ATNfcSoft

ATNFCSOFT PROGRAMMING SOFTWARE FOR ATT1 TRANSMITTERS

User anual

Code : ISTR-MATNFCSOFTENG00 • Vr. 00 (ENG)

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1 GENERAL DESCRIPTION

The program allows to configure the transmitters of the ATT1 family according to the customer's needs.

Having prepared a configuration, it is possible to store it in the computer, send it to another user or transfer it to one or more transmitters.

The program also allows to prepare, store on PC or send to one or more transmitters the special linearisations (custom) prepared by the customer himself.

This manual explains the functionality of the program and the steps necessary for the correct use of the same.

1.1 Hardware requirements

The program requires a PC running Windows XP or higher.

To transfer the configurations and / or custom linearizations to one or more ATT1, an AFC1 must be installed.

2 AFC1 INSTALLATION

Connect the unit to a computer USB port. Wait for the Operating System to indicate that it has been installed. The AFC1 installation does not require specific drivers.

3 PROGRAM INSTALLATION

3.1 Program download

ATNfcSoft can be freely downloaded from our internet site:
ftp://atftp.ascontecnologic.com/ATT1_PC_Configurator/
Download the ATNfcSoft program on the PC hard disk.

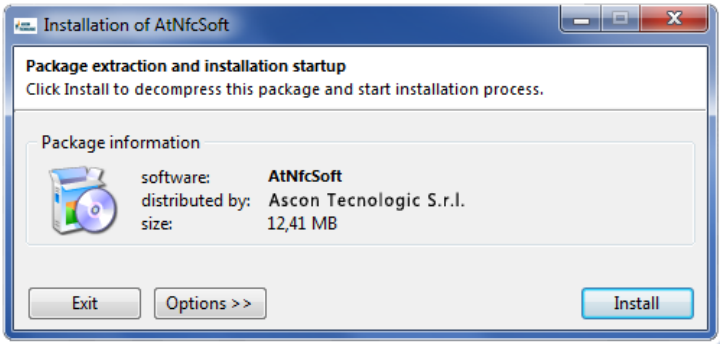
Note: It is strongly recommended to install theATNfcSoft program only after the AFC1 transmitter has been installed.

3.2 Installing the ATNfcSoft program

Once the installation program has been downloaded, move to the download directory, the using the left button of the mouse, double click on the installation Icon:

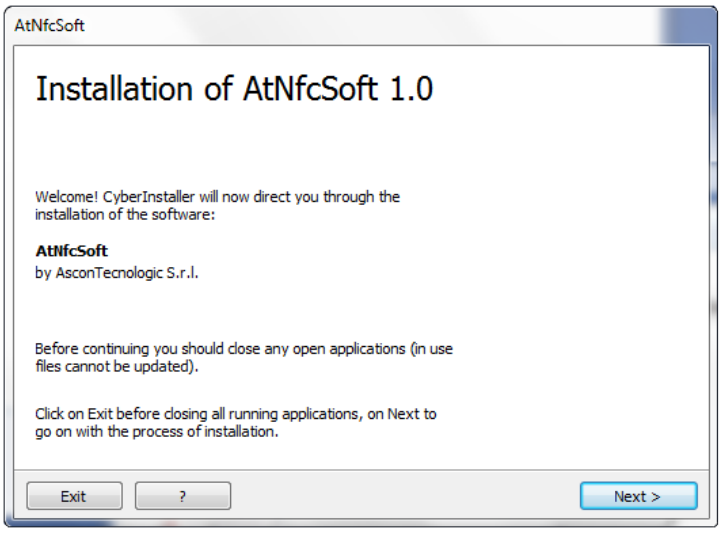
InstallAtNfcSoft.exe

the PC shows the image that follows::

