

FOSTEN
AUTOMATION



F500GL

**F500GL Flanged Level
Intelligent Gauge Pressure
Transmitter**

HART
COMMUNICATION PROTOCOL



www.fosten.com.br

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1. WORKING PRINCIPLE

The gauge pressure transmitter **F500GL** is based on the capacitive sensor principle. Capacitive sensors are devices that receive and respond to a physical/chemical stimulus or signal. In turn, this technology is based on the capacitor concept, being able to detect the presence of objects without their contact. The sensor is triggered when it detects the presence of the object at a certain distance. The working principle is based on changing the capacitance of the detector plate located in the region called sensitive.



But what is a capacitor? A capacitor is a simple device, being a passive electronic component that stores charge and energy in the electrostatic field. It consists of two electrical conductors (known as plates) that store opposite charges. These plates are separated by a special type of isolator (ie, a nonconductor) known as a dielectric. Because these plates have opposite charges, the storage process is characterized by the movement and transfer of electrons from one plate to another. The potential difference caused by this movement is the same as the potential energy stored in the plate. The capacitance of a capacitor is the ratio of the potential difference (PDD) between the plates and the charge on each of the plates. In turn, the capacitance is inversely proportional to the distance

between the plates and directly proportional to the area of the plates and the dielectric constant of the isolating material. Based on this concept on capacitors, the capacitive sensors work in a very similar way to the capacitor. The difference is in the way the plates are arranged. In the sensors, the plates are arranged parallel to each other. The operating principle is based on the change in the capacitance of the detector plate located in the region called sensitive, that is, when the dielectric in the middle varies.

The functioning of this capacitive sensor, in turn, is based on the variation of the electric field in the place in front of the electrode of the sensor, which we call the active zone. The sensor will be activated when the object approaches a certain distance and it is positioned in front of the active zone. The distance at which the sensor is triggered is called the switching distance, which can vary greatly depending on the permittivity constant in the diameter of the sensor, the material and mass of the approximate body and also the position at which the sensor is placed. The sensor also comprises an integrated RC oscillator circuit. As a metallic or non-metallic substance approaches the active zone, the capacitance value will change. As the capacitance varies, the frequency of the oscillator circuit changes. This frequency change is sent to another circuit called a detector, where it will transform the frequency variation caused by the capacitance variation into a voltage signal. The trigger schmitt circuit, in turn, has the purpose of transforming the voltage signal into a square wave. Last but not least, the switching circuit. The switching circuit is where the square wave will be excited and transferred to the external circuits.

Capacitive sensors can be used in the most varied types of processes, being able to monitor and detect the presence of dust, concentration of gases, objects and products of an organic and mineral nature, metals and non-metals, solids and liquids, even when fully submerged in the product.

The gauge-type capacitive sensor, as it is installed directly in the process, has a reading only on the high side. The low side is inactive.

2. MAIN APPLICATIONS

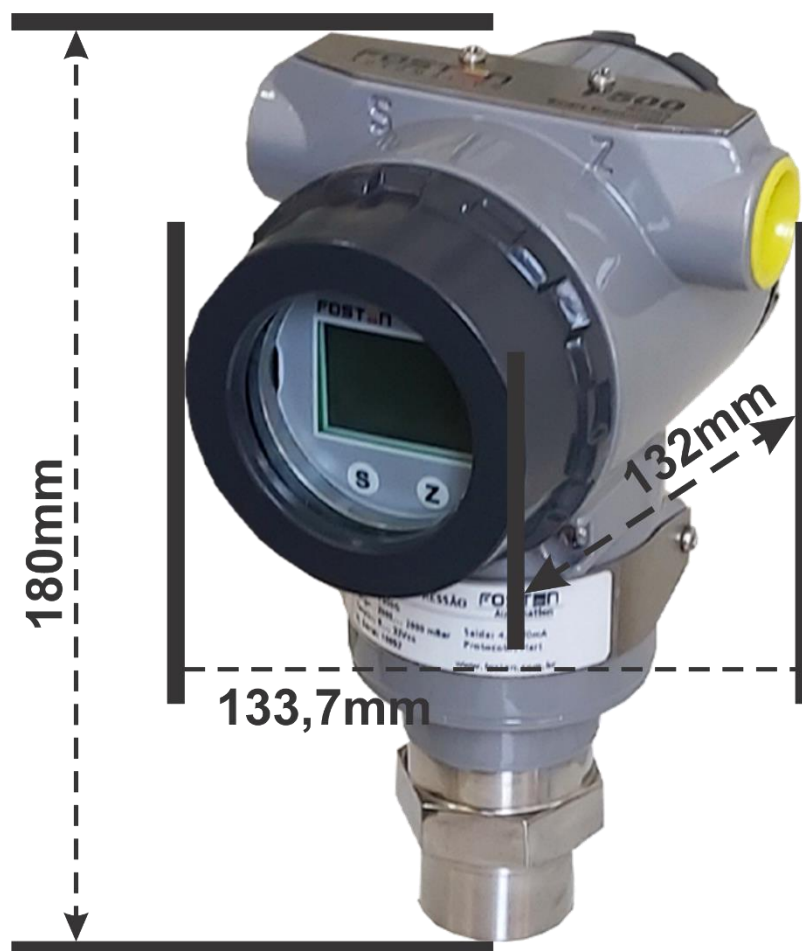
- Sugar and Alcohol
- Fertilizers
- Chemistry
- Food and Beverages
- Petrochemical
- Pharmaceutical
- Energy
- Plastic
- Among others

3. TECHNICAL CHARACTERISTICS

The following are the main technical characteristics of the **F500GL** flanged level and intelligent gauge pressure transmitter.

Accuracy	± 0,075%
Exit sign	4 to 20 mA
Communication protocol	Hart
Feeding	9 to 32 Vcc, without polarity – 12 mA
Operating temperature	-20 °C to 100 °C
Storage Temperature	-20 °C to 100 °C
Environment temperature	-20 °C to 85 °C
Types of exit	Linear and square root
Degree of protection	IP66
Response Time	50 ms
Rangeability	80:1
Thermal stability	± 0,15% URL, 5 years
Display	Backlight type
Approximate weight with support	3,5 kg for differential and gauge version

4. DIMENSIONAL



5. FIXING SUPPORT

The **F500GL** gauge pressure transmitter, come with a fixing support suitable for assembling on 2" diameter pipes.



