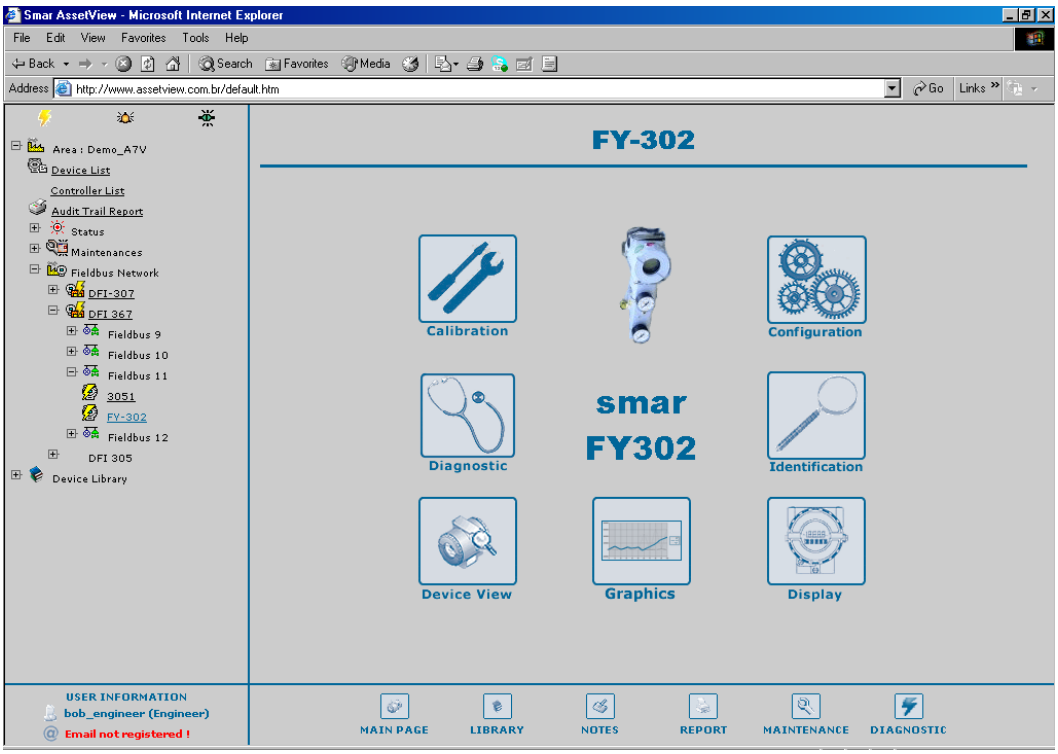
smar - AssetView HMI

USER'S MANUAL

FY302 - AssetView HMI



JAN / 09

AssetView HMI

ASVFY302ME

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FY302 - ASSETVIEW HMI

FY302 Home Page

This manual describes the pages developed for FY302 maintenance using AssetView.

The figure below shows the options from **FY302** initial page.

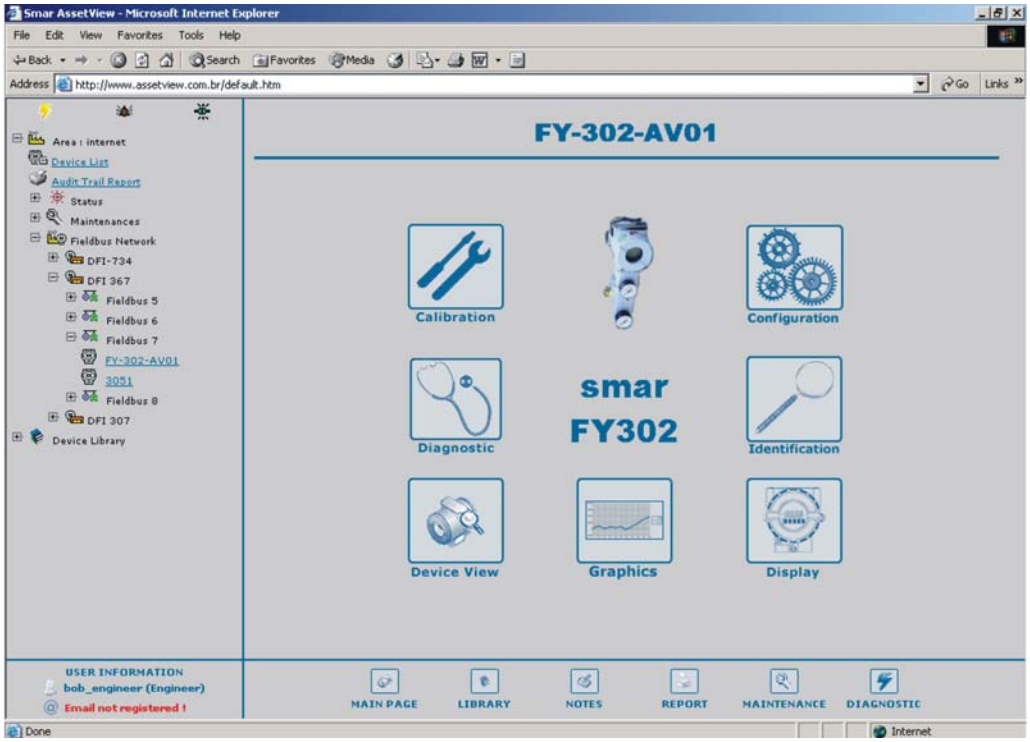

Figure 1. FY302 Home Page

The following sub-sections will describe each one of the pages developed for the device maintenance.

FY302 Identification Page

This page displays relevant information about the positioner. The user can easily identify and specify the positioner in the physical plant.

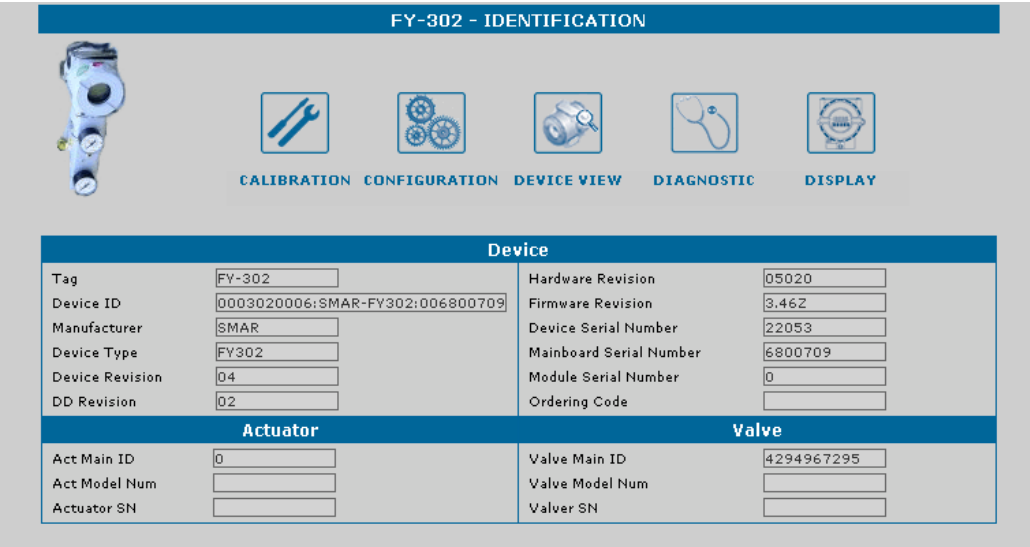

Figure 2. Identification Page

Device

TAG	Indicates the associated tag to the positioner in the physical plant. The tag can have up to 32 characters.
DEVICE ID	Indicates the identification code of the positioner. This code can have up to 32 characters.
MANUFACTURER	Identifies the positioner manufacturer.
DEVICE TYPE	Identifies the positioner type for a specific manufacturer.
DEVICE REVISION	Indicates the positioner revision.
DD REVISION	Indicates the DD revision.
HARDWARE REVISION	Indicates the positioner hardware revision.
FIRMWARE REVISION	Indicates the positioner firmware revision.
DEVICE SERIAL NUMBER	Indicates the positioner serial number.
MAINBOARD SERIAL NUMBER	Indicates the main board serial number.
MODULE SERIAL NUMBER	Indicates the serial number of the positioner transducer module.
ORDERING CODE	Indicates the positioner ordering code.

Actuator

ACT MAIN ID	Indicates the identification number of the actuator manufacturer.
ACT MODEL NUM	Indicates the identification number of the actuator model.
ACTUATOR SERIAL NUMBER	Indicates the actuator serial number.

Valve

VALVE MAIN ID	Indicates the identification number of the valve manufacturer.
VALVE MODEL NUM	Indicates the identification number of the valve model.
VALVE SERIAL NUMBER	Indicates the valve serial number.

FY302 Configuration Page

There are a few parameters in the **FY302** transducer block that can be used in the predictive and proactive maintenance. Some of them can be read online, while other parameters require that the process to stop or the plant control to be set to manual.

It is possible to detect performance decreasing comparing the current parameters with standard values and therefore determine the predictive and proactive maintenance.

The user can check the general diagnostic status in the **FY302 Diagnostic Page**.

Operational Statistics (OEs) are data stored in the device that inform its usage, abnormal behaviors, or number of times that a specific condition occurred, such as total valve travel (odometer), total of reversals and maximum deviation limit between the valve position and the set point.

Using the **FY302 Configuration Page**, the user can set limit conditions for the operational statistics. If a specific OE reaches the limit value, the device notifies the system and this notification is highlighted in the Diagnostic Page.

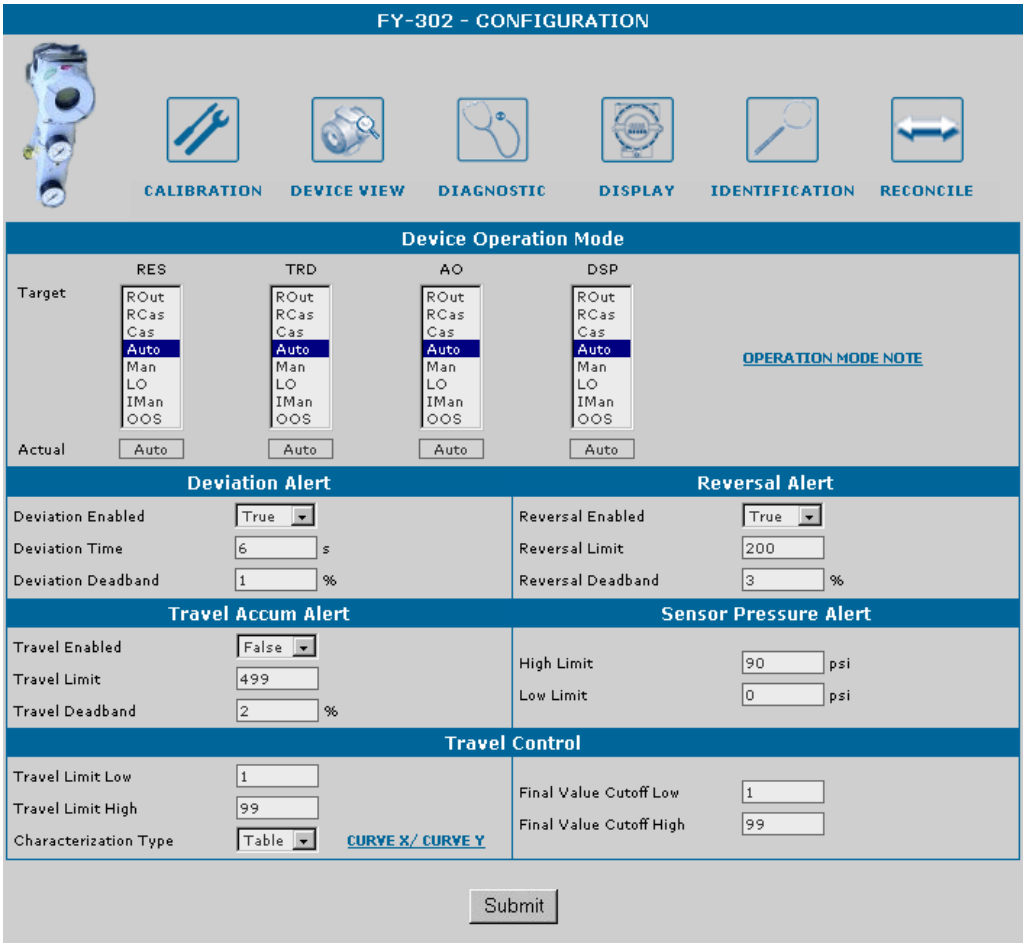

Figure 3. Configuration Page

Device Operation Mode

Indicates the operation mode for the device:

OOS	If this mode is selected, the value of *Mode Block* parameter will be *Out of Service* for the *Resource*, *Transducer* and *Analog Output* blocks.
AUTO	If this mode is selected, the value of *Mode Block* parameter will be *Auto* for the *Resource*, *Transducer*, *Display* and *Analog Output* blocks.
MAN	If this mode is selected, the value of *Mode Block* parameter will be *Manual* for the *Analog Output* block, and *Auto* for the *Resource*, *Transducer* and *Display* blocks.
CAS	If this mode is selected, the value of *Mode Block* parameter will be *Cas* for the *Analog Output* block, and *Auto* for the *Resource*, *Transducer* and *Display* blocks.

