



F500-TTDIN
4-20mA HART

TTDIN Rail Temperature Transmitter

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1. GENERAL DESCRIPTION

The DIN rail **F500-TDIN** Temperature Transmitter is designed to be used in industrial environments, offering reliable, accurate and stable measurement. In addition to the standard Pt100, TC temperature measurement, it also has an isolated passive analog current and 4@20 mA HART signal output. The 2-port high isolation provides surge suppression and protects the control system from transients and noise.

2. MAIN APPLICATIONS

- Sugar and Alcohol
- Fertilizers
- Chemistry
- Food and Beverages
- Petrochemical
- Pharmaceutical
- Energy
- Plastic
- Among others

3. TECHNICAL CHARACTERISTICS

The following are the main technical characteristics of the DIN rail **F500-TDIN** Temperature Transmitter.

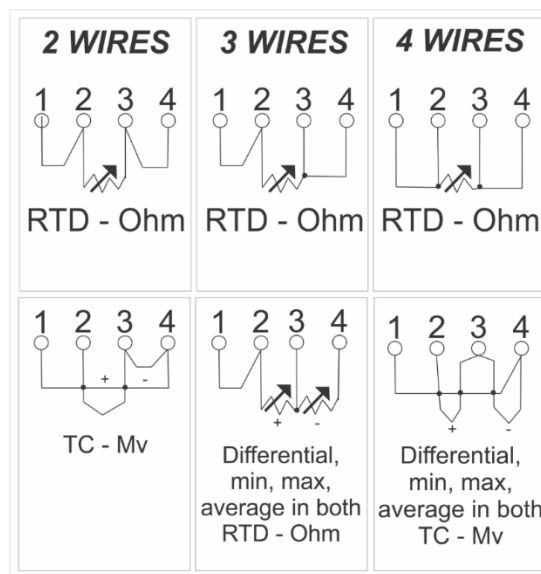
| | |
|------------------------|--|
| Types | RTD, TC, Ohm, mV |
| Exit sign | 4 to 20 mA |
| Communication Protocol | Hart |
| Feeding | 9 to 32 Vcc, without polarity – 12 mA |
| Operation temperature | -40 °C to 85 °C |
| Stability | 0,01°C (RTD), 0,1°C (E J K N T), 0,2°C (B R S) |
| Precision | 0,1°C (RTD), 0,5°C (E J K N T), 1°C (B R S) |

4. DIMENSIONAL



5. TYPES OF CONNECTIONS

The following are the different types of connections that can be used for the DIN rail **F500-TTDIN** Temperature Transmitter.