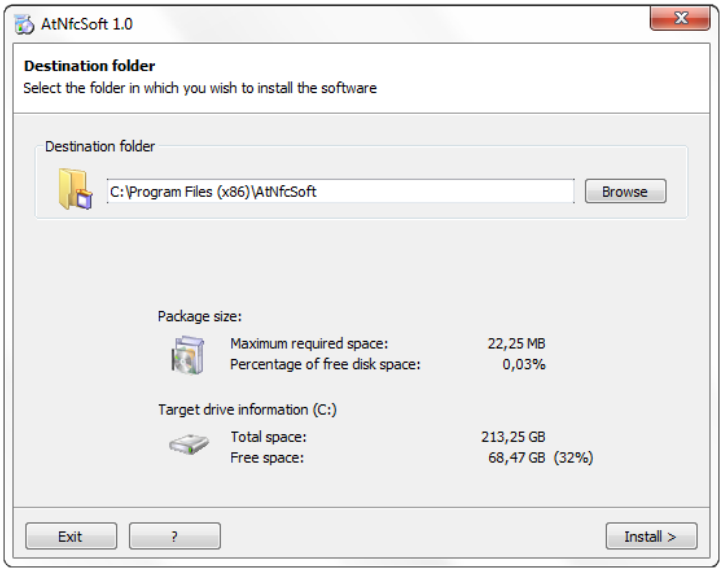


Launch the installation procedure clicking: Install.

Once the installation procedure is running, the system show the welcome page that follows:



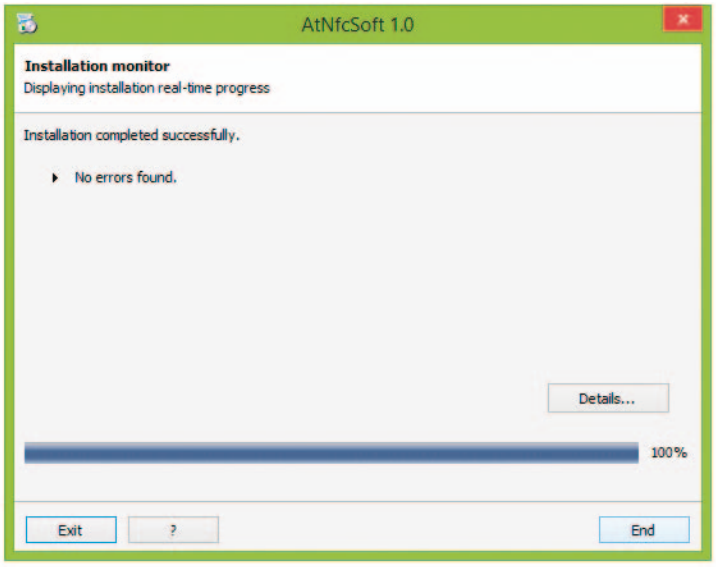
Click on the Next > button, the system now displays a page in which the user can specify the position, on the hard disk, in which the program is to be installed.



Specified the installation position, press Install > to start the installation process.

When the AtNfcSoft program is already installed, the Computer asks to the user to confirm if the new installation must be terminated erasing the old one.

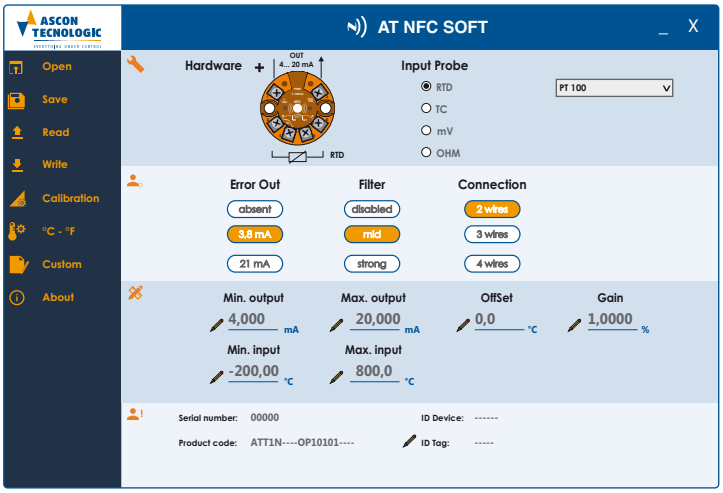
At the end of the installation process the System displays the page that follows.



Press the End button to exit the installation procedure. The icon to run the ATNfcSoft program is copied o the Desktop.

4 HOW TO USE THE PROGRAM

When the ATNfcSoft is launched, the default screen with the PT100 2 wires connection is displayed on the PC monitor.

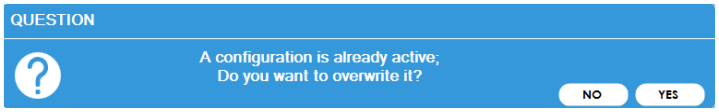


4.1 How to read the configuration present in an ATT1 transmitter

To read the configuration stored in an ATT1 transmitter, place the ATT1 on the antenna of an AFC1 unit. The antenna zone is shown by the symbol:

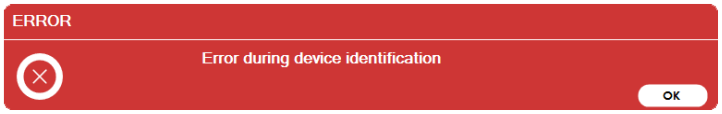
Click on teh key Read

The PC asks:



Press YES.