6. F500GL FLANGED LEVEL AND INTELLIGENT GAUGE PRESSURE TRANSMITTER

The **F500GL** flanged level and intelligent gauge pressure transmitter can be made with different types of level taps. A wide range of flange sizes, pressure rating, diaphragm blade material and filling fluid allow for the precise specification that will best suit the process being controlled.



Size of the flange	1", 2", 3", 4", Special
Pressure Class	150#, 300#, 600#
Extension length	00 mm, 50 mm, 100 mm, 150 mm, 200 mm, Special
Diaphragm blade	Stainless Steel, Hastelloy, Moxnel 400, Tantalum, Stainless Steel with Hallar or Tefzel coating
Filling fluid	Silicon DC704, Silicon DC200, Neobee

Below we have the sale codes for purchasing and throughout this instructional and operational manual, more specifically in the spares section, the sale codes for purchasing spare parts.

PRODUCT												
F500-GL	: Intelligent Gauge Pressure And Level Transmitter											
COMMUNICATION PROTOCOL												
H		: 4 to 20 mA Hart										
CALIBRATION RANGE												
2		: 0 to 5000 mmH2O										
3		: 0 to 25000 mmH2O										
4		: 0 to 25 Kgf / cm ²										
5		: 0 to 68 Kgf / cm ²										
6		: 0 to 160 Kgf / cm ² (Sob Consult)										
DIAPHRAGM MATERIAL / FILLING OIL												
1		: Stainless Steel / Silicone Oil										
CAPACITIVE SENSOR MATERIAL												
I		: Stainless Steel										
SHELL MATERIAL												
A		: Aluminium										
ELECTRICAL CONNECTION												
1		: 1/2 NPT Thread										
LEVEL FLANGE CONNECTION												
1		: 1" 150 # (ANSI B16.5)				A		: 4" 150 # (ANSI B16.5)				
2		: 1" 300 # (ANSI B16.5)				B		LEVEL FLANGE FILLING OIL				
3		: 1" 600 # (ANSI B16.5)				C		: 4" 600 # (ANSI B16.5)				
4		: 2" 150 # (ANSI B16.5)				D		: DN25 PN 10/40				
5		: 2" 300 # (ANSI B16.5)				E		: DN40 PN 10/40				
6		: 2" 600 # (ANSI B16.5)				F		: DN50 PN 10/40				
7		: 3" 150 # (ANSI B16.5)				G		: DN80 PN 10/40				
8		: 3" 300 # (ANSI B16.5)				H		: DN100 PN 10/16				
9		: 3" 600 # (ANSI B16.5)				Z		: Special				
LEVEL FLANGE EXTENSION SIZE												
0		: 00 mm										
1		: 50 mm										
2		: 100 mm										
3		: 150 mm										
4		: 200 mm										
Z		: Special										
LEVEL FLANGE MATERIAL												
1		: Stainless Steel										
LEVEL FLANGE DIAPHRAGM MATERIAL												
1		: Stainless Steel										
2		: Hastelloy										
3		: Monel 400										
4		: Tantalum										
5		: Hallar Coating										
6		: Tefzel Coating										
LEVEL FLANGE FILLING OIL												
1		: Silicone DC704										
2		: Silicone DC200										
3		: Neobee										
Z		: Special										
PAINT												
0		: Standard Sensor Br (Synthetic Liquid Paint)										
1		: Special										
F500-GL	H	2	1	I	A	1	7	0	1	1	1	0

7. LOCAL ADJUSTMENT

The local adjustment functions include: Zero Trim, Damping, Unit, Range.


The following table shows the operation codes and their corresponding functions:

CHARACTERS DISPLAYED IN THE LOWER LEFT CORNER	FUNCTION
0	Display value.
1	The user can enter the operation code such as 2,3,5,6 or 7 to execute the corresponding function respectively.
2	Configuration of PV unit.
3	Configuration of the lower range value.
4	Configuration of the upper range value.
5	Damping.
6	Zero Trim.
7	Zero and Span configuration.

CONFIGURATION OF THE PV UNIT.

Press Z key to enter the menu mode.

The lower left side of the display shows the operation code 1 to indicate the "Input Operation Code" function. The first 0 will start flashing.

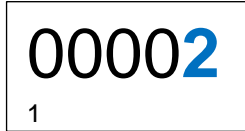


Press the Z key to shift until the last 0 starts flashing.

Press the S key to change the value.

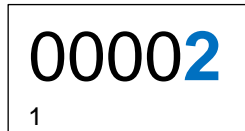
Enter multiple operation codes to perform the corresponding function.

For example enter 2 to set the unit.



Press the S key until the last number is 2, then press the Z key.

The down arrow will start flashing.



Press the S key to save the operation code. The bottom left side of the display will show the operation code 2 to indicate enter the function "Unit Settings."



MINIMUM RANGING CONFIGURATION.

Enter the operation code to execute the corresponding function, respectively.

0.0000
3 kPa

Input **** 3 (* means a random number), Input Value Definition of The Lower PV range.

2.0000
5 S

Input **** 5 (* means a random number), enter in Damping Adjustment.

1.000
6 NO

Input **** 6 (* means a random number), enter in Zero Trim.

1.000
8 LIN

Input ****8 (* means a random number), enter in Output type.

MAXIMUM RANGE CONFIGURATION.

After completing the setting of the lower PV value, enter the Upper range value of the PV.

The way to enter an upper value is the same as for entering the lower value (Please see PV for lower range value).

1.0000
4 kPa

DAMPING CONFIGURATION.

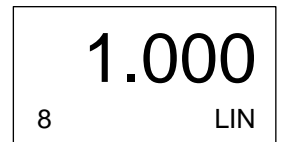
Enter the operation code 5 to enter damping adjustment, or it will enter automatically on damping

2.0000
5 S

The way to enter the damping value is the same as for entering a lower value. (See PV for lower range value).