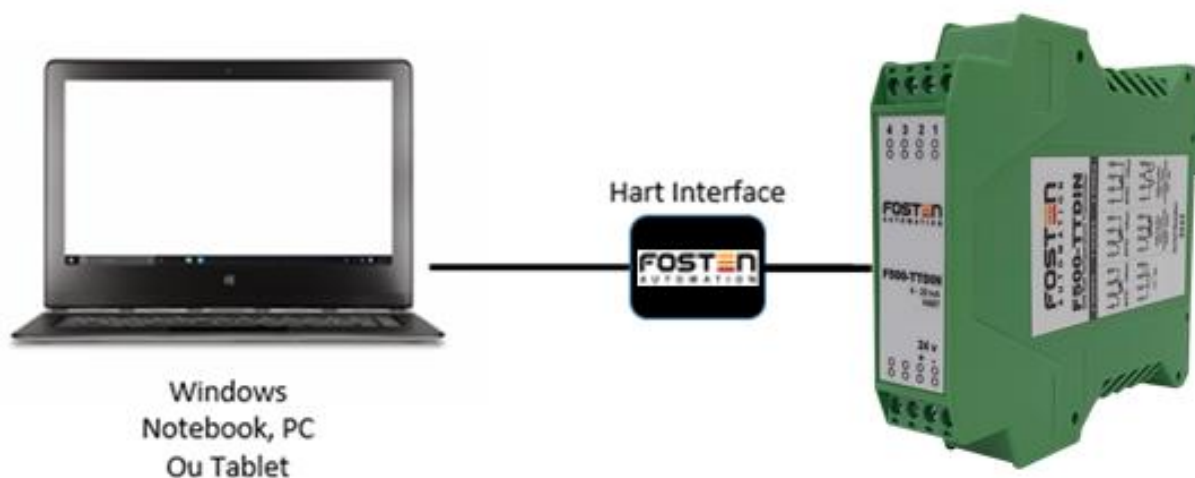
6. SALE CODES

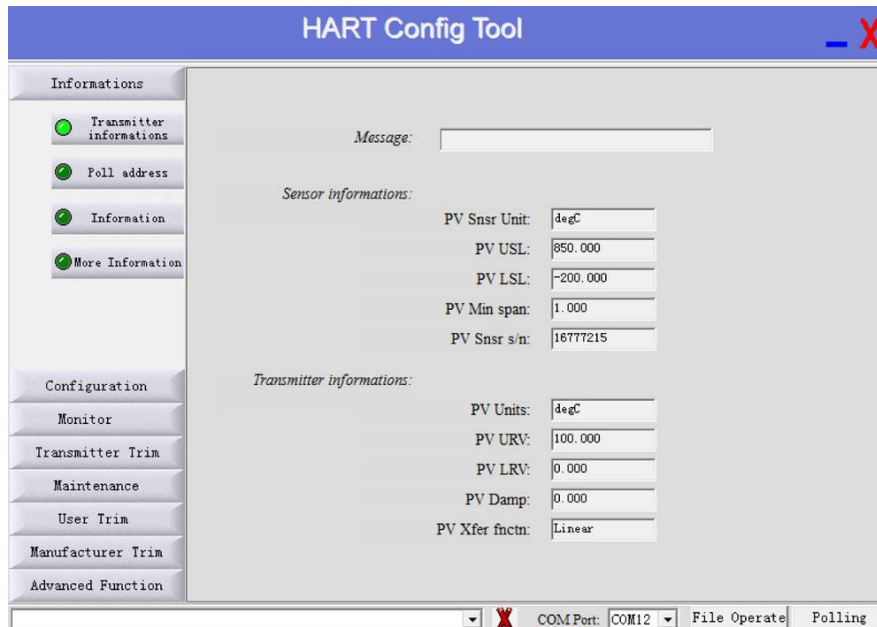
Below we have the sale codes for purchasing:

| PRODUCT | | | |
|------------------------|------------------------------------|---|------------------------------------|
| F500-TTDIN | : DIN Rail Temperature Transmitter | | |
| COMMUNICATION PROTOCOL | | | |
| H | : 4 to 20 mA Hart | | |
| SENSOR TYPE | | | |
| 1 | : RTD - PT100 | C | : Thermocouple - Type K |
| 2 | : RTD - PT50 | D | : Thermocouple - Type N |
| 3 | : RTD - PT200 | E | : Thermocouple - Type R |
| 4 | : RTD - PT500 | F | : Thermocouple - Type T |
| 5 | : RTD - PT1000 | G | : Thermocouple - Type DIN L |
| 6 | : RTD - COBRE | H | : Thermocouple - Type U |
| 7 | : RTD - NIQUEL (Ni120) | I | : Thermocouple - Type W5RE26 |
| 8 | : RTD - OHMS (R) | J | : Thermocouple - Type GOST L |
| 9 | : Thermocouple - Type E | K | : Thermocouple - mV - 120 to 120 |
| A | : Thermocouple - Type J | L | : Thermocouple - mV - 1000 to 1000 |
| B | : Thermocouple - Type B | | |
| F500-TTDIN | H | 1 | |

7. CONFIGURATION VIA SOFTWARE

The **F500** line transmitters are configured using the Hart Config Tool software, which is free and available on the website. A Hart communication interface of any model/manufacturer is required.