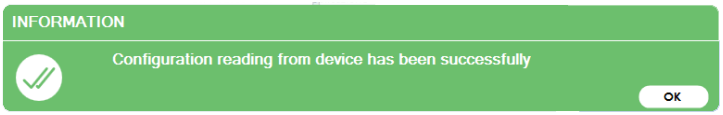
If the read process fails, the Computer shows the following error message:



In this particular case, proceed as follows:

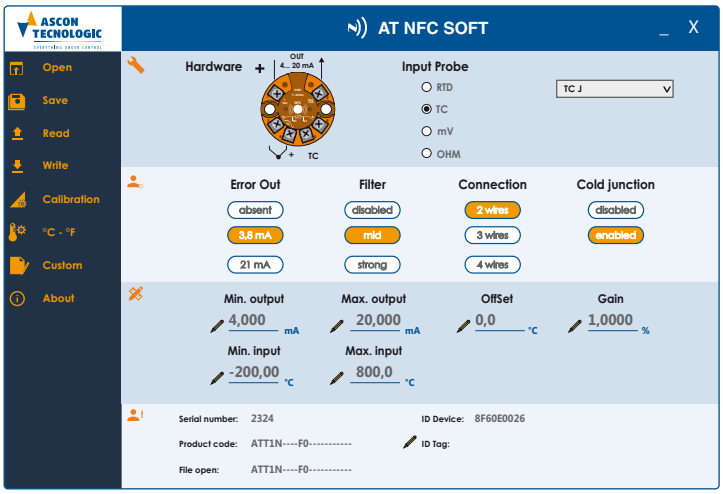
1. Check that the NFC unit placed on the AFC is an ATT1;
2. Sconnect and reconnect the AFC1 from/to the PC;
3. Remove the ATT1 from the AFC1 unit and carefully place it again correctly on the AFC1 antenna;
4. Start a new Read session.

When the read process end in tha correct way, theSystem displays the following message:



Press OK to continue.

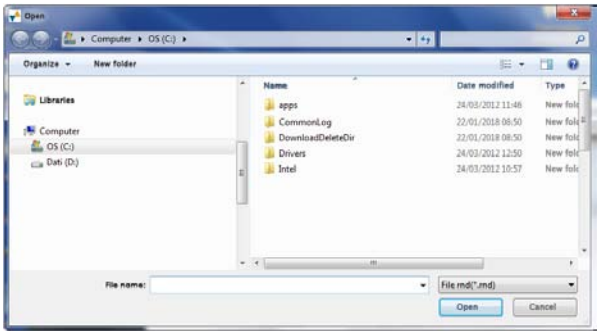
The system returns to the main screen showing the data present in the ATT1 transmitter:



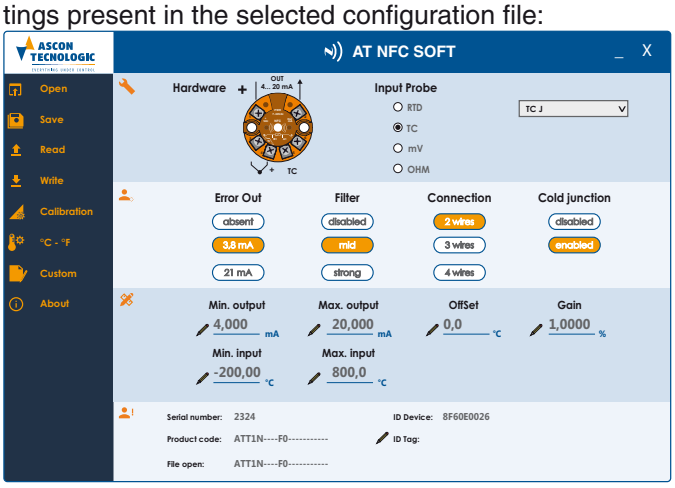
4.2 How to read a configuration saved in the PC

To read a configuration previously saved in the Persona Computer follow the sequence that follows:

1. Click on the button Open, the system displays the Open menu:



   Select the position (disk/directory) where the configuration has been saved;
2. Click on the file name of the desired configuration and click on the Open button;
3. The program returns to the main screen, showing the settings present in the selected configuration file:



Note: In the lower part of the screen the system displays the name of the file loaded in the program.