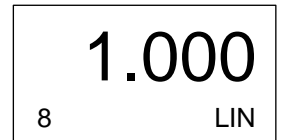
OUTPUT TYPE CONFIGURATION:

The F500 will automatically enter "Output Setup" after Zero Trim.



1.000
8 LIN

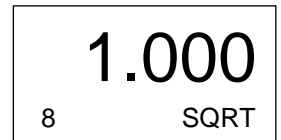
Enter operation code "8". In output type configuration mode, the operation code "08" is displayed at the bottom left side of the display. "LIN" or "SQRT" will be displayed at the bottom.



1.000
8 LIN

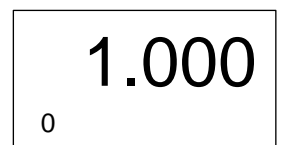
Press S key, then "**LIN**" symbol will flash, indicating enter into output and the selection is "Linear Output Mode."

Press the "S" key again to change, the "**SQRT**" symbol flashes, indicating that the selection is "Square Root Output Mode."



1.000
8 SQRT

Press M or Z key to save output and complete the configuration.

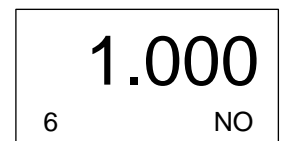


1.000
0

ZERO TRIM.

Press the C and Z key simultaneously, and hold for less than 5 seconds.

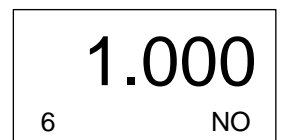
Enter operation code "6".



1.000
6 NO

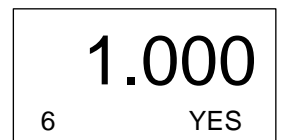
After the adjustment of the damping values.

In Zero Trim function mode, the operation code "6" is displayed at the bottom left side of the display and the pressure value is shown in the middle. "YES" or "NO" will be displayed at the bottom.



1.000
6 NO

Press "S" key to change, "YES" symbol will flash, indicating that the selection is "TRIM".



1.000
6 YES

When displaying "YES", press "C" key or "Z" key to execute the function Zero Trim

The pressure value will be set to "0" after successful operation.



1.000
8 LIN

LOWER TRIM

Pressing the "C" and "S" keys simultaneously, and keeping them pressed for less than 5 seconds, it will enter the lower TRIM mode.

Enter operation code "9" as follows:


Press "Z" key to enter the manual mode. The bottom left side of the display will show the operation code "1" to indicate the function "Entry Operation Code".

The first zero will start flashing.

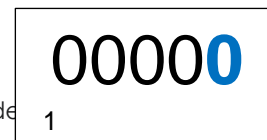
Press the "Z" key to change until the last "0" starts flashing.

Press the "S" key to increase the setting number to "9".

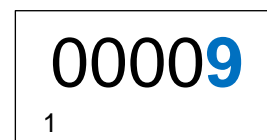
Press "Z" key, the down arrow will start flashing.



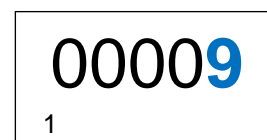
00000
1



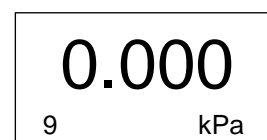
00000
1



00009
1



00009
1

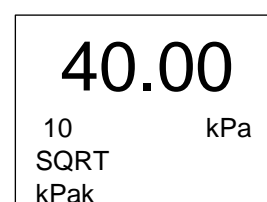


0.000
9 kPa

HIGHER TRIM

Enter Lower Trim mode, then press "Z" or "C" key to skip the lower compensation and enter the high TRIM mode, and the lower left side of the display will show the operation code "10".

It will automatically enter "High Trim" after successfully operating "Low Trim".



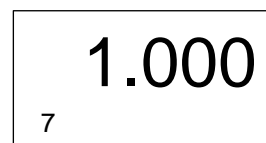
40.00
10 kPa
SQRT
kPak

Use the following steps for **TRIM**:

1. Using a pressure source, apply a pressure equivalent to the higher calibrated value.
2. Enter the reference pressure to calibrate. The input method of data refers to "Setting the PV Lower Rate Value".

ZERO SPAN ADJUSTMENT.

Simultaneously pressing the S and Z keys, and holding down at least 5 seconds, it will enter Zero and Span adjustment mode and the operation code "07" will be displayed at the bottom left side of the display.

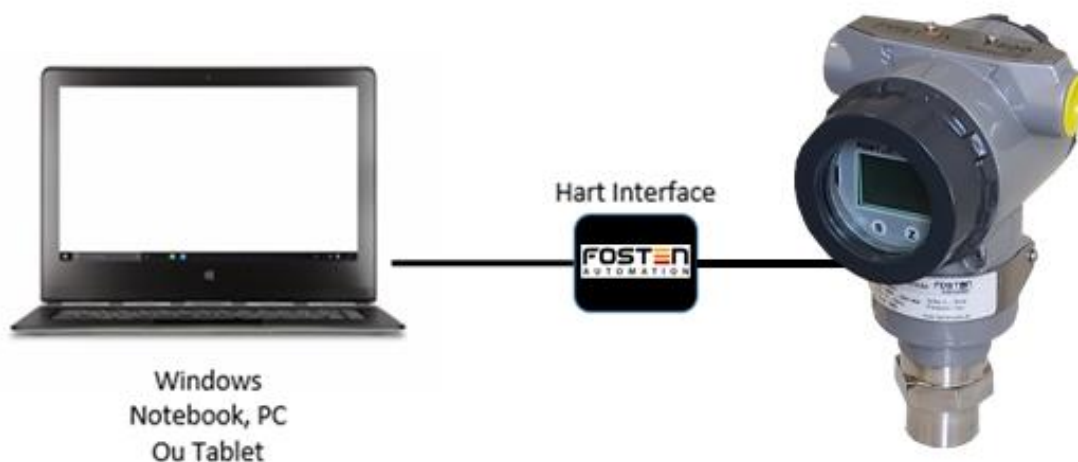


Use the following steps to adjust Zero and Span:

- 1 – Using a pressure source, apply a pressure equivalent to the lower calibrated value.
- 2 – Press the Z key for five seconds to adjust the 4mA point.
- 3 – Apply the pressure equivalent to the highest calibrated value.
- 4 – Press the S key for five seconds to adjust the 20mA point. Check whether the output is 20mA.