Deviation Alert

DEVIATION ENABLED	Enables checking the difference between the current valve position and the desired set point. If this difference exceeds the dead band for more than a given time period, an alert will be generated and will remain active until this difference decreases.
DEVIATION TIME	This time period is in seconds. The valve must exceed the dead band during this time period before generating an alert.
DEVIATION DEAD BAND	Indicates the magnitude of the valve deviation value (in percentage). An alert is generated when the valve exceeds this value during a given time period.

The user can check the status of this diagnostic alarm in the **FY302 Diagnostic Page**, in "**Deviation Limit Exceeded**".

Reversal Alert

REVERSAL
It indicates the number of times that the valve changes the direction according to the movement. The reversal total is increased when the valve changes the direction. When the total of movement exceeds the specified limit an alarm is generated.

REVERSAL ENABLED	Enables checking the difference between the reversal total and an established limit. An alert is generated when the reversal total exceeds this limit. If it is false the counter will not be increased (Reversal Count).
REVERSAL LIMIT	Indicates the reversal total limit. An alert is generated when the reversal total exceeds this limit. Enter a reversal value lower than the limit to acknowledge the alert.
REVERSAL DEAD BAND	Indicates the magnitude of the valve movement value (in percentage). This value is used to increase the reversal total.

The user can check the general diagnostic status in the **FY302 Diagnostic Page**. See the following example.

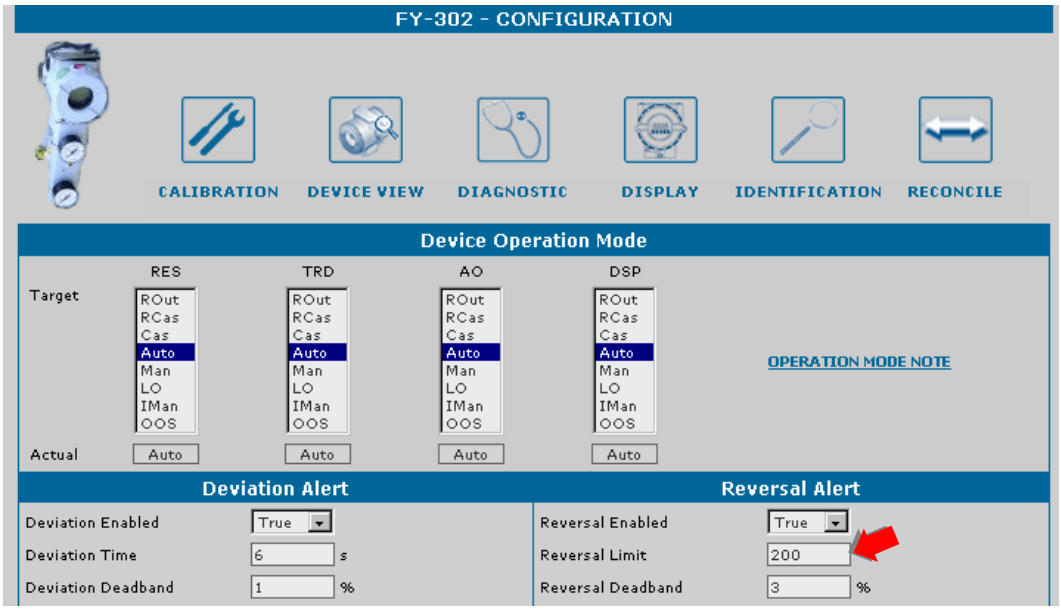

Figure 4. Reversal Alert

The user can check the alarm generated in the **FY302 Diagnostic Page**:

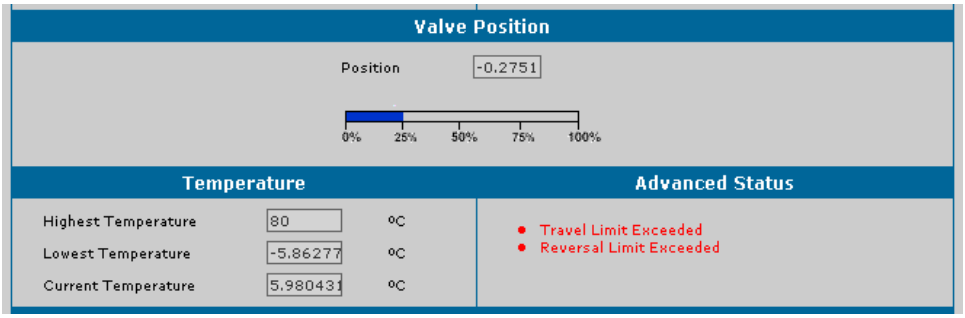

Figure 5. Advanced Diagnostics

Note that the variable **Reversals** in the **Valve Totals** area exceeded the limit specified. The alarm is indicated in red in the **Advanced Status** area.

Travel Accum Alert

TRAVEL (odometer)
It indicates the equivalent number of full strokes. The travel is increased when the number of changes exceeds the dead band value. It is used to indicate that the diaphragm needs to be replaced and the actuator needs overhaul.

TRAVEL ENABLED	Enables checking the difference between the odometer and an established limit. An alert is generated when the odometer exceeds this limit.
TRAVEL LIMIT	Indicates the odometer value limit. An alert is generated when the odometer exceeds this limit. Enter an odometer value lower than the limit to acknowledge the alert.
TRAVEL DEAD BAND	Indicates the magnitude of the valve movement value (in percentage). This value is used to increase the odometer.

The user can check the status of this diagnostic alarm in the **FY302 Diagnostic Page**, in "**Travel Limit Exceeded**".

Sensor Pressure Alert

An alert is generated every time the input pressure exceeds the limit. The user can check the general diagnostic status in the **FY302 Diagnostic Page**.

HIGH LIMIT	Indicates the maximum limit of the input pressure.
LOW LIMIT	Indicates the minimum limit of the input pressure.

NOTE

An alarm will be generated when the input pressure is lower than **Low Limit** (**Supply pressure too low**), and another one will be generated when it exceeds **High Limit** (**Supply pressure too high**) limit.
These alarms only will be generated when the sensor pressure is installed.

Travel Control

The valve travel conditions will be based on the parameters below.

CHARACTERIZATION TYPE	Valve characterization type: ▪ LINEAR: the real position will be represented as a linear chart with the desired position. ▪ TABLE: the user can characterize the real positions according to its application. ▪ EP25, EP33, and EP50: the EP (Equal Percentage) curves provide a larger travel only for wide set point variation. ▪ QO25, QO33, and QO50: the QO (Quick Open) curves provide a larger travel for narrow set point variation.
CURVE BYPASS	Enables/disables the curve.
CURVE LENGTH	Indicates the number of points that will be used to define the curve.
FINAL VALUE CUTOFF LOW	If FINAL VALUE is less than this value the valve is forced to be fully closed. FINAL VALUE is the value of the desired position.
FINAL VALUE CUTOFF HIGH	If FINAL VALUE is greater than this value the valve is forced to be fully open. FINAL VALUE is the value of the desired position.
TRAVEL LIMIT LOW	Odometer lower limit.
TRAVEL LIMIT HIGH	Odometer upper limit.

The user can check the general diagnostic status in the **FY302 Diagnostic Page**.

In the **Characterization Type** parameter select the **Table** option, and the table will appear.

To configure the points that define the characterization curve, click the link **Curve X/ Curve Y**, as indicated below:

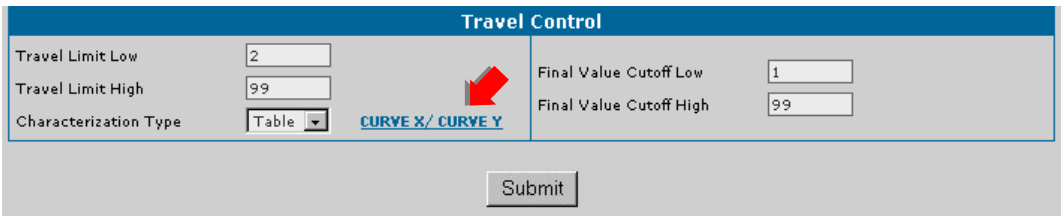

Figure 6. Characterization Curve

Type the points of the curve and click **Submit** to send the values to the device. Click **Configuration** link to return to the configuration page.

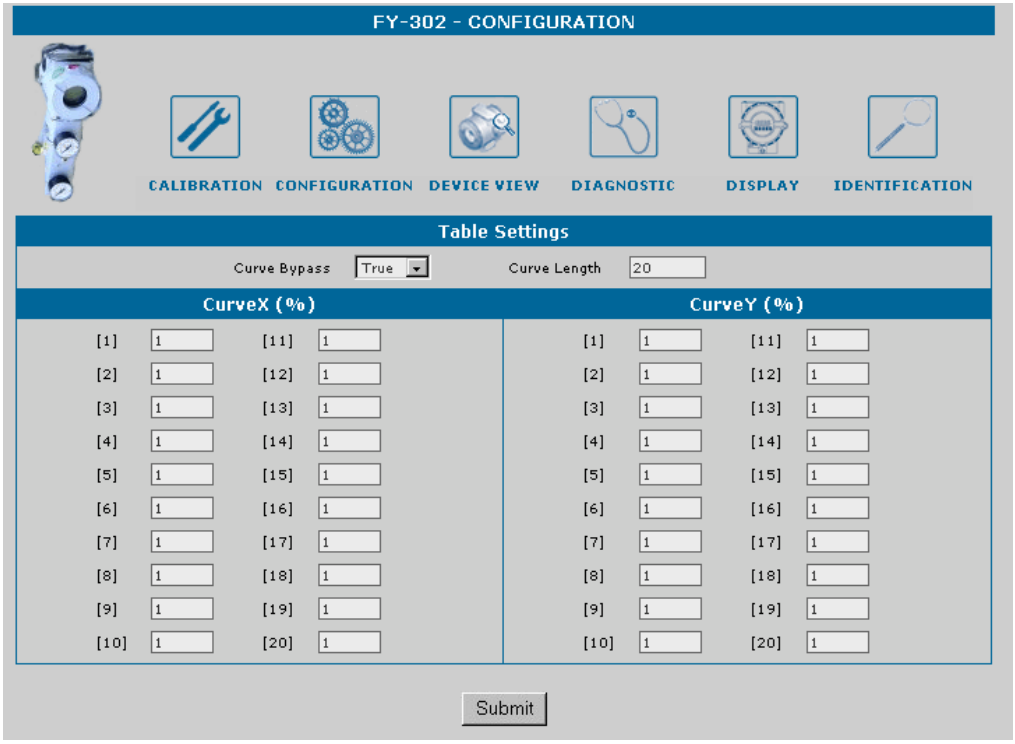

Figure 7. Points Table

FY302 Diagnostics Page

This page displays the device status.