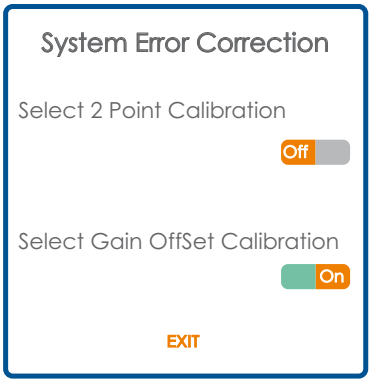
4.3 First time setting

The first time the program is activated it is suggested to make some initial settings.

4.3.1 Calibration

Press the Calibration button, the System displays a mask with which the user can select the type of correction is to be applied.

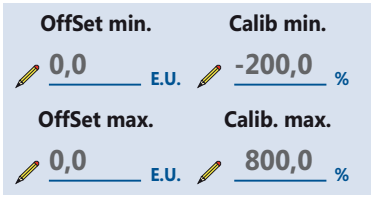
Per fare questo, premere Calibration, il sistema presenterà la maschera con cui l'utente potrà selezionare il tipo di correzione che desidera effettuare(the two selections are mutually exclusive). Once the selection has been made, press **Exit**.



If the "*Gain OffSet Calibration*" has been selected, the main screen shows in the numeric data area:

In which **OffSet** is a constant value applied to the whole input field while the **Gain** is a multiplicative factor applied to the linearization curve.

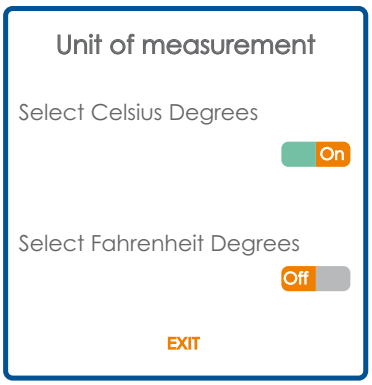
Or, if the "*2 point calibration*" has been selected:



This screen allows to modify the calibration by defining **an OffSet** applied to the beginning of the range to be used and **a second OffSet** that is to be applied to the end of range.

4.3.2 How to select the temperature unit

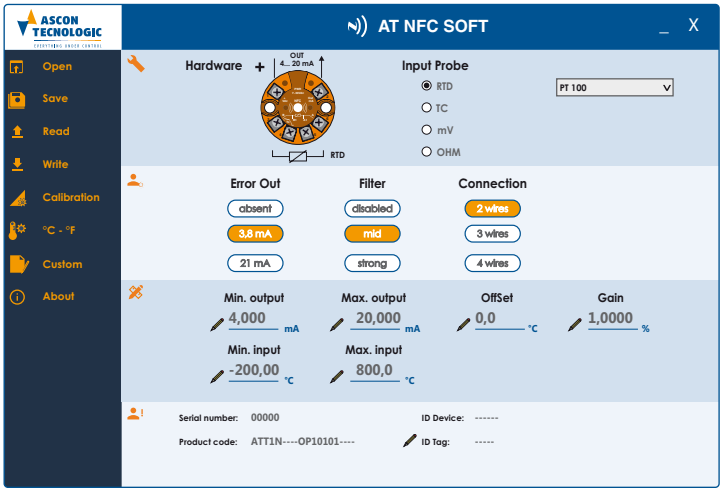
In the main screen, click on °C - °F to access the Unit of measurement selection menu (the two selections are mutually exclusive).



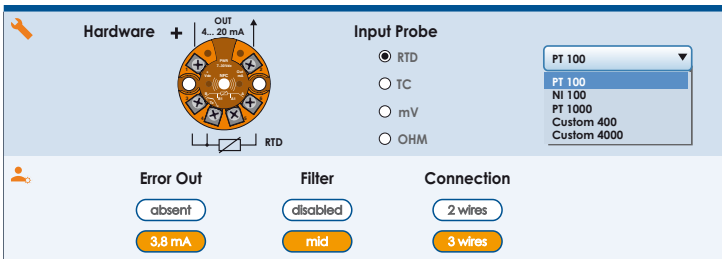
At the end of the selection press **Exit**.