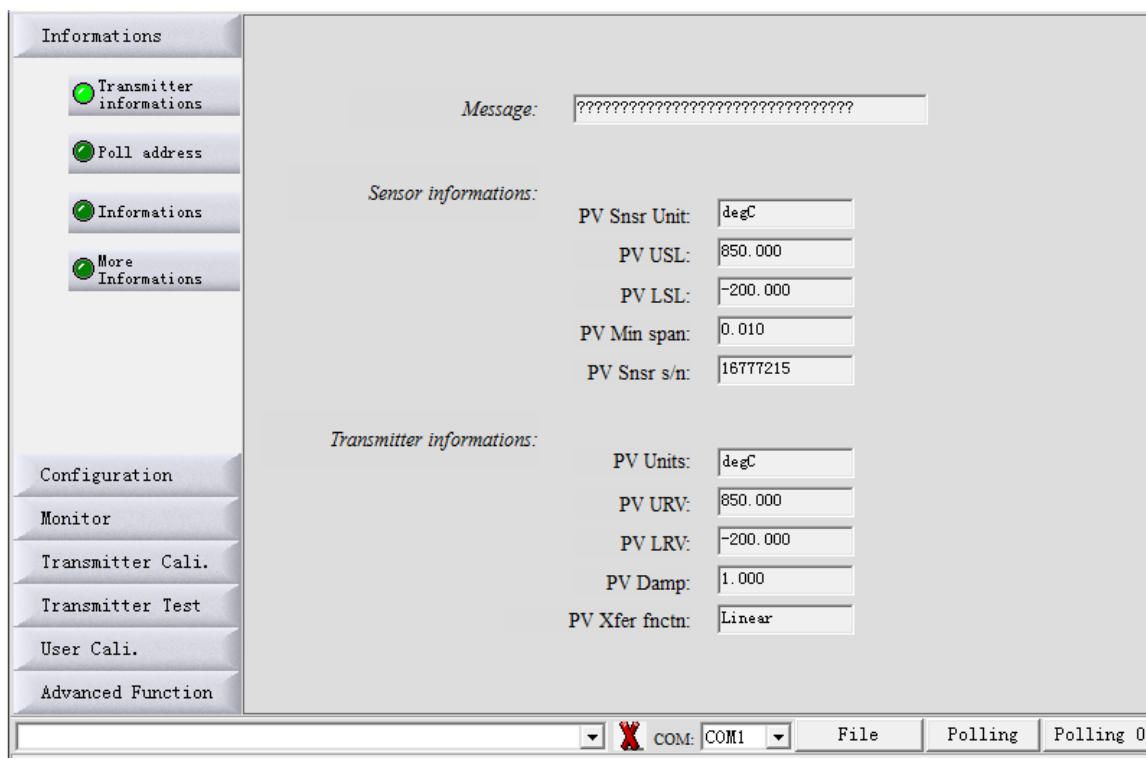
7.1 CONNECTING THE INSTRUMENT

Make sure the instrument and the Hart interface are turned on. Access the Hart Config Tool software and click on the "Polling 0" button in the lower right corner.

IMPORTANT

If necessary, a 250Ω resistor must be connected in series with the positive pole of the instrument.

By choosing the "Information" button, all the information contained in the instrument will appear



7.2. WORK RANGE

To adjust the working range, just choose the "Configuration" button. In the sub-option "Range", the minimum and maximum ranges will be displayed ("Sensor Information" box) and then the working range in which the instrument is configured ("Output Range" box).

To change this range and adjust it, just select the LRV (low temperature or minimum value) and URV (high temperature or maximum value) boxes. Making change, click the "Write" button to confirm and save.

The screenshot displays a software interface for configuring an instrument. On the left is a vertical menu with the following options: "Informations", "Configuration", "Range" (selected with a green circle), "Output function", "Fault protection", "Monitor", "Transmitter Cali.", "Transmitter Test", "User Cali.", and "Advanced Function". The main area is titled "Configuration" and contains two sub-sections: "Sensor Information" and "Range values".

Sensor Information:

- PV Snsr s/n: 16777215
- PV USL: 850.000
- PV LSL: -200.000
- PV Snsr unit: degC
- PV Min span: 0.010

Range values:

- PV Unit: degC (dropdown menu)
- PV URV: 850.000
- PV LRV: -200.000

At the bottom of the configuration area are two buttons: "Read" and "Write".

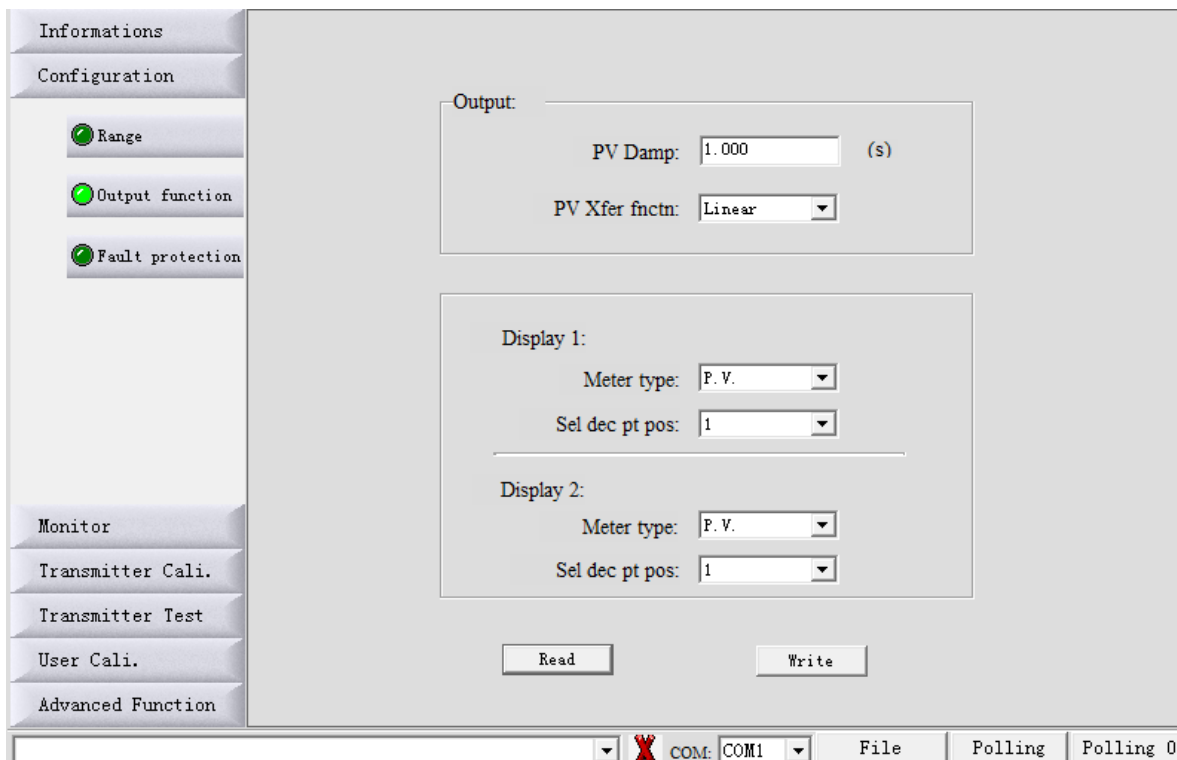
The bottom status bar shows a red "X" icon, "COM: COM1", "File", "Polling", and "Polling 0".