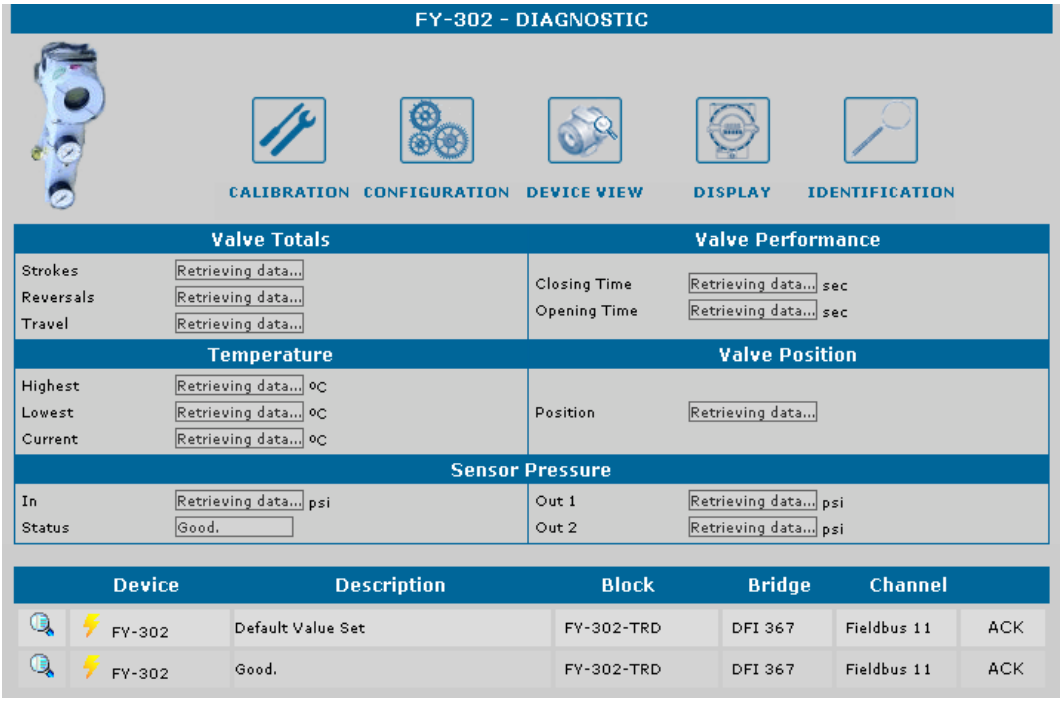

Figure 8. Diagnostic Page

Valve Totals

STROKES	Indicates the number of times that the valve fully opens and closes.
REVERSALS	Indicates the number of times that the valve changes the direction according to the movement. The number of reversals is increased when the valve changes the direction and the movement exceeds the dead band.
TRAVEL (odometer)	Indicates the equivalent number of full strokes. The travel is increased when the number of changes exceeds the dead band value. It is used to indicate that the diaphragm needs to be replaced and the actuator needs overhaul.

Valve Performance

CLOSING TIME	Indicates the time period (in seconds) that the valve spent to go from fully opened to fully closed. This time is used to indicate a problem with the actuator, diaphragm leak and problem with the pneumatic tube.
OPENING TIME	Indicates the time period (in seconds) that the valve spent to go from fully closed to fully opened. This time is used to indicate a problem with the actuator, diaphragm leak and problem with the pneumatic tube.

Valve Position

POSITION	Indicates the current valve position.

Temperature

HIGHEST TEMPERATURE	Indicates the highest temperature value measured by the positioner temperature sensor.
LOWEST TEMPERATURE	Indicates the lowest temperature value measured by the positioner temperature sensor.
CURRENT TEMPERATURE	Indicates the temperature value measured by the positioner temperature sensor.

Advanced Status

Shows the status of the continuous diagnostic, including the conditions of the mechanical module.

MAGNET NOT CENTRALIZED OR NOT DETECTED	Automatic alarm: the magnet is not centralized or it was not detected.
SLOW VALVE MOVEMENT OR LOW AIR SUPPLY	Automatic alarm: there is a slow valve movement or low air supply.
TEMPERATURE OUT OF RANGE	Automatic alarm: the temperature is out of range.
BASE NOT TRIMMED	Automatic alarm: the base is not trimmed.
OUTPUT MODULE NOT INITIALIZED OR NOT CONNECTED	Automatic alarm: the output module is not connected to the circuit board or it was not initialize.
DEVIATION LIMIT EXCEEDED	This alarm indicates the *Deviation Limit* configured in the configuration page was exceeded.
TRAVEL LIMIT EXCEEDED	This alarm indicates the odometer counter limit configured in the configuration page was exceeded.
REVERSAL LIMIT EXCEEDED	This alarm indicates the *Reversal Limit* configured in the configuration page was exceeded.

Sensor Pressure

SENSOR PRESSURE IN	Indicates the input pressure sensor reading.
SENSOR PRESSURE OUT1	Indicates the pressure sensor reading of the output 1.
SENSOR PRESSURE OUT2	Indicates the pressure sensor reading of the output 2.

Sensor Pressure Status

SENSOR PRESSURE STATUS	Indicates the status of the input pressure sensor.

Status

Shows the continuous diagnostic of the device status, including the condition of function block, electronic and the mechanical module. All of the alarms are automatic, that is, the device will notify the user even if the alarm has not been configured.

BLOCK CONFIGURATION ERROR	Indicates error in the hardware and software components associated to the block.
LINK CONFIGURATION ERROR	Indicates the error in the link configuration.
SIMULATE ACTIVE	Indicates that the device is on simulation mode.
LOCAL OVERRIDE	Indicates that the device is being operated manually.
DEVICE FAULT STATE SET	Indicates that the device is in safe fault state condition.
DEVICE NEEDS MAINTENANCE SOON	Internal diagnostic according to the user configuration or device internal checking has detected that the device will need maintenance soon.
INPUT FAILURE/PROCESS VARIABLE HAS BAD STATUS	Condition of the process variable is BAD.
OUTPUT FAILURE	Indicates a failure in the output that could be due to the electronic or the mechanical module.
MEMORY FAILURE	Indicates an electronic failure according to the internal checking process, such as an incorrect checksum detected in the main memory.
LOST STATIC DATA	Indicates that the device lost data from the flash or the EEPROM memory.
LOST NV DATA	Indicates that the device lost data from the RAM memory.
READ BACK CHECK FAILED	Indicates a discrepancy in the reading of return value. This may have been caused by a hardware failure.
DEVICE NEEDS MAINTENANCE NOW	Internal diagnostic according to the user configuration or device internal checking has detected that the device needs maintenance.
POWER UP	Indicates that the device has finished the initial operation procedure.
OUT-OF-SERVICE	Indicates that the function block is out of service.
GENERAL ERROR	An error has occurred and could not be classified as one of the errors below.
CALIBRATION ERROR	An error occurred during the device calibration or a calibration error has been detected during the device operation.
CONFIGURATION ERROR	An error occurred during the device configuration or a configuration error has been detected while operating the device.

ELECTRONIC FAILURE	An electronic component has failed.
MECHANICAL FAILURE	A mechanical component has failed.
I/O FAILURE	I/O failure has occurred.
DATA INTEGRITY ERROR	Indicates that data stored in the system may be no longer valid, because the checksum of the data in the RAM memory has failed when compared to the data in the non-volatile memory.
SOFTWARE ERROR	The software has detected an error that may have been caused by a deviation to a wrong routine, an interruption, a lost pointer, etc.
ALGORITHM ERROR	The algorithm used in the transducer block generated an error, such as, a data overflow.

FY302 Graphics Page

This page allows the user to configure the **FY302** graphs. Select the type of the graph, type the delay time to get the desired position (**Delay**) and click **New Graph**.

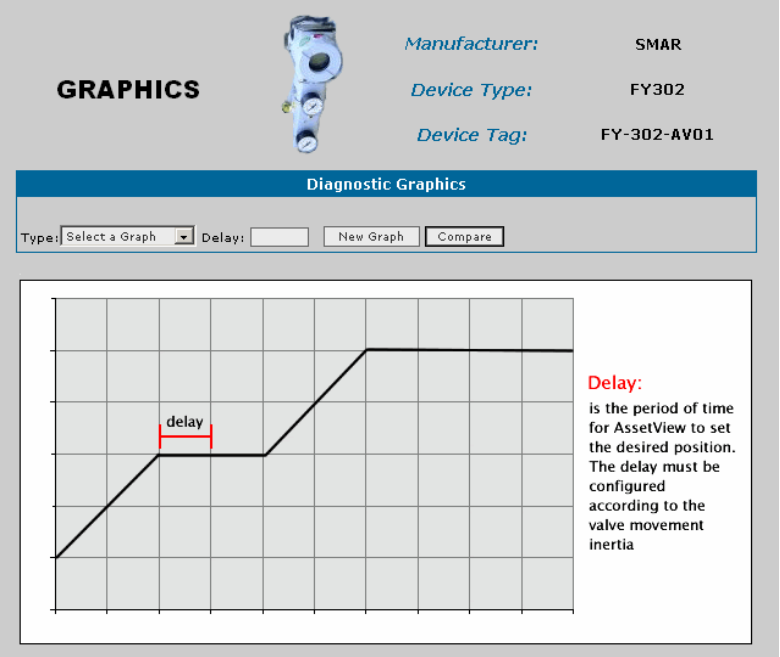

Figure 9. Graphics Page

Remember that this procedure must be executed when the process stops or the plant control is set to manual. Movements of opening and closing may interfere in the process.

AssetView will set the **Resource** and **Transducer Mode** blocks to **Auto** to draw the chart. The mode block values will be restored at the end of this process.

CHARACTERIZATION
This chart will show the behavior of the current valve position compared to the desired value. ***AssetView*** will generate the desired value. The user can analyze the behavior of the valve response, such as stuck and stress. It will be easier to set the positioner parameters in the **Calibration** page, such as the **Servo_Gain** and the **Servo_Reset**, according to the application tuning and the positioner dynamic response.

This chart helps the preventive and predictive maintenance because the user can save the curves and compare them later. Performance results are related to the chosen characterization type, Servo gains and Servo reset parameters.

Remember that the response curve will depend on the response inertia of the valve analyzed. For slow valves, the time configured must be longer because it takes longer for the valve to reach the desired position.

See the example below:

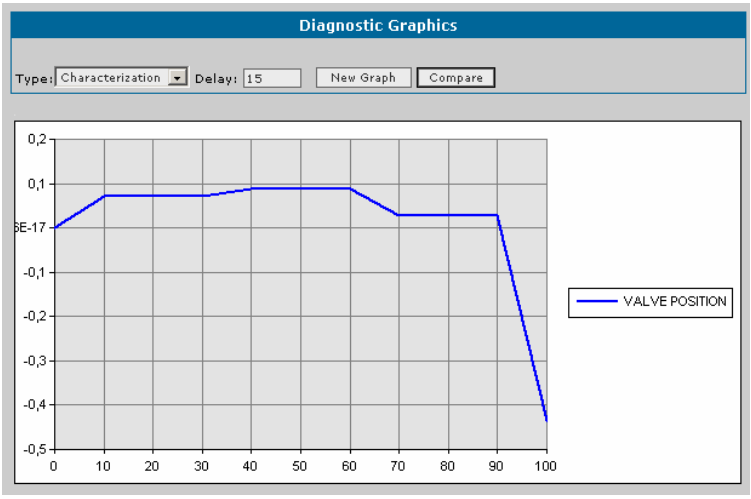

Figure 10. Characterization Graph

Click **Compare** to compare characterization charts. On the **Type Graph** menu, select **Characterization**. Select the moment for the valve position **VP1** and another moment for the valve position **VP2**. Click **Compare** to conclude.

See the example below:

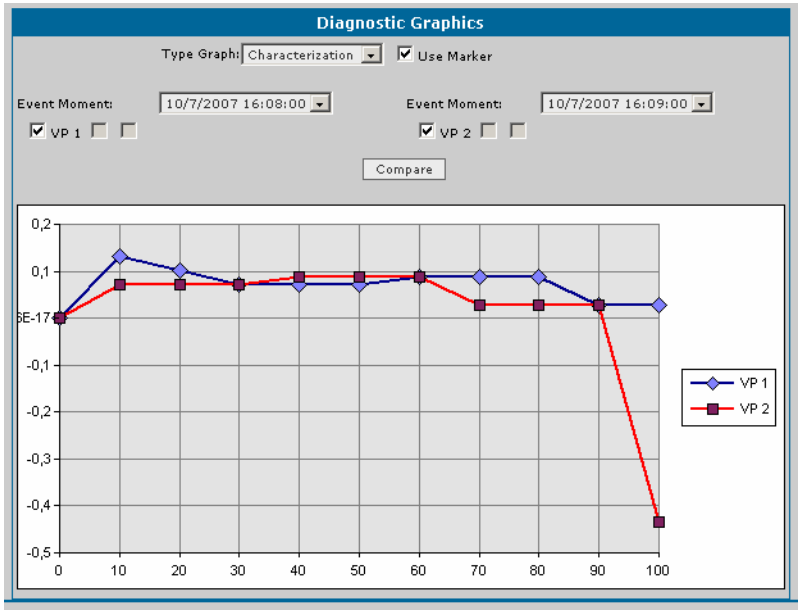

Figure 11. Comparing Graphs

STEP RESPONSE:
This chart will show the behavior of the current valve position and the desired position related to the time. It is an easier way to check the tuning between the servo PID and the positioner.