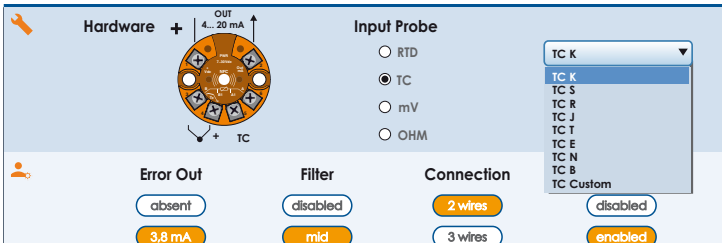
4.4 How to change a configuration

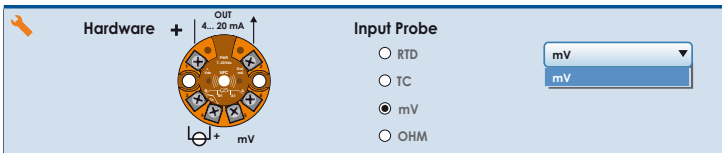
The main screen contains all the parameters that can be set.



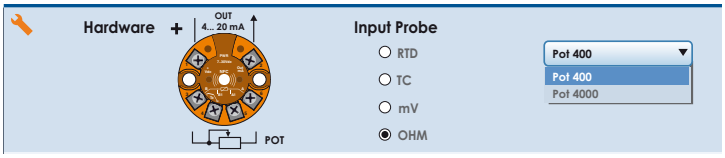
In particular, in the upper part it is possible to select the probe family be used and the specific type:





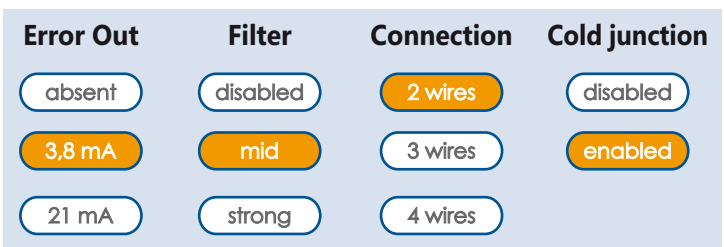


or



For all the choices the drawing on the left shows how to connect the wires for the selection made.

In the central part we find the settings related to the input:



Where:

Error output

Defines the transmitter output signal when an incorrect input signal is detected (sensor break or out of range);

Filter This is a first order filter applied to the measurement input where:

Disabled: No filter at all;

Mid: Medium filter means a 2 seconds filter;

Strong: Strong filter means a 4 seconds filter.

Connection

For the measurements with PT100, Ni100 and 400 Ω potentiometer it is possible to select the type of connection to be used. The drawing, just above indicates the correct connection.

Note: For PT 1000 and the 4000 (Ω) potentiometer can only be connected with the 2-wire technique.

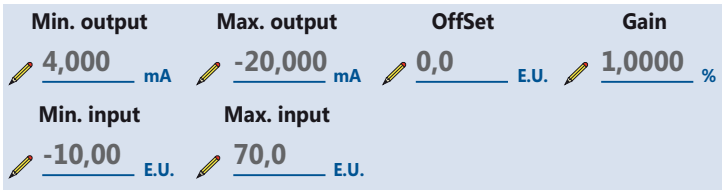
Could junction

Defines whether Cold Junction compensation is active or not during a thermocouple measurement. Cold Junction compensation is displayed when a Thermocouple (TC) input has been selected.

Note: The reference junction compensation must be excluded when:

- A differential measurement is made between 2 TCs;
- When using the TC Custom selection to linearize an input signal in mV.

Under the Input settings part there is the Output settings area:



Where:

Min. output

Defines the beginning of the electric retransmission scale.

Note: This value can not be lower than 4 mA.

Max. output

Defines the end of the electric retransmission scale.

Note: This value can not be higher than 20 mA.

Min. input

Defines the value of the input field associated to the programmed "**Min. output**" value.

E.g. I have to measure a temperature with a 3-wire PT100 probe that has an input range of -200... +800°C. The connected control unit is an old model with a 4... 20 mA input range which corresponds to a displayed measurement ranging of 0... 500°C. This parameter allows to adapt the "Min. output" value (4 mA in this example) to correspond to the 0°C measurement (Min. input 0°C instead of -200°C by default).

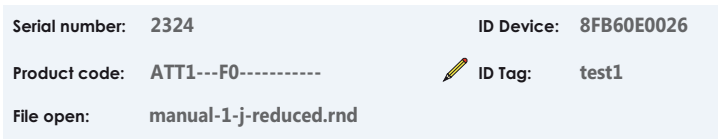
Max. input

Defines the value of the input field associated to the programmed "**Max. output**" value.