8. CONFIGURATION VIA SOFTWARE

The F500 line of 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.



The screenshot shows the "HART Config Tool" software interface. The title bar is blue with the text "HART Config Tool" and a red "X" icon. The left sidebar contains a menu with the following items: "Informations" (selected), "Configuration", "Monitor", "Transmitter Trim", "Maintenance", "User Trim", "Manufacturer Trim", and "Advanced Function". Under "Informations", there are four sub-items: "Transmitter informations", "Poll address", "Information", and "More Information", each with a green checkmark icon. The main area displays "Sensor informations" and "Transmitter informations" with various fields and values.

Sensor informations:	
PV Snsr Unit:	degC
PV USL:	850.000
PV LSL:	-200.000
PV Min span:	1.000
PV Snsr s/n:	18777215

Transmitter informations:	
PV Units:	degC
PV URV:	100.000
PV LRV:	0.000
PV Damp:	0.000
PV Xfer fnctn:	Linear

At the bottom of the window, there is a status bar with a dropdown menu, a red "X" icon, and the text "COM Port: COM12", "File Operate", and "Polling".

8.1. 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 resistor must be connected in series with the positive pole in the instrument.

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

The screenshot shows the 'Information' tab selected in the Hart Config Tool. The left sidebar contains the following buttons: Information, Configuration, Monitor, Transmitter Adjustment, Transmitter Test, Maintenance, User Calibration, Manufacturer Calibration, and Advanced Functions. The main area displays the following information:

Message:

Sensor Information:

PV (Process Variable) Sensor Unit:	mmH2O
PV USL (Upper Sensor Limit):	25538.691
PV LSL (Lower Sensor Limit):	-25538.691
PV Min Span:	0.001
PV Sensor S/N:	66051

Transmitter Information:

PV Unit:	mmH2O
PV URV (Upper Range Value):	25000.000
PV LRV (Lower Range Value):	0.000
PV Damp:	0.000
Xfer Fcnctn(Transfer Function):	Linear

At the bottom of the window, there is a status bar with a dropdown menu showing 'COM1', a 'File' button, a 'Polling' button, and a 'Polling 0' button.

8.2. CALIBRATION

To adjust the calibration range, just choose the "Configuration" button.

In the "Range" sub-option, 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 pressure or minimum value) and the URV boxes (high pressure or maximum value). Making change, click on the "Write" button to confirm and save.

The screenshot displays a software interface for instrument configuration. On the left is a vertical menu with the following items: 'Information', 'Configuration', 'Range' (highlighted with a green circle), 'Zero/Span Setup' (highlighted with a green circle), 'Output' (highlighted with a green circle), 'Fault Protection' (highlighted with a green circle), 'Monitor', 'Transmitter Adjustment', 'Transmitter Test', 'Maintenance', 'User Calibration', 'Manufacturer Calibration', and 'Advanced Functions'. The main area on the right is titled 'Configuration' and contains two sub-sections. The 'Sensor Information' section includes fields for 'PV Sensor S/N' (66051), 'PV USL' (25538.691), 'PV LSL' (-25538.691), 'PV Sensor Unit' (mmH2O), and 'PV Min Span' (0.001). The 'Transmitter Output Range' section includes fields for 'PV Unit' (mmH2O), 'PV URV' (25000.000), and 'PV LRV' (0.000). Below these sections are 'Read' and 'Write' buttons. At the bottom of the interface, there is a status bar with a dropdown menu, a red 'X' icon, 'COM: COM1', and buttons for 'File', 'Polling', and 'Polling 0'.

8.3. CURRENT TRIM

To perform the current trim, choose the "Configuration" button and the "Zero / Span Setup" sub-option.

On the next screen that will open, choose the "Zero: 4mA" button to adjust the current value to 4 mA, taking the minimum value (LRV) as a reference. Choose the "Span: 4mA" button to adjust the current value to 20 mA, having as reference the maximum value (URV).

The screenshot shows a software interface with a left-hand menu and a main configuration area. The menu includes 'Information', 'Configuration', 'Range', 'Zero/Span Setup', 'Output', 'Fault Protection', 'Monitor', 'Transmitter Adjustment', 'Transmitter Test', 'Maintenance', 'User Calibration', 'Manufacturer Calibration', and 'Advanced Functions'. The 'Configuration' section is active, and 'Zero/Span Setup' is selected. The main area is divided into three sections: 'PV Range' with fields for 'PV Unit' (mA/20), 'PV URV' (25000.000), and 'PV LRV' (0.000); 'Zero Setup' with a text box explaining that the current value of PV as LRV is set to Zero, and a button labeled 'Zero: 4mA'; and 'Span Setup' with a text box explaining that the current value of PV as URV is set, and a button labeled 'Span: 20mA'. At the bottom, there is a status bar with a dropdown menu, a red 'X' icon, 'COM: COM1', and buttons for 'File', 'Polling', and 'Polling 0'.

Section	Field/Text	Value/Action
PV Range	PV Unit	mA/20
	PV URV	25000.000
	PV LRV	0.000
Zero Setup	Instruction	Set the current value of PV as LRV, i. e., Zero, but the Span will not be changed.
	Button	Zero: 4mA
Span Setup	Instruction	Set the current value of PV as URV, but the Zero will not be changed.
	Button	Span: 20mA

8.4. DAMP, LINEAR OUTPUT OR SQUARE ROOT AND USER UNIT

To adjust options such as Damp, output to linear type or square root extraction, as well as choose the units to be shown on the display, choose the "Configuration" button and then the sub-option: "Output".

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

In the table below, select the desired option for Display 1 and Display 2.