The user can analyze the behavior of the valve response, such as stuck and stress. It helps the preventive and predictive maintenance because the user can save the curves and compare them later.

Performance results are related to the chosen characterization type, Servo gains, Servo reset parameters and the valve inertia (slow or fast valve response).

After configuring the **Delay**, set the value for the **Setpoint** and click **Write** to start. This chart allows the user observe it ranging in time during the analysis.

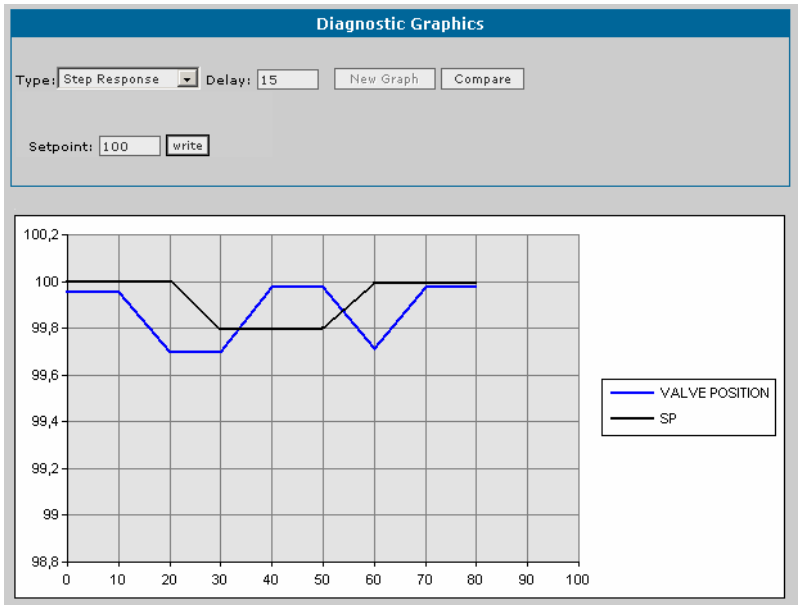

Figure 12. Step Response Graph

Click **Compare** to compare the valve response charts. On the **Type Graph** menu, select **Step Response**. Select the moment to be compared and click **Compare** to conclude. See the example below:

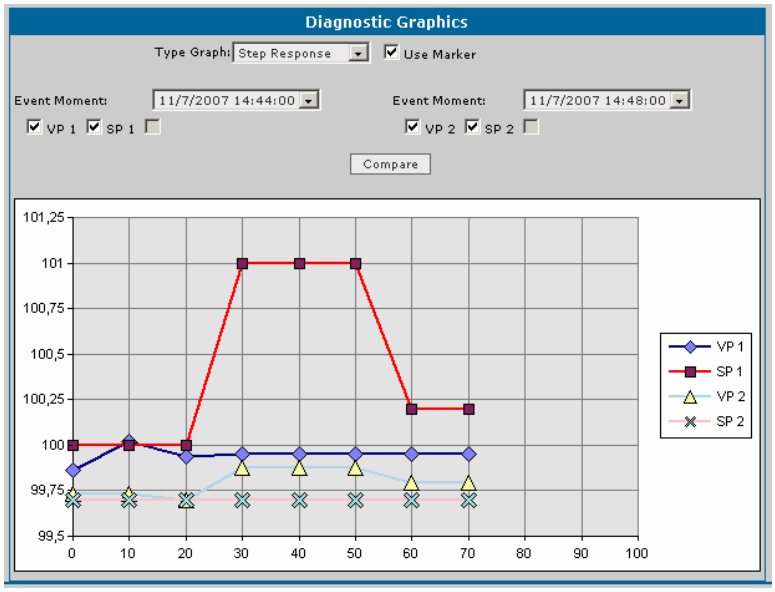

Figure 13. Comparing Graphs

VALVE SIGNATURE

This chart will show the behavior of the position related to the output pressure. The desired value will be generated by ***AssetView***. This chart allows the user to analyze the behavior of the valve response according to the air pressure. For example, the user can save the chart during the installation or commissioning, and then, compare the current chart with the one saved before. It will be possible to check if more pressure is necessary to establish the same position. If it is true, it means that there is a mechanical stuck.

NOTE
The chart *Valve Signature* will be plotted only if the FY302 has the pressure sensor.

Performance results are related to the chosen characterization type, Servo gains, Servo reset parameters and input pressure. See the example below:

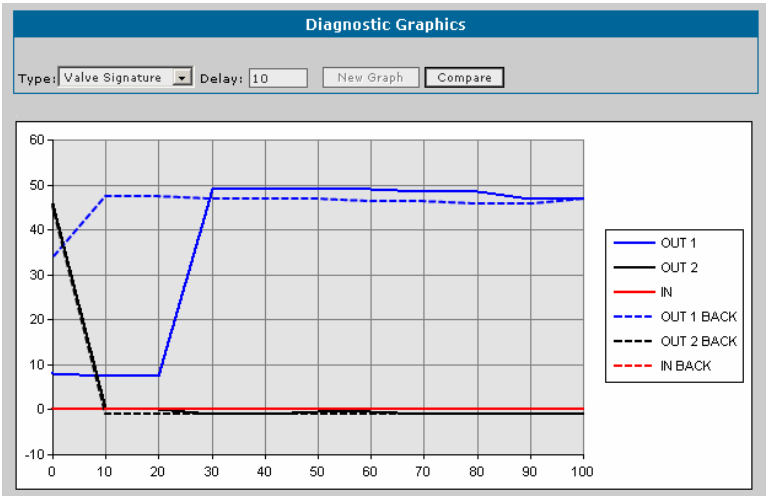

Figure 14. Valve Signature Graph

Click **Compare** to compare the valve response charts. On the **Type Graph** menu, select **Valve Signature**. Select the moment to be compared and click **Compare** to conclude. See the example below:

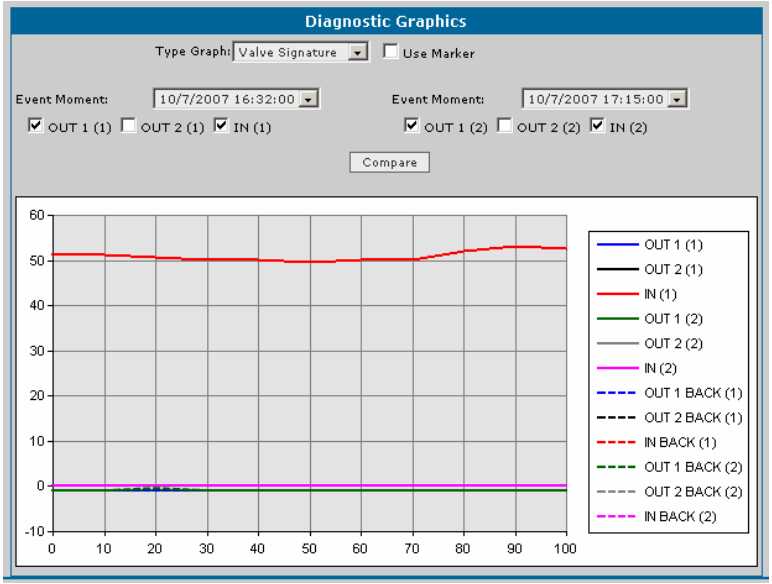

Figure 15. Comparing Graphs

HYSTERESIS:
This chart will show the hysteresis behavior of the valve when moving the valve from fully closed to fully opened, and vice-versa. It lets the user analyze the behavior of the valve response, such as stuck and stress. It helps the preventive and predictive maintenance because the user can save the curves and compare them later.

Performance results are related to the chosen characterization type, Servo gains and Servo reset parameters.

Remember that the response curve will depend on the response inertia of the valve analyzed. For slow valves the time configured must be longer because it takes longer for the valve to reach the desired position.

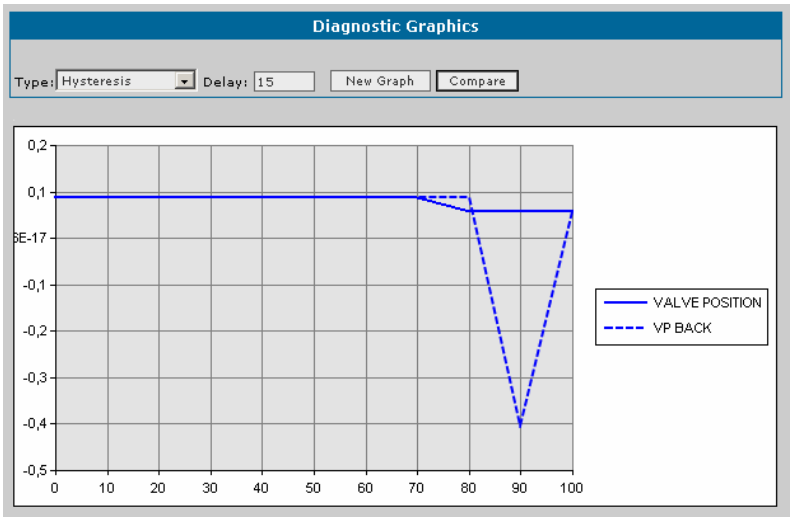

Figure 16. Hysteresis Graph

Click **Compare** to compare the valve response. On the **Type Graph** menu, select **Hysteresis**. Select the moments to be compared, and click **Compare** to conclude. See the example below:

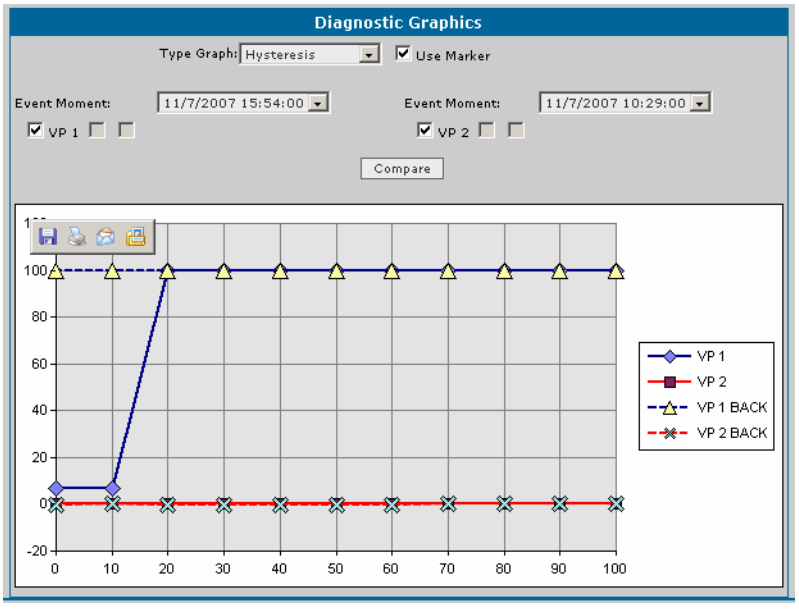

Figure 17. Comparing Graphs

TRAVEL DEVIATION

This chart will show the behavior of the error accumulated in the process (between the current valve position and the desired position) related to the time. It allows the user analyze the behavior of the valve response, such as stuck and stress. It helps the preventive and predictive maintenance because the user can save the curves and compare them later.

The value that appears in the histogram is the arithmetic average of 10 acquisitions. In stuck conditions the error accumulated tends to increase because the instantaneous error increases. This fact can be verified since the servo PID action increases.