Continuing the example at the previous parameter, the parameter allows to adapt the max output value (20 mA in this example) Max output = 20 mA) to correspont to the 500 ° C measurement (Max. Input = 500°C).

The **OffSet** and **Gain** parameters are defined at Paragraph 4.3. To change a value click on the pencil icon and enter the desired number.

In the lower part of the screen are present some information about the programming ATT1 unit:



Where:

Serial Number
ATT1 Serial Number;

Product code
Order code of the product;

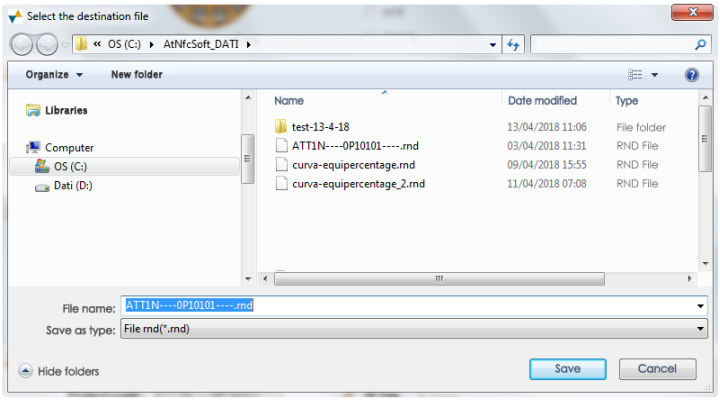
File open
If a saved configuration has been read, this field shows the name of the file read;

ID Device
Similar to Serial number, but indicates the NFC micro-processor number inside the transmitter.

ID Tag
ATT1 unit name (up to 20 characters) often used to indicate the position of the transmitter in the plant.

4.5 How to save in the PC a just prepared configuration

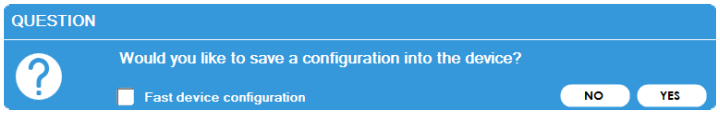
Click on the Save icon, the System shows the save menu:



Select the position where the file is to be saved, assign a name to the file and click on Save.

4.6 Sending the current configuration to one or more transmitters

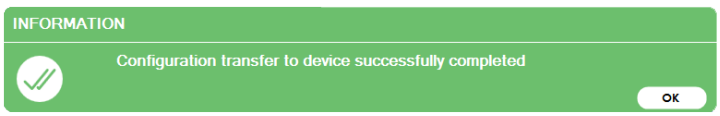
After having tuned up the configuration, click on the button Write, the System displays the following screen:



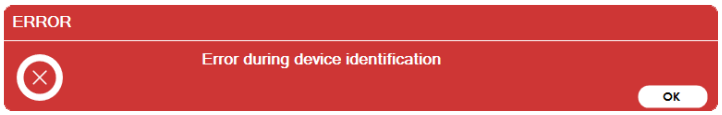
4.6.1 Sending the configuration to only one transmitter

In order to send the current configuration (in the PC memory) to a single ATT1, click on the YES button without enabling the "*Fast device configutration*" option:

If the transfer procedure is OK, the PC displays:



Otherwise in the event of an error:



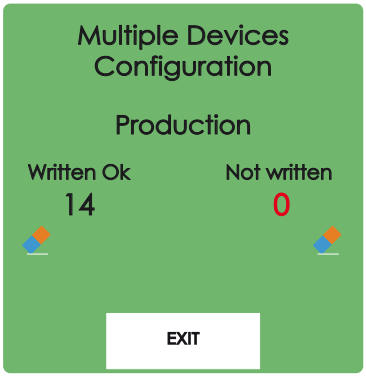
In the case proceed as follows:

1. Make sure that the NFC unit on the AFC1 is an ATT1;
2. Disconnect and reconnect the AFC1;
3. Remove ATT1 from the AF1 and reposition it correctly;
4. Resume the writing action.