7.3. DAMP AND DISPLAY INDICATION OPTIONS

To adjust options such as Damping, choose the "Configuration" button and then the sub-option "Output".

On the next screen that opens, choose the options for Damp and linear function in the "Output Characteristics" box.

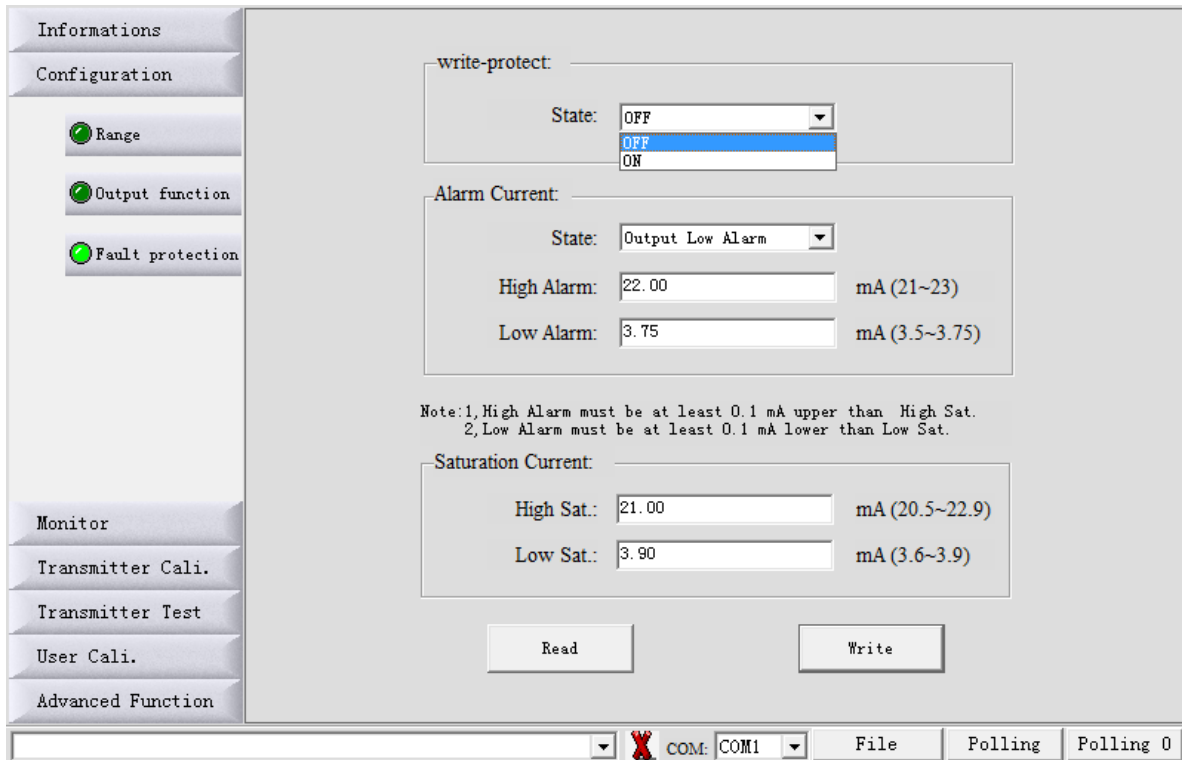
In the table below, select the desired one for Display 1 and Display 2. (esta linha falta no português, mas esta nos outros manuais – VERIFICAR)