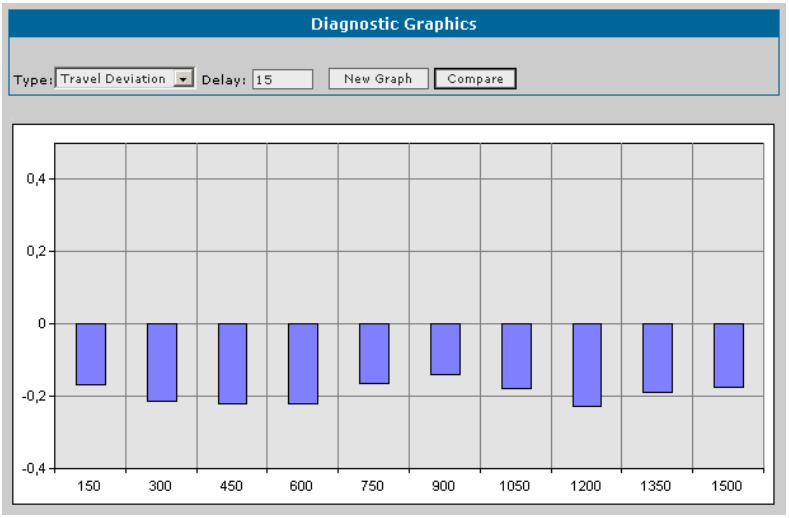

Figure 18. Travel Deviation Graph

AS FOUND AS LEFT

This chart allows the user to store the device status before executing a calibration procedure. The user can save the chart of the set point related to the **Primary Value**. After executing the calibration, generate the chart again with the same characteristics to analyze the deviation.

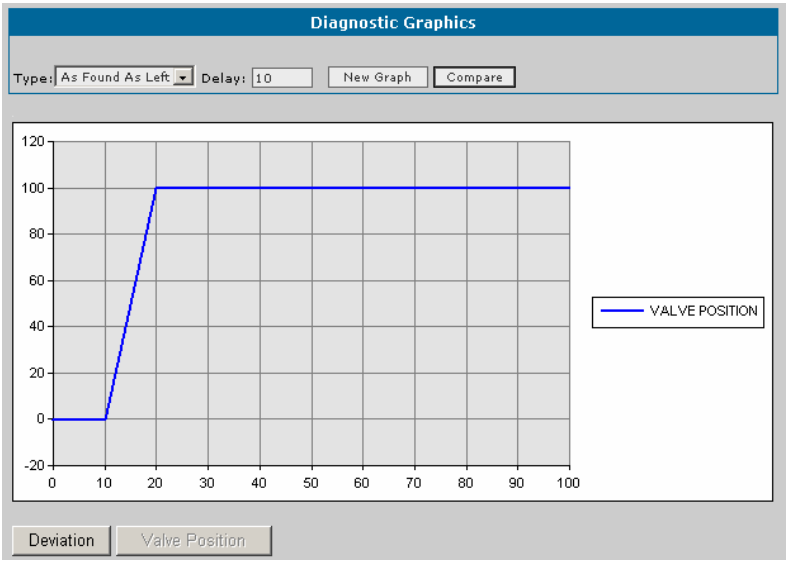

Figure 19. As Found As Left Graph

Select the **Deviation** option to show the error values for each point written in the device.

Click **Compare** to compare the valve response. On the **Type Graph** menu, select **As Found As Left**. Select the moments to be compared, and click **Compare** to conclude. See the following example:

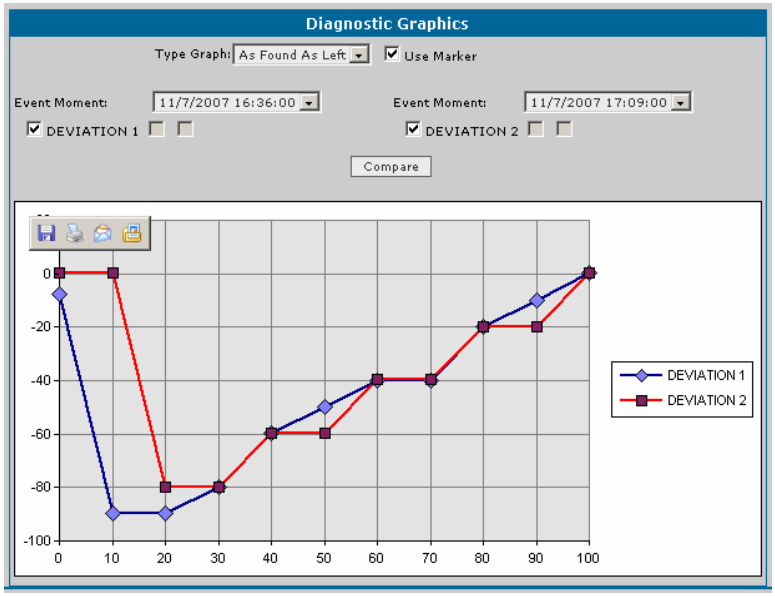

Figure 20. Comparing Graphs

FY302 Calibration Page

This page displays configuration data used in the calibration procedures.

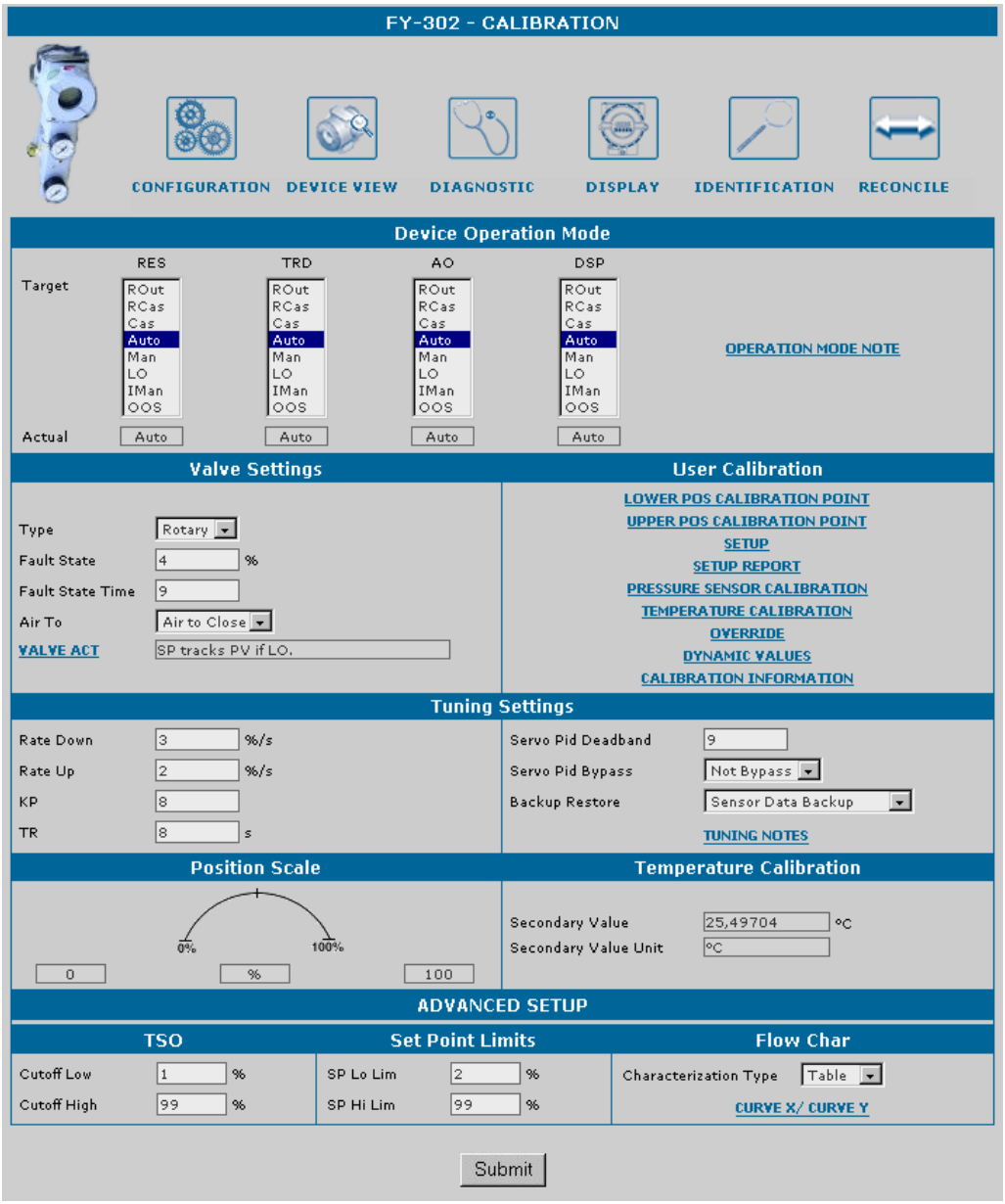

Figure 21. Calibration Page

Device Operation Mode

Indicates the operation mode for the device:

OOS	If this mode is selected, the value of the *Mode Block* parameter will be *Out of Service* for the *Resource*, *Transducer,* and *Analog Output* blocks.
AUTO	If this mode is selected, the value of the *Mode Block* parameter will be *Auto* for the *Resource*, *Transducer*, *Display,* and *Analog Output* blocks.
MAN	If this mode is selected, the value of the *Mode Block* parameter will be *Manual* for the *Analog Output* block, and *Auto* for the *Resource*, *Transducer,* and *Display* blocks.
CAS	If this mode is selected, the value of the parameter *Mode Block* will be *Cas* for the *Analog Output* block, and *Auto* for the *Resource*, *Transducer* and *Display* blocks.

Valve Settings

TYPE	The user configures the valve type: linear or rotary.
FAULT STATE	Safe fault value (in percentage).
FAULT STATE TIME	Indicates the time before the valve changes to the safe fault value (in seconds).
AIR TO	Air condition to open or close.
VALVE ACT	Action type: direct or reverse. The options are: Invert, SP tracks PV if Man, SP tracks PV if LO, SP tracks RCas or Cas if LO or Man, Increase to close, Faultstate Type, Faultstate restart, Target to Man, PV for BKCal_Out, Low Cutoff.

Tuning Settings

RATE DOWN	Configures the set point step-down rate (in percentage) related to the time.
RATE UP	Configures the set point step-up rate (in percentage) related to the time.
KP	Servo PID proportional gain.
TR	Servo PID integral time.
SERVO PID DEAD BAND	Set the Servo PID dead band. It should not be changed by the user.
SERVO PID BYPASS	Enables/disables the Servo PID.
BACKUP RESTORE	Enables save and restore the calibration, setup and important configuration data. It is recommended to run the backup process with the option **Sensor Data Backup** after the auto-calibration process (setup).

Calibration Information

MIN SPAN	Indicates the smallest difference allowed between the calibration upper position and the calibration lower position.
UNIT	Indicates the calibration unit, always in percentage.
METHOD	Indicates the calibration method. When leaving the factory, the device is calibrated according to the manufacturer criteria. If the user calibrates the positioner, it will indicate that the user executed the calibration.
LOCATION	Indicates the location of calibration, such as a laboratory, area 1, etc.
DATE	Indicates the date of the executed calibration.
WHO	Indicates the person responsible for the executed calibration.

Position Scale

EU 0%	Indicates the lower limit for the input scale of the position variation.
EU100%	Indicates the upper limit for the input scale of the position variation.
UNITS INDEX	Indicates the engineering unit: percentage (%), radian (rad) or millimeter (mm).

Temperature Calibration

CAL TEMPERATURE	Indicates the last temperature calibration value of the positioner temperature sensor. The user must type the reference temperature and the device will be calibrated with this value. Note the - 40 to 85 °C limits when executing the calibration.
SECONDARY VALUE UNIT	Indicates the unit related to the temperature.

Advanced Setup

TSO

FINAL VALUE CUTOFF LOW	If FINAL VALUE is less than this value the valve is forced to be fully closed. FINAL VALUE is the value of the desired position.
FINAL VALUE CUTOFF HIGH	If FINAL VALUE is greater than this value the valve is forced to be fully opened. FINAL VALUE is the value of the desired position.

Set Point Limits

SP LO LIMIT	Set point lower limit of the AO Block.
SP HI LIMIT	Set point upper limit of the AO Block.

Flow Char

CHARACTERIZATION TYPE	Valve characterization type: ▪ LINEAR: the real position will be represented as a linear chart with the desired position. ▪ TABLE: the user can characterize the real positions according to the application. ▪ EP25, EP33, and EP50: the EP (Equal Percentage) curves provide a larger travel only for wide set point variation. ▪ QO25, QO33, and QO50: the QO (Quick Open) curves provide a larger travel for narrow set point variation.
CURVE BYPASS	Enables/disables the curve.
CURVE LENGTH	Indicates the number of points that will be used to define the curve.