4.6.2 Sending the configuration to more ATT1s

Enable the "*Fast device configutration*" option by clicking on the box and displaying the check mark

Then click on the YES button, the System displays the screen that follows:

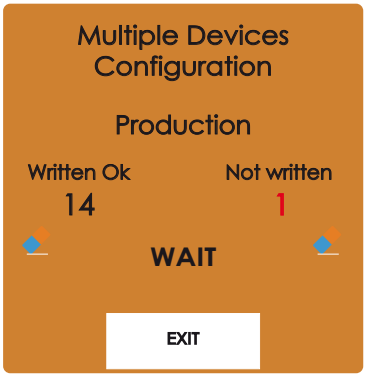


In this screen is reported the number of successful writing processes and those that have been completed with errors.

Place the unit to be programmed in correspondence with the drawing:

After a few seconds the successful writing counter should increase, remove the newly programmed unit and move on to the next one.

When a write generates an error the PC displays:



Rimuovere l'unità e procedere con la successiva.

Note: The program temporarily holds the last serial number of the unit to which it has transferred the configuration to avoid rewriting the same ATT1 continuously.

To reset the counters click on the button.

Once all the transmitters have been configured, click on **EXIT**.

5 CUSTOM LINEARIZATIONS

5.1 When using custom linearizations

When a non-standard or uncommon sensor is used, it is often almost impossible to "*talk*" to it with standard units purchased from a different supplier.

E.g.: The W5 thermocouple (0... 2300°C) is not so common and may be not foreseen by the instrumentation to be used. But, by storing in an ATT1 the mV/°C table of this thermocouple, it is possible to interface the W5 to any instrument (provided with 4... 20 mA input) of any manufacturer.

5.2 How to prepare a custom linearization

The ATT1 can perform 4 types of measurements: TC, RTD, mV and Ohm (Ω), but the difference between the TC and the mV measurements consists in the measurement of the Cold Junction (measuring the mV, the value of the Cold Junction measurement is meaningless and not considered).

A similar argument applies to the measurement from RTD which in practice is a measure in Ohm (Ω).

For these reasons, the custom linearizations are only 3:

– TC Custom (which without Cold Junction compensation become mV);

– RTD custom 400 (400Ω full scale);

– RTD custom 4000 (4000Ω full scale).

In order to prepare a custom linearization, first select the type of input to be linearized by following these rules:

1. To linearize a TC, select an input from TC and the TC Custom type. Make sure the reference junction compensation is **enabled** and click on Custom;
2. To linearize a mV input, select an input from TC and the TC Custom type. Make sure the reference junction compensation is **disabled** and click on Custom;
3. To linearize an RTD, select RTD type input then choose between custom 400 and 4000 depending on the maximum value we will assign to the points in the linearization table. If you have chosen a custom 400, select the type of connection (2, 3 or 4 wires), then click on Custom;
4. To linearize a variable resistance, select RTD type input then choose between custom 400 and 4000 depending on the maximum value we will assign to the points in the linearization table. If you have chosen a custom 400, select the type of connection (2, 3 or 4 wires), then click on Custom.

Once the Custom button has been pressed, the System shows a screen like the following:

The mask is divided in 3 distinct regions:

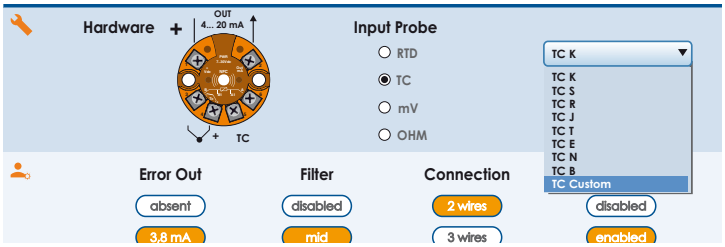
A. Output data area (linear zone);

B. Measurements area: table of measurements referred to the pre-fixed output points (non linear input);

C. Menu (Save, Read, Write, etc. commands area).

Below, to clarify each step, we are going to report an example related to a TC (type W5), but the logic is the same for the different types of sensors.

In the main screen, select an input from TC and the TC Custom type. Make sure the reference junction compensation is **enabled**:



click on Custom;

Then, to define the linearization, operate as described in the following steps. In the **A.** region of the "*EDIT CUSTOM TC*" mask:

A.1 In the **Min. Value** field specify the "*Start of range*" in use (in our example 0°C).

Note: The value that is to be inserted in this field must multiplied per 10^n where **n** is the no. decimal set (here 10^1);

A.2 In the **Max. Value** field specify the "*End of range*" in use (in our example 2000°C);

Note: The value that is to be inserted in this field must multiplied per 10^n where **n** is the no. decimal set (Max. Value = 20000 in this example);

Note: The value that is to be inserted in this field must multiplied per 10 (Max. Value = 20000 in this example).