7.4. WRITING AND ALARM PROTECTION

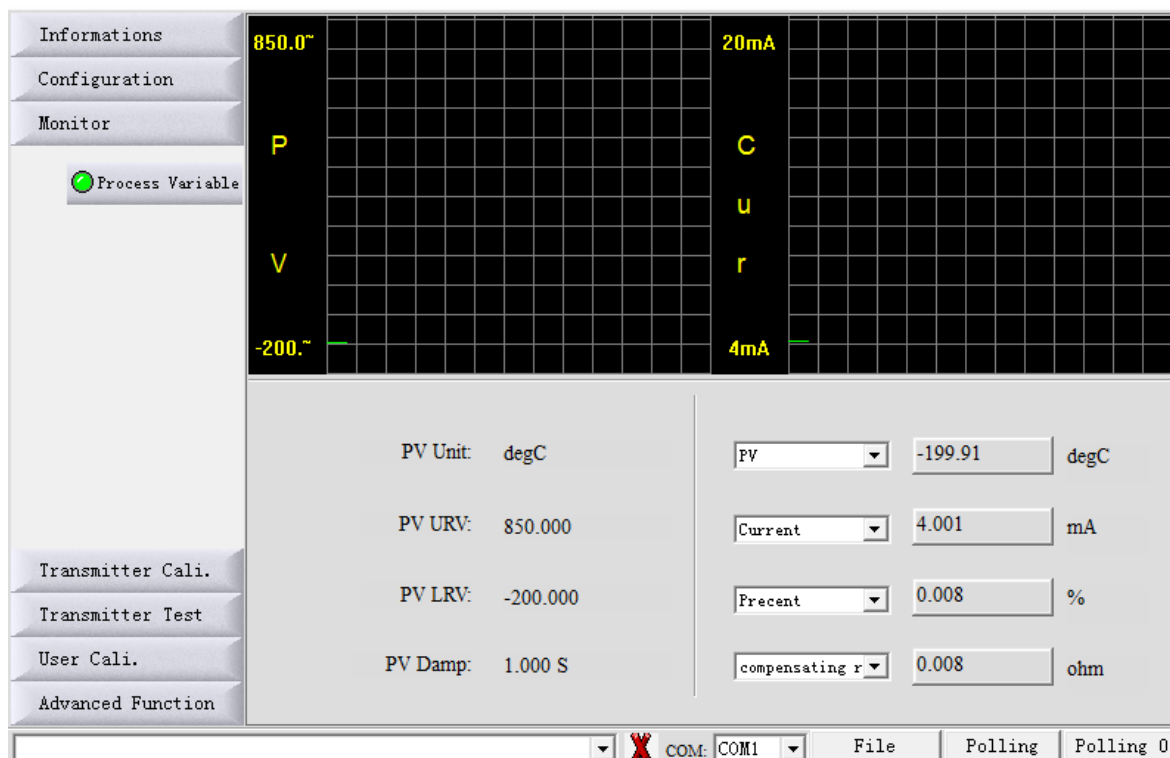
To enable the writing protection, preventing allowed changes to the configuration already made and saved in the memory of the instrument, simply choose the "Configuration" button and the sub-option: "Fault Protection".

On this same screen, there is also the possibility of setting the alarm, in which you can select an option for very low or very high current to send an alarm signal.



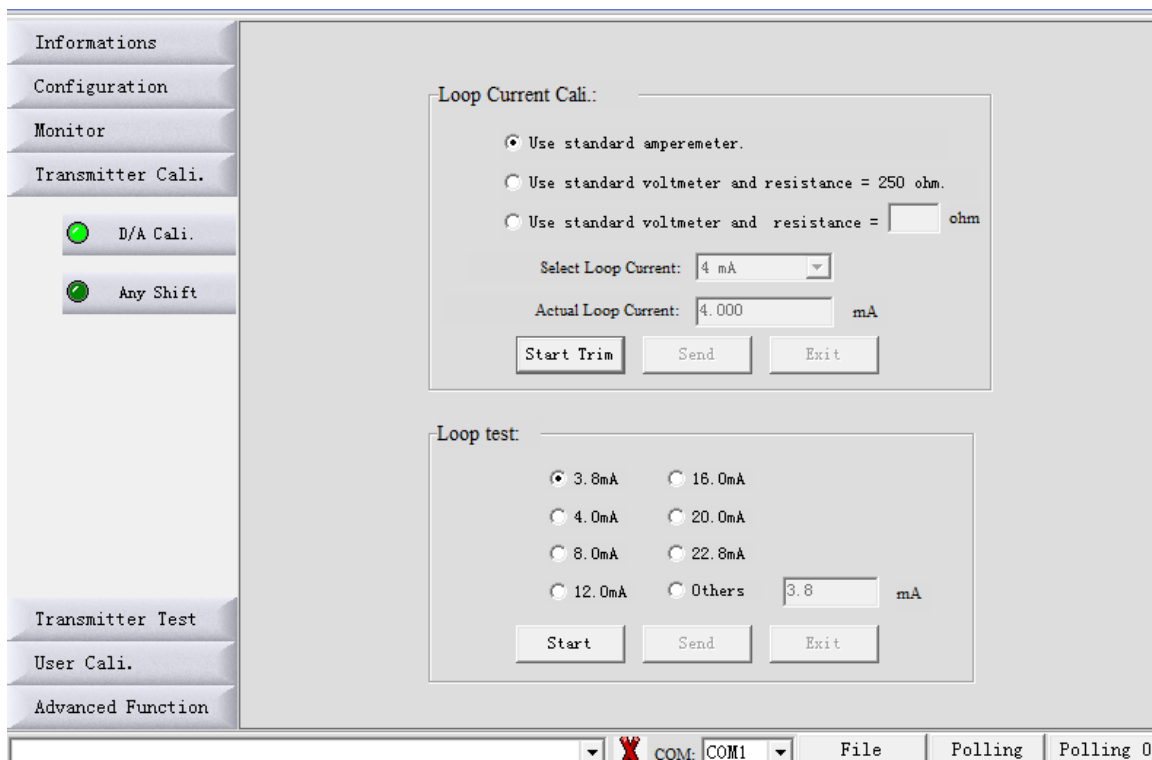
7.5. MONITORING VARIABLES

Choose the "Monitor" button and the "Process Variable" sub-option. A screen will be available in which the variables can be selected to be monitored and displayed in a graph.



