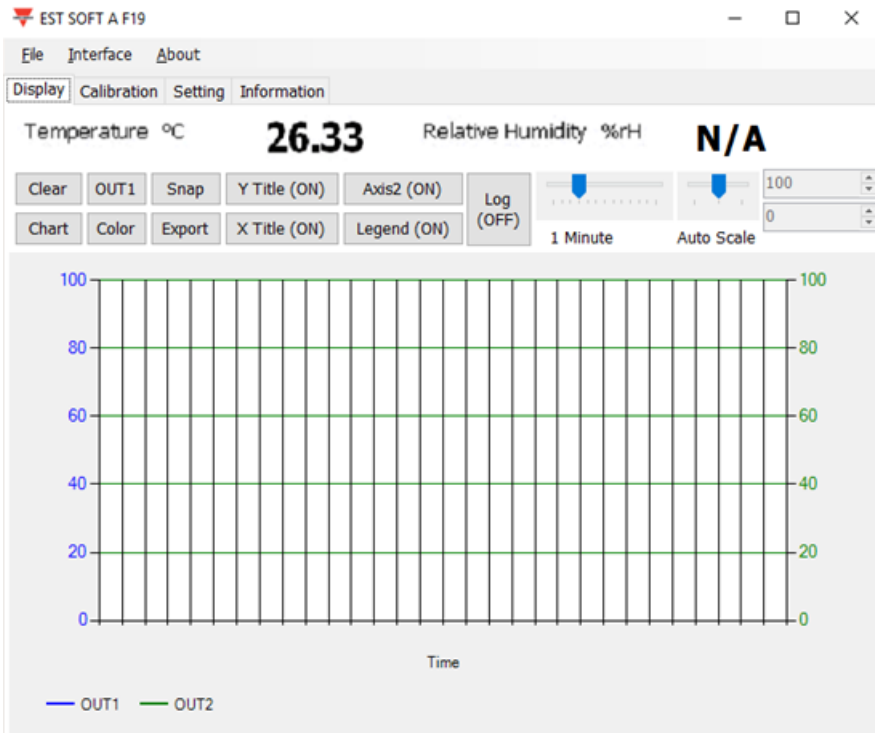
4. Once scanning is completed, connected devices are shown in the table below
   a. Choose the Station ID that you want to edit/connect
   b. Click ''CLOSE AND EXPORT''