After selecting the table, the user must type the input and output values in percentage.

To configure the points that define the characterization curve, click the link **Curve X/ Curve Y**, as indicated in the following figure.

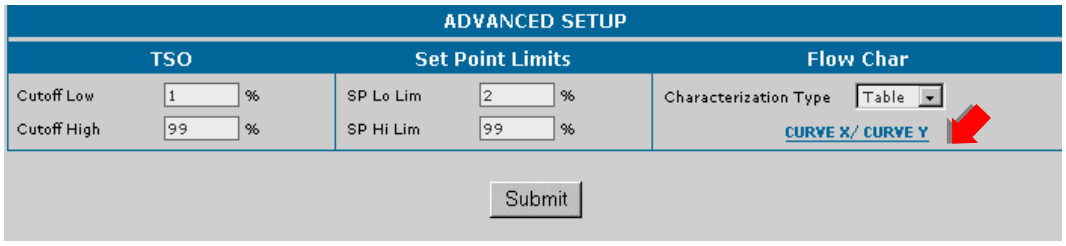

Figure 22. Configuring the Characterization Curve

The table with the points will open:

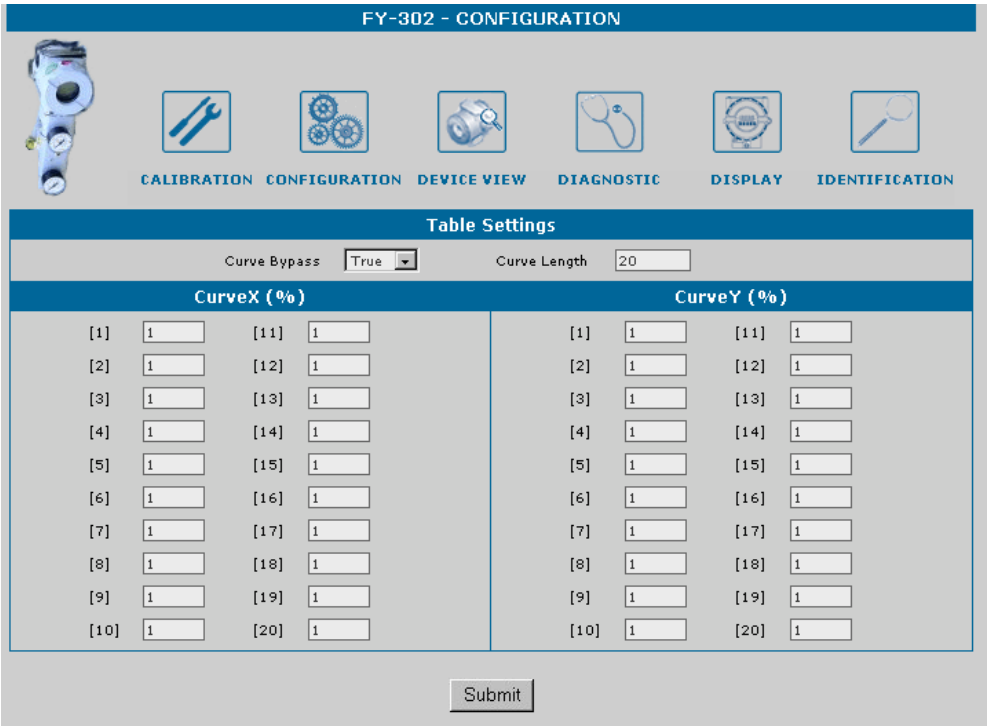

Figure 23. Points Table

Type the curve points and click **Submit** to send the values to the device. Click **Calibration** link to return to the calibration page.

User Calibration

NOTE
Whenever the positioner is installed to a valve, it is necessary to execute the auto-calibration procedure (setup) before connecting it to the process. The setup procedure will move the valve searching for the physical limits of the position.

The user must install the positioner when the valve is isolated from the process and air is directly applied to it using a manual regulator. Match the arrow of the magnetic part with the arrow of the positioner transducer module when the valve is at 50.0%. This procedure is crucial for the properly operation of the positioner.

For further details consult the FY302 manual.

The setup procedure is necessary even before the lower or upper position calibration.

LOWER POS CALIBRATION POINT
This method is used when the user wants to calibrate the 0 and the 100% limits differently from the physical limits set during the setup process.

Use this procedure in applications that involve *Splitter Range* conditions.

When this method is selected, a message box appears warning the user that this procedure must be executed when the process stops or the plant control is set at manual. Opening and closing movements may interfere in the process.

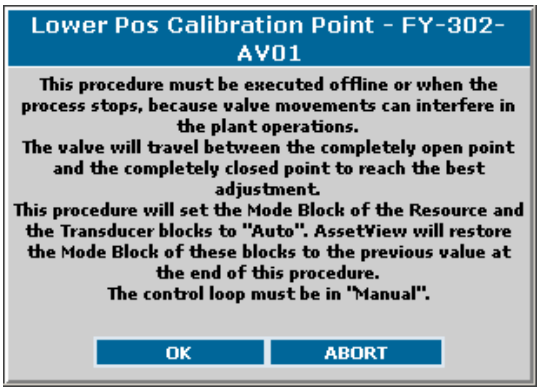

Figure 24. Configuring the Mode Block

Click **OK** and complete the information about the calibration, indicating the location of the calibration, the date and the person responsible for the calibration:

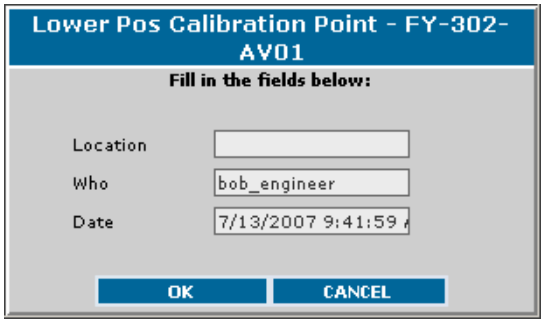

Figure 25. Calibration Data

The valve will move to the lower position. The message shown in the figure below appears. Wait until the valve stabilizes the position, and click **Ok** to continue.

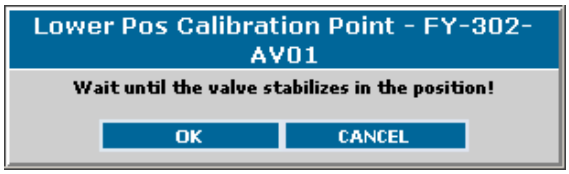

Figure 26. Stabilizing the Position

Check the current physical position of the lower limit, which is indicated in the actuator scale, and type this value in the **New Position** text field:

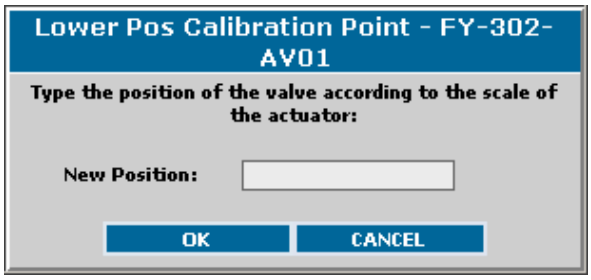

Figure 27. Valve New Position

Suppose that the value read in the actuator scale is 10.0%. After the user types this value and click **Ok**, the positioner will correct the lower position (set at around 0%).

Negative values for the position will execute the correction in the opposite direction of the movement.

Verify the scale and indicate if the correction was successful or the calibration procedure must be executed again.

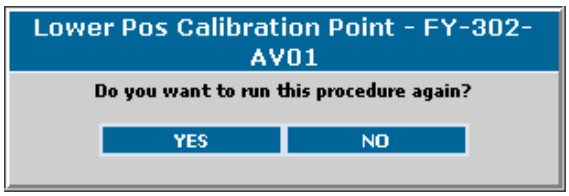

Figure 28. Checking the Calibration

If the correction was successful, click **No**. Otherwise, if the calibration is not suitable, click **Yes**. The user can execute the correction. It is possible to "lie" to the positioner about the value read from the actuator scale. In this way, the positioner will be calibrated lower, according to the user necessities.

It is possible to save the calibration in the EEPROM memory of the positioner transducer module, which is recommended. Click **Yes** to save the calibration data.

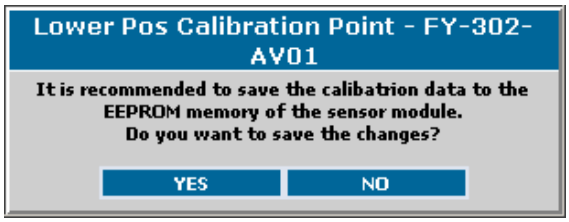

Figure 29. Saving Calibration Data

UPPER POS CALIBRATION POINT

This method is similar to the **Lower Pos Calibration** procedure described above. It is used when the user wants to calibrate the 0 and the 100% limits differently from the physical limits set during the setup process.

Use this procedure in applications that involve *Splitter Range* conditions.

When this method is selected, a message box appears warning the user that this procedure must be executed when the process stops or the plant control is set at manual. Opening and closing movements may interfere in the process.

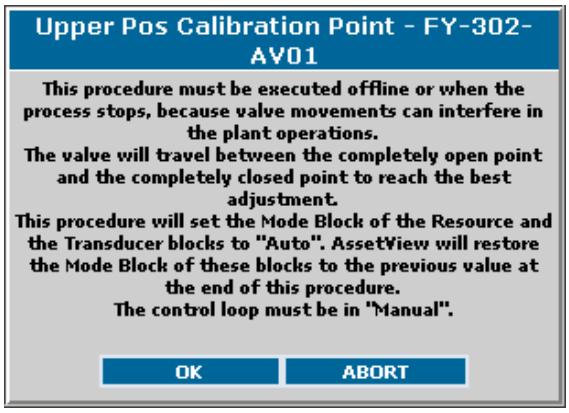

Figure 30. Configuring the Mode Block

Click **OK** and complete the information about the calibration, indicating the location of the calibration, the date and the person responsible for the calibration:

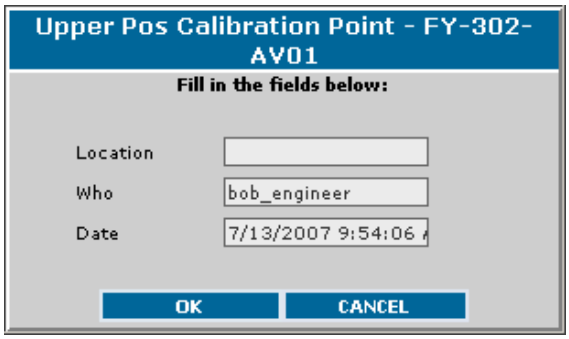

Figure 31. Calibration Data

The valve will move to the upper position. The message shown in the following figure appears. The user must wait until the valve stabilizes the position and click **Ok** to continue.

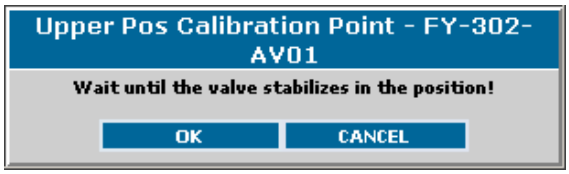

Figure 32. Stabilizing the Position

Check the current physical position of the upper limit, which is indicated in the actuator scale, and type this value in the **New Position** text field:

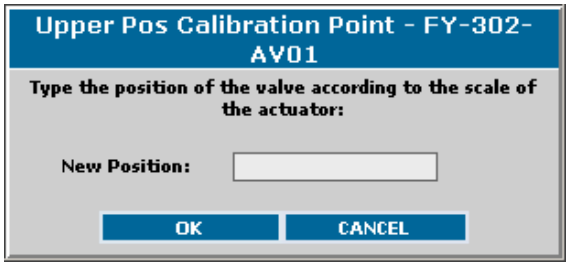

Figure 33. Valve New Position

Suppose the value read in the actuator scale is 90.0%. After the user types this value and click **Ok**, the positioner will correct the upper position (set at around 100%).

Negative values for the position will execute the correction in the opposite direction of the movement.