The screenshot shows a software interface for configuring an output device. On the left is a vertical menu with the following items: Information, Configuration, Range, Zero/Span Setup, Output, Fault Protection, Monitor, Transmitter Adjustment, Transmitter Test, Maintenance, User Calibration, Manufacturer Calibration, and Advanced Functions. The 'Configuration' menu item is selected. The main area is titled 'Output Characteristics' and contains two sections: 'Output Characteristics' and 'Display 1:'. The 'Output Characteristics' section has three fields: 'PV Damp:' with a value of '0.000' and a unit 's', 'Xfer Fnctn:' with a dropdown menu set to 'Linear', and 'SQRT Mode:' with a dropdown menu set to 'Current'. The 'Display 1:' section has two fields: 'Var. Type:' with a dropdown menu set to 'Percent' and 'Decimal Places:' with a dropdown menu set to '0'. Below these sections are two buttons: 'Read' and 'Write'. At the bottom of the interface is a status bar with a dropdown menu, a red 'X' icon, 'COM: COM1', 'File', 'Polling', and 'Polling 0'.

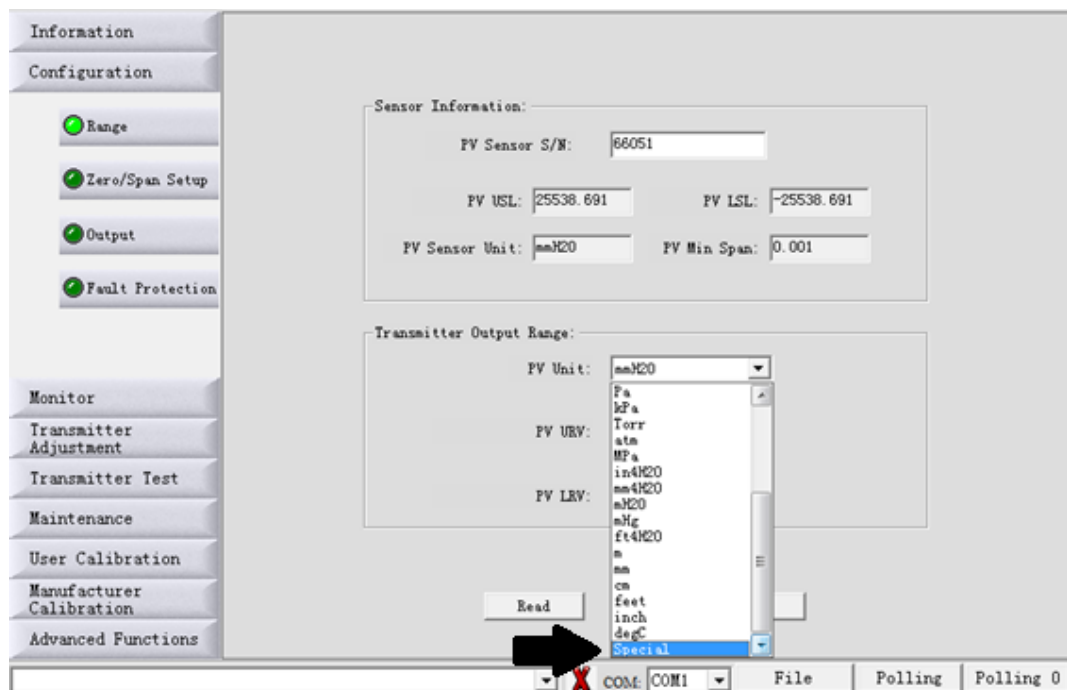
Section	Field	Value
Output Characteristics	PV Damp:	0.000 s
	Xfer Fnctn:	Linear
	SQRT Mode:	Current
Display 1:	Var. Type:	Percent
	Decimal Places:	0
Display 2:	Var. Type:	PV
	Decimal Places:	0

8.5. INCLUDING USER UNIT

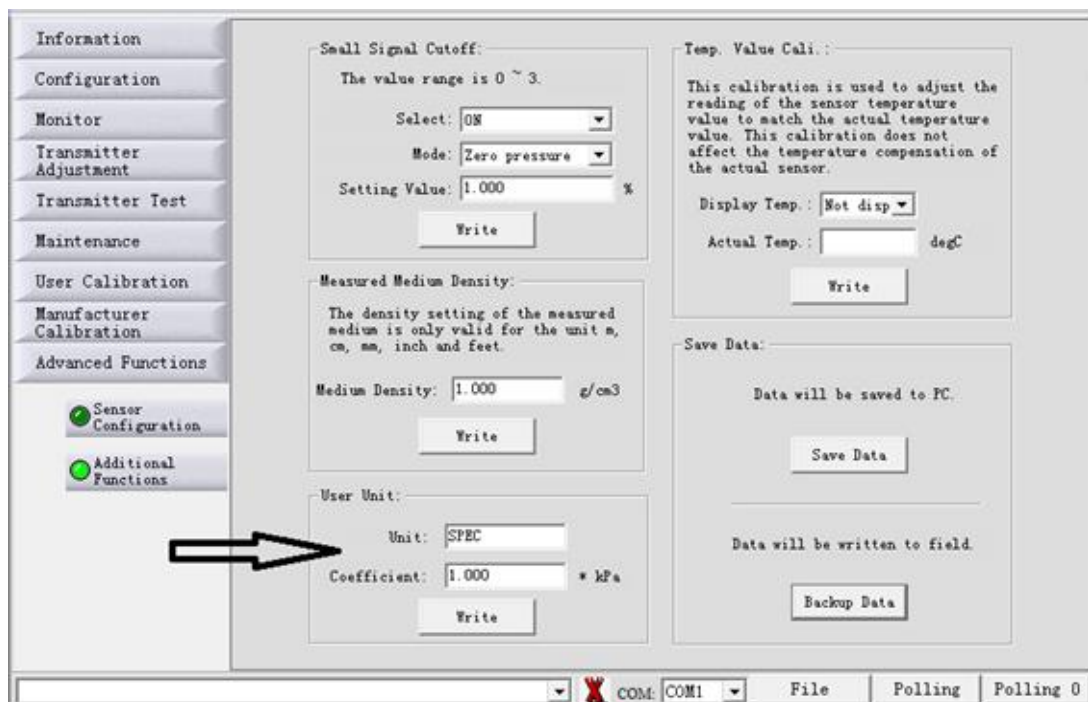
To include a user unit (drive), choose the "Configuration" button and the sub-option: "Range". In the box "Transmitter Output Range", option "PV Unit", select the desired unit.