7.6. CURRENT TRIM AND LOOP

Choose the "Transmitter Cali" button and the "D/A Cali" sub-option to perform the current trim (4 to 20 mA), using a multimeter as a reference. To perform a simulation and test with various current values, see the options in the "Current Loop Test" table.



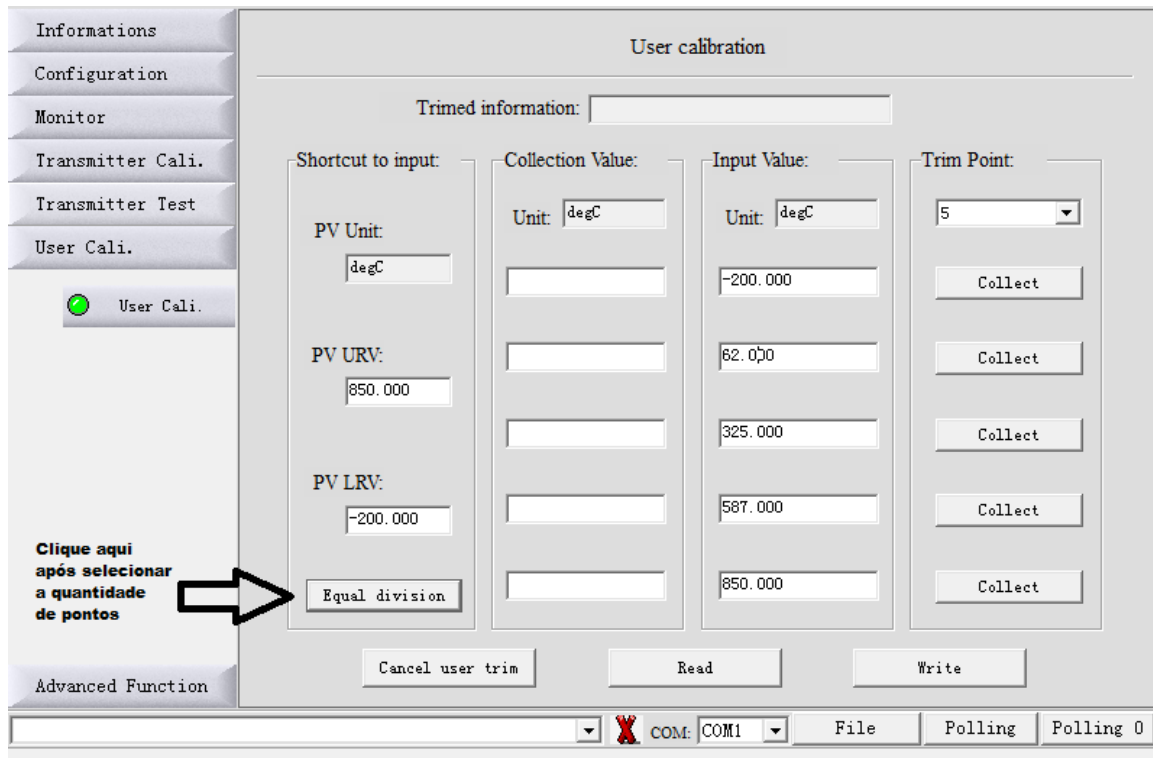
7.7. CALIBRATION UNTIL 5 POINTS

To carry out the calibration of the temperature transmitter, it will be necessary to have as a reference a resistance generator in Ohms to change the resistance, or a generator to change the current or millivolts.

Choose the "User Cali" button, and in the frame that opens, choose in the "Trim Point:" box: the number of points at which you want to calibrate it.

The screenshot shows the 'User calibration' window. On the left sidebar, the 'User Cali.' button is selected. The main window has a 'Trimmed information:' field. It is divided into four columns: 'Shortcut to input', 'Collection Value', 'Input Value', and 'Trim Point'. The 'Shortcut to input' column contains 'PV Unit' (degC), 'PV URV' (850.000), 'PV LRV' (-200.000), and an 'Equal division' button. The 'Collection Value' and 'Input Value' columns each have a 'Unit: degC' label and four empty input fields. The 'Trim Point' column has a dropdown menu with options 2, 3, 4, and 5 (option 2 is selected), and four 'Collect' buttons. At the bottom of the main area are 'Cancel user trim', 'Read', and 'Write' buttons. The bottom status bar shows 'COM: COM1', 'File', 'Polling', and 'Polling 0'.