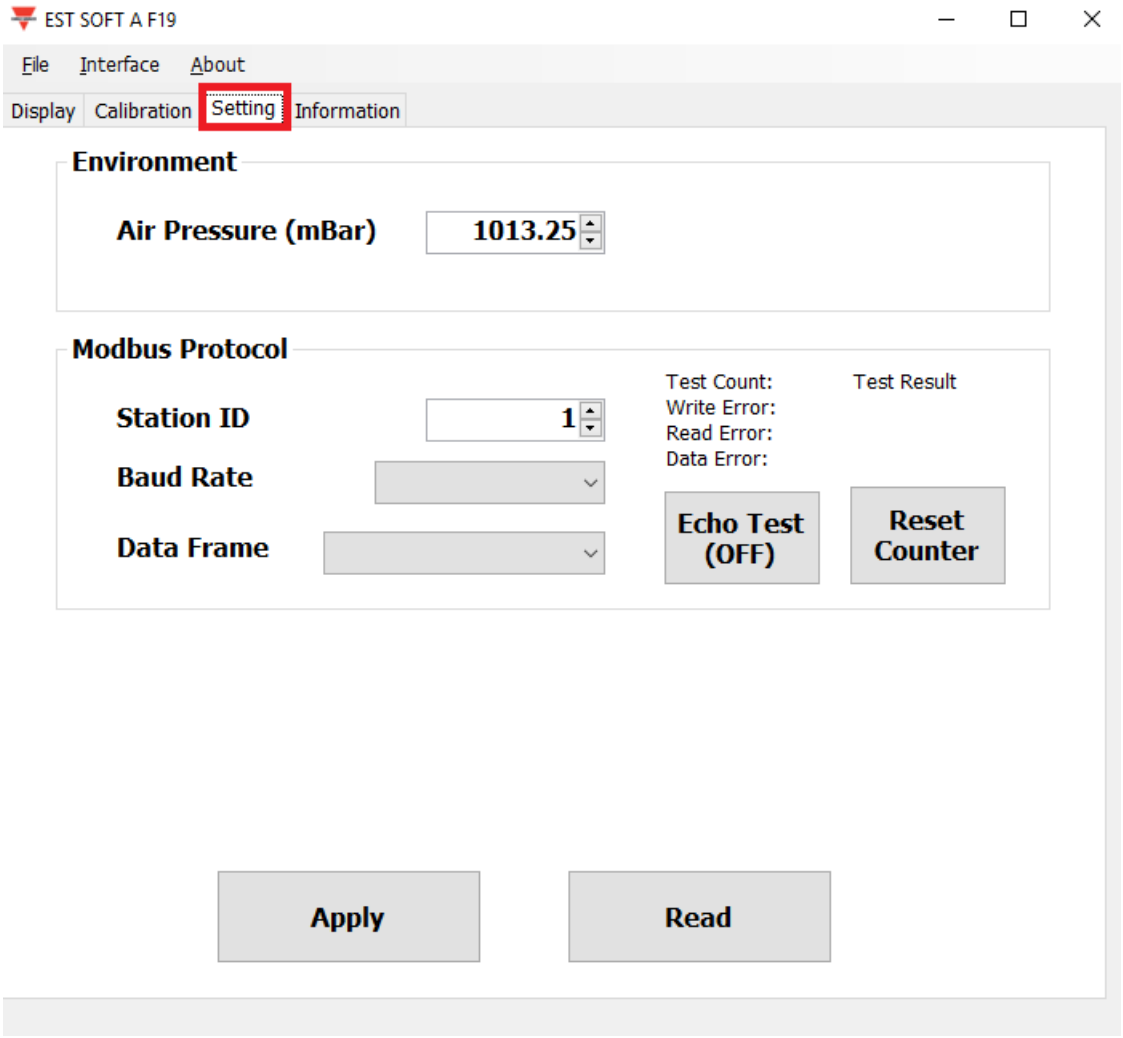
5. Click ‘’Apply’’ to save the setting

6. If connection is successful, this window will appear:
   a. Shows the current measured values
   b. Shows “Read OUT1 Config, Read successful” in status bar



7.4 Setting RS-485 communication format

1. RS485 connection establishment according to 7.2
2. Click on ‘’Setting’’



3. To select Modbus protocol parameter

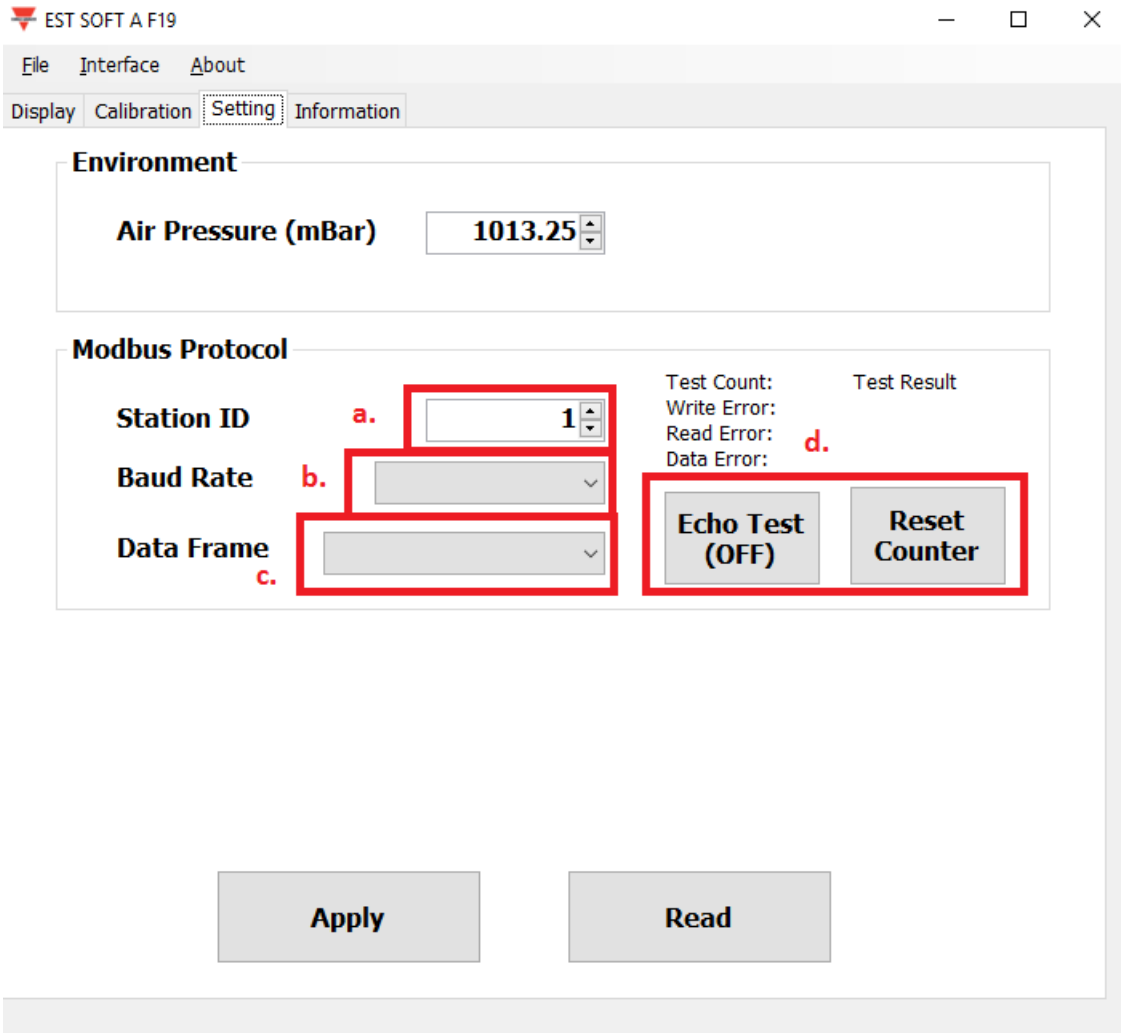
a. Station ID：1~247 (default:1)

b. Baud Rate：9600, 19200, 38400, 57600, 115200 (default:9600)