Verify the scale and indicate if the correction was successful or the calibration procedure must be executed again.

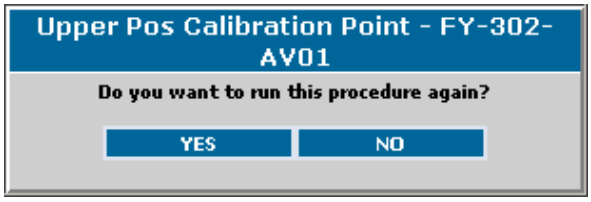

Figure 34. Checking the Calibration

If the correction was successful, click **No**. Otherwise, if the calibration is not suitable, click **Yes**. The user can execute the correction. It is possible to “lie” to the positioner about the value read from the actuator scale. In this way, the positioner will be calibrated higher, according to the user necessities.

It is possible to save the calibration in the EEPROM memory of the positioner transducer module, which is recommended. Click **Yes** to save the calibration data.

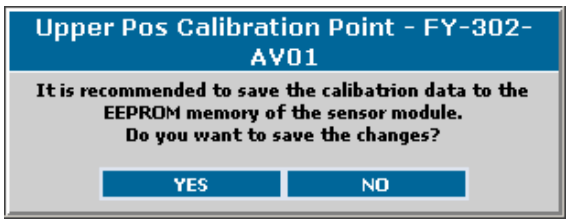

Figure 35. Saving Calibration Data

SETUP

When this method is selected, a message box appears warning the user that this procedure must be executed when the process stops or the plant control is set at manual. Opening and closing movements may interfere in the process. Please refer to the FY302 manual for setup details.

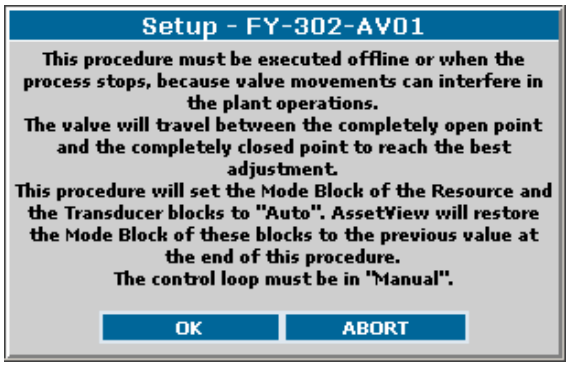

Figure 36. Configuring the Mode Block

Click **OK** and the valve will move searching for the lower and upper physical position. Depending on the valve inertia this process may take a few minutes.

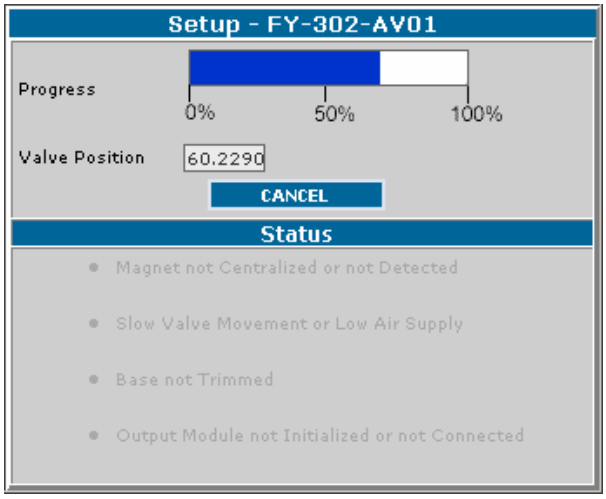

Figure 37. Valve Movement

The progress bar indicates the procedure progress. The user can also verify the setup status.

A message box will appear indicating that the *Setup* process is completed.

Figure 38. Concluding the Calibration

At the end of the setup, it will be possible to save the data:

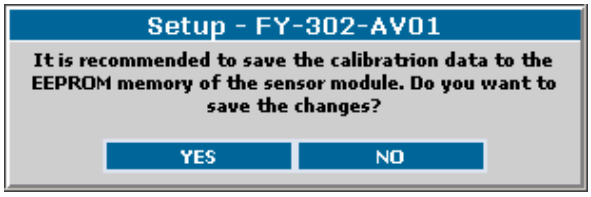

Figure 39. Saving Calibration Data

SETUP REPORT

This option provides an analysis of the data stored during the last Setup process. The data has information about the HALL and the PIEZO sensors. It is useful to report a problem during the Setup process.

There are cases where the Setup process is executed and the valve is stuck or the input pressure is too low to allow the valve movement. In this case, the process will be finalized with “Time Out” and the lower and upper values of the HALL sensor will be practically the same, which indicates no movement.

Another example is the voltage condition of the PIEZO sensor that must be between 30 and 60V in a stable condition and a fixed position. If the voltage is out of this range the mechanical calibration will be necessary at the PIEZO sensor.

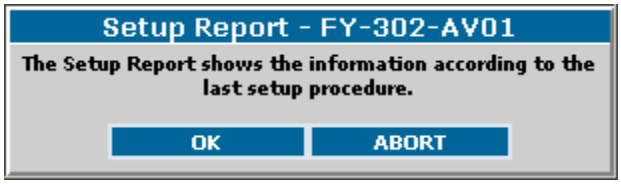

Figure 40. Setup Report

Click **Ok**. The figure below shows the **Setup Report** options:

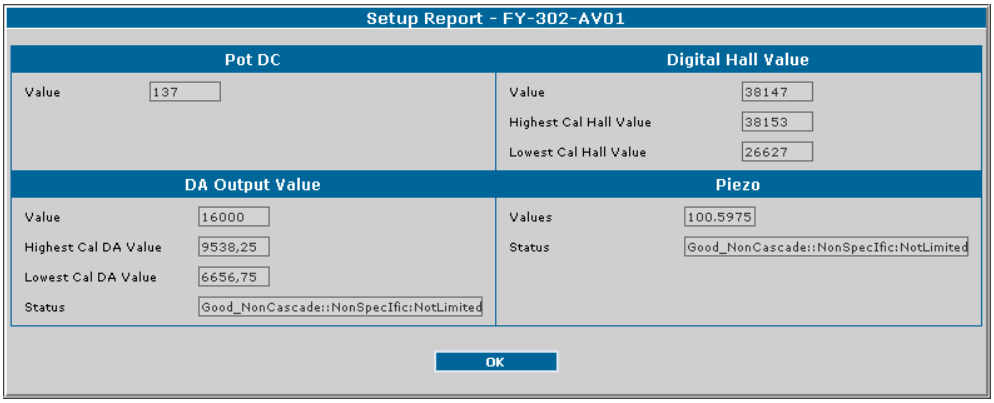

Figure 41. Report Data

Pot DC:

VALUE	The constant DC value for piezo sensor.

Digital Hall Value:

VALUE	Indicates the current value of the HALL sensor according to the current position.
HIGHEST CAL HALL VALUE	Upper value of the HALL sensor calibrated during the *Setup* process or *Upper Pos Calibration* process.
LOWEST CAL HALL VALUE	Lower value of the HALL sensor calibrated during the *Setup* process or *Lower Pos Calibration* process.

DA Output Value:

VALUE	Indicates the current value of the D/A converter.
HIGHEST CAL DA VALUE	Upper value of the D/A converter calibrated during the *Setup* process or *Upper Pos Calibration* process.
LOWEST CAL DA VALUE	Lower value of the D/A converter calibrated during the *Setup* process or *Lower Pos Calibration* process.
STATUS	Status of the D/A converter value.

Piezo:

VALUE	Indicates the value of the PIEZO sensor voltage.
STATUS	Indicates the status of the PIEZO sensor voltage.

PRESSURE SENSOR CALIBRATION:
Selecting this method the user can calibrate the pressure sensors, when they are installed in the positioner. These installations depend on the positioner version.

When this method is selected, a message box appears warning the user that this procedure must be executed when the process stops or the plant control is set at manual. Opening and closing movements may interfere in the process.

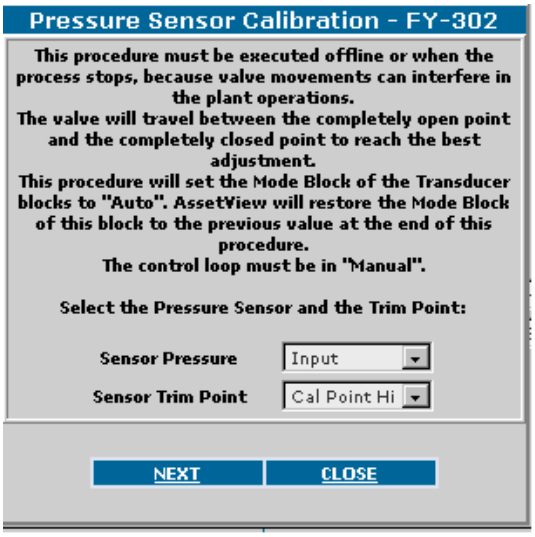

Figure 42. Checking the Sensor Pressure

In the same window is possible select the sensor that will be calibrated and the respective calibration (upper or lower). Click **Next** to continue.

A message will appear indicating the pressure values. The selected pressure and calibration will be shown according to measured pressure. Click **Next** to confirm that the pressure and calibration are correct. Otherwise, do the corrections, click **Submit**, and then, **Next**.

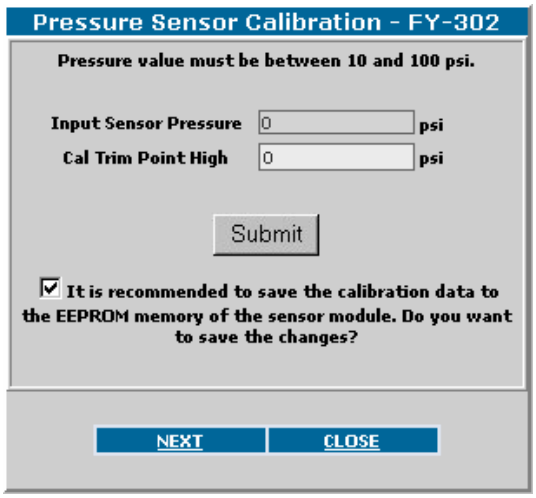

Figure 43. Sensor Calibration Data

It is possible to save the calibration in the EEPROM memory of the sensor module, just select the option. Click **Next** and a window will appear to complete the information about the calibration location, the date and the person responsible for the calibration:

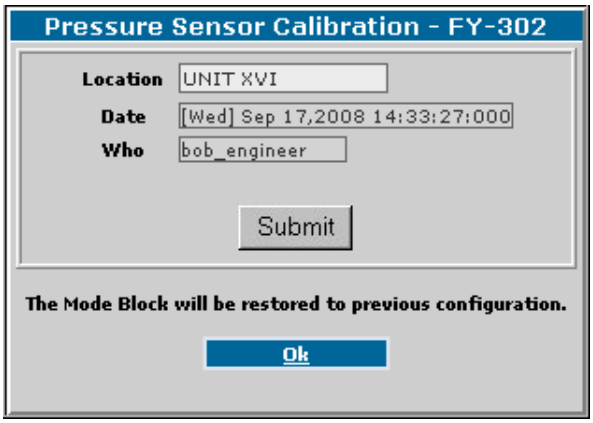

Figure 44. Sensor Calibration Data

Click **Ok** to finish the configuration.

TEMPERATURE CALIBRATION:
Selecting this method the user can calibrate the temperature sensor. Click the **Temperature Calibration** option and the following window will appear:

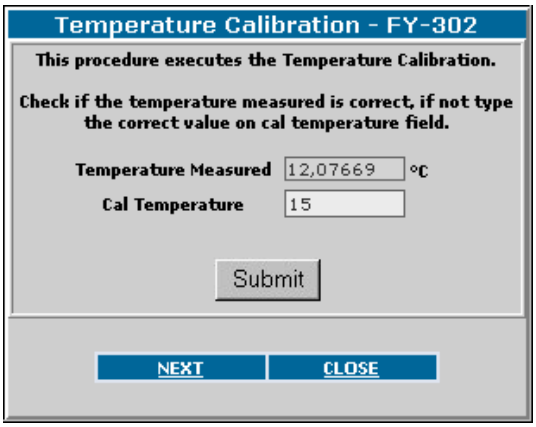

Figure 45. Calibrating the temperature

Verify if the temperature is correct. Otherwise, it can be changed in the **Cal Temperature** field. Click **Next** and the following window will appear.