If the unit to be chosen is not listed for choice, it will be necessary to make a simple adjustment as described below:

a) In the "PV Unit" select "Special". At this time, the calibration value will automatically be converted to kpa.



b) Go to the last button "Advanced Functions" and choose the sub-option: "Additional Functions" as shown on the following screen.



In the "User Unit" box, indicated by the arrow in the previous figure, write the user unit you want to use. Enter the value of the "Coefficient", which must always be the maximum value of the calibration range divided by the maximum value of the user unit range.

Example:

The instrument works from 0 to 25000 mmH₂O, which transformed into Kpa will be from 0 to 244727 kpa.

The user unit you want to work with is from 0 to 200 m³/h.

So, the value of the "Coefficient" will be $244727 \div 200$, which will result in 1223.63 (or 1224 rounded off to the decimal point).

$$\frac{\text{Maximum range value}}{\text{Maximum unit value}}$$

From this setting, the user unit m³/h, which did not exist in the selection list, starts to appear on the display of the instrument.

The screenshot shows the configuration software interface with a sidebar on the left containing menu items: Information, Configuration, Monitor, Transmitter Adjustment, Transmitter Test, Maintenance, User Calibration, Manufacturer Calibration, and Advanced Functions. Under 'Advanced Functions', 'Sensor Configuration' and 'Additional Functions' are marked with green checkmarks. The main panel displays several configuration sections:

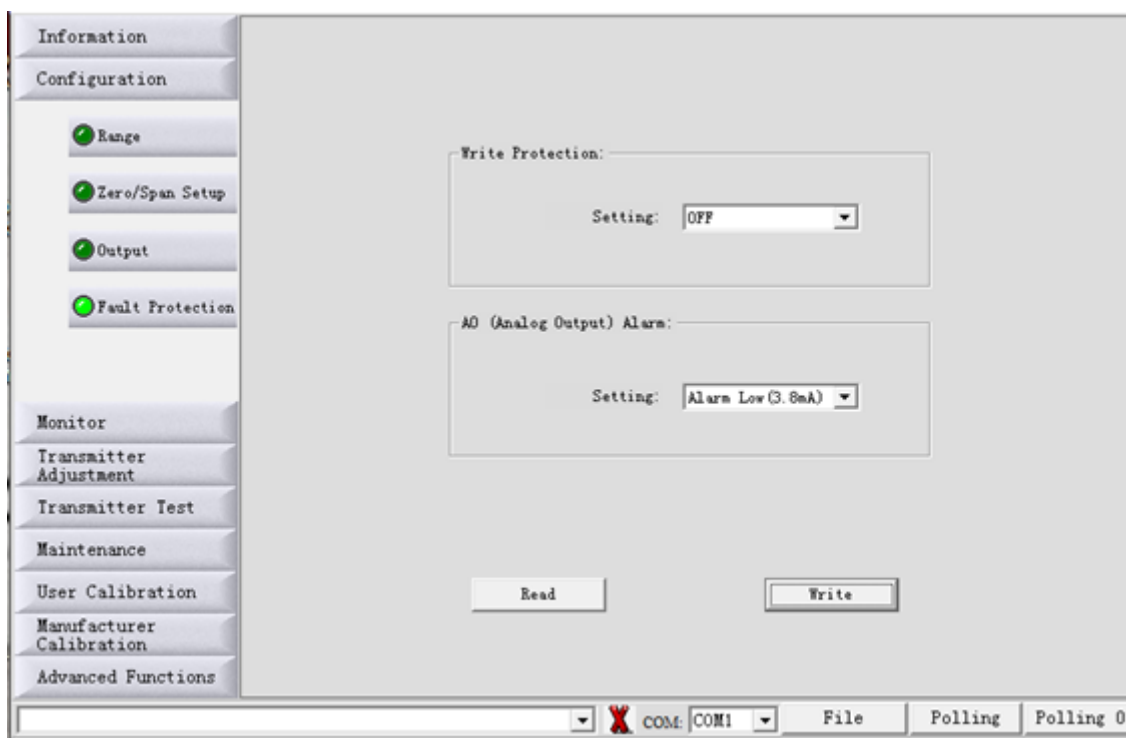
- Small Signal Cutoff:** The value range is 0 ~ 3. Select: ON, Mode: Zero pressure, Setting Value: 1.000 %.
- Measured Medium Density:** The density setting of the measured medium is only valid for the unit m, cm, mm, inch and feet. Medium Density: 1.000 g/cm³.
- User Unit:** Unit: m³/h, Coefficient: 1.224 * kPa. A black arrow points to this section.
- Temp. Value Cali.:** This calibration is used to adjust the reading of the sensor temperature value to match the actual temperature value. This calibration does not affect the temperature compensation of the actual sensor. Display Temp.: Not disp, Actual Temp.: degC.
- Save Data:** Data will be saved to PC. Data will be written to field.

At the bottom, there is a status bar with a dropdown menu, a red X icon, COM: COM1, File, Polling, and Polling 0.

8.6. WRITING AND ALARM PROTECTION

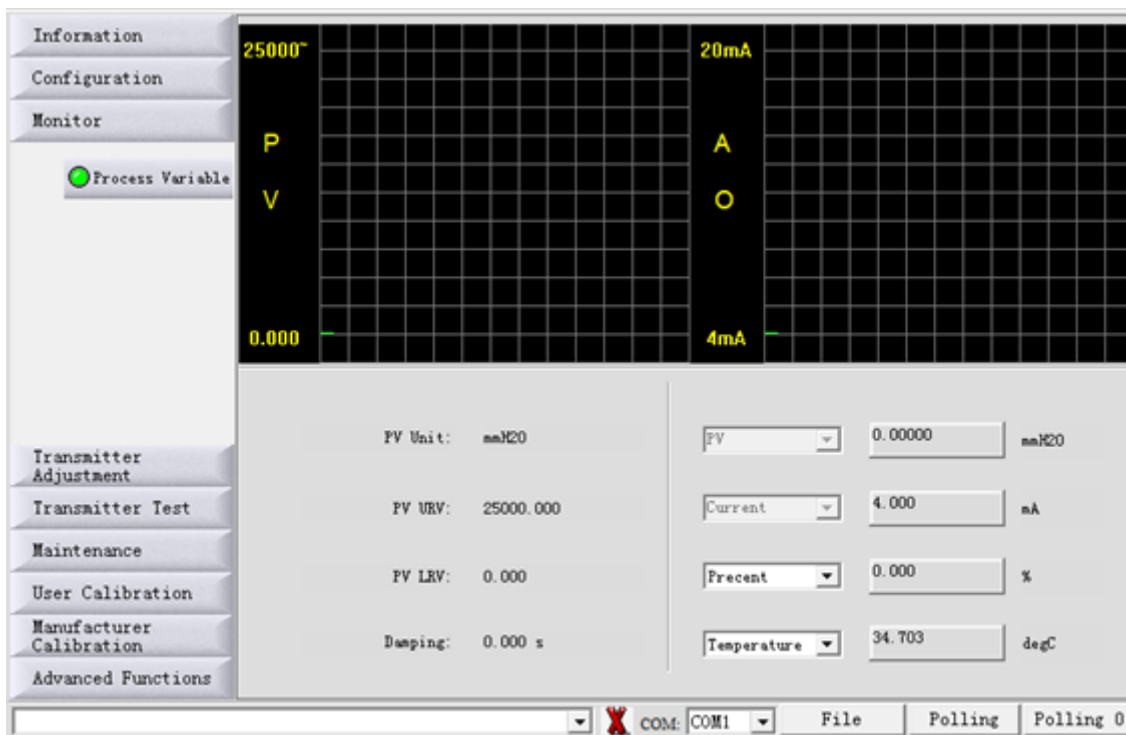
To enable the writing protection, preventing allowed changes to the configuration already made and saved in the memory of the instrument, simply choose the "Configuration" button and the sub-option: "Fault Protection".

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.



8.7. 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.



8.8. CURRENT TRIM AND LOOP

Choose the "Transmitter Adjustment" button and the "D/A Adjustment" 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.

The screenshot shows a software interface with a sidebar menu on the left and a main content area on the right. The sidebar menu includes the following items: Information, Configuration, Monitor, Transmitter Adjustment (highlighted), D/A Adjustment (checked), Two-Point Adjustment (checked), Zero Adjustment (checked), Cancellation (checked), Transmitter Test, Maintenance, User Calibration, Manufacturer Calibration, and Advanced Functions. The main content area is divided into two sections: "Current Loop Calibration" and "Current Loop Test".

Current Loop Calibration:

- ☒ Use standard amperemeter
- ☐ Use a standard voltmeter with a resistor of 250 ohm
- ☐ Use a standard voltmeter with a resistor of ohm
- Theoretical Loop Current: mA
- Actual Loop Current: mA
- Buttons: Start Cali., Send, Exit

Current Loop Test:

- ☒ 3.8mA
- ☐ 4.0mA
- ☐ 8.0mA
- ☐ 12.0mA
- ☐ 16.0mA
- ☐ 20.0mA
- ☐ 22.8mA
- ☐ Others mA
- Buttons: Start Test, Send, Exit

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

8.9. LOWER TRIM AND HIGHER TRIM

To perform the pressure trims, choose the "Transmitter Adjustment" button and the sub-option: "Two-Point Adjustment".

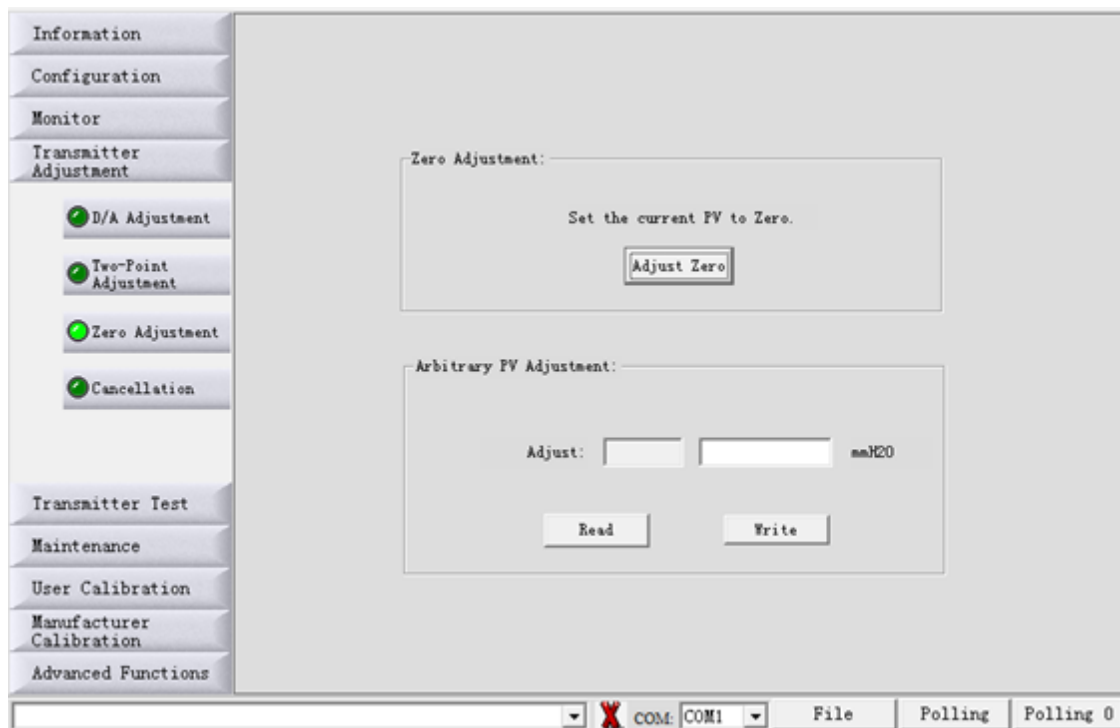
The screenshot shows the 'Transmitter Adjustment' window. On the left is a sidebar with buttons: Information, Configuration, Monitor, Transmitter Adjustment (selected), D/A Adjustment, Two-Point Adjustment (highlighted with a green circle), Zero Adjustment (highlighted with a green circle), Cancellation (highlighted with a green circle), Transmitter Test, Maintenance, User Calibration, Manufacturer Calibration, and Advanced Functions. The main area is titled 'Two-Point Adjustment:' and contains an 'Options:' dropdown menu, an 'Adjusted Value:' input field with a 'mmH2O' unit, and a 'Write' button. Below this is a 'Readout:' section with two columns: 'URV Adjustment:' and 'LRV Adjustment:'. Each column has a 'Value:' input field and a 'mmH2O' unit. A 'Read' button is at the bottom of the Readout section. At the very bottom of the window is a status bar with a dropdown menu, a red 'X' icon, 'COM: COM1', 'File', 'Polling', and 'Polling 0'.

In the "Options" selection box, you can choose whether you want to make a lower trim or a higher trim.

This is a close-up of the 'Options:' dropdown menu in the 'Two-Point Adjustment' section. The menu is open, showing two options: 'URV Adjustment' (highlighted in blue) and 'LRV Adjustment'. Below the dropdown is the 'Adjusted Value:' input field with a 'mmH2O' unit and a 'Write' button. The 'Readout:' section below is also visible, showing the 'URV Adjustment:' and 'LRV Adjustment:' columns with their respective 'Value:' input fields and 'mmH2O' units, and a 'Read' button at the bottom.

8.10. ZERO TRIM

To perform the zero trim, choose the "Transmitter Adjustment" button and the sub-option: "Zero Adjustment".



9. SPARE PARTS

The **F500** instrument line offers a wide variety of single pieces, also called spare parts. Practically all items can be purchased separately, through the list of codes below.

PRODUCT		
500-0010	Blind Cover - Universal	
.	MATERIAL	
.	A	: Aluminum
.	PAINTING	
.	1	: Standard
.	Z	SPECIAL (see notes)
.	.	.
500-0010	A	1

PRODUCT		
500-0012	: Cover with Viewfinder - Universal	
.	MATERIAL	
.	A	: Aluminum
.	PAINTING	
.	1	: Standard
.	Z	: SPECIAL (see notes)
.	.	.
500-0012	A	1

PRODUCT		
500-0016	: Housing with Hart pump for pressure transmitter (without covers)	
.	MATERIAL	
.	A	: Aluminum
.	PAINTING	
.	1	: Standard
.	Z	: SPECIAL (see notes)
.	.	.
500-0016	A	1

PRODUCT	
500-0020	: Hart pump for pressure transmitter

PRODUCT		
500-0026	: Fixing support L-type	
	MATERIAL	
	1	: Carbon steel
	2	: Stainless steel
500-0026	1	

PRODUCT	
500-0060	: Hart main board for pressure transmitter

PRODUCT	
500-0014	: Sealing ring for blind cover / with viewfinder – Buna N 7750

PRODUCT	
500-0016	: Sealing ring for the electrical connection plug – Buna N 2117

PRODUTO	
500-0018	: Sealing ring for gauge sensor – Buna N 2136

PRODUCT									
500-000GL		: Capacitive sensor for gauge pressure transmitter and level transmitter with socket							
		RANGE							
		2	: 0 to 5000 mmH2O						
		3	: 0 to 25000 mmH2O						
		4	: 0 to 25 Kgf / cm²						
		5	: 0 to 68 Kgf / cm²						
		6	: 0 to 160 Kgf / cm² (Sob Consult)						
		DIAPHRAGM MATERIAL AND FILLING FLUID							
		1	: stainless steel - silicone oil						
		MATERIAL IN THE BODY OF THE SENSOR							
		I	: Stainless steel						
		PROCESS CONNECTION – Level Socket							
		1	: 1" 150 # (ANSI B16.5)				A	: 4" 150 # (ANSI B16.5)	
		2	: 1" 300 # (ANSI B16.5)				B	: 4" 300 # (ANSI B16.5)	
		3	: 1" 600 # (ANSI B16.5)				C	: 4" 600 # (ANSI B16.5)	
		4	: 2" 150 # (ANSI B16.5)				D	: DN25 PN 10/40	
		5	: 2" 300 # (ANSI B16.5)				E	: DN40 PN 10/40	
		6	: 2" 600 # (ANSI B16.5)				F	: DN50 PN 10/40	
		7	: 3" 150 # (ANSI B16.5)				G	: DN80 PN 10/40	
		8	: 3" 300 # (ANSI B16.5)				H	: DN100 PN 10/16	
		9	: 3" 600 # (ANSI B16.5)				Z	: Especial (Ver Notas)	
		EXTENSION LENGH – Level Socket							
		0	: 00 mm						
		1	: 50 mm						
		2	: 100 mm						
		3	: 150 mm						
		4	: 200 mm						
		Z	: Special – See Notes						
		FLANGE MATERIAL – Level Socket							
		1	: Stainless steel						
		DIAPHRAGM MATERIAL – Level Socket							
		1	: Stainless steel						
		2	: Hastelloy						
		3	: Monel 400						
		4	: Tântalo						
		5	: Hallar coating						
		6	: Tetzal coating						
		FILLING FLUID – Level Socket							
		1	: Silicon DC704						
		2	: Silicon DC200						
		3	: Neobee						
		Z	: Special (See Notes)						
		USE IN VACCUUM							
		0	: No						
		1	: Yes (Welded Coin)						
500-000GL	3	1	I	7	0	1	1	1	0

10. WARRANTY

The **F500** Pressure 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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VERSION MAR2023 - 01

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