A.3 In the **Decimal** field specify the number of decimal digits that we are going to display (20000 = 2000.0 then 1 decimal digit);

A.4 Define the number of calibration points that we are going to insert in the table.

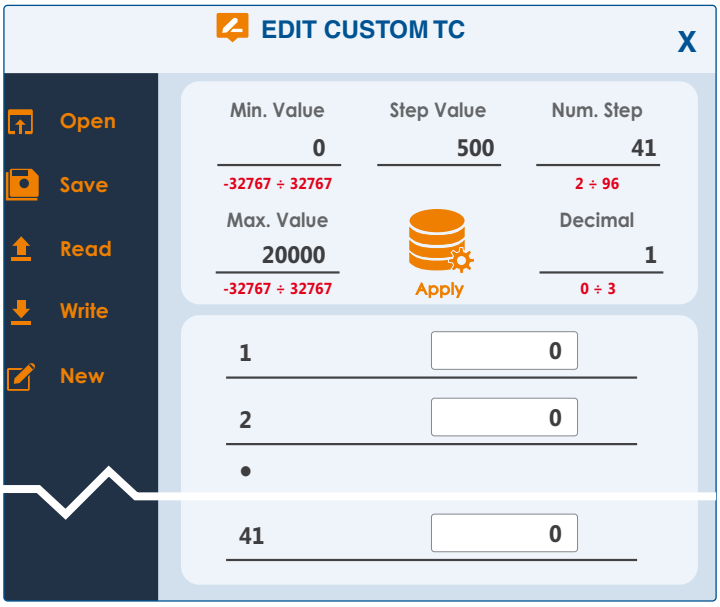
In our example, we set 41 points (number of segments + 1). Remember that to divide an element into 3 segments, we have to define 4 points that are: beginning, first intermediate, second intermediate, last point.

A.5 Clic on the Apply icon.

At this point, the program automatically calculates the **Step Value**. This parameter indicates the "distance" between each calibration point to be inserted in the table.

For our example, the program calculates that hour calibration points must be spaced by 500 units (value that must be divided by 10 to obtain the engineering unit) namely every 50.0°C.

The program also prepares the (empty) table in which the values are to be entered (in the B. zone).



B.1 The first value of the table must be the value in µV generated by the TC at the "*Start of range*" value (in our example, 0 µV).
The other values represent the µV value generated by the TC when the TC temperature is equal to:
(Start of range value) + ([Step value]) * [(Step no.) -1]

B.2 In hour example, the Point number 2 (second) is:
`0 + (50.0)*(2 - 1) =` **50°C**.

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B.21 Following the same logic, at step 20 in the table must be instered the µV value generated by the TC when the TC temperature is equal to:
`0 + 50 * (20 - 1) = 50 * 19 =` **950°C**.

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Once all the measured values have been inserted in the table of the B. zone, it is possible, using the Menu (C. zone) to specify which usage must be done of the linearization made.

C.1 Save the linearization on the PC hard disk (click on the Save button and specify the file_name.LIN) and/or transfer the new linearization to a transmitter (click on the Write button).

To use the custom linearization just made, the transmitter must receive all the values inserted in the B. zone table. This means that, prior it can be used, the linearization must be written in the ATT1 with the Write command. Therefore, if the linearization is saved only on the PC hard disk, when it must be used by ATT1, it must be read from disk (Read command) and written in ATT1 (Write command) before it can be used.

Once the linearization has been transferred to the ATT1, it is necessary to return to the main screen (click on the **X** in the high-righ end of the mask), select the custom measurement (in our example the TC Custom) and send this configuration to ATT1.

The new configuration will become active the next time the ATT1 is turned ON.

For the thermocouples only, the linearization table must contain the values to be assigned to the measurement of the Cold Junction of the specific TC.

Example no. 2:

As a second example, we need to transmit the position on a 300 mm rail, measured through a non-linear 250Ω full scale potentiometer.

Min Value = **0** (mm);

Max. Value = **30000** (mm);

Decimal digits = **2**;

Number of Steps = **21**;

The result is a Step Value = **1500** (15 mm).

In the table we have to insert the resistance, measured every 15 mm, in tenths of Ω (Ω/10).

5.3 Program Information

When a support is to be requested, one of the important information that is to be given to the customer support department is the Version of the program installed.

To obtain this information, press on the About menu entry.

The System shows the info screen: