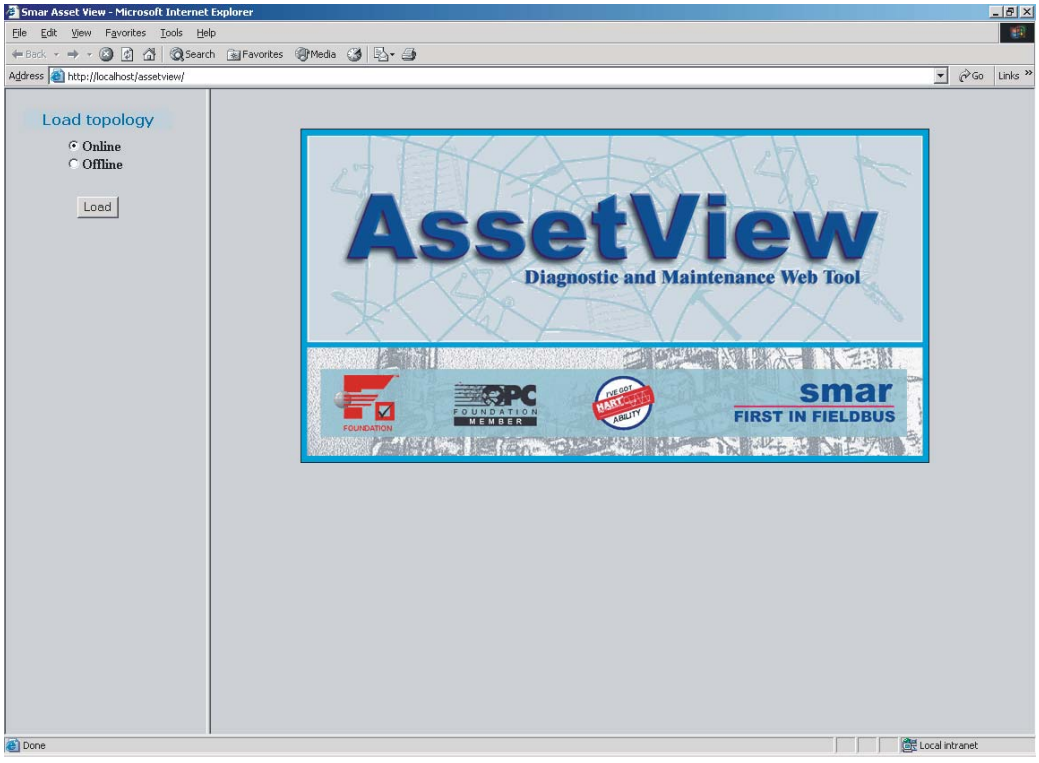
# AssetView

smar FIRST IN FIELDBUS

## INSTALLATION AND OPERATION

# USER'S MANUAL




**OCT / 05**

**AssetView**

**VERSION 3.0**

ASETVIEWME

smar

**web: www.smar.com**

**Specifications and information are subject to change without notice.**
**For the latest updates, please visit the SMAR website above.**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# INTRODUCTION

To fulfill the requirements of a control system, the plant needs a system that can provide specific management functions, such as calibration, diagnostics, identification, materials of construction and setup for the *Field Devices*.

Smar **AssetView** is a software system for on-line network enabled asset management. The primary objective is to unleash the powerful diagnostics capabilities found in *Fieldbus* devices in general and particularly in Smar devices, providing several maintenances schemas and making the user interface more friendly.

**AssetView** deals only with devices and is used for the long-term maintenance and device operation. **AssetView** is not restricted to just displaying error messages from the device, but it can take devices through test sequences, record data, plot charts and analyze them providing a much more sophisticated failure analysis.

Another important characteristic of the **AssetView** is the web technology based architecture. The user interface is the Internet Explorer web browser and it can be used on any windows platform.

Since there will always be a mix of instrument brands in a plant, it is important to have a maintenance tool that is independent of the device manufacturer. The same single software must support devices even though these come from different manufacturers.

The device manufacturers know best what information to display, and how to present it for the user to get the best out of their device. The device manufacturer is the ideal candidate to make pages available for their devices, incorporating their knowledge and visualization characteristics, and keeping them up to date with the latest features and capabilities. That's the proposal of **AssetView**: to allow the manufacturers to develop the devices' home pages.

**AssetView** software is network enabled and allows the user to tap into the information of the devices, then tell the user of the condition of any device at any time, so that users can have a complete overview to picture the status of the entire plant.

# TABLE OF CONTENTS

# 1. INSTALLATION

## 1.1 System Requirements

### 1.1.1 Server Station

| | | |
|---|---|---|
| Operational System | ⇒ | Windows 2000 Server with Service Pack 4 |
| Processor | ⇒ | Pentium III |
| RAM | ⇒ | 512 MB |
| Free HDD Space | ⇒ | 40 GB |
| Display | ⇒ | 1024 x 768 - 256 Colors |

Internet Information Server 5.0 for Windows 2000 Server

Internet Explorer 6.0

### 1.1.2 Client Station

Internet Explorer 6.0 web browser.

## 1.2 Preparing the Installation

Before installing **AssetView** in the server machine, the user must have already installed a few essential applications that support the Smar software. The user will find these applications in the *SYSTEM302* Installation CD. Follow the instructions below to install these applications.

Before running the *AssetView Installation* program, execute the following steps:

- Install the Internet Explorer 6.0, located at the Tools\IE6 folder, in the *SYSTEM302* CD. Run the EN\Ie6setup.exe application and follow the instructions in the dialog boxes to complete the installation. It will be necessary to restart the computer after the IE installation.
- Install the Internet Information Server (IIS), version 5.0 for *Windows 2000*. Please refer to the section below for further information.

### 1.2.1 How to install IIS 5.0 on Windows 2000

The IIS is an *Add-on Component* of *Windows 2000*. Place the Windows CD in the CD-ROM drive. Click *Start*, point to *Settings*, click *Control Panel*, and start the *Add/Remove Programs* application:

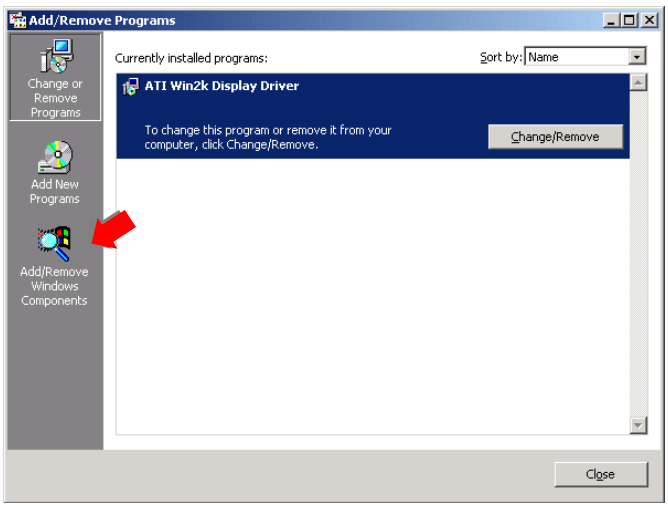



**Figure 1.1. Adding a new component**

Select *Add/Remove Windows Components* to open the *Properties* dialog box and then follow the on-screen instructions to install **IIS**. Click *Close* in the *Properties* dialog box and then click *Finish*.

To check that the installation was successful, open a browser window and type the machine name. The *Internet Information Services* page should be loaded.

## 1.3 Installing AssetView

| IMPORTANT |
| --- |
| **To install *AssetView*, the user must be logged on as an Administrator or a member of the Administrators group.** |

Place *SYSTEM302* CD installation at the CD-ROM driver. The *Installation* dialog box will open automatically. Click the *SYSTEM302* button.

Follow the instructions in the dialog boxes to complete the installation. Do not forget to select the option *AssetView* in the *Component* dialog box:

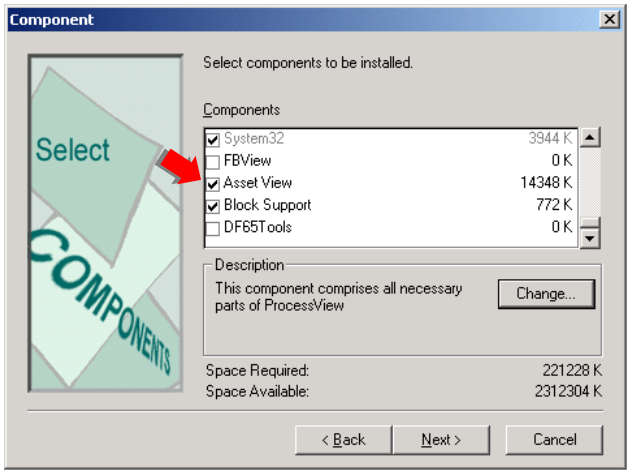



**Figure 1.2. Installing AssetView**

| IMPORTANT |
| --- |
| **If a database application is not located during the *AssetView* installation, the MSDE database will be automatically installed.** |

### 1.3.1 AssetView Licensing

The *Asset Server* requires a *Hard Key* to run properly. Connect the *Hard Key* to the parallel port or the USB port of the server machine.

The following table shows the license types available:

| Number of Devices: | Database Required: |
| --- | --- |
| **16** | **MSDE or SQL Server** |
| **256** | **MSDE or SQL Server** |
| **No limits** | **SQL Server** |

## *1.4 After the Installation*

It is necessary to restart the computer after the *AssetView* installation.

Otherwise, it would be necessary to restart the database. From the *Start* menu, select *Programs* > *Startup* > *Service Manager*. Click *Start/Continue* and check if the icon of the database server appears in the Windows Taskbar.

Check if the *Engineer* group has reading, writing and modifying permissions in the *System302* installation directory:

1. Locate the *System302* installation directory using *Windows Explorer*.
2. Right-click the *System302* folder icon and select the option **Properties**.
3. In the **Properties** dialog box, click the **Security** tab and select the **Engineer** group.
4. In the **Permissions** area, mark the **Allow** column for the options **Read**, **Write** and **Modify**. See the example below:

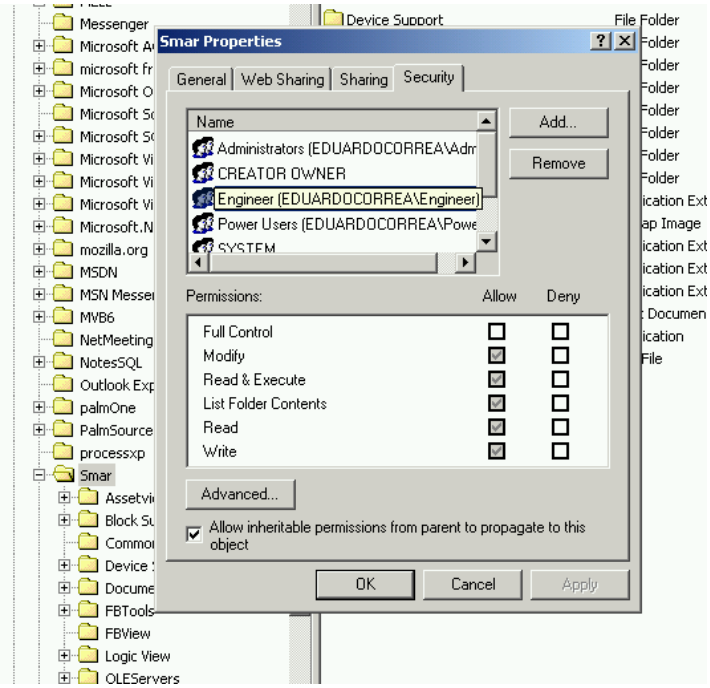



**Figure 1.3. Checking Permissions for the Engineer Group**

### 1.4.1 Database Configuration

| IMPORTANT |
| --- |
| **To create the *AssetView* database, the user must be logged on as an Administrator or a member of the Administrators group.** |

It is not necessary to install *System302* and the database on the same machine, because the *AssetServer* can remotely access the database.

| NOTE |
| --- |
| **The SQL Server 2000 can be installed on any computer that communicates with the AssetView server.** |

Follow the steps described below to configure the database server and the client machine.

#### *Database Server*

Run this procedure in the machine that hosts the database server to create the *AssetView* database.

1. From the *Start* menu, select *Programs* > *System302* > *AssetView* > *SqlServer Create Database*.

2. The following dialog box will open:

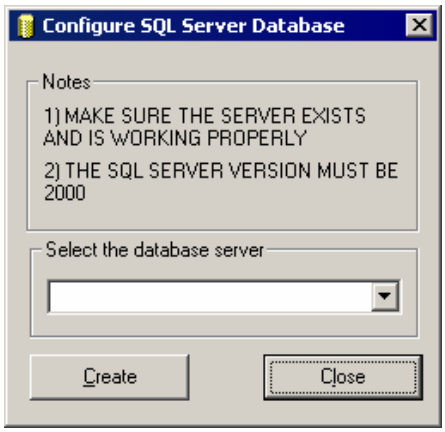



**Figure 1.4. Configuring the SQL Server Database**

3. Select the database server.

| NOTE |
| --- |
| **If the user selected the MSDE database, the server name should be "*<machine name>/AssetView*".** |

4. Click *Create* and wait a few seconds until the message box opens alerting the user that the database was created. Click *Ok* to close this dialog box:

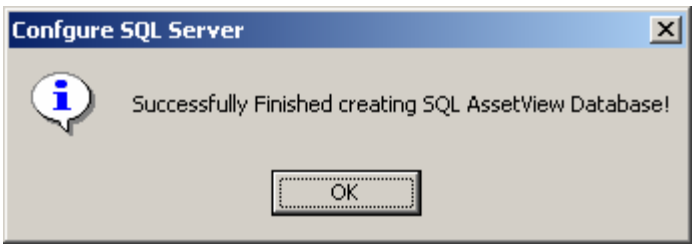



**Figure 1.5. Creating the SQL Server Database**

| NOTE |
| --- |
| **If the database already exists in the selected server, a message box will open asking if the user wants to create a new database. All existing data will be deleted.** |

5. Click *Close* to conclude the database configuration.

| NOTE |
| --- |
| **If the database was not created properly, check the SQL Server configuration and the user login information.** |

### *AssetView Client Database*

The database client of *AssetView* is the computer where *System302* and *AssetView* were installed. Run this procedure in each computer where *AssetView* has been installed to configure the database connection.

1. From the *Start* menu, select *Programs* > *System302* > *AssetView* > *AssetView.udl*.

2. The *Data Link Properties* dialog box will open.

3. Click the *Connection* tab:

   3.1 Select the SQL Server name at the item 1 text box.

   3.2 At the item 2 text box, select the "*Windows NT Integrated security*" mode to log on to the server.

   3.3 Select the *AssetView Database* at item 3. See the following figure:

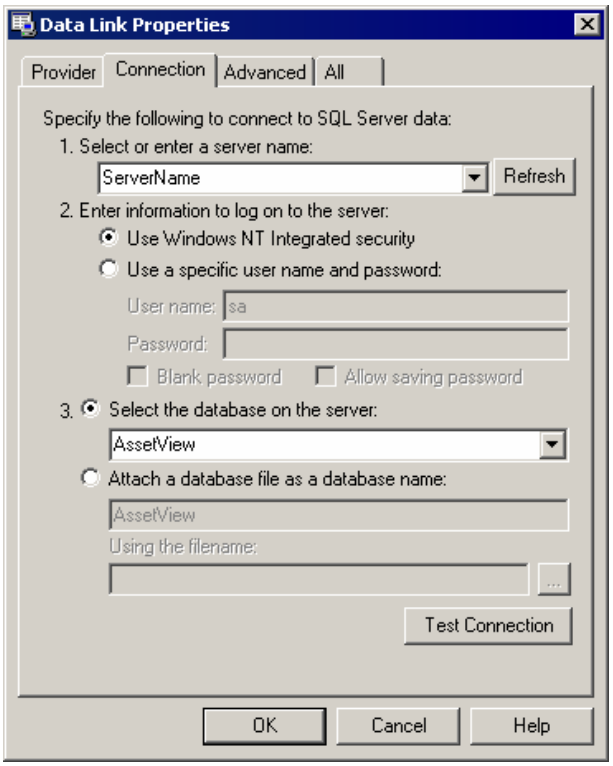



**Figure 1.6. Connecting to the SQL Server Database**

   3.4 Click the Test Connection button and wait for the message confirming the test succeeded:

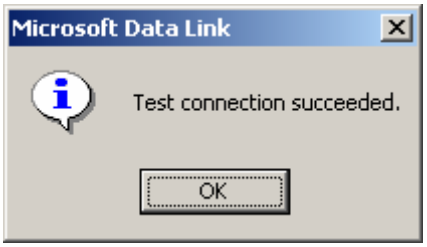



**Figure 1.7. Testing the connection**

4. Click *Ok* in the *Data Link Properties* dialog box to conclude.

### 1.4.2 Setting the Engineer Access Level for the Administrator

The access level is configured only by the administrator of the *AssetView*. The access control of *AssetView* uses the Windows authentication, and for this reason the *AssetView* administrator is the administrator of the machine where the *System302* was installed.

Click *Start*, point to *Settings*, click *Control Panel*, and start the *Users and Passwords* application. The *Users and Passwords* dialog box will open. Select the *Advanced* tab and click the *Advanced* button at the "*Advanced User Management*" rectangle as the figure below shows:

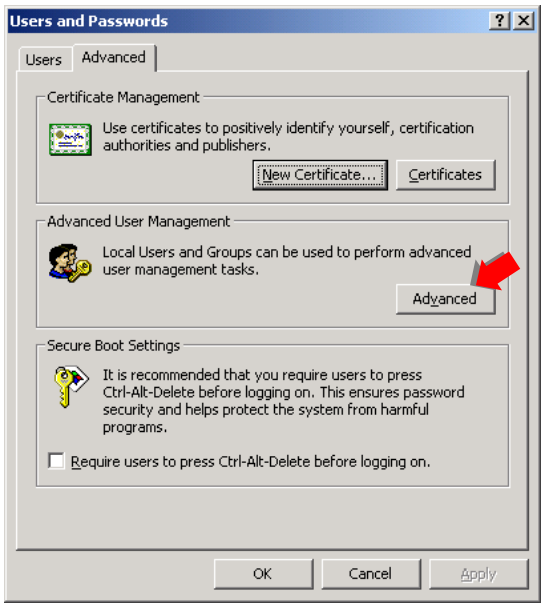



**Figure 1.8. Managing users**

The *Local Users and Groups* window will open. At the *User* directory, double-click the user who is the administrator of the machine and will also be the *AssetView Administrator*, and the *Properties* dialog box will open. Select the *Members Of* tab and click *Add*.

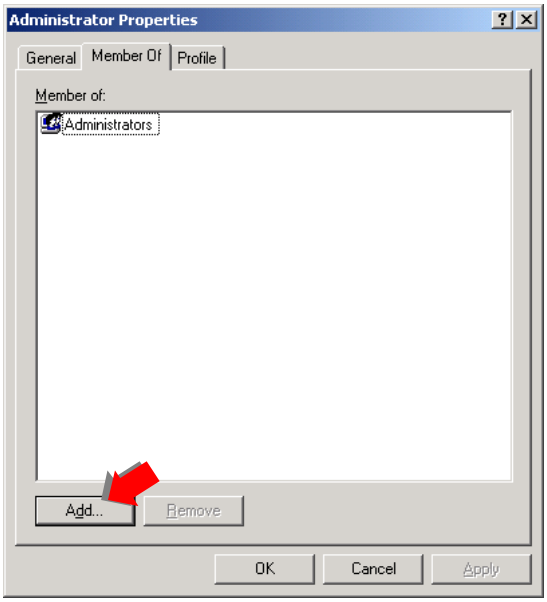



**Figure 1.9. Adding an user to a new group**

Double-click the *Engineer* group, click *Ok* to close both dialog boxes. Then close the *Local Users and Groups* window and the *Control Panel* window.

This procedure will configure the *Engineer* access level for the *AssetView* administrator. To configure the access level for the *AssetView* clients, select the *client* user instead of the *administrator* user and then select the access level (*Engineer* or *AssetViewGuest*).

| NOTE |
| --- |
| **If *AssetView* is being used on *Windows NT Server*, please refer to the Appendix A of this manual for specific information.** |

# 2. ASSETVIEW SERVER

The *Smar Asset Server* runs transparently to the user. It is responsible for monitoring the devices, controlling the number of devices monitored and granting permissions to users.

Before initializing the *Asset Server*, it is necessary to:

- Create the device configuration using SYSCON.
- Export the tags.
- Initialize the communication using SYSCON to check if the settings are correct.
- Check if SYSCON's *Online Characterization* window shows the parameter values.

It is not necessary to keep the SYSCON window open while executing the *Asset Server*.

## 2.1 Initializing the Server

To open the AssetServer window, click *Start* > *Programs* > *SYSTEM302*, and click the *AssetView Server*:

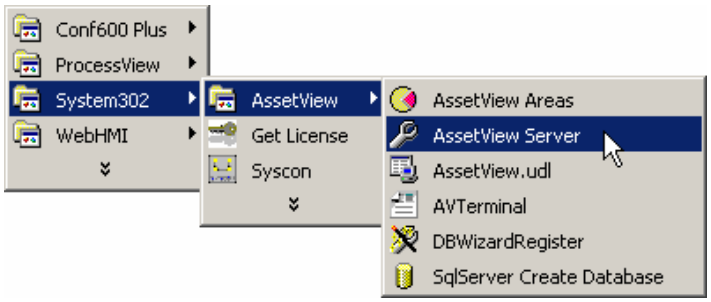



**Figure 2.1. Initializing the Asset Server**

The following figure shows the *Asset Server* window:

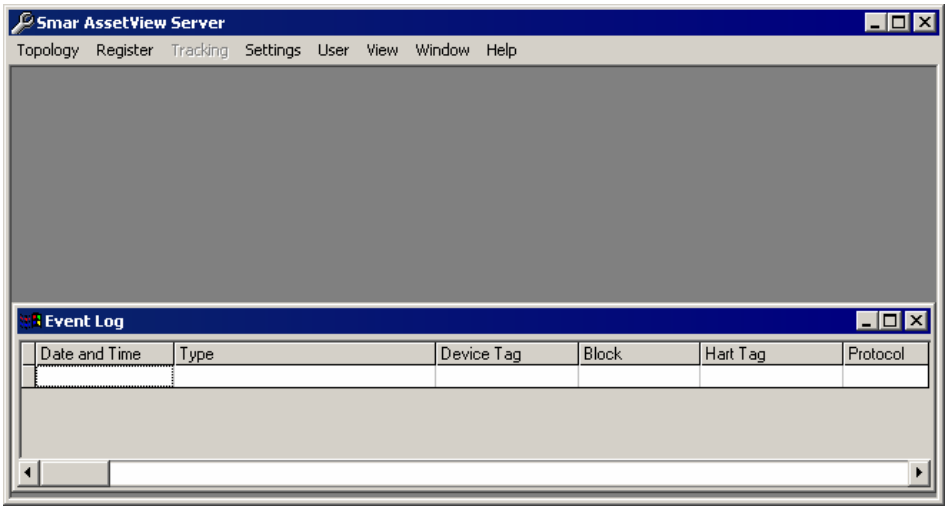



**Figure 2.2. Asset Server interface**

## 2.2 Configuring the Communication

To configure the communication interface, go to the *Settings* menu and select *Communication*. The configuration dialog box will open:

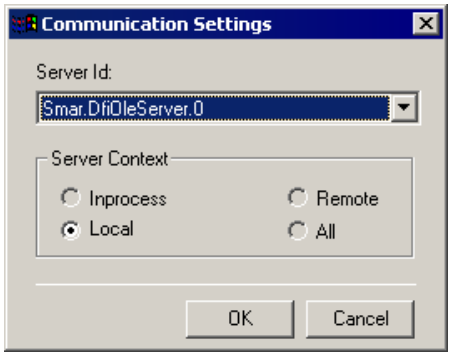



**Figure 2.3. Configuring the Communication Interface**

Select the communication server from the list of available servers. Click *Ok* to conclude.

## 2.3 Selecting the Topology

The *Topology* option allows the user to select the topology configuration to be used by the *AssetServer*.

To read the configuration saved on a Syscon file, go to the *Standard* menu, select *Topology* and click the option *From Syscon Configuration File*:

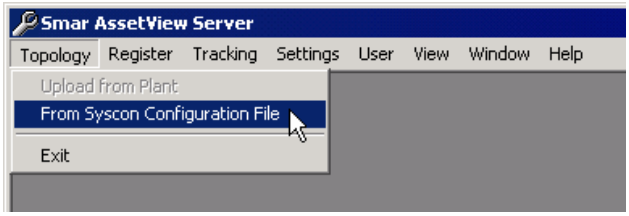



**Figure 2.4. Reading the configuration from a Syscon file**

The *Import Syscon Configuration* dialog box will open:

1. In the *Look in* box, select the folder that contains the project file to be opened.
2. Click the Syscon project file (***.ffp***) icon or type its name in the *File name* box.
3. Click *Open* to conclude this task.

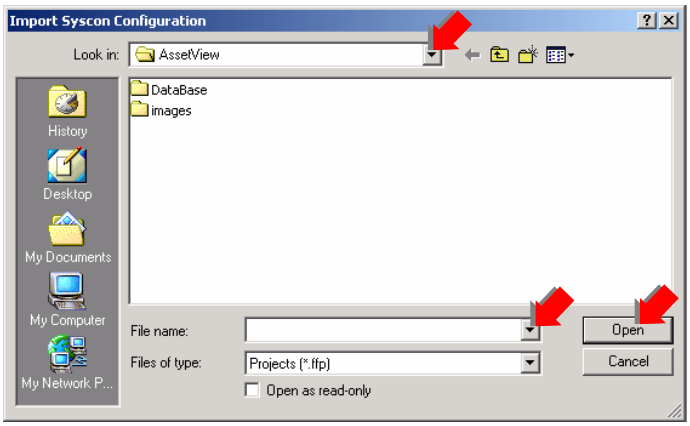



**Figure 2.5. Selecting the configuration file**

The plant configuration will be imported to the *AssetServer*.

## 2.4 Registering Devices

Register a device implies that the parameter values from this device will be read and stored in the database.

| NOTE |
| --- |
| **Upon executing the *Asset Server* the first time, it will be necessary to register the devices in the database.** |

On the *Standard* menu, click the option *Register*:

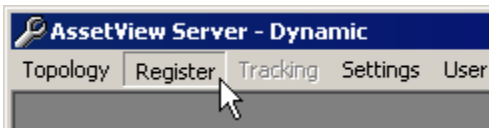



**Figure 2.6. Registering Devices**

The *List of Devices* dialog box will open. Select the devices to be registered in the database from the *Unregistered* list and click the *Include* button (>>), or double-click the device name.

To select all devices, click *Ctrl+A* on the keyboard.

The devices will be placed in the *Selected* list.

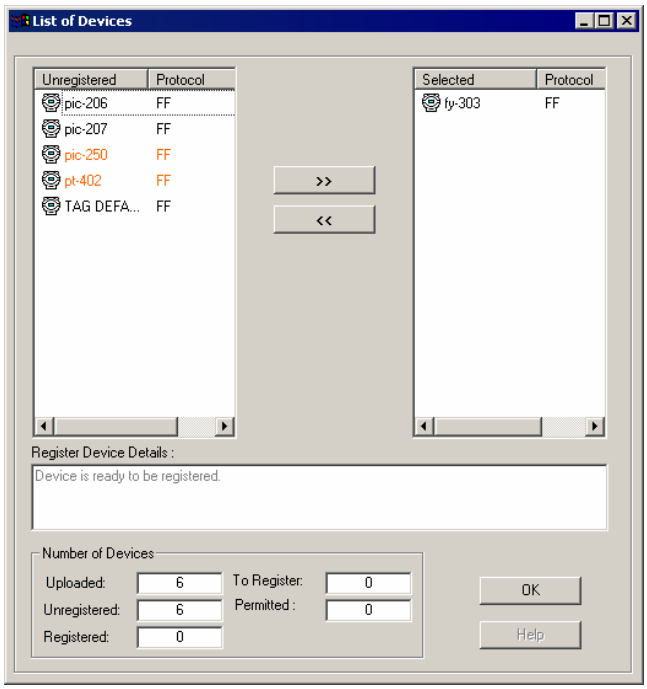
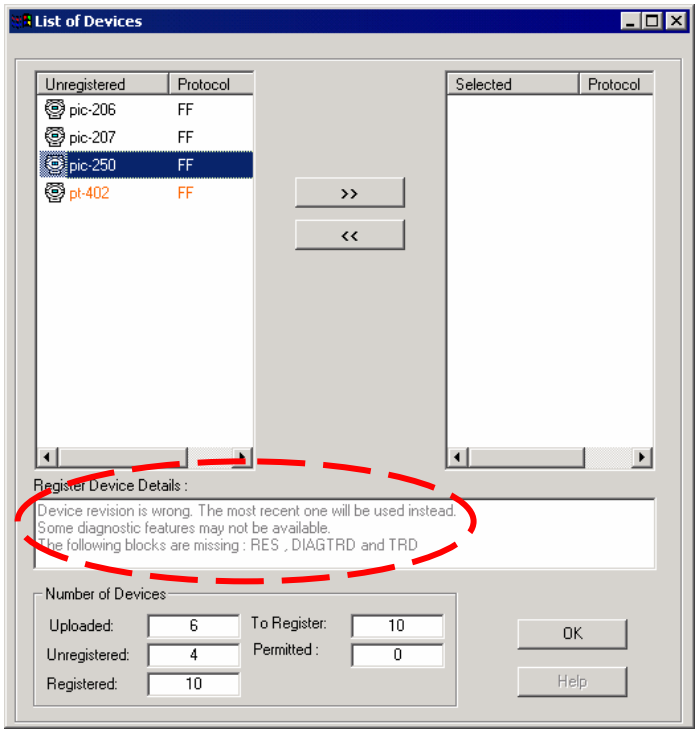



**Figure 2.7. Devices List**

**IMPORTANT**

**For Smar's Fieldbus devices, it is recommended to use the firmware version 3.46. Some parameters and methods may not be available for devices with other firmware versions. The *List of Devices* dialog box indicates the functionalities missing in the selected device:**



| NOTE |
| --- |
| ***AssetView* can monitor the HART devices through Smar's HI302 - HART/Foundation Fieldbus Interface. It is necessary to update the firmware version to 0301 (3.15 or higher) and create the blocks configuration for the HI302. Please refer to the *HI302 User's Manual* (Chapter 3) for further information.**<br>**The current *AssetView* version supports the FY301, LD301, TT301 and DT301.**<br>**Others HART devices will use a generic page, as well as the devices from other manufacturers.**<br>**The *DBWizard Register* application cannot register templates of HART devices.** |

If the user doesn't want to register a device, select the device at the *Selected* list and click the *Exclude* button (<<) or double-click the device name. The devices will be placed in the *Unregistered* list.

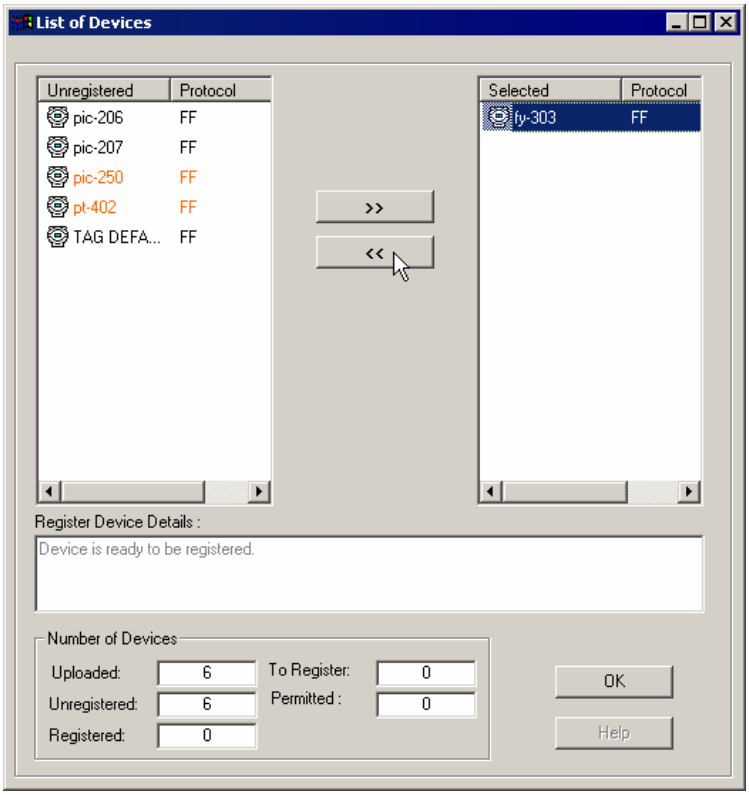



**Figure 2.8. Removing a device from the Selected list**

If a device selected to be registered doesn't have all blocks required or has an old firmware revision, the device will be registered in the database but some functionalities, such as calibration and diagnostic methods, may not be available.

Click *Ok* to start registering the devices. The following dialog box will appear while the devices are being registered:

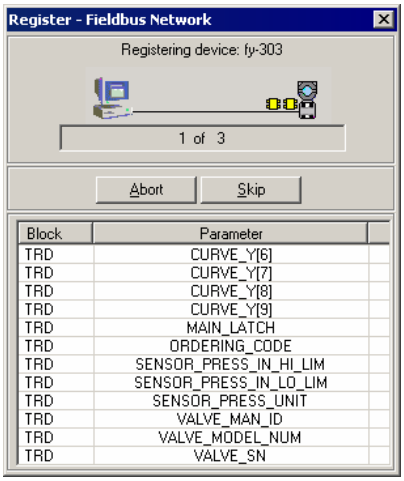



**Figure 2.9. Registering devices**

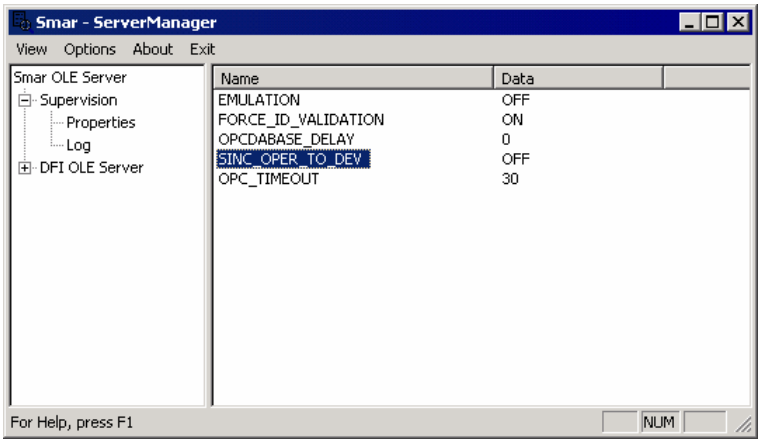
The procedure to register the devices has a time limit variable (*REGISTERTIMEOUT*) and its default value is 300 seconds. This value can be edited in the "**`SmarAssetView.ini`**" file, located in the *AssetView* installation folder.

## 2.5 Tracking

The *Tracking* option initializes the monitoring of the devices registered in the database, storing the changes of the parameter values in the historical information.

**NOTE**

**To monitor HART instruments, check if the server is configured correctly. In the folder *OLEServers*, in the *System302* installation directory, run the *ServerManager.exe* application double-clicking its icon. Click the *Server Manager* icon, at the Windows taskbar, to open the Smar Server Manager:**




**Double-click the parameter SINC_OPER_TO_DEV and select the value *ON*.**


**Click *Ok* and restart the server.**

On the *Standard* menu, click the option *Tracking*:

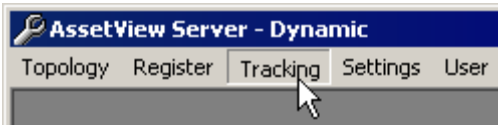



**Figure 2.10. Tracking devices**

*AssetServer* starts monitoring the information from the Fieldbus network. The following messages will appear during the initialization:

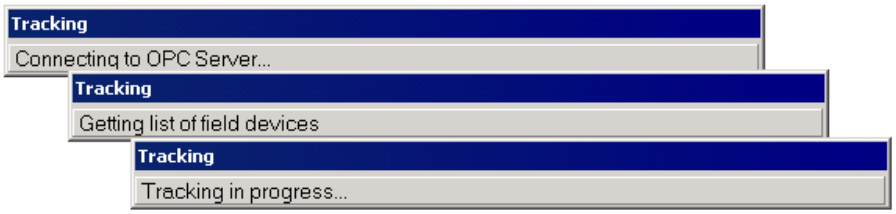



**Figure 2.11. Initializing Tracking**

The devices that will be monitored must be registered in the database and be online on the Fieldbus network.

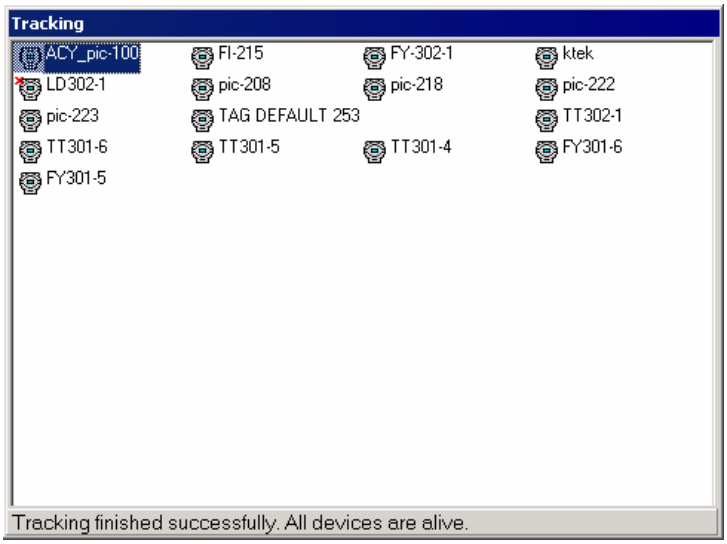



**Figure 2.12. Tracking results**

The *Tracking* dialog box displays the information about the devices being monitored.

If a device is displayed in the *Tracking* dialog box with a red ***X*** on its icon, it means that the device is not being monitored because of a failure in communication. A typical example of a failure in communication occurs when the device goes offline and returns to online mode after a short period of time.

The system automatically detects when the instrument starts communicating again. The monitoring process is restarted and the device icon in the *Tracking* dialog box is restored to its normal state.

| NOTE |
| --- |
| **To stop tracking the devices, it is necessary to close the *Asset Server*: in the *Topology* menu, click *Exit*.** |

## 2.6 Managing devices in the database

The user can check the list of devices registered in the database or remove a device register from the database.

On the *Standard* menu, click the option *View*, point to *Devices*, and then click *List*:

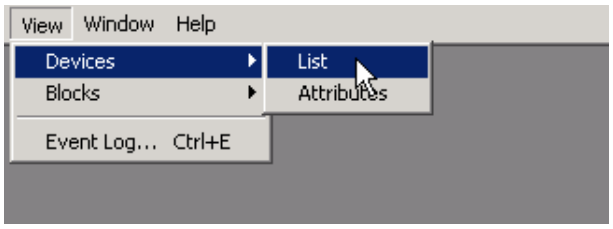



**Figure 2.13. Opening the Device List**

The *Devices List* dialog box will open:

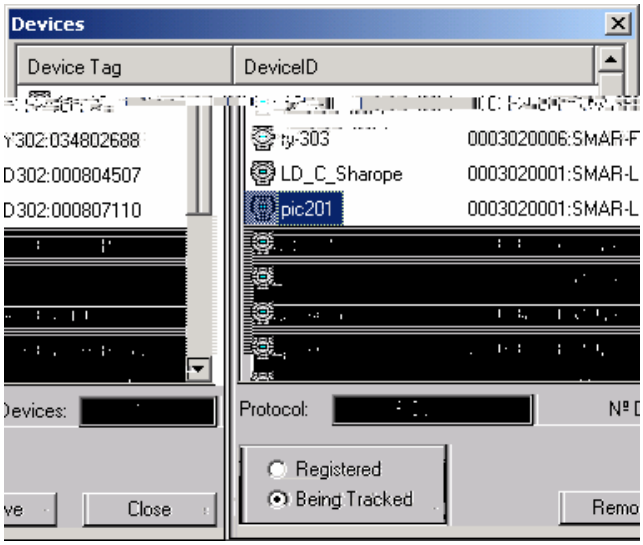



**Figure 2.14. Device List**

The devices displayed in this dialog box are registered in the database. The *Tracking* procedure obtains these devices by reading the information from the database and from the Fieldbus Network. (See the section ***Tracking*** for further information about monitoring a device)

In this dialog box, it is possible to apply a filter in the *Devices List*. At the bottom of the dialog box, select the option:

- *Registered*: displays the devices that are registered in the database but not necessarily being monitored.
- *Being Tracked*: displays the devices that are registered in the database and that are being monitored by the *AssetServer*.

The user can manage the devices while they are removed or added to the database, according to the number of devices that his *License* allows being included in the topology.

## 2.7 Device Attributes

To display the device's attributes, *Asset Server* must be monitoring the devices, by clicking the option *Tracking* in the main menu.

On the *View* menu, select the option *Devices* and click *Attributes*:

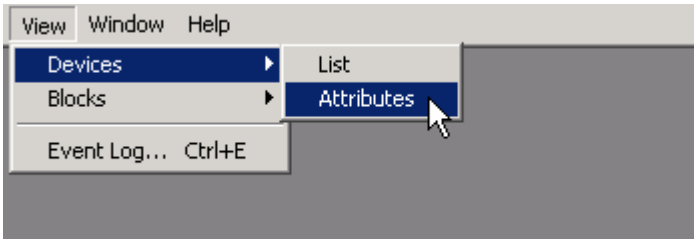



**Figure 2.15. Opening the Device Attributes**

The *Device Attributes* dialog box will open:

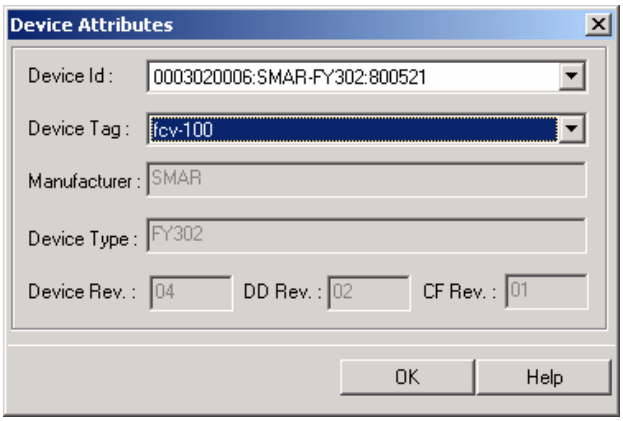



**Figure 2.16. Device Attributes**

Select a *Device ID* or the *Device tag* from the list. This dialog box will display the information about the device selected, such as the *Manufacturer*, the *Device Type* and *Revision*, *DD Revision* and *CF Revision*.

## 2.8 Removing a Device from the Database

To remove a device from the database, open the *Device List* clicking the *View* menu and selecting *Devices > List*.

Select the device icon and click *Remove*.

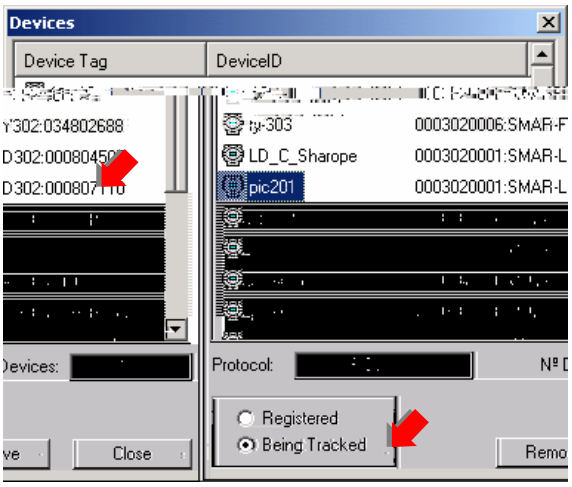



**Figure 2.17. Removing a device from the database**

The user can also activate the device popup menu by right-clicking its icon. Click the item *Remove*:

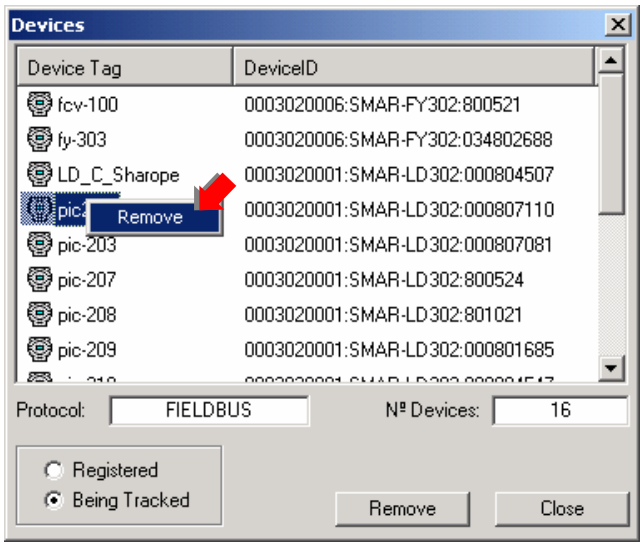



**Figure 2.18. Removing a device from the database**

A message box is displayed for the user to confirm the operation. Click *Yes* to remove the device from the database.

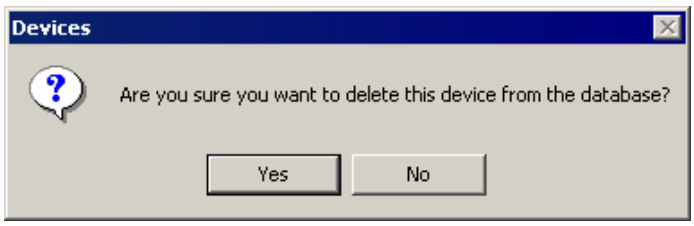



**Figure 2.19. Confirming the operation**

## 2.9 Block Attributes

To display the list of blocks, *Asset Server* must be monitoring the devices, by clicking the option *Tracking* in the main menu.

On the *View* menu, select the option *Blocks* and click *Attributes*:

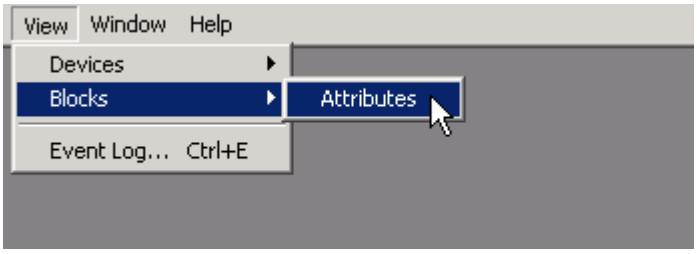



**Figure 2.20. Opening the Block Attributes**

The *Block Attributes* dialog box will open:

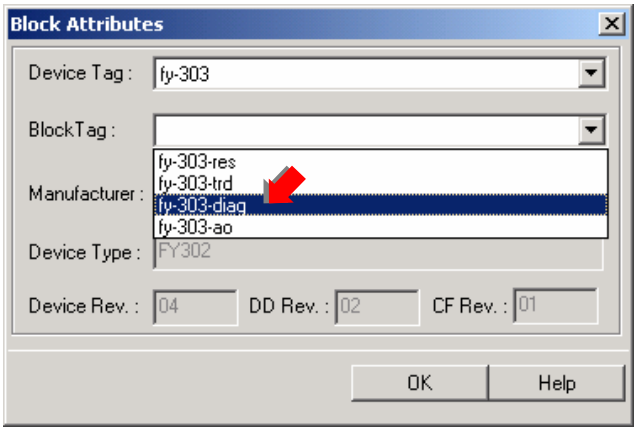



**Figure 2.21. Block Attributes**

Select the *Device tag* from the list. This dialog box will display all of the blocks configured for the selected device and the information about the device, such as the *Manufacturer*, the *Device Type* and *Revision*, *DD Revision* and *CF Revision*.

## 2.10 Event Log

The user can display the log file with the events executed in the *Asset Server*.

On the *View* menu, select the option *Event Log*:

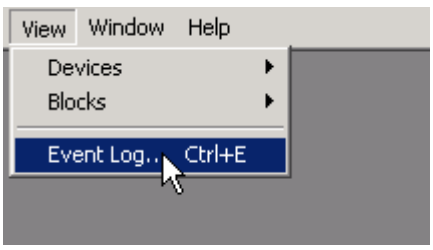



**Figure 2.22. Opening the Event Log window**

The *Event Log* window will appear at the bottom of the *AssetServer* window.

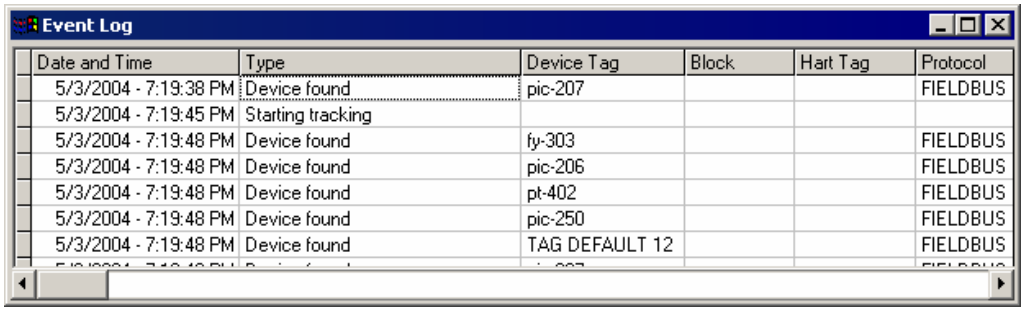



**Figure 2.23. Event Log window**

## 2.11 User Management

The *Administrator* must grant permissions for other users to access the *Asset Server*.

On the *Standard* menu, select the option *User*:

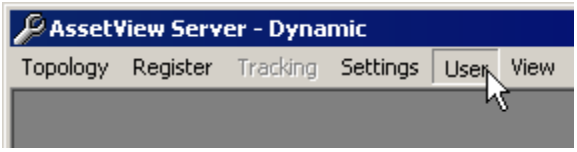



**Figure 2.24. Managing Users**

The *Users* dialog box will open:

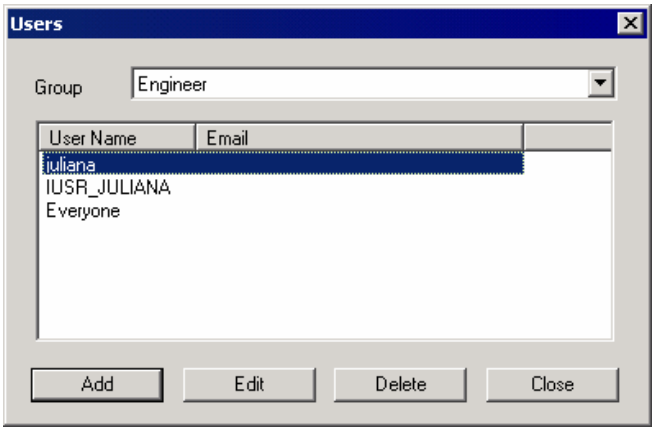



**Figure 2.25. Users dialog box**

### 2.11.1 Adding Users

Click the *Add* button to add a new user. The *Add Users* dialog box will open:

1. Type the user name.
2. Type a brief description for the user.
3. Type the user's full name.
4. Choose a password for the user.
5. Select the group to which the user will be added.
6. Type the user's e-mail.
7. Click *Ok*.

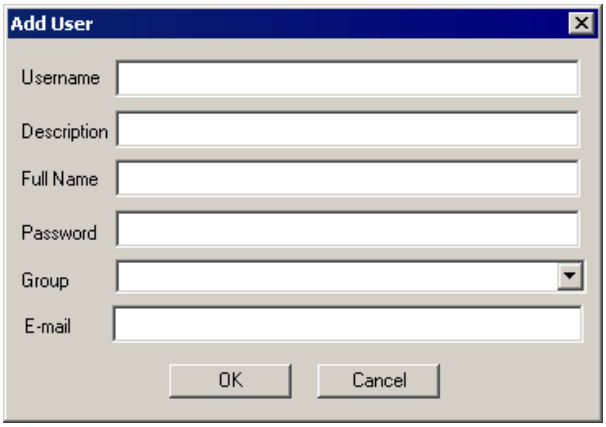



**Figure 2.26. Adding Users**

Users that are added to the *Engineers Group* will have permission for writing and reading information from the server. Users that are added to the *AssetViewGuest Group* will have permission only to read information from the server.

### 2.11.2 Editing User's Attributes

Click the *Edit* button to change the information about a user.

Only the *e-mail* text box will be enabled for edition.

### 2.11.3 Removing a User

To remove a user, click the *Delete* button.

A message box will appear confirming the operation. Click *Yes* to remove the user.

## 2.12 Configuring the Mail Service

To configure the e-mail server, go to the *Settings* menu and select the option *Mail*:

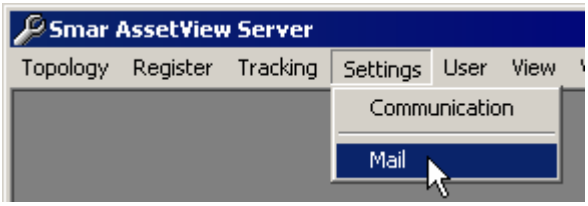



**Figure 2.27. Configuring the E-Mail Service**

The *Mail* dialog box will open:

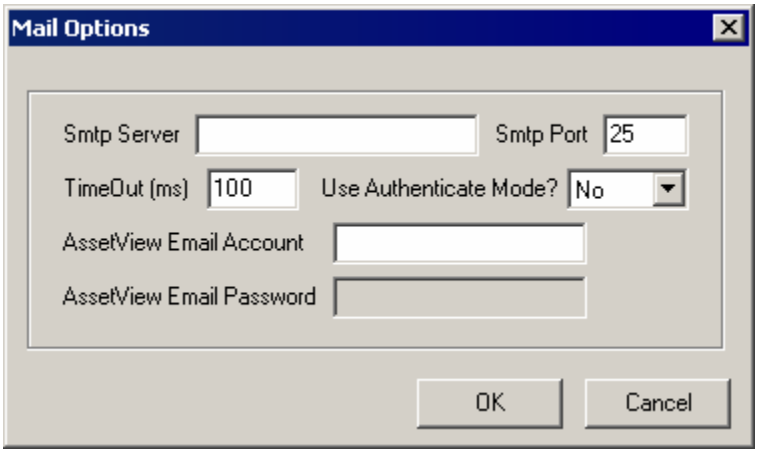



**Figure 2.28. E-mail options**

1. Type a name or the IP address of the e-mail server in the *SMTP Server* text box.
2. Configure the maximum idle time, in milliseconds, for the communication with the e-mail server in the *TimeOut* text box. It is recommended to use a value 10 times bigger than the server's response time.
3. If the e-mail server requires authentication, select *Yes* in the *Use Authenticate Mode* box and type the password for the e-mail address in *AssetView*.
4. Configure the e-mail account for *AssetView*.
5. Click *Ok* to save the changes and close this dialog box.

# 3. ASSETVIEW AREAS

For many reasons, a big plant is usually divided into several areas. From the *AssetView* point of view, each area is represented by one particular *AssetServer*, which will be in charge of registering all devices and keeping track of them.

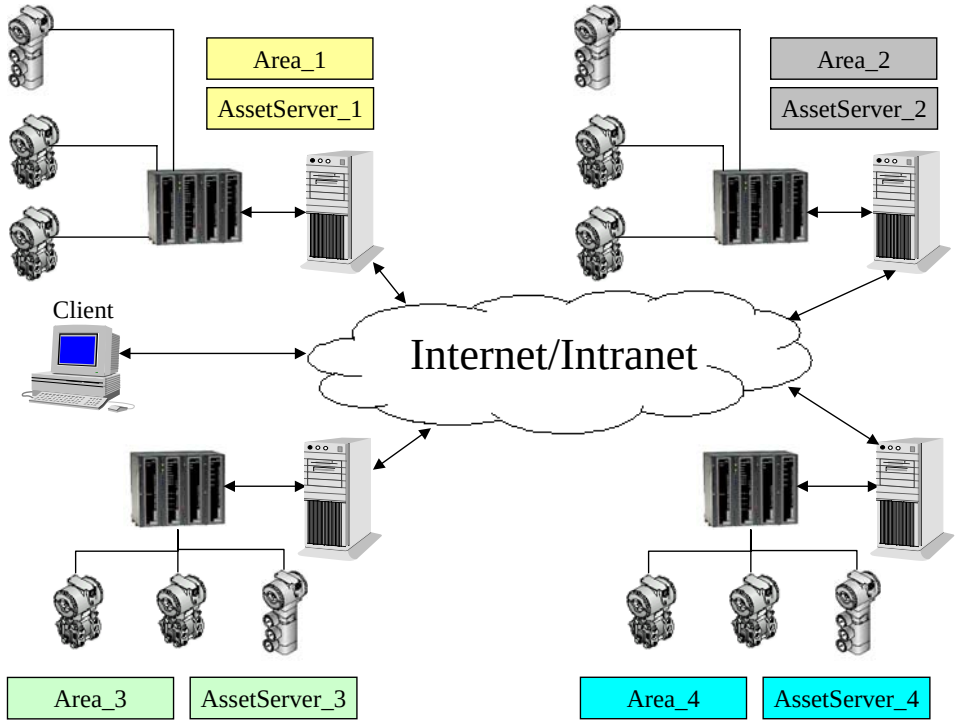



**Figure 3.1. Managing different areas**

*AssetView* provides a Web page with links to all these areas, so the user can easily navigate through these areas just by clicking a link. This Web page can be opened from any of the *AssetServer* machines as well as any other client computer (intranet/internet) that has a browser installed. To achieve this functionality, follow the steps below to configure the *AssetView* areas.

To open the *AssetView Areas* window, go to the *Start* menu, select *Programs* > *System302* > *AssetView* > *AssetView Areas* as indicated below:

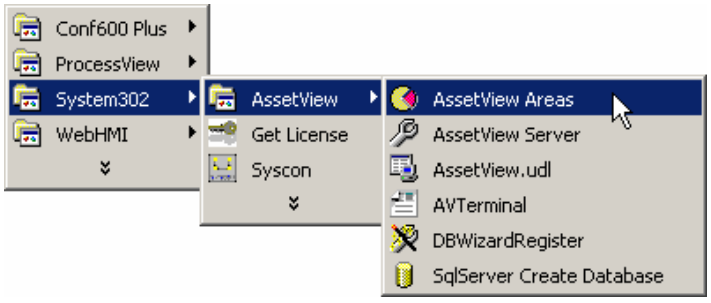



**Figure 3.2. Initializing the AssetView Areas**

The *AssetView Areas* window will open:

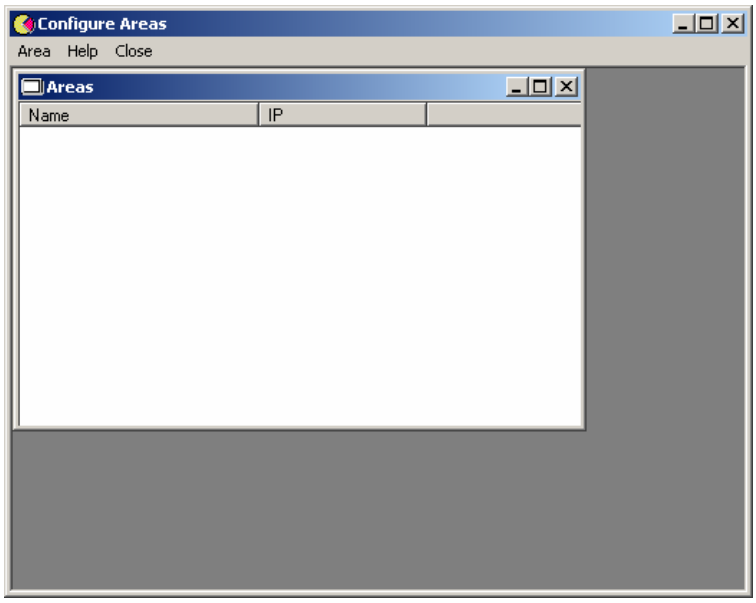



**Figure 3.3. Configuring Areas**

## 3.1 Adding Areas

1. On the *Main* menu, select *Area* and click *Add*. The *Add Area* dialog box will open:

   1.1 At the *Area Name* text box, type the name that better describes the purpose of the area.

   1.2 At the *Asset Server IP address* text box, type the IP address or the network machine name where the devices of this area have been registered.

   1.3 Click the *Add* button.

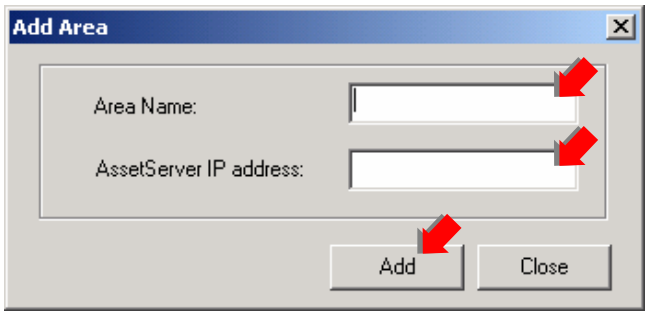



**Figure 3.4. Adding Areas**

   1.4 Repeat steps 1.1 to 1.3 to add other areas from the Plant. Click the *Close* button when all of the areas have been added to the configuration.

2. On the *Main* menu, select *Area* and click *Save*. The area configuration will be saved and the list of existing areas is stored in the database. The list of areas will be displayed to the user anytime the *AssetView Areas* application is executed.

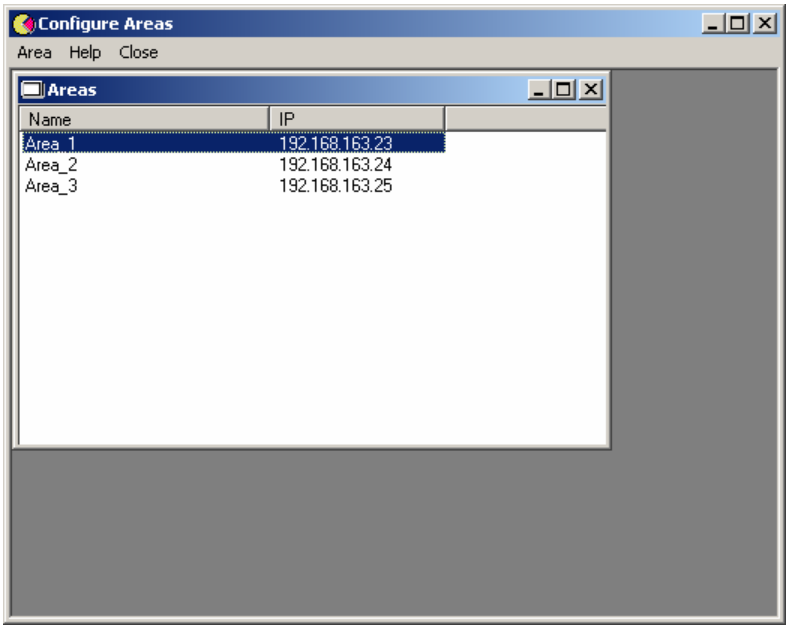



**Figure 3.5. List of Areas**

## 3.2 Changing Areas Attributes

1. On the *Main* menu, select *Area* and click *Change Attributes*. The *Change Attributes* dialog box will open:
   a. At the *Area Name* text box, select the name of the area to be changed.
   b. At the *Asset Server IP address* text box, type the new IP address or the network machine name where the devices of this area have been registered.
   c. Click the *Change* button.

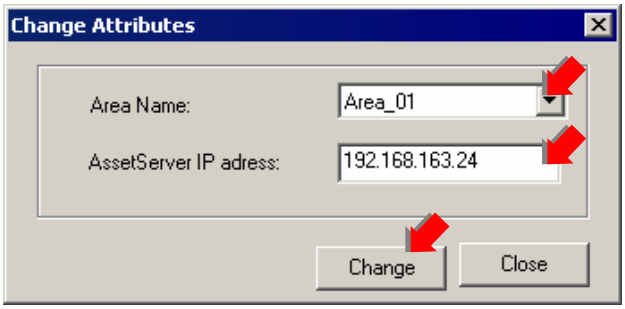



**Figure 3.6. Changing Areas Attributes**

2. Repeat steps ***a*** to ***c*** to change other areas attributes. Click the *Close* button to conclude.
3. On the *Main* menu, select *Area* and click *Save*. The new area configuration will be saved and the list of existing areas is stored in the database.

## 3.3 Removing Areas

1. On the *Main* menu, select *Area* and click *Remove*. The *Remove Area* dialog box will open:
   a. At the *Area Name* text box, select the name of the area to be removed.
   b. Click the *Remove* button.

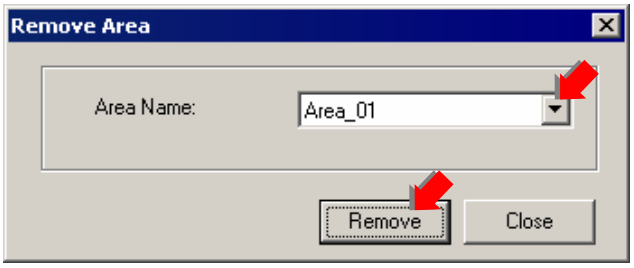



**Figure 3.7. Removing Areas**

2. Repeat steps ***a*** to ***b*** to remove other areas from the Plant. Click the *Close* button to conclude.

3. On the *Main* menu, select *Area* and click *Save*. The new area configuration will be saved and the list of existing areas is stored in the database.

## 3.4 Opening the Areas Topology

1. Open the Web Browser and type the *Areas* page address:

```
http://<server address>/assetview/area.htm
```

| IMPORTANT |
| --- |
| **The Areas page must be opened in the browser using the server address (name of the server machine) where the areas were configured with the *AssetView Areas*, as in the figure above.** |

2. Click the expansion sign next to the plant icon to expand the tree and see the links to the areas:

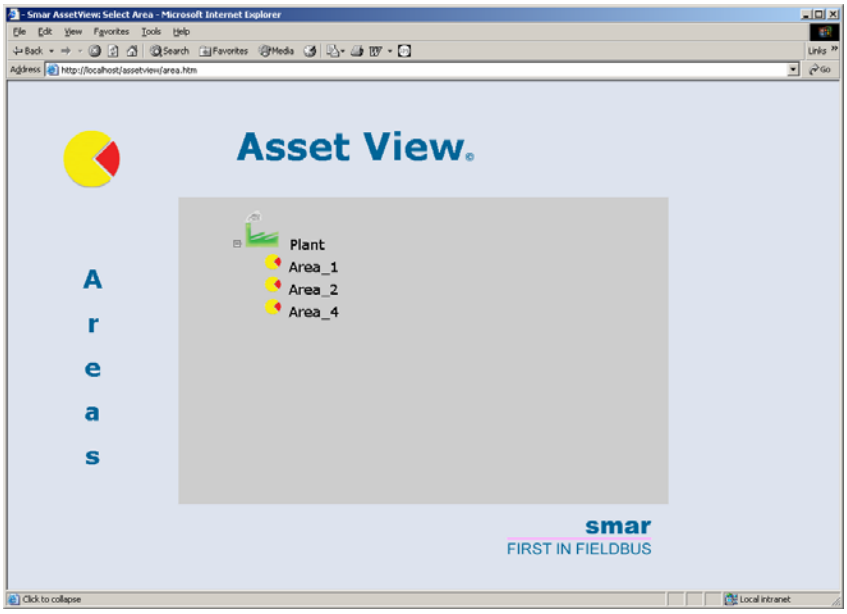



**Figure 3.8. Areas topology**

3. Clicking a link to an area will open *AssetView* from the respective computer, identified by the IP address configured previously by the *AssetView Areas* application. The *Authentication* dialog box will open to validate the user.

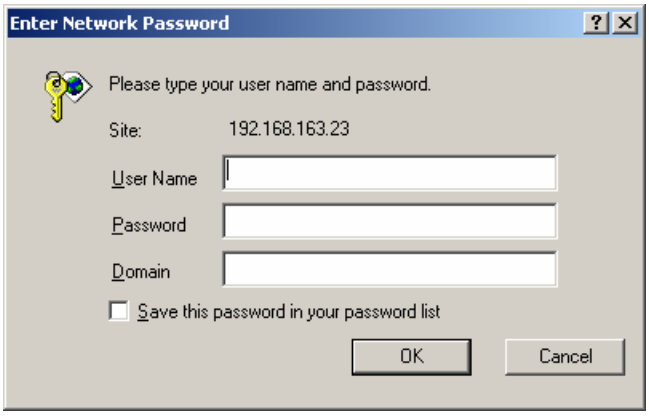



**Figure 3.9. User Authentication**

4. Once the user name and the password are correct the *AssetView* topology will open on the browser as illustrated below:

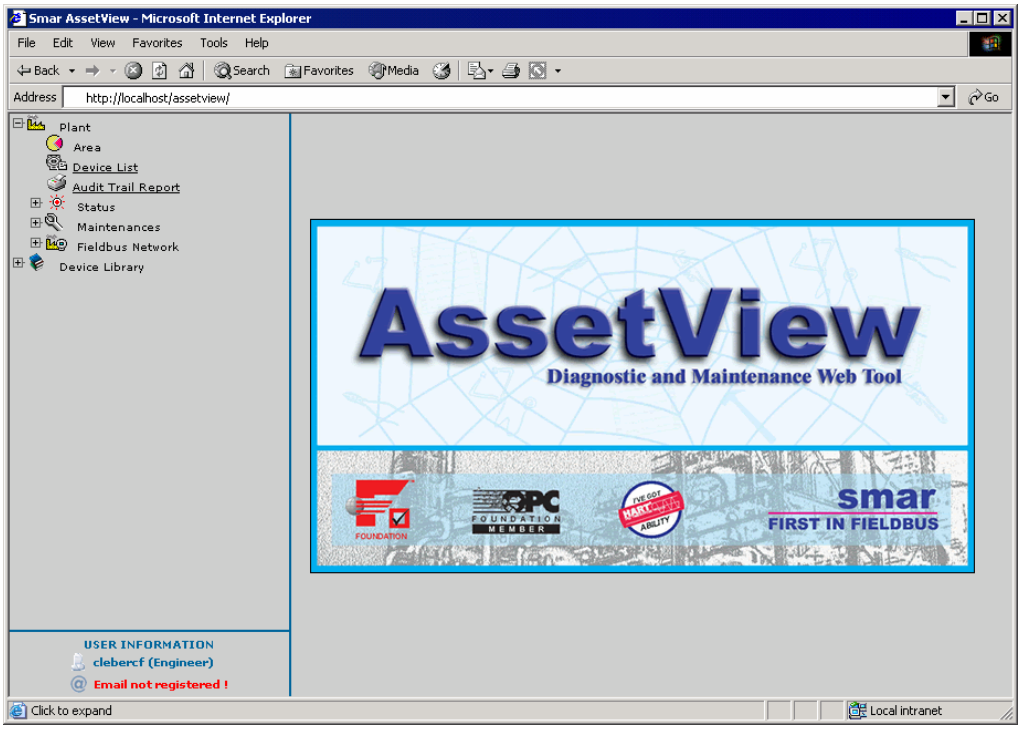



**Figure 3.10. Loading the topology**

# 4. ASSETVIEW

## 4.1 Loading the Configuration

To start *AssetView*, open the Internet Explorer and type:

```
http://machine name/assetview (local or remote access)
    or
http://localhost/assetview (local access)
    or
http://machine IP_number/assetview (local or remote access)
```

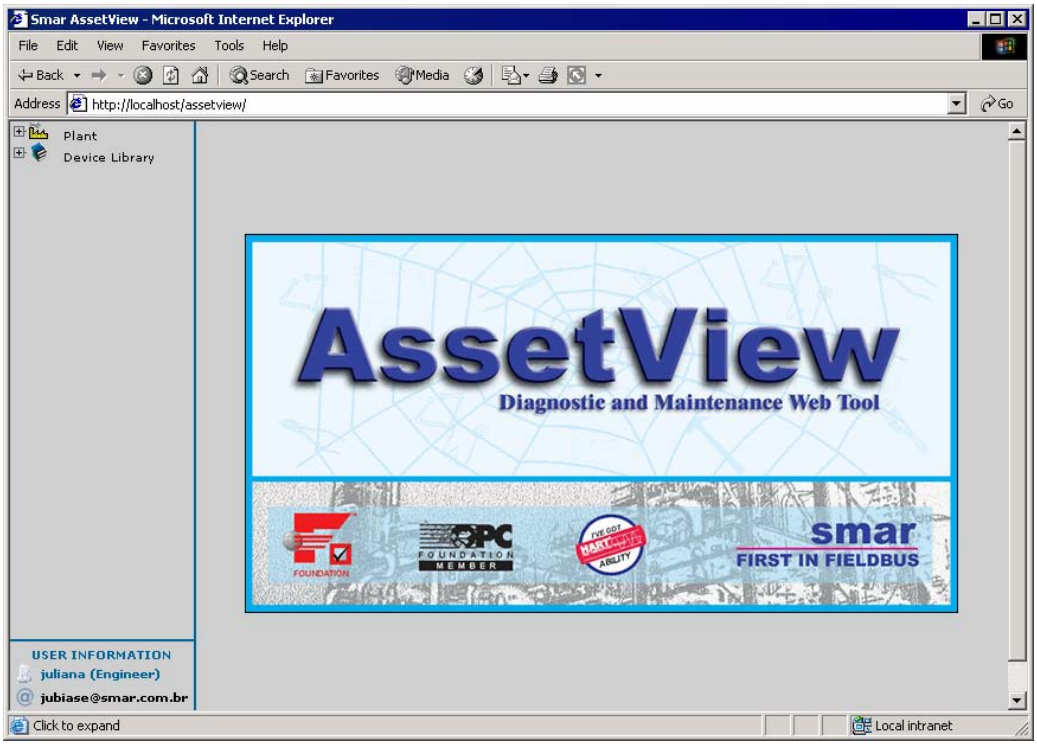



**Figure 4.1. AssetView Home Page**

*AssetView* uploads the network topology from the SYSTEM302 servers. The user can browse to the operational devices at the different plant locations from *AssetView*.

Once the topology is uploaded from the network, the frame on the left side of the browser window will display the plant topology. Click the expansion sign to expand the *Fieldbus Network* and its segments.

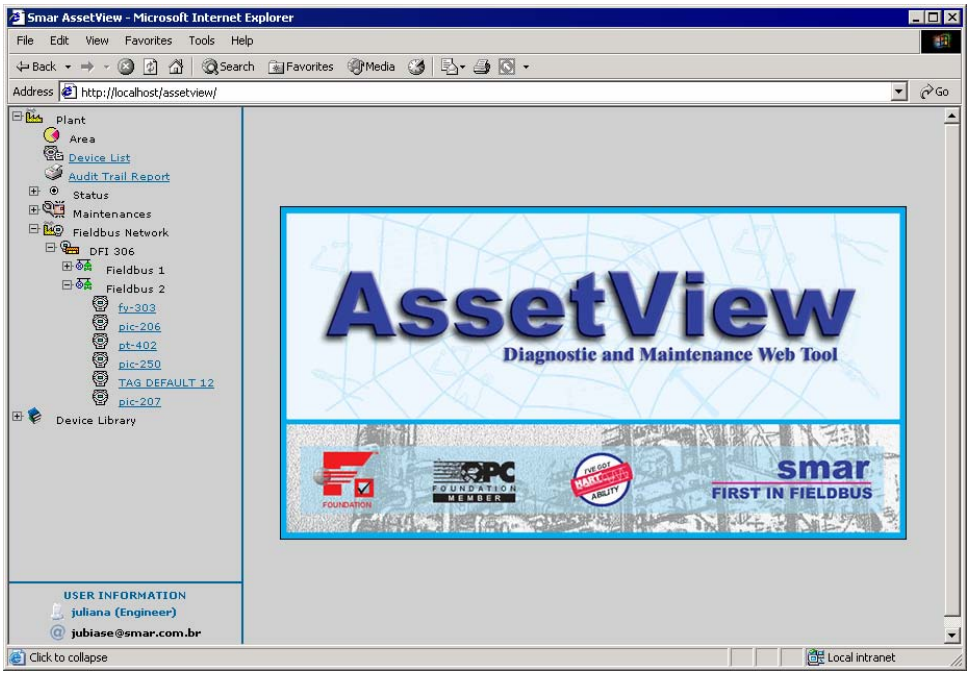



**Figure 4.2. Browsing the Topology**

## 4.2 Opening the Device Home Page

Each device type has a standard home page layout. Every device in a plant location has a "home page" from where the user can proceed with the calibration, configuration, identification, diagnostics or reconciliation of the device configuration.

Navigating through the topology tree, click on any device icon to display its home page. The figure below shows the home page of the *FY302* with the tag name FCV-100:

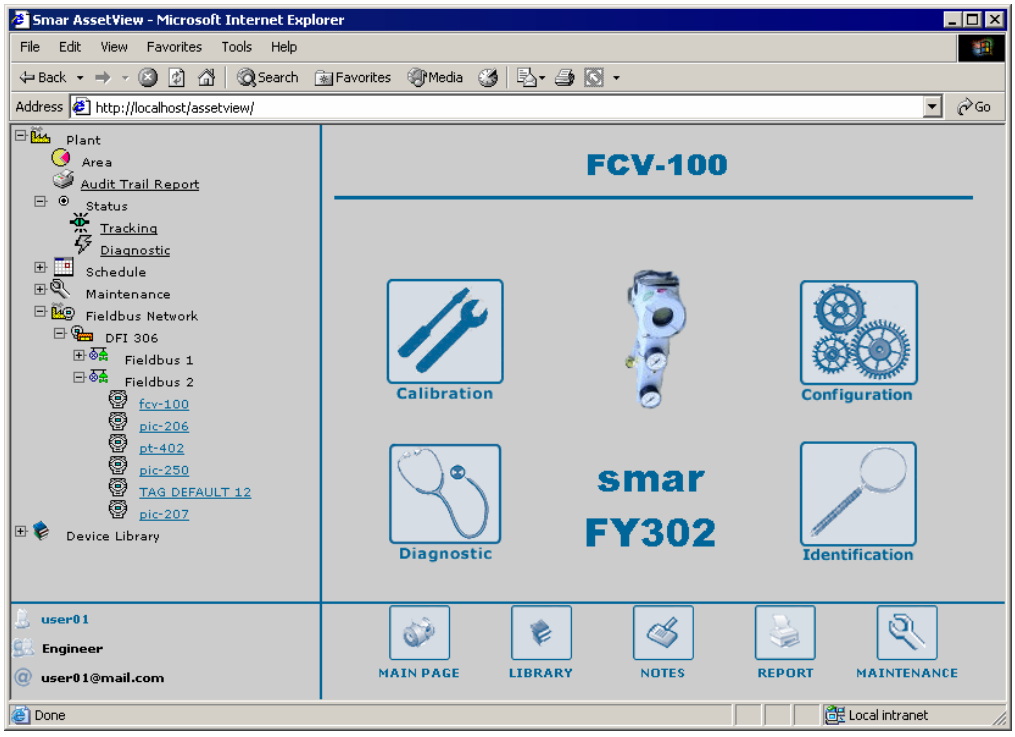



**Figure 4.3. Device Home Page**

For each device type, the main page will have the links:

### 4.2.1 Identification

The *Identification* page provides all the information relevant to maintenance of the device, such as its manufacturer, *Device* type, tag, serial number, and its versions. Materials of construction for wetted parts are also indicated.

### 4.2.2 Configuration

In the *Configuration* page the user can read and write the parameter values of the devices.

### 4.2.3 Calibration

Calibration is the correction of sensor reading and physical outputs. During this process messages are displayed to the user indicating the status of this condition. There are specific calibration methods for each device based on scripts defined by the manufacturers.

### 4.2.4 Diagnostics

Simple diagnostics are displayed to the user. Comprehensive tests can be done from time to time using several charts to check the condition of the field device. Because of the diagnostic it is possible to first remotely check the device if there really is a failure before going into the field. And yet because of the detailed information about the Network and device operation provided by the diagnostics, the user knows exactly where the problem is.

### 4.2.5 Reconciliation

Reconciliation allows comparison of current device settings with past configurations stored in the database.

On the right side of the screen, it is possible to see the changes made previously selected by the user. On the left side, the user can see the changes made on the same items displayed on the right side, but from the moment of the last change executed in the device. The last change is called “Current Device Parameterization”.

*Parameterization* means the action of changing the values of the parameters. The parameters are the variables of the device.

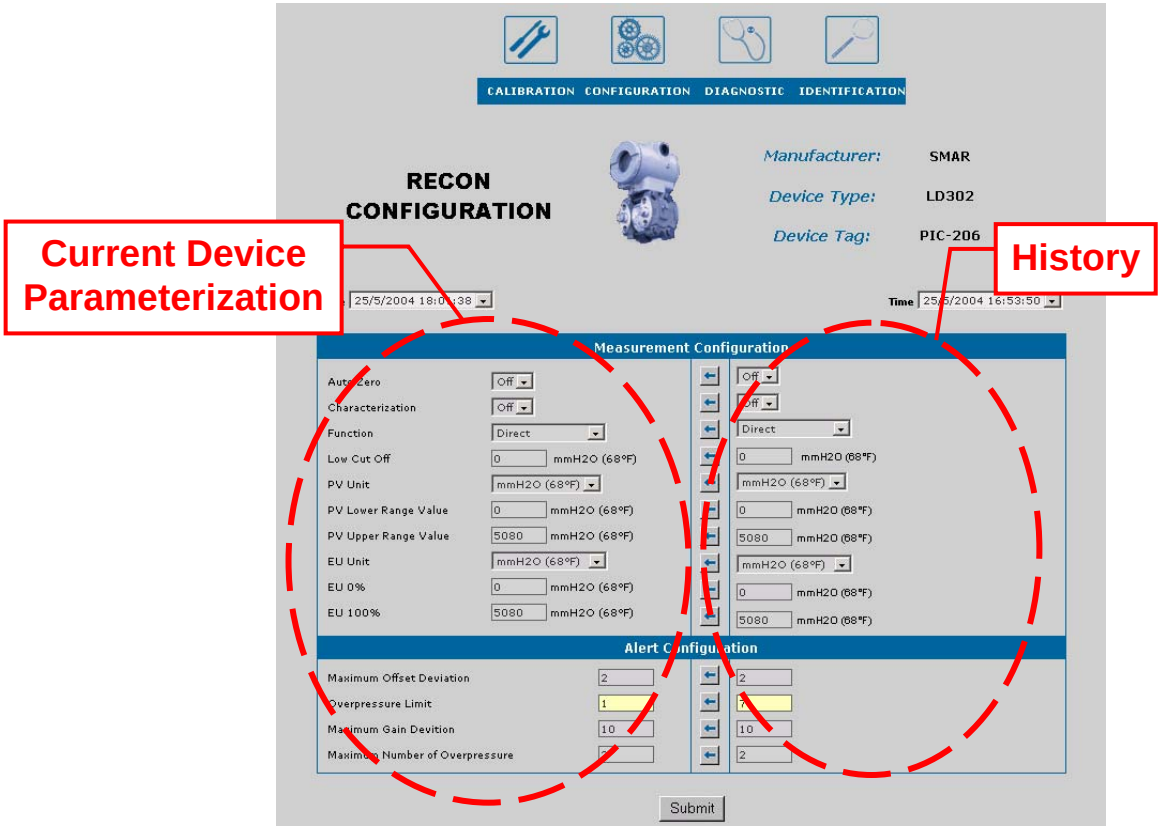



**Figure 4.4. Reconciliation Page**

If a moment different from the *Current Device Parameterization* is displayed on the left side and any previous moment is displayed on the right side, the user will only be able to compare the configurations. The arrows will be disabled and it will not be possible to transfer values.

If the *Current Device Parameterization* is displayed on the left side and any previous moment is displayed on the right side, the user can transfer the values from the previous moment to the device, clicking on the respective arrows. Click *Submit* to apply the values to the device.

## 4.3 Integrating Devices

### 4.3.1 Fieldbus Devices

Use the *DBWizard Register* application to integrate Smar or third-party devices that were not installed in the *Device Support* folder, in the installation directory "`Program Files\Smar\Assetview\Web Pages\`".

Click the *Start* menu, point to *Programs* > *System302* > *AssetView* and click the *DBWizardRegister* application:

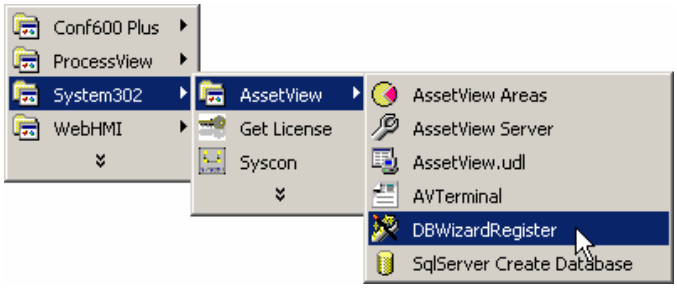



**Figure 4.5. Starting the DBWizard Register Application**

The *DB Wizard Register* window will open. On the *Standard* menu, select the option *Register* and click *Database*:

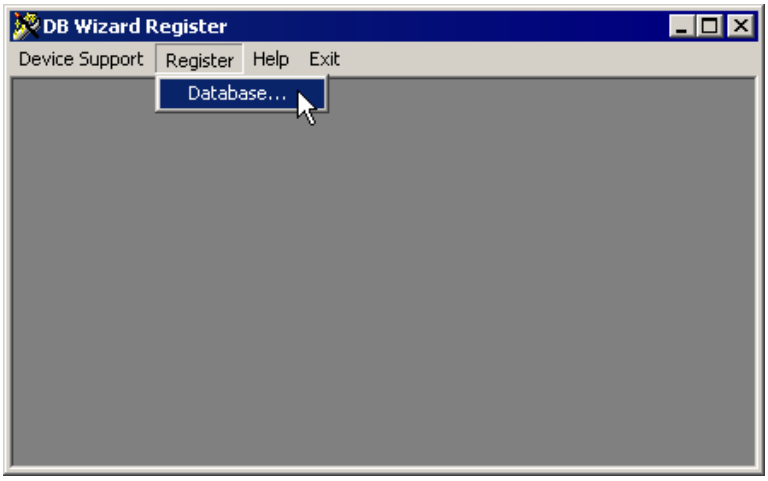



**Figure 4.6. Registering the Database**

The *Register Database* dialog box will open.

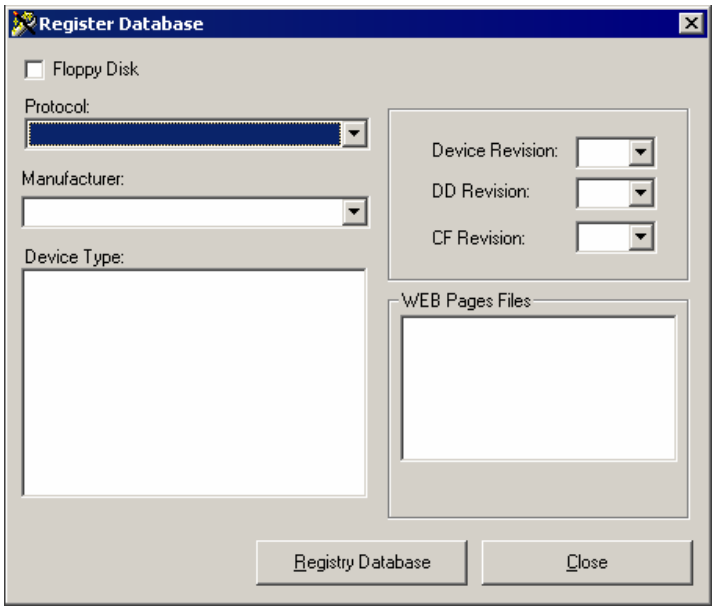



**Figure 4.7. Register Database Dialog Box**

Follow these steps to register a device:

1. Select the protocol from the *Protocol* list box.
2. Select the device manufacturer from the *Manufacturer* list box.
3. The list of devices will be displayed in the *Device Type* box. Click the target device to select it.
4. Select the revision of the selected device in the *Device Revision* list box.
5. Select the revision of the *Device Description* in the *DD Revision* list box.
6. Select the revision of the *Capability File* in the *CF Revision* list box.
7. Click *Registry Database*.

If the selected device doesn't exist in the database, the following message will open:

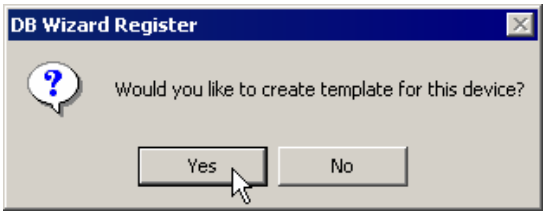



**Figure 4.8. Creating the Device Template**

Click *Yes* to create the device template in the database.

The *Search in Capabilities Files* dialog box will open.

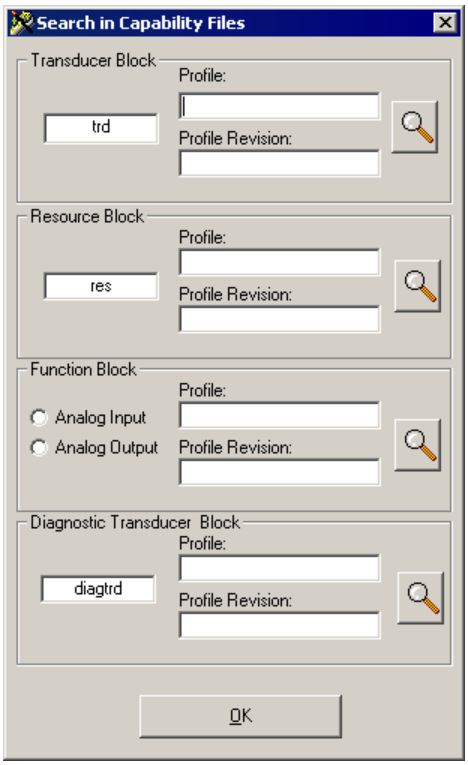



**Figure 4.9. Configuring the Device**

Type the *Profile* and *Profile Revision* numbers for the blocks. Observe that the numbers must be in the Hexadecimal format.

| HINT |
| --- |
| **Open the *Capability File* (**.cff*) of the device to locate the *Profile* and *Profile Revision* numbers.**<br><br>**Or use SYSCON to read the *Profile* and *Profile Revision* numbers, opening the *Block List* dialog box of the device. Please refer to the software manual for details.** |

After typing the numbers, click the button  to validate them.

If the numbers do not match the *Profile* and *Profile Revision* in the *CFF* file, the button  will be displayed.

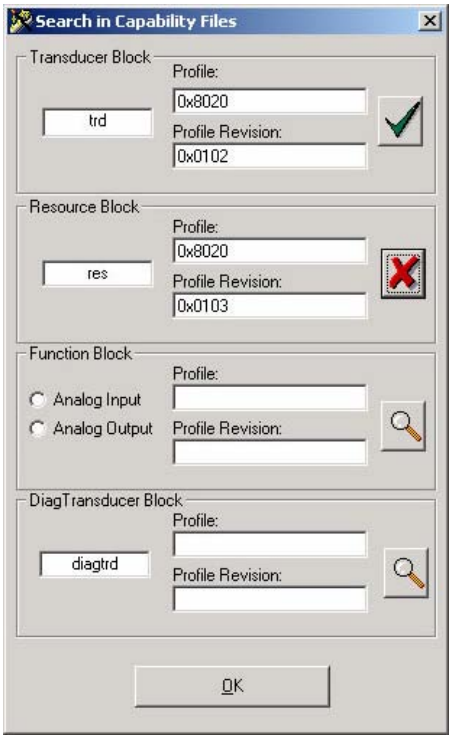



**Figure 4.10. Checking the Information**

Once all *Profile and Profile Revision* numbers are correct, the button  is displayed.

| **IMPORTANT** |
| --- |
| **The *Profile* and *Profile Revision* numbers of the *Resource* block and *Analog Input* (or *Analog Output block*) are required to register the device, because the parameters of these blocks are read by the device's generic pages.** |

Click *Ok* to register the device. If the template allows multiple instances of the *Transducer* block, the message below will open so the user can select the number of instances for the block.

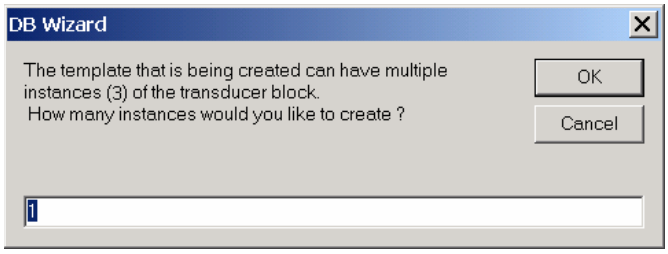



**Figure 4.11. Selecting the Transducer Block Instances**

After registering the template, the *Wizard* will verify if the pages were created for this type of device. See the message below:

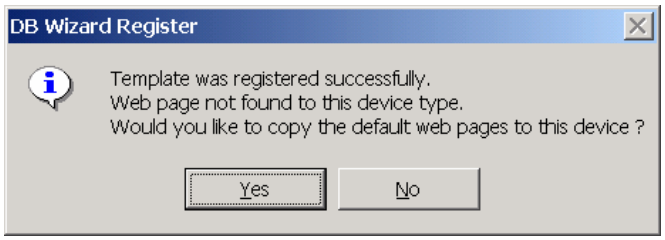



**Figure 4.12. Selecting the Transducer Block Instances**

Click *Yes* to copy the generic pages from the directory "`Program Files\Smar\Assetview\Web Pages\FF Generic`" to the device folder. The user can customize these pages by editing the files located in the corresponding folder in the *Device Support* directory. See the example below:

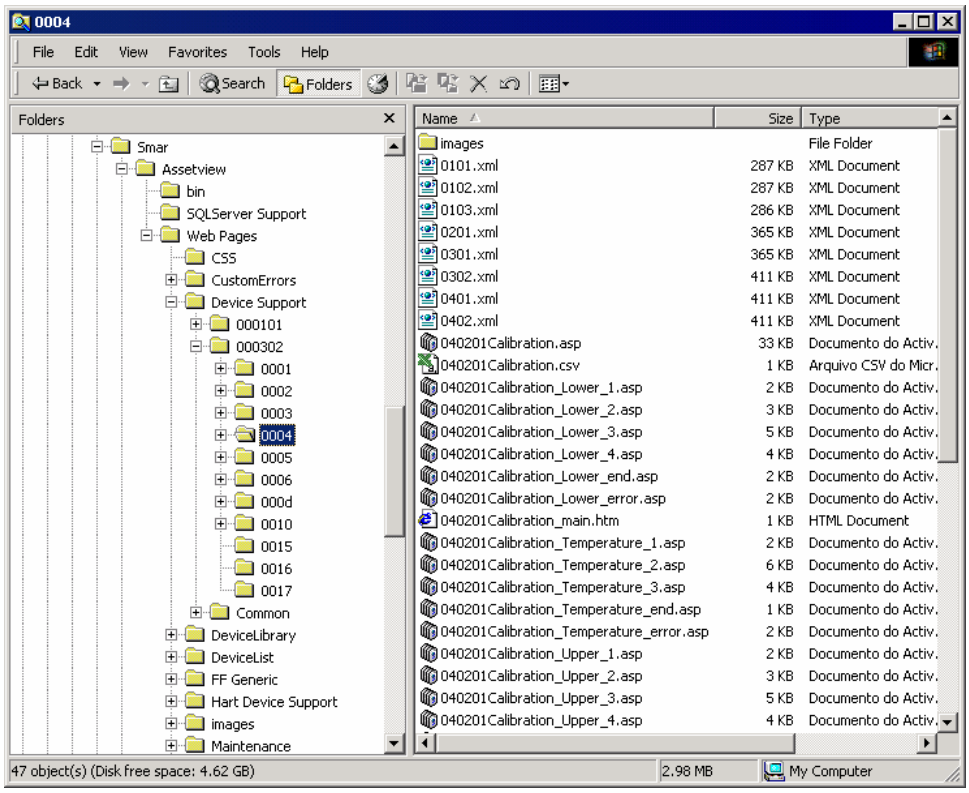



**Figure 4.13. Editing the Device Pages**

## 4.3.2 HART Devices

The *DBWizard Register* application cannot be used to register HART instruments. *AssetView* monitors HART instruments using the Smar's HI302 (HART/Foundation Fieldbus Interface).

It is necessary to create the blocks configuration for the HI302 to represent the HART instruments installed in the plant. Please refer to the **HI302 User's Manual** (Chapter 3) for further information.

When registering a HART instrument using the *Asset Server*, that hasn't been registered in the database, the message below will open alerting the user that the device will be registered as a generic instrument:

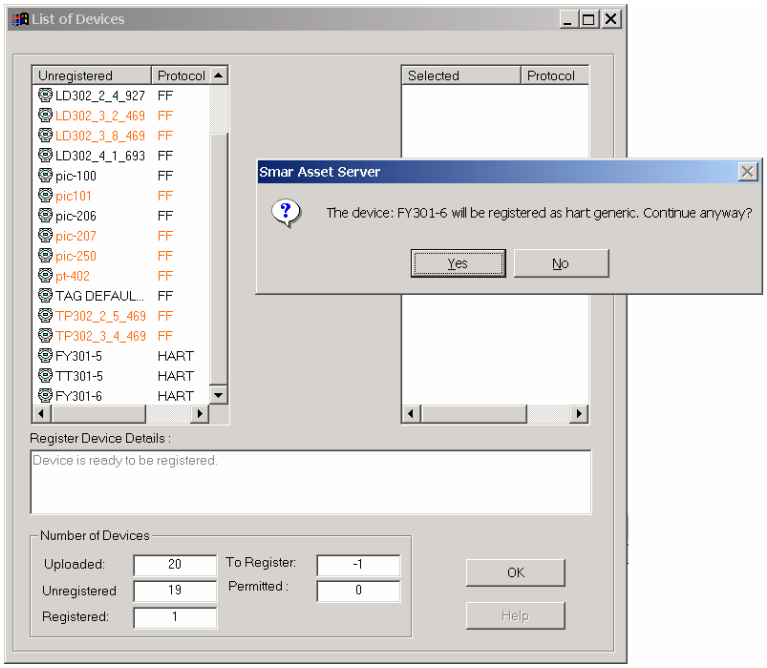



**Figure 4.14. Registering a Generic Device**

HART instruments from Smar or other manufacturers that don't have registered pages will use the generic pages located in the folder "**`Web Pages\Hart Device Support\GenericHart`**", inside the *AssetView* installation folder.

Observe the figure below:

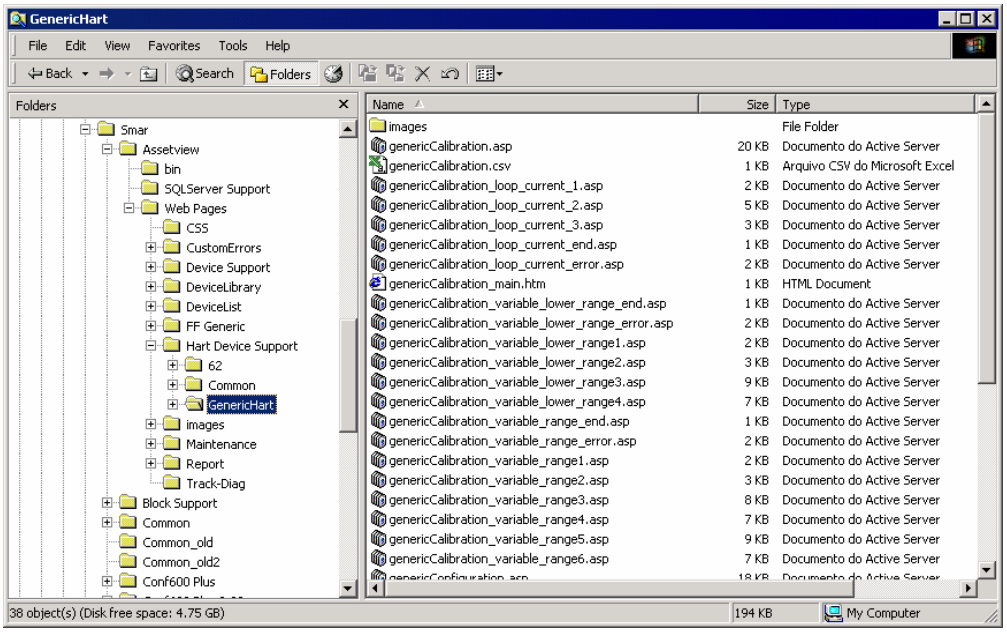



**Figure 4.15. Generic Pages for HART Instruments**

# 5. DEVICE LIST

Click the link *Device List* to open a page with the list of all devices registered in the database:

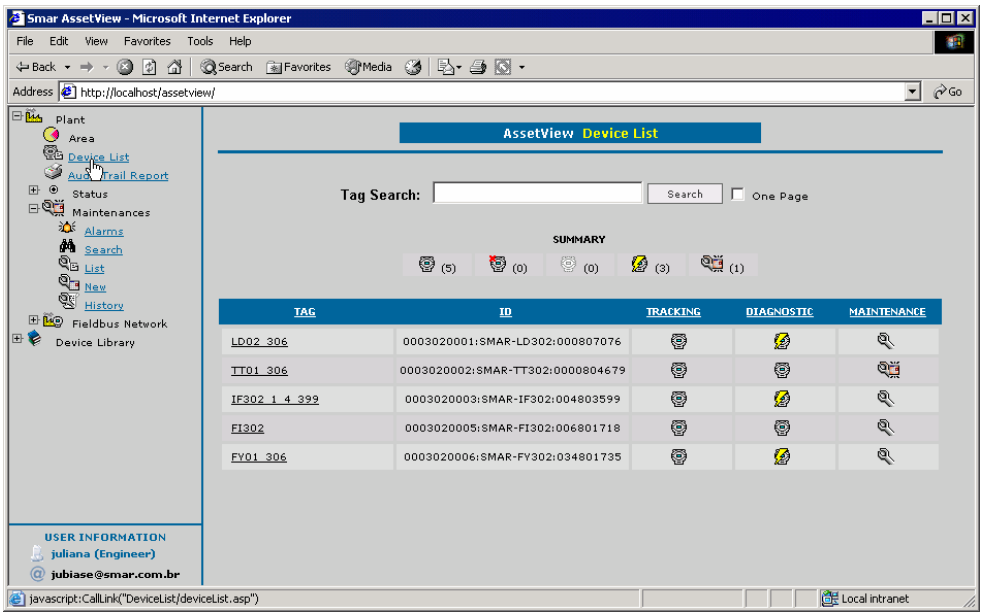



**Figure 5.1. Device List Page**

The user can search for a specific device tag:


**Figure 5.2. Searching for a Device**

1. Type the device tag.
2. Click the button *Search*.
3. The device will be highlighted in the *Device List*:

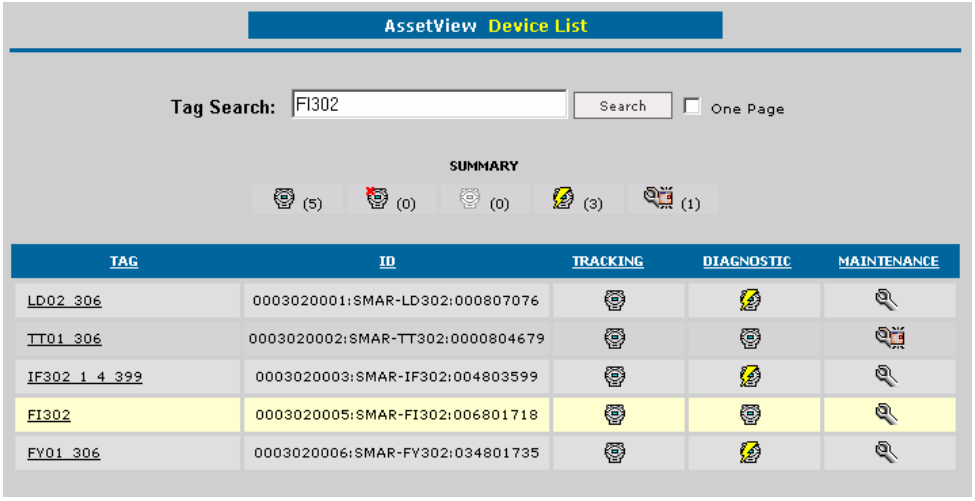



**Figure 5.3. Search Results**

The user can order the columns in alphabetical order, ascendent or descendent, clicking the column header.

In the *Tag* column, click the device tag to open the home page of the device.

In the *Tracking* column, the following icons indicates the device status:


Indicates the device has communication problems.


Indicates the device is operating in normal conditions.


Indicates the device is off-line.

In the *Diagnostic* column, the following icons indicates diagnostic events:


Indicates that a diagnostic event has occurred.


Indicates the device is operating in normal conditions.

In the *Maintenance* column, the following icons indicates the maintenance status for the device:


Indicates there are no pending maintenances for the device.


Indicates that maintenance should be executed in the device.

# 6. AUDIT TRAIL REPORTS

*AssetView* has different types of reports to be configured by the user.

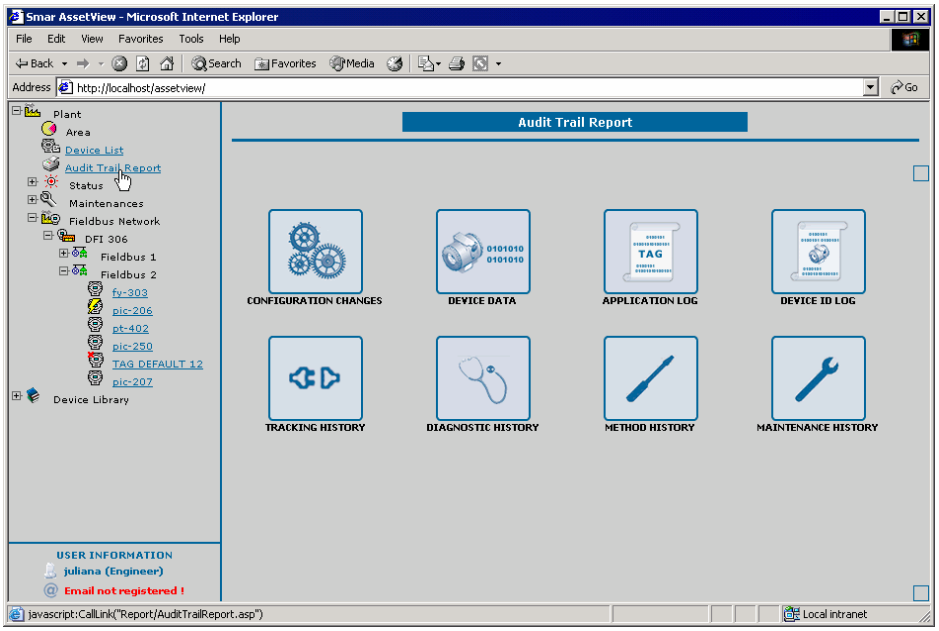



**Figure 6.1. Audit Trail Reports in AssetView**

The sections below describe the functionality of these reports and how to generate them.

For each report, the following filters will be available:

### *START DATE*

Select the initial date to search for the information to generate the report.

### *END DATE*

Select the final date to search for the information to generate the report.

### *PROTOCOL*

Allows the user to select the devices of a specific communication protocol (Hart or Fieldbus).

### *DEVICE TYPE*

Allows the user to select the type of the device from the list of devices registered in the database.

### *DEVICE TAG*

This filter will display the list of tags from the devices registered in the database.

## 6.1 Configuration Changes Report

This report shows all changed parameters of the device in a specific period of time.

To generate this report, click the link *Configuration Changes* in the *Audit Trail Reports* page and select the options to configure the report.

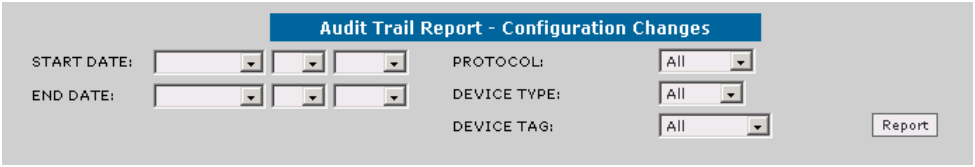



**Figure 6.2. Filters for the Configuration Changes Report**

After configuring the filters, click the button *Report* to generate the *Configuration Changes Report*:

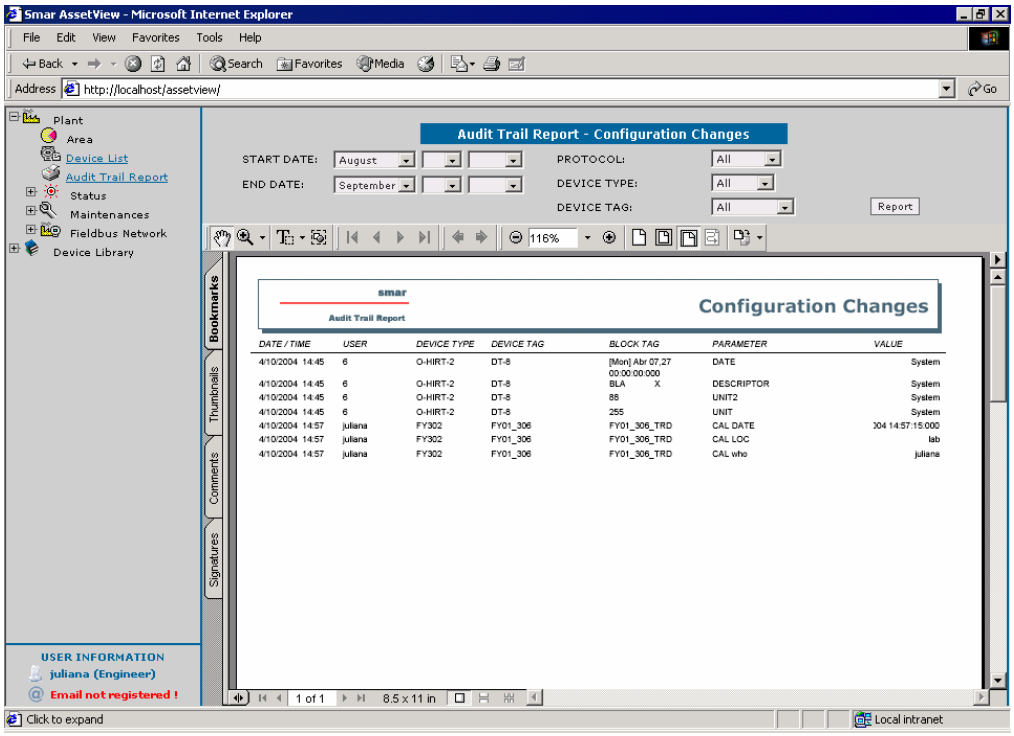



**Figure 6.3. Configuration Changes Report**

## 6.2 Device Data Report

This report shows the current status of the device in a specific period of time, listing the last values of all parameters at the selected date.

To generate this report, click the link *Device Data* in the *Audit Trail Reports* page and select the options to configure the report.

After configuring the filters, click the button *Report* to generate the *Device Data Report*:

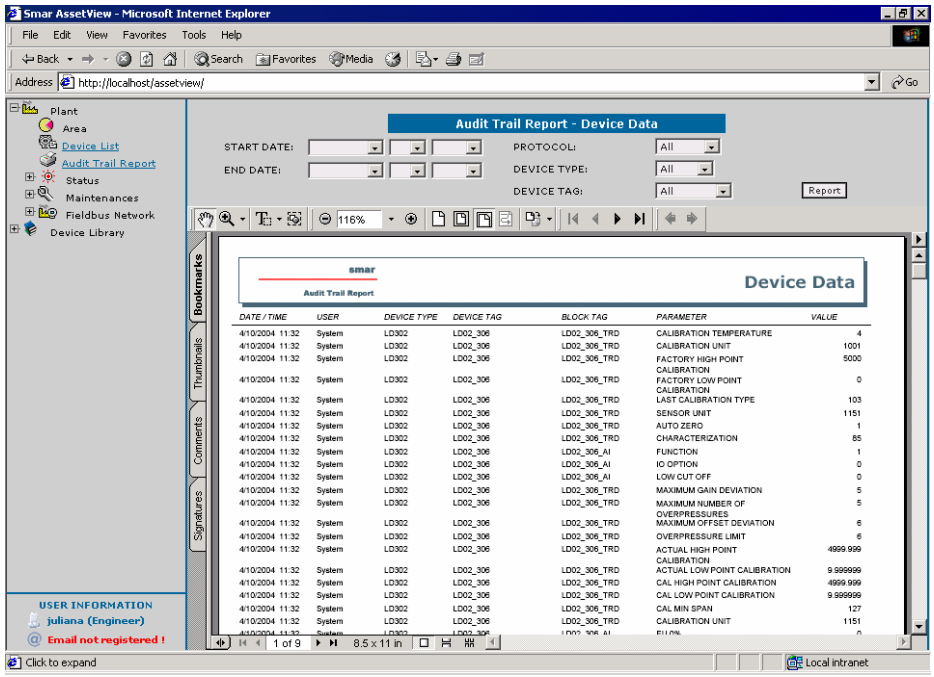



**Figure 6.4. Device Data Report**

## 6.3 Application Log Report

*AssetView* stores the devices' tags in the database. This report shows the different tags assigned to the device in the plant configuration.

To generate this report, click the link *Application Log* in the *Audit Trail Reports* page. The page with the filter options will be loaded.

After configuring the filters, click the button *Report* to generate the *Application Log Report*:

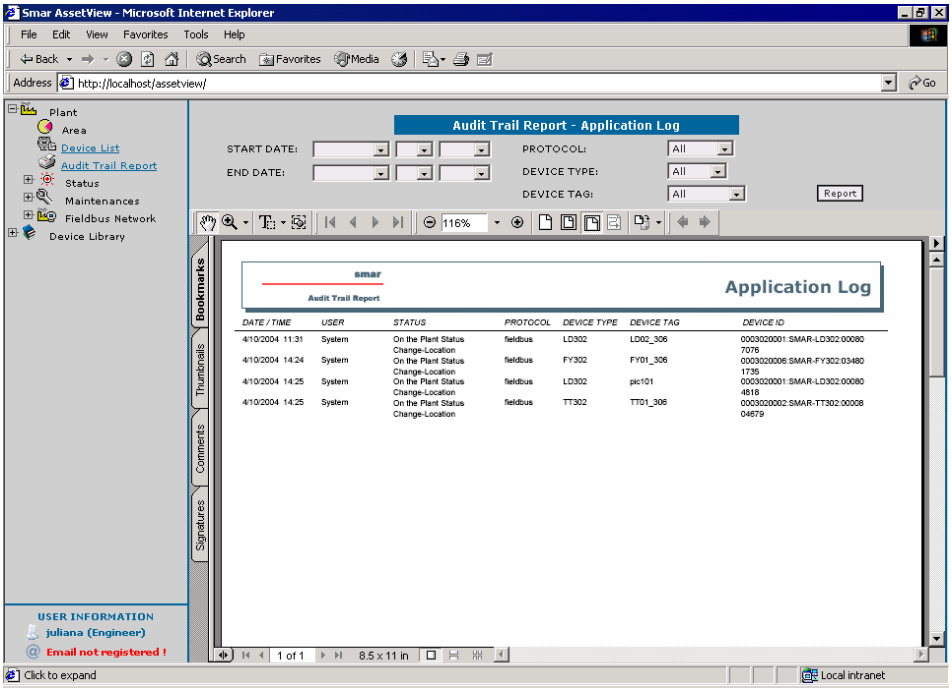



**Figure 6.5. Application Log Report**

## 6.4 Device ID Log Report

This report shows all device's IDs assigned to a tag in the plant configuration.