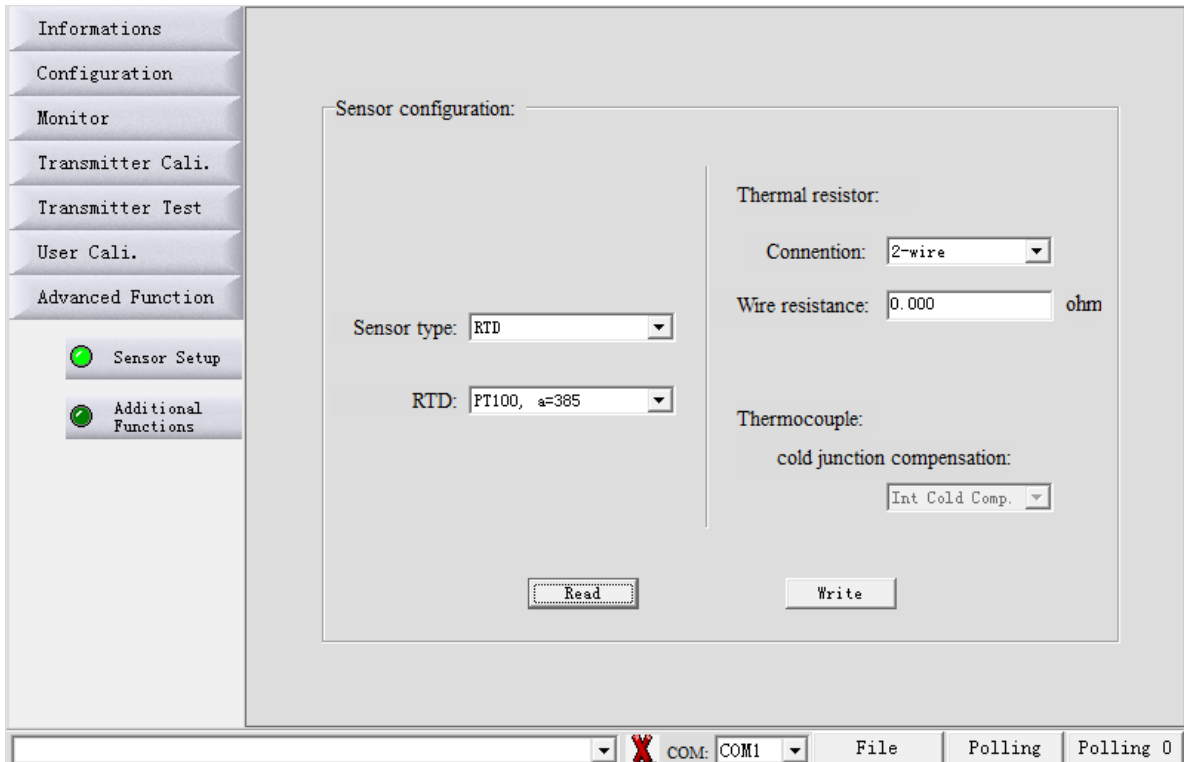
After selecting the number of points at which you want to calibrate your transmitter, click on the "Equal division" button, which will distribute the points to be trimmed and adjusted. It will automatically distribute and equalize the points according to the requested number.



Using the resistance generator in Ohms as a reference, or another calibrator that makes the change within the range that you want to perform the point-to-point calibration, always click on the "Collect" button for each point performed. After making all the points, choose the "Write" button to record the calibration performed and the points generated.

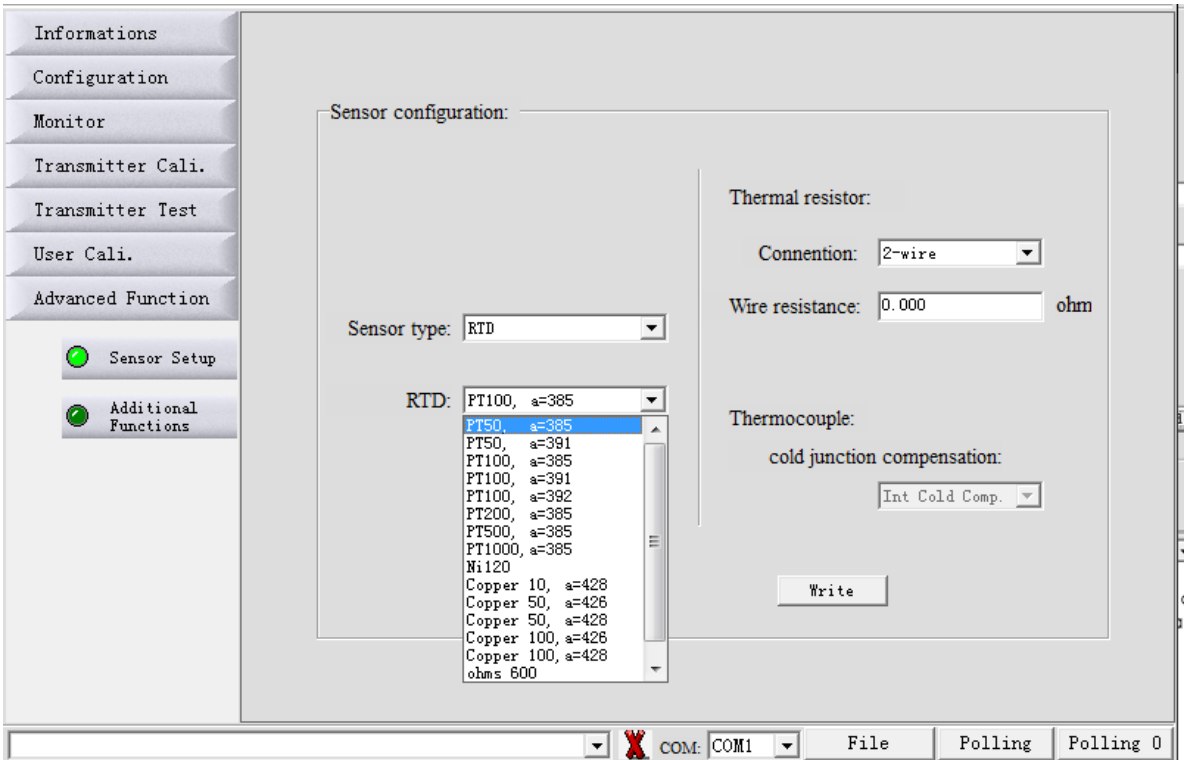
7.8 CHANGING THE TYPE OF SENSOR AND THE QUANTITY OF WIRE

To change the type of sensor you are going to use, be it thermocouple (TC) or PT100 (RTD), choose the “Advanced Function” button and the sub-option “Sensor Setup”, it will make the Sensor Type options (RTD and TC) available.

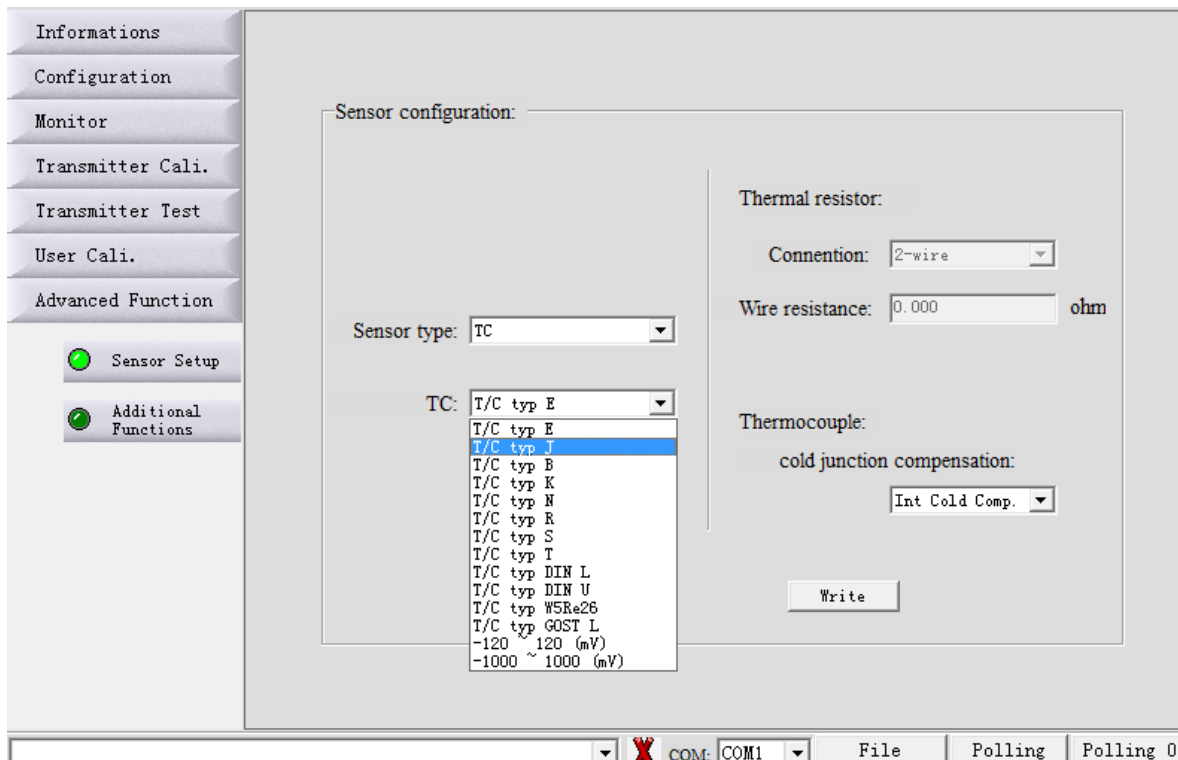


On this same screen you can also choose the number of wires for your PT100 or thermocouple, being able to change the options contained in the “Connention” box in the “Thermal Resistor” box.

Selecting the RTD option (PT100) in the box, it will provide the available options below.



Selecting the TC (Thermocouple) option, it will provide the available options in the box below. Remembering that in the TC option, it also releases the Clearing Board option.



Whenever selected and made the change as desired, then choose the "Write" button to save.

8. WARRANTY

The **F500-TTDIN** Temperature Transmitter has a 12 month warranty.

Such warranty becomes invalid once the following situations are detected:

- Incorrect installation of the instrument
- Use in inappropriate applications
- Mechanical damage by impacts

Electrical damage as a result of damage from other instruments in the industrial plant.

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