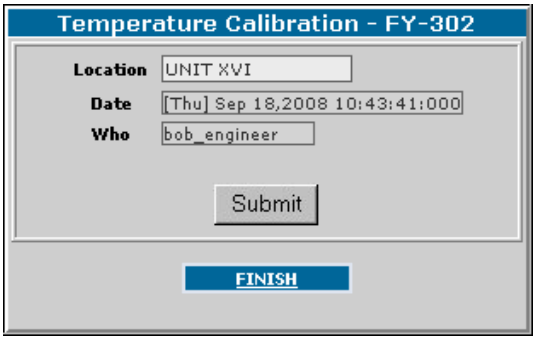

Figure 46. Temperature Calibration Data

Click **OK** and complete the information about the calibration, indicating the location of the calibration, the date and the person responsible for it.

OVERRIDE:
Selecting this method, the user can verify the desired position according to a previous Set Point. The message box will appear warning the user about the safe procedures.

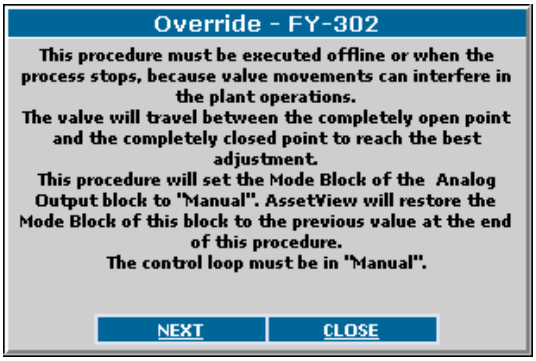

Figure 47. Configuring the Mode Block

Click **Next** to start the process. Select the set point value, and click **Ok**.

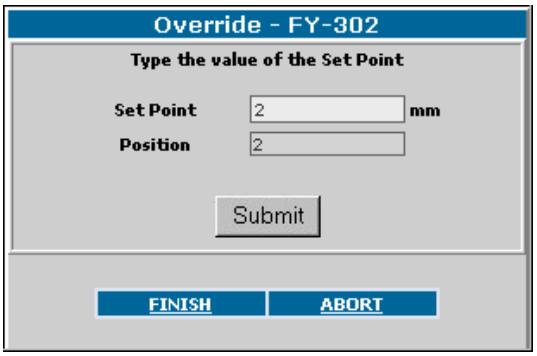

Figure 48. Selecting the Set Point

DYNAMIC VALUES:
Selecting this method the user can verify the dynamic values of the device.

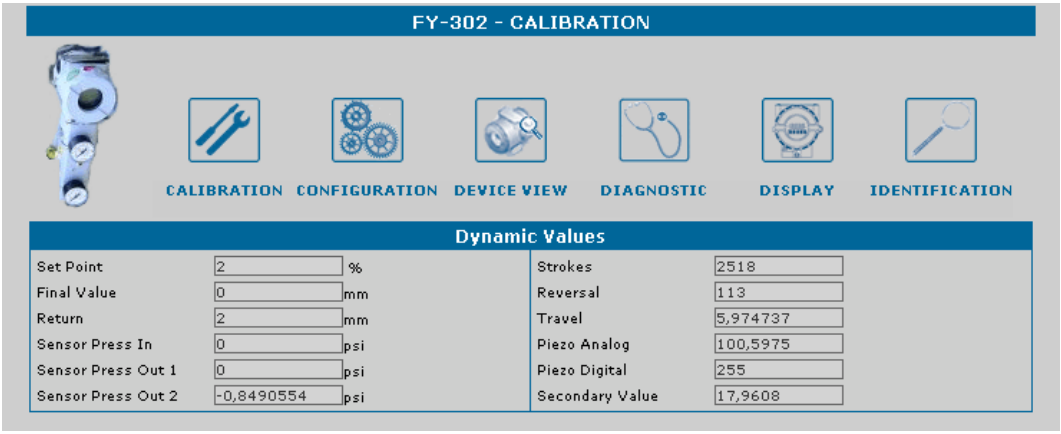

Figure 49. Dynamic Values

FY302 Display Page

The user can save the data shown in the device's display.

Figure 50. Display Page

Display Options

BLOCK TAG	Shows the tags list for the available instantiated blocks.
PARAMETER	Shows the list of available parameters to be displayed in the LCD for the selected block in the *Block Tag* option.
SUB INDEX	Indicates the sub-index of the selected parameter.
MNEMONIC	Indicates the mnemonic of the selected parameter in the *Parameter* option.
INC DEC	Indicates the value to be added or subtracted when acting in the parameter via local adjustment.
DECIMAL POINT NUMB	Indicates the number of digits after the decimal point that will be shown in the LCD.
ACCESS	The user can select the access type of the selected parameter: monitoring or action.
ALPHA NUM	Indicates if the alphanumeric field will be used for mnemonic or for value.

FY302 Device View Page

The user can monitor the device's data opening the **Device View** page.

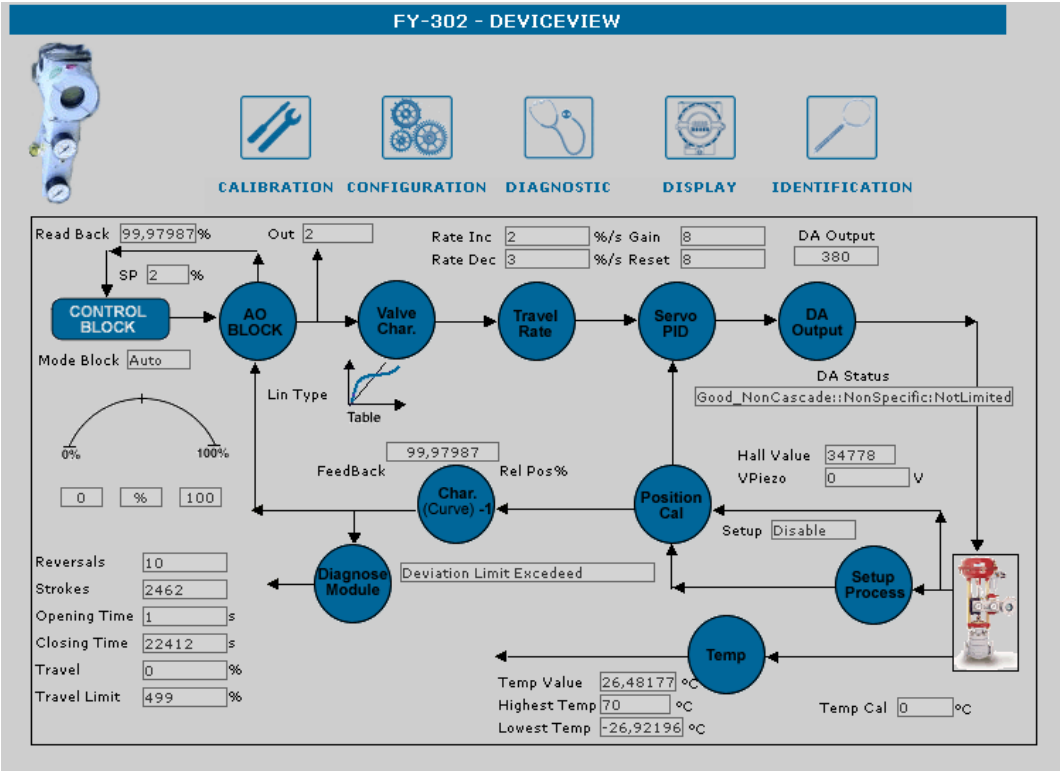

Figure 51. Device View Page

Diagnostic and Maintenance for Positioners

With ***AssetView***, the user can take advantage of the digital information provided by fieldbus and HART protocols.

The ***AssetView*** is a powerful tool for configuring the parameters of positioners and control valves, assisting the control system management and the predictive maintenance. It provides the information about the network, online performance tests (charts and trends), positioners' configuration/calibration, performance monitoring and online diagnostics. The user can also analyze the data stored from several periods ("as found, as left"), reconcile configurations according to the application needs, and print reports for later analysis.

With ***AssetView***, the user can act and control the process stability and its variation by viewing the entire process control, then optimizing the use of devices and assuring a continuous improvement for the system operation. The main goals are to provide a low-cost maintenance, guarantee the continuous and operational functionality of the devices with performance levels accepted by the application process control, minimize the efforts for the corrective maintenance and adapt the system for a safe and reliable operational expansion.

The use of the ***AssetView*** starts during the devices commissioning and the process startup, when the user creates the database to be used as reference. The initial database is periodically compared to the current data. In this initial process, the network tuning is optimized according to the processes. The charts and trends will be used. The diagnostics online monitoring allows the user to easily detect the status of the positioners and control valves. In the **Calibration Page**, the user can execute the *Auto Setup* and calibrate the position, assuring the operation performance of the positioners and control valves.

Preventive and Predictive Maintenance for Positioners

The status of the positioners and valves must be followed periodically through the **Diagnostics Page**, for predictive maintenance purposes. The tracking can minimize maintenance costs, because the maintenance will focus on the devices that really need maintenance, and in that way it will be possible to plan and reduce the plant idle time. Configuring the process to manual or off-line, it is possible monitoring and testing the performance to evaluate the general operation condition of the positioners and control valves.

The positioners service and calibration are executed to assure the control precision and the best valves performance. These procedures are executed when the process stops or in **Manual** mode, and it is not necessary to remove the valves from the process. The analyses and the services suggested by the analysis results are reported right after the tests, and all of the results can be saved in the maintenance database. For example, the analysis can indicate valve stuck.

After analyzing the tests, it is possible to create a time reference between the calibrations or maintenance of the positioners, actuators and valves. For the positioners, the tests may indicate the actions needed, such as gain adjustments, improvement of the air system or tuning adjustment. The frequency criterion and the analyses system are essential for the information acknowledgement, so the information stored can be useful for the proactive maintenance.

After the calibration, it will be necessary to check the valve signature and verify the dynamic response. If the result is not acceptable, it will be necessary to analyze the valve/actuator and positioner/valve conditions to find the best parameterization.

If the control valves tested continue to report control problems, the valve designs should also be analyzed. The design will be based on the minimum, medium and extreme conditions of the process. This phase must be conducted by an application engineer or an expert technician.

The great advantage of the digital technology is the qualitative information, not only the process values, in addition to the online monitoring of the valve operation conditions and to the online analysis of the performance curves and deviations.

The technology used in the **FY302** positioner provides powerful diagnostic algorithms and, through ***AssetView***, it also provides powerful resources for the predictive analyses.

The positioner has characterization resources (tables, QO and QE curves), input and output pressure monitoring, temperature monitoring, travel control, strokes control, reversals control, input signals, set point, deviation, etc. With ***AssetView***, it is possible to do online diagnostics safely, without interrupting the process. It is possible to configure the travel limits, strokes, reversals, and alarms. With these features the user can track the device condition and prevent problems in the process. The information are read and saved in the tool history for a specific configuration, helping to plan and execute the maintenance.

The ***AssetView*** can be accessed from anywhere because it was built on Web technology.

It is recommended to generate the charts before and after maintenance to register the status of the positioner, the valve, the actuator and the database. The database will be analyzed later to assist the user to decide the period of time needed between maintenances, delaying the following maintenance and reducing the idle time of the device.

AssetView and the Proactive Maintenance

Because of the resources available in the positioner and the online monitoring, it is possible to implement the proactive maintenance, determining the problems and their causes. The potential diagnostic of the field devices allows monitoring and conditions register, such as valve stress. Through the diagnostics, the plant technicians execute the proactive maintenance based on the online information, before the problem occurs, not waiting for the maintenance planned, avoiding and reducing the idle time of the plant.

The proactive maintenance in the **FY302** is implemented by configuring the alarms in the **FY302 Configuration Page**, such as **Reversal**, **Deviation** and **Travel**.

After configuring the alarms, the user can view the alarms in the **FY302 Diagnostics Page** according to the previous configuration, such as **Reversal Limit Exceed**, **Deviation Limit Exceed** and **Travel Limit Exceed**. The alarms that were not configured by the user are also displayed in the **Diagnostics Page**, such as **Slow Valve Movement or Low Air Supply**, **Base not Trimmed**, **Output Module not Initialized or not Connected**, etc.