To generate this report, click the link *Device ID Log* in the *Audit Trail Reports* page.

After configuring the filters, click the button *Report* to generate the *Device ID Log Report*:

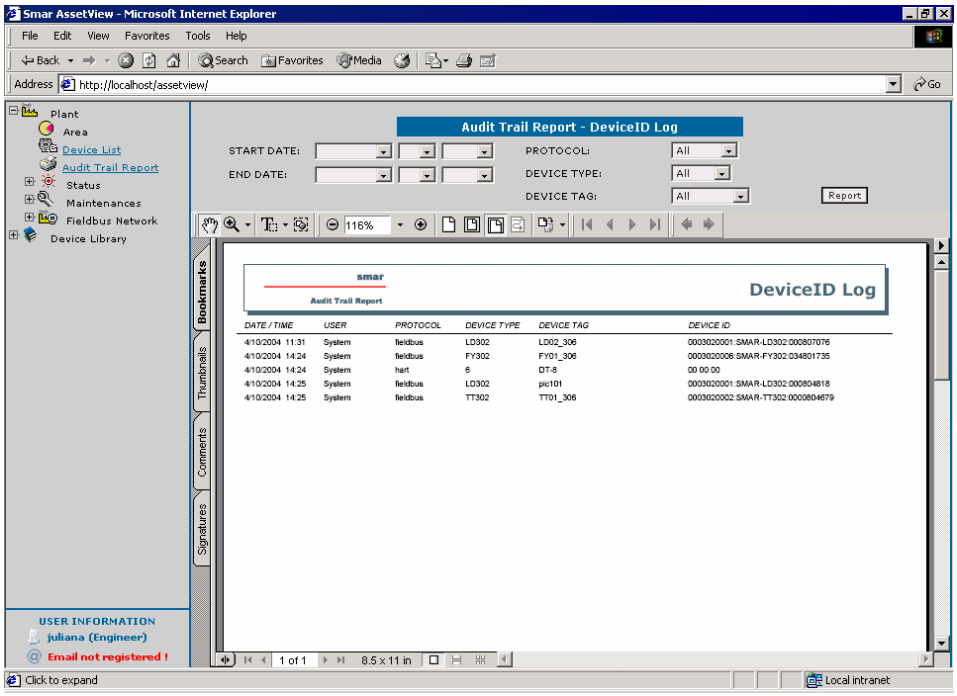



**Figure 6.6. Device ID Log Report**

## 6.5 Tracking History Report

This report shows the occurrences of communication failures.

To generate this report, click the link *Tracking* in the *Audit Trail Reports* page.

After configuring the filters, click the button *Report* to generate the *Tracking History Report*:

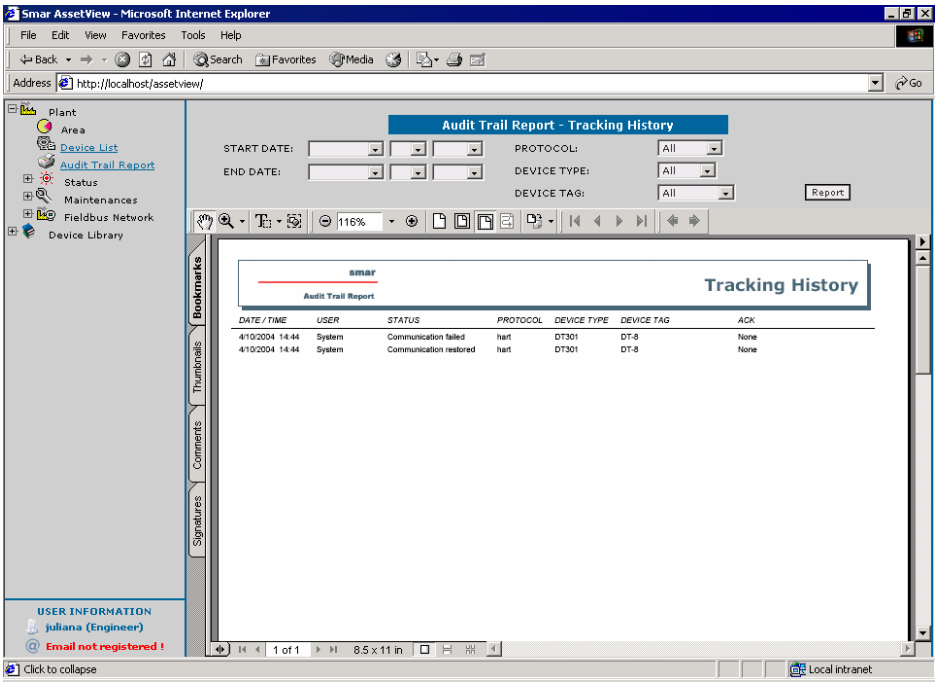



**Figure 6.7. Tracking History Report**

## 6.6 Diagnostic History Report

The diagnostic events indicate failures or operational conditions of the devices, and they are stored in the *AssetView* database.

To generate this report, click the link *Diagnostic History* in the *Audit Trail Reports* page. The page with the filter options will be loaded.

After configuring the filters, click the button *Report* to generate the *Diagnostic History Report*:

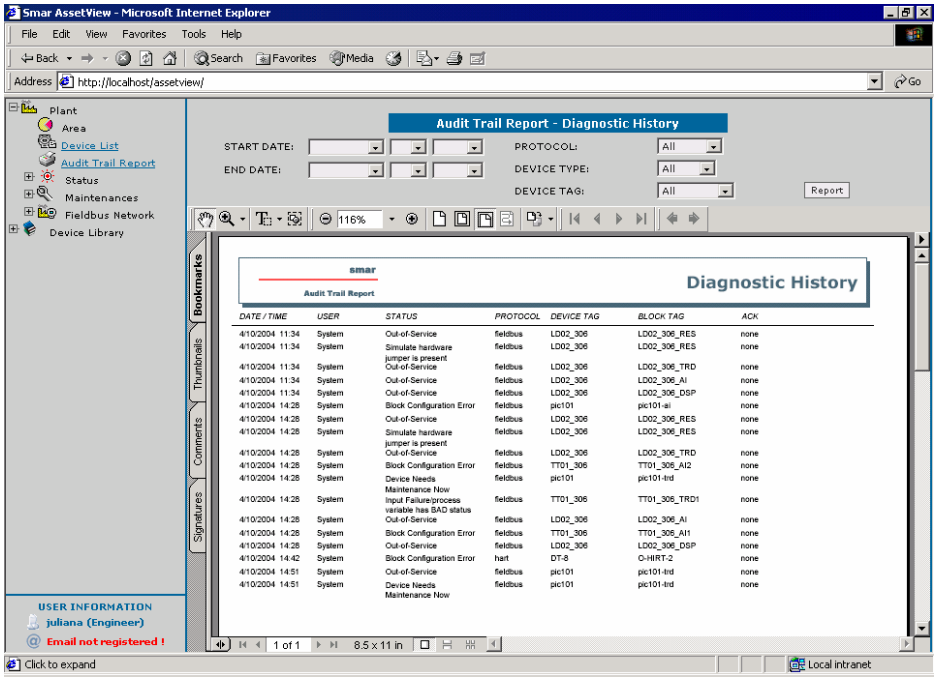



**Figure 6.8. Diagnostic History Report**

## 6.7 Method History Report

Methods are calibration procedures composed by a sequence of reading and writing in the device. The parameter values before writing and the values that were writen in the parameters, statics or dynamics, are stored in the database.

This report shows all methods performed and the parameters that have been changed.

To generate this report, click the link *Method History* in the *Audit Trail Reports* page.

After configuring the filters, click the button *Report* to generate the *Method History Report*:

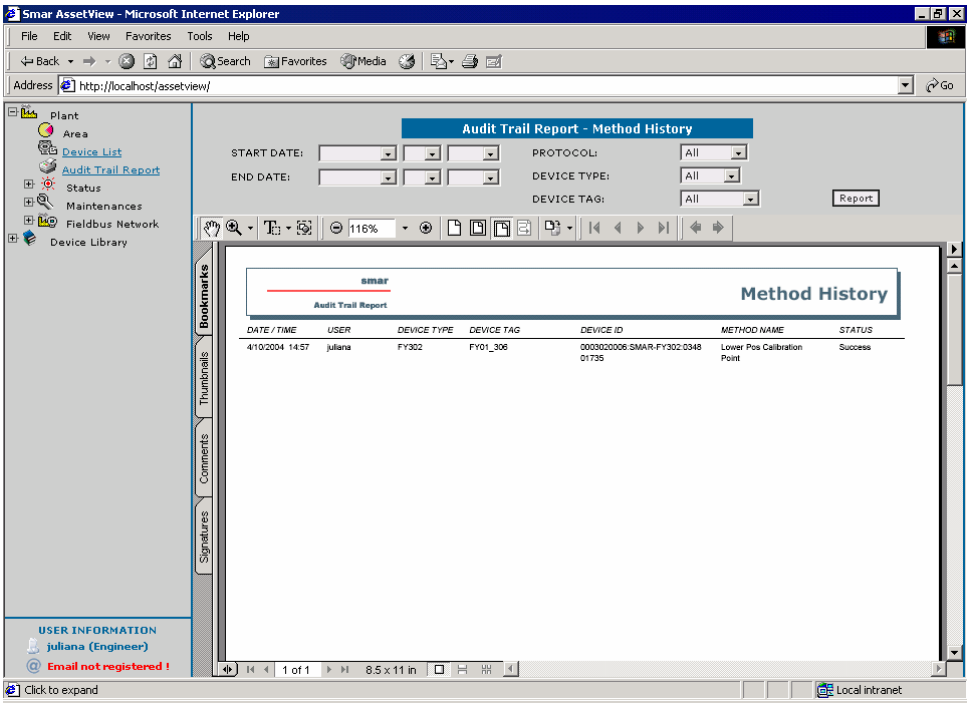



**Figure 6.9. Relatório de Histórico dos Métodos**

## 6.8 Maintenance Report

This report shows all maintenances scheduled and performed for each device.

To generate this report, click the link *Maintenance History* in the *Audit Trail Reports* page. The page with the filter options will be loaded.

After configuring the filters, click the button *Report* to generate the *Maintenance Report*:

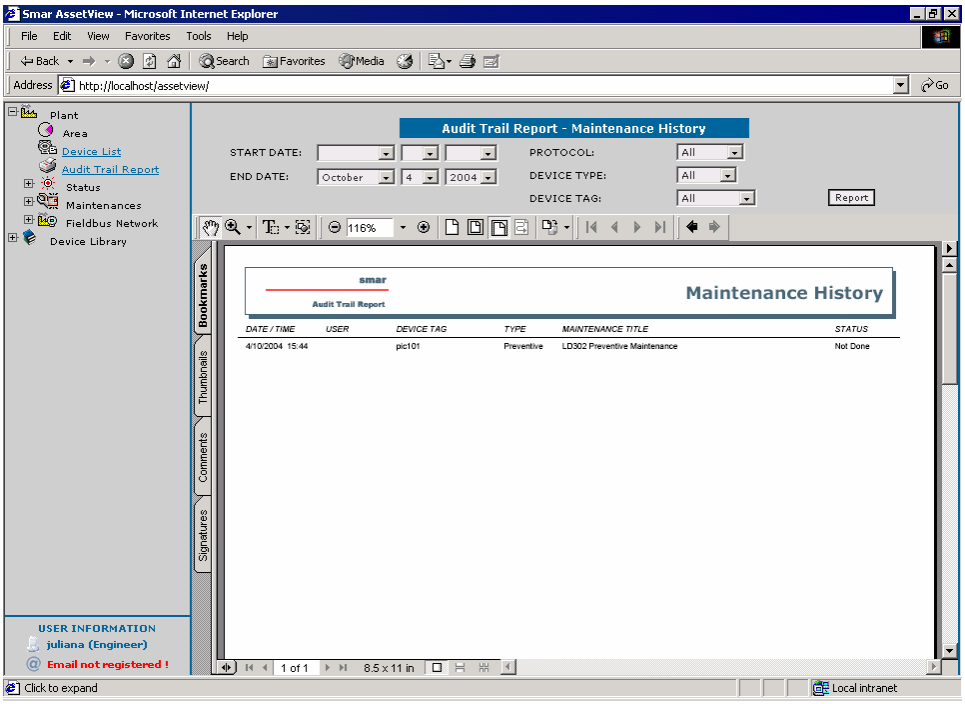



**Figure 6.10. Maintenance Report**

# 7. MONITORING THE DEVICE STATUS

The field devices notify the system when a communication failure or operational conditions occur.

To display the events reported to *AssetView*, click the link *Status* in the topology to expand the monitoring options.

| | |
|---|---|
| Status | Indicates normal condition, no communication problem occurred. |
| Status | Indicates that a diagnostic event or communication problem has occurred. |

## 7.1 Tracking

The *Tracking View* page shows the status of the devices and their location.

| | |
|---|---|
| Tracking | Indicates normal condition, no communication problem occurred. |
| Tracking | Indicates that a communication problem has occurred. |

When the device is disconnected from the plant or has communication problems, it appears in the tracking list. Click the link *Status* > *Tracking* in the topology to open the *Tracking List*:

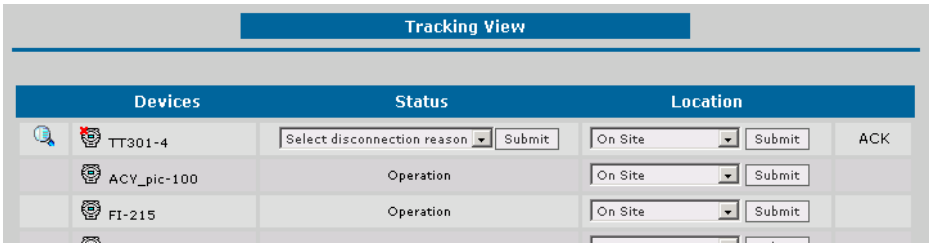



**Figure 7.1. Tracking List**

Click the magnifying glass icon to open a new window that shows detailed information about the device:

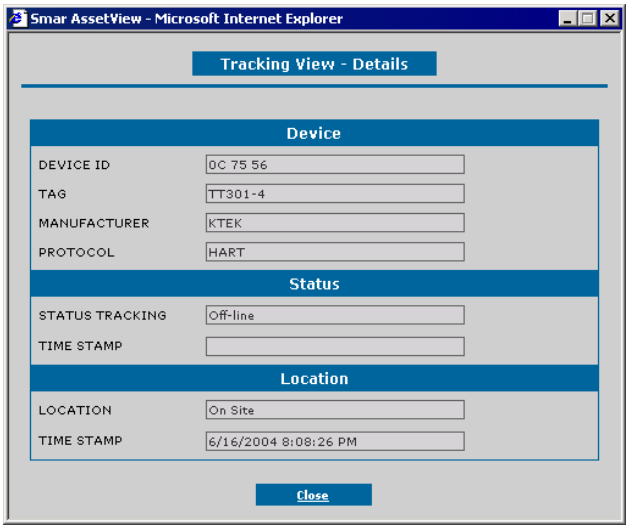



**Figure 7.2. Device details**

### 7.1.1 Defining the device status

To define the device status in the tracking list, click the list box in the *Status* column related to the device:

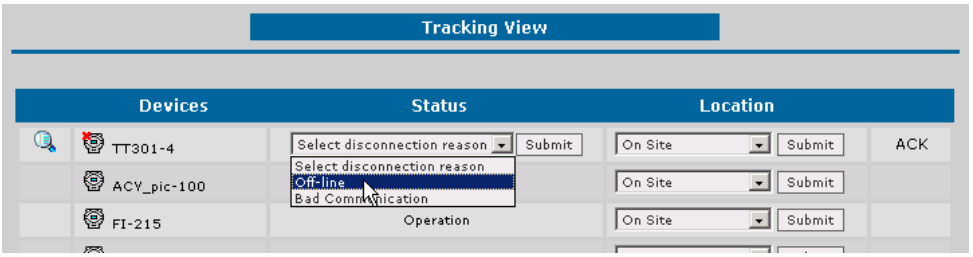



**Figure 7.3. Device status**

Select the option:

- *Off-line*: the device is not communicating because it was removed from the plant.
- *Bad Communication*: the device is connected to the plant but has communication problems.

Click the button *Submit* to apply the alterations to the device. The tracking event will be automatically acknowledged. See the example below:

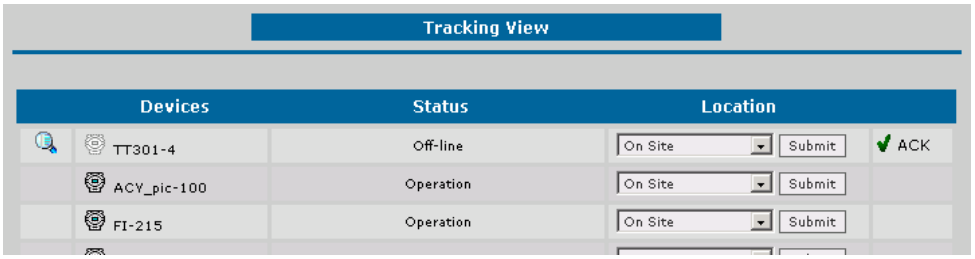



**Figure 7.4. Defining the Device status**

### 7.1.2 Defining the device location

To define the device's location in the tracking list, click the list box in the *Location* column related to the device:

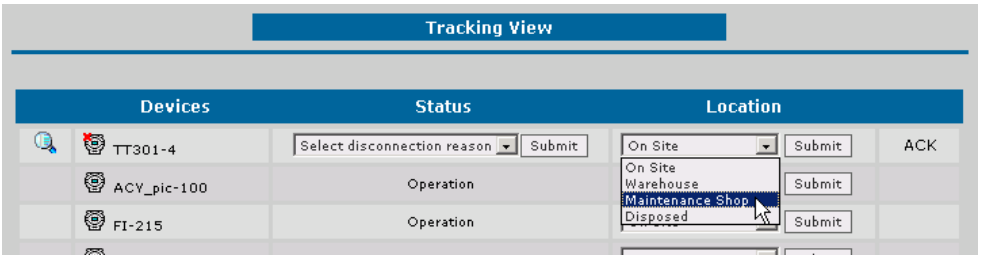



**Figure 7.5. Device Location**

Select the option:

- *On Site*: the device is operating in the plant.
- *Warehouse*: the device is stored in the warehouse.
- *Maintenance Shop*: the device was removed from the plant for maintenance.
- *Disposed*: the device was removed from the plant and discarded.

Click the button *Submit* to apply the alterations to the devices.