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

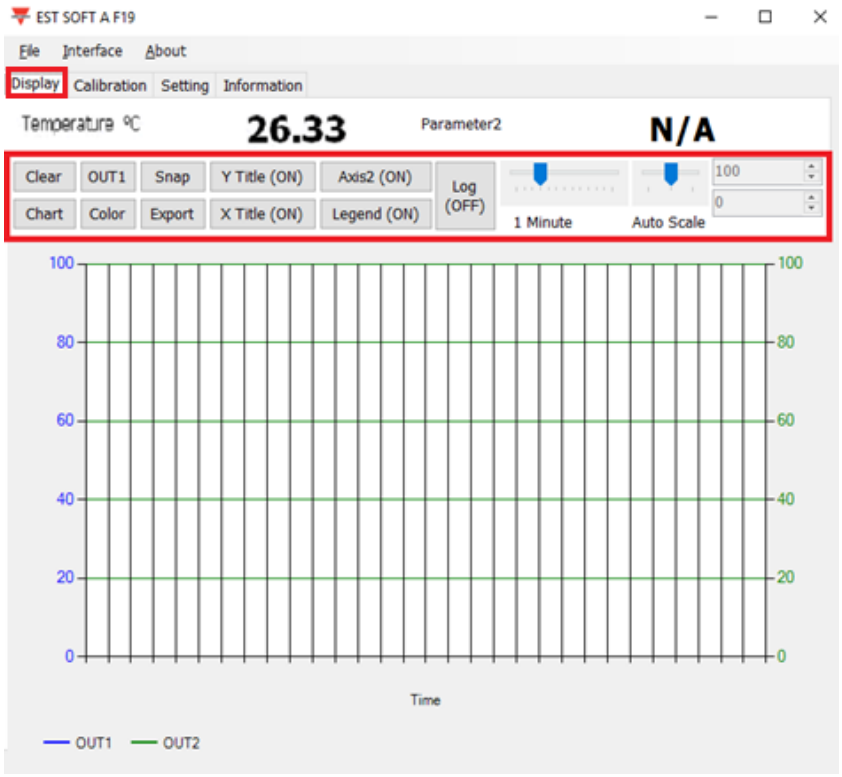
   i. Odd-8Bit-1Stop, Odd-8Bit-1Stop

d. Echo Test: On to test the RS485 signal line



4. Click ''Apply'' to save the setting
5. Then perform RS485 connection establishment according to 7.2 or 7.3

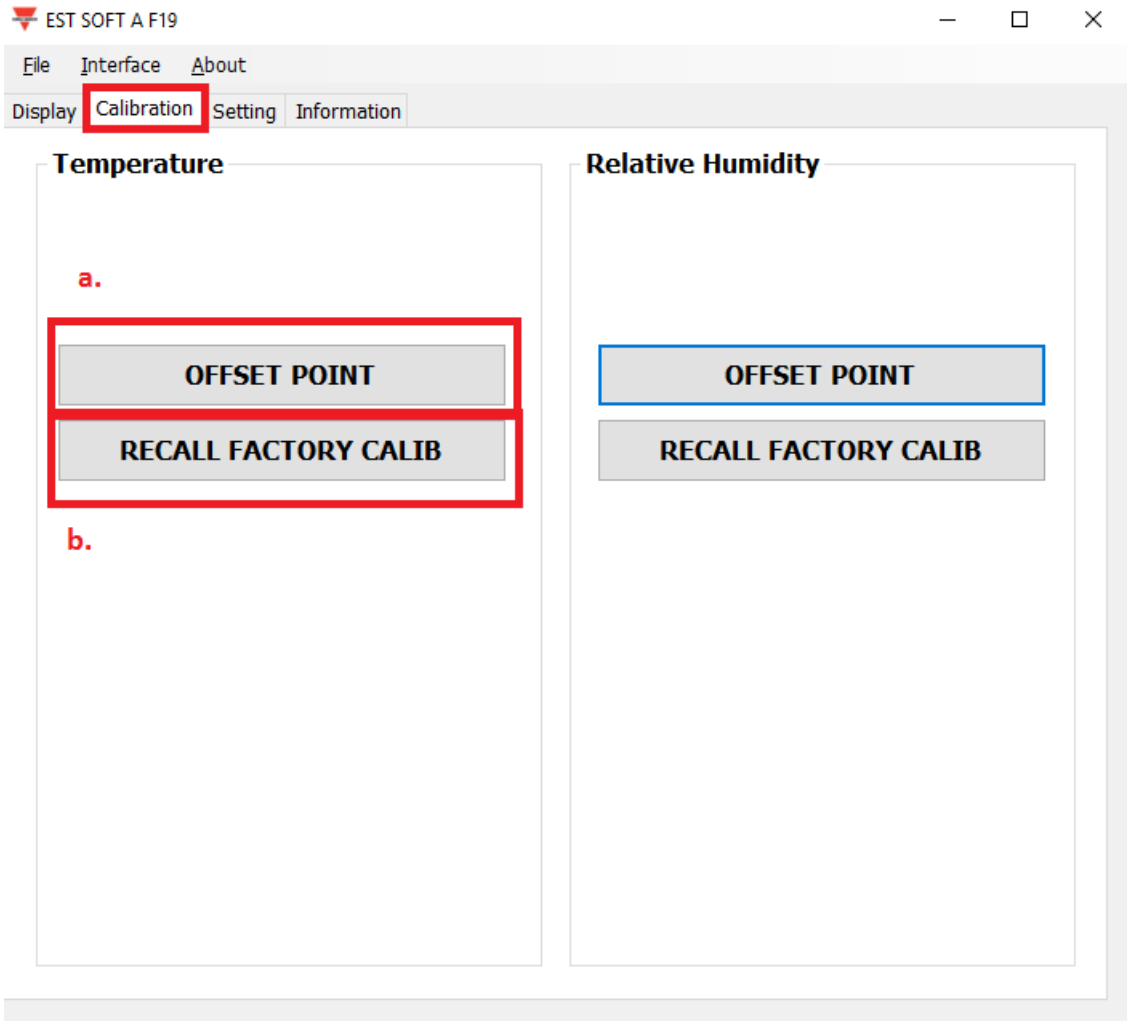
7.5 Display page



a. Clear: clear the chart records
b. Chart: change the chart style
c. Out1: toggle between output channel
d. Color: set the chart line color of the selected output channel
e. Snap: print screen the chart area and can be copy to other programs
f. Export: export the measurement to csv format and select location to save
g. Y Title: On/off the title of Y axis
h. X Title: On/off the title of X axis
i. Axis 2: On/off the second axis on the right of the chart
j. Legend: On/off the legend
k. Log: On/off the logging and select location to save (logging interval is set at File>Log Interval)
l. Auto Scale: On/off auto scale or switch to manual scale for the Y axis

Note: Not every function in this software will be available; this is depending on the product model that the software is connected to.

7.6 Calibration page



a. Offset Point: Key in the offset value required so that displayed measurements starts from the value instead.
b. Recall Factory Calibration: Click to recall back the factory default calibration and erases the offset value.

8. Modbus Protocol

a. User can also use other Modbus software (such as BMS system, Modscan etc) to read data according to the Modbus protocol provided.

b. Please download the protocol document from the Carlo Gavazzi website

c. Modbus is a standard protocol in industry field, a common protocol between electrical equipment.

d. Wiring Rule:

   I. The Port No. must be different.

   II. The maximum devices which connected to RS-485 interface restricted to 32 devices.

   III. Transmission Rate (Baud Rate) must be the same.

9. Cautions

a. In order to prevent the internal PCB & electric components from damage, user must not open the internal cover or if really necessary, please open with extreme care.
b. In order to avoid damage or measuring error; do not touch or knock the high-sensitivity sensors.
c. In order to maintain accurate measuring values. Please install product at a well-ventilated location.

10. Inspection and Maintenance

Maintenance & Trouble Shooting

User is not necessary to calibrate the product during installation. This product has already passed the inspection/ calibration before shipment.

1. Periodical Inspection --- According to the contamination status & density of air dust, to implement the inspection/ maintenance periodically for sensing accuracy and clean the filter.
2. Protection for High-Sensitivity Sensor --- Extreme care is required for not destroying the sensor during installation or maintenance.
3. Trouble Shooting --- Please follow the instructions for appropriate solution,

Unusual Status:	Inspection:	Procedures:
1. No Output 2. Output Unstable	1. Disconnected Wiring. 2. Wiring Loosen or disconnected. 3. Confirm the voltage of power supply. 4. The damage of sensors.	1. Re-Perform the wiring 2. Screw on terminal tightly or re-place wires. 3. Replace the sensor.
1. Slow Response Output 2. Inaccuracy	1. Moisture/ condensation on sensor. 2. Check the installed location. 3. Check the dust & contamination of the product	1. Remove the housing. 2. Place the sensor in the clean/ nature air for drying. 3. Clean the filter