### 7.1.3 Acknowledging the Tracking Event

Click the link *ACK* in the *Tracking View* page to acknowledge the event.

| NOTE |
| --- |
| **The tracking event is automatically acknowledged when the user defines the device status in the *Tracking View* page, clicking the list box in the *Status* column related to the device.** |

The *Acknowledge Tracking* window will open:

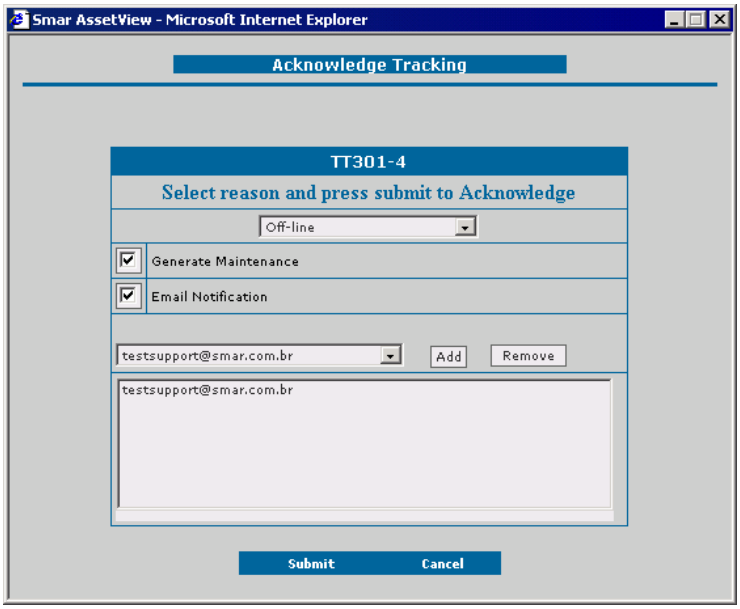



**Figure 7.6. Acknowledge Window**

- Select the cause of the tracking event: *Off-line* if the device was removed from the plant or *Bad Communication* if the device has communication problems.
- Select the option *Generate Maintenance* to schedule a maintenance for the device, corrective or proactive. See section *Scheduling Maintenances for an Event* for details.
- Select the option *E-mail Notification* to send e-mails to the plant administrator and technicians.

Click the button *Submit* to acknowledge the tracking event.

| NOTE |
| --- |
| **When acknowledging a tracking event, the user doesn't have to define a maintenance for the device, or the e-mail address to be notified.**<br><br>**To create a maintenance related to an acknowledged event, or define an e-mail address, click the link *ACK* in the *Tracking View* page and the *Acknowledge* window will open.** |

The *Tracking View* page will be updated and a check mark will appear in the column *ACK* for the events that have been acknowledged. Observe the figure below:

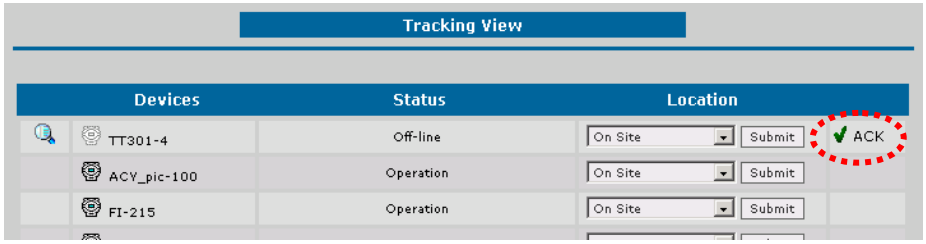



**Figure 7.7. Event Acknowledged**

## 7.2 Diagnostic

The *Diagnostic View* page shows the events caused by failure notifications or operational conditions programmed by the user to be monitored by the system.

| | |
|---|---|
| Diagnostic | Indicates normal condition, no communication problem occurred. |
| Diagnostic | Indicates that a diagnostic event has occurred. |

When a diagnostic event occurs, it appears in the *Diagnostic View*. Click the link *Status* > *Diagnostic* in the topology tree to open the list of diagnostic events:

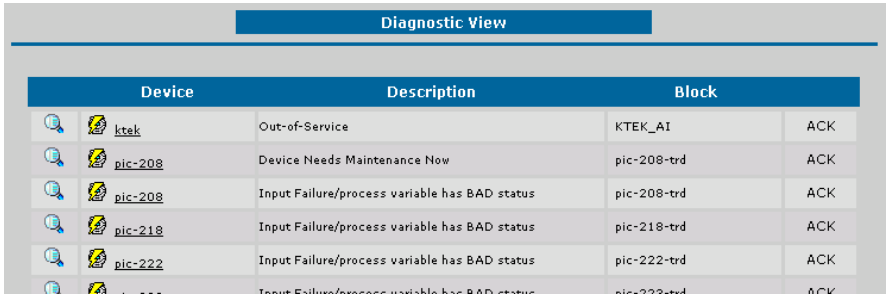



**Figure 7.8. Diagnostic View**

Click the device icon in the *Devices* column to open the home page of the device.

Click the magnifying glass icon to open a new window that shows detailed information about the error related to the block of the device:

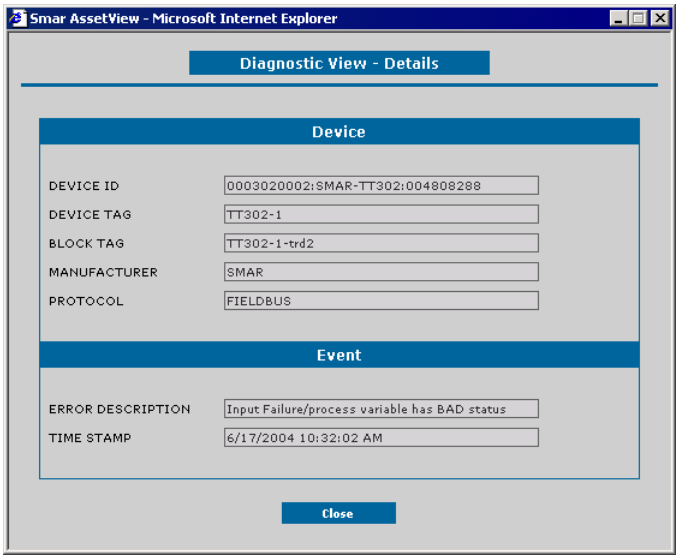



**Figure 7.9. Device Details**

### 7.2.1 Acknowledging the Diagnostic Event

Click the link *ACK* in the *Diagnostic View* page to acknowledge the event.

The *Acknowledge Diagnostic* window will open:

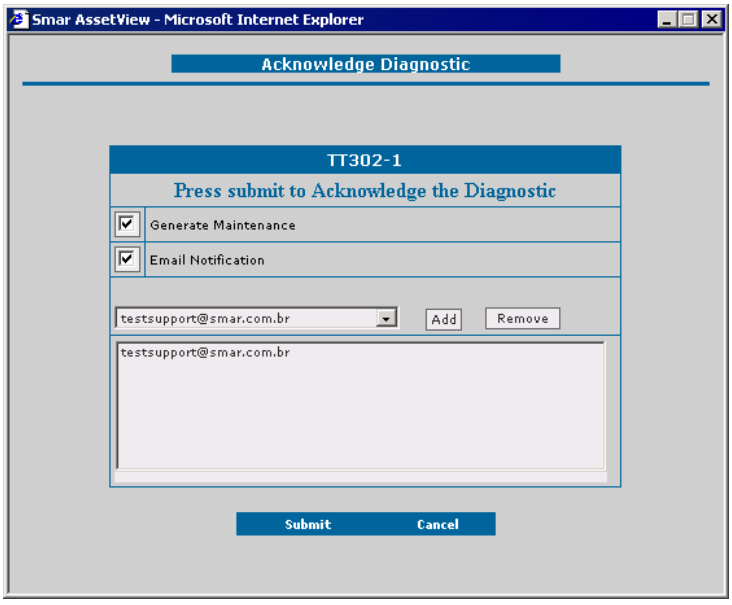



**Figure 7.10. Acknowledging the Event**

- Select the option *Generate Maintenance* to schedule a maintenance for the device, corrective or proactive. See section *Scheduling Maintenances for an Event* for details.
- Select the option *E-mail Notification* to send e-mails to the plant administrator and technicians.

Click the button *Submit* to acknowledge the diagnostic event.

| NOTE |
| --- |
| **When acknowledging a diagnostic event, the user doesn't have to define a maintenance for the device, or the e-mail address to be notified.**<br>**To create a maintenance for an acknowledged event, or define an e-mail address, click the link *ACK* in the *Diagnostic View* page and the *Acknowledge* window will open.** |

The *Diagnostic View* will be updated and a check mark will appear in the column *ACK* for the events that have been acknowledged. Observe the figure below:

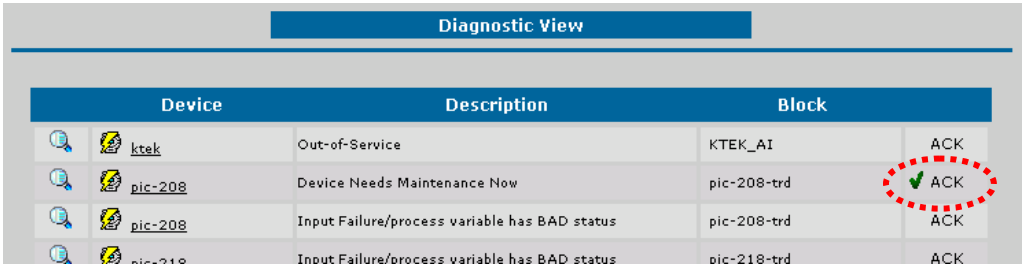



**Figure 7.11. Event Acknowledged**

## 7.3 Scheduling Maintenances for an Event

At the *Acknowledge* window, for tracking and diagnostic events, select the option *Generate Maintenance* to schedule a maintenance for the device. When the user clicks the button *Submit*, the window below will open:

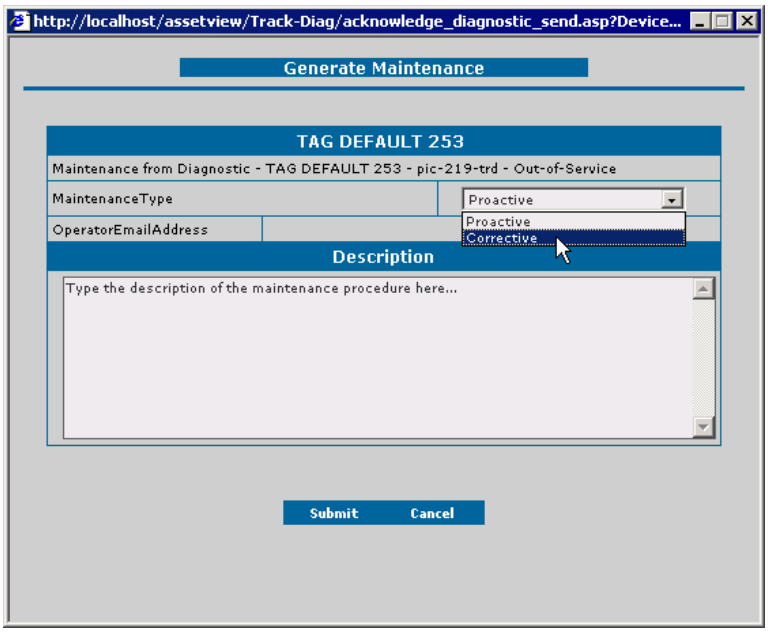



**Figure 7.12. Generating the Maintenance**

1. Select the type for the maintenance: proactive or corrective.
2. In the field *Description*, describe the procedure for executing the maintenance.
3. Click the button *Submit* to conclude. The window below should appear confirming the maintenance was created:

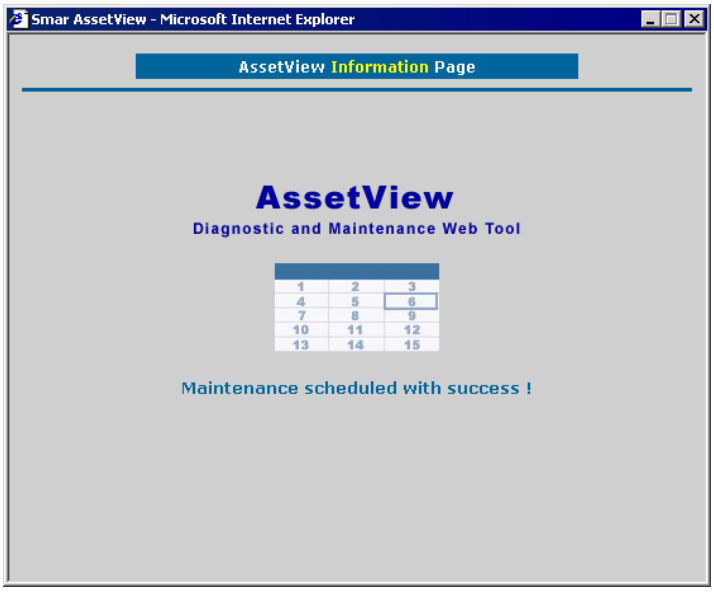



**Figure 7.13. Confirming the Maintenance**

# 8. MANAGING THE DEVICE MAINTENANCES

To open the list of scheduled maintenances, click the link *Maintenances* > *List* in the topology tree:

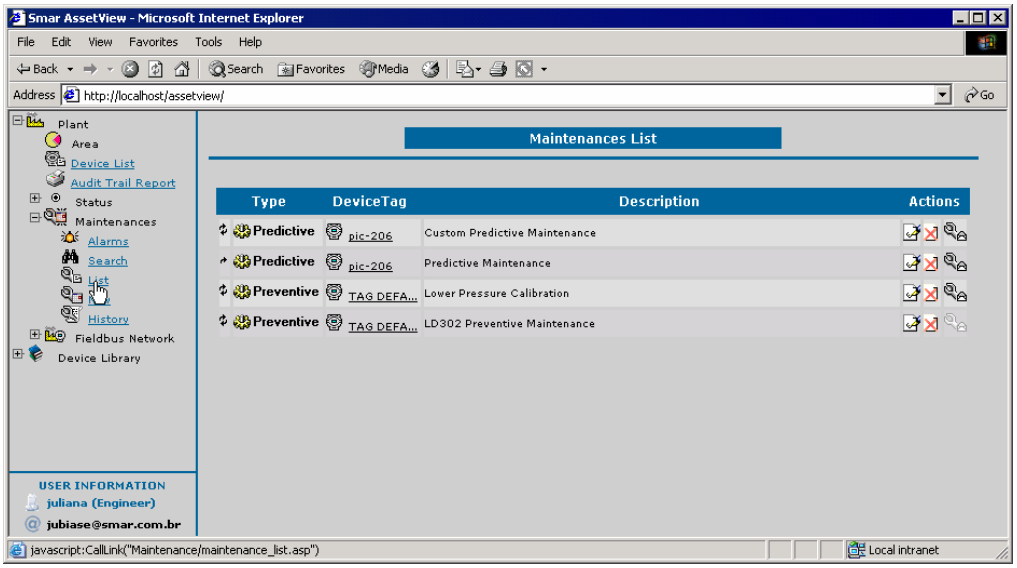



**Figure 8.1. Maintenances List**

The icon indicates that the maintenance is recurrent, while the icon indicates the maintenance should be executed only once.

The *Type* column indicates the type of the maintenance.

Click the device icon in the *Device Tag* column to open the home page of the device.

## 8.1 Adding Preventive and Predictive Maintenances

To schedule a maintenance for a specific device, click the link *Maintenances* > *New* in the topology tree. The *Maintenance Scheduling* page will be loaded:

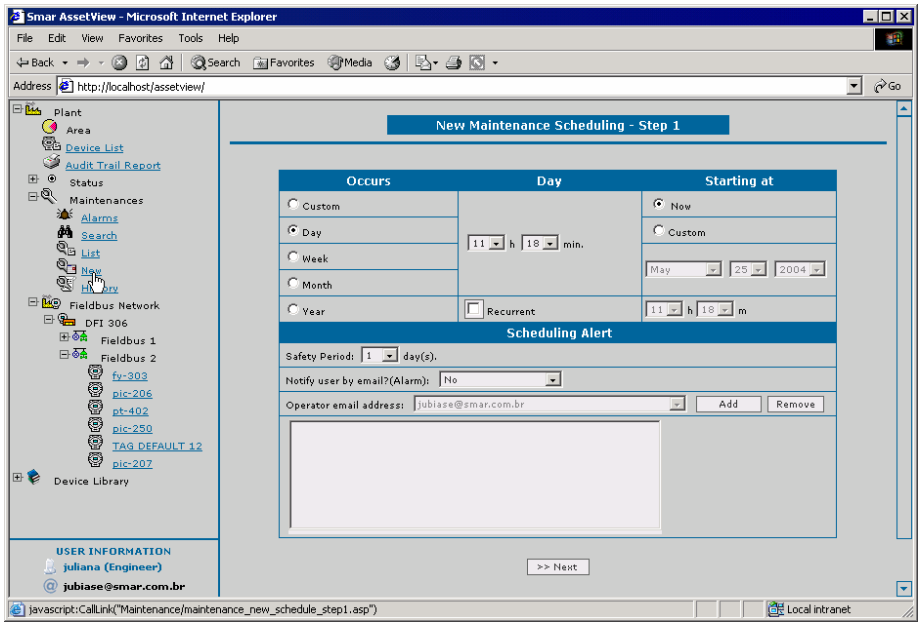



**Figure 8.2. Adding Device Maintenances**

1. In the field *Occurs*, select the maintenance occurrence: customized, daily, weekly, monthly or annual.
2. Select the option *Recurrent* in case the maintenance should occurs repeatedly.
3. In the field *Starting at*, select the date and the time that the maintenance should start. To customize the maintenance starting date, click the option *Custom*, select the maintenance date and the time.
4. Configure the maintenance alert in the field *Scheduling Alarm*, selecting the number of days that the user should be notified in advance.
5. In the field *Notify user by e-mail*, select *Yes* in the options list to send e-mails to the users, and add the e-mail address of the user that will be notified about the maintenance.
6. Click the button *Next* to proceed describing the maintenance details:

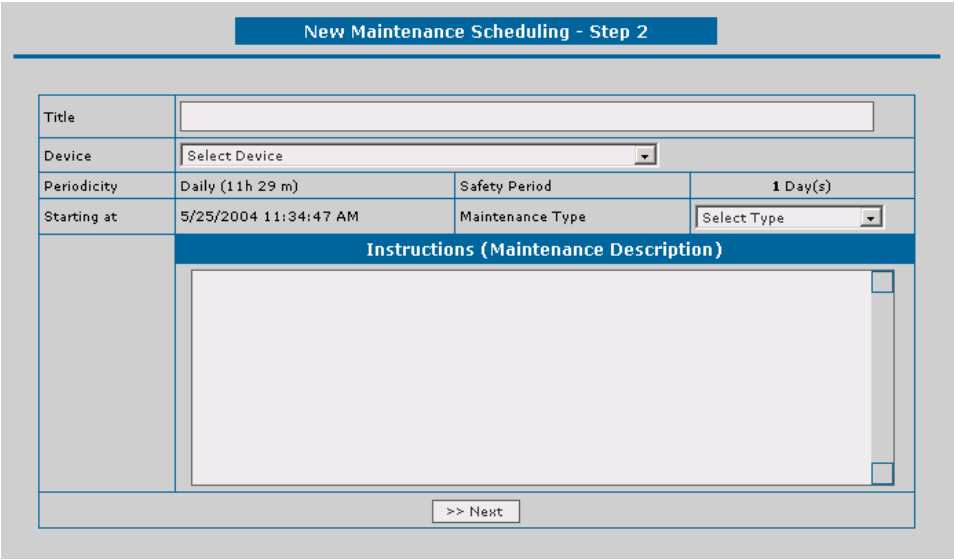



**Figure 8.3. Maintenance Details**

7. Type the title of the maintenance.
8. Select the device.

9. Select the type of the maintenance: preventive or predictive.
10. Type the instructions to perform the maintenance.
11. Click *Next* to conclude and update the *Maintenances List*.

## 8.2 Editing the Maintenance

In the topology tree, click the link *Maintenances* > *List* to open the list of scheduled maintenances.

In the column *Action*, click the edit icon,  , related to the device, to open the *Maintenance Edit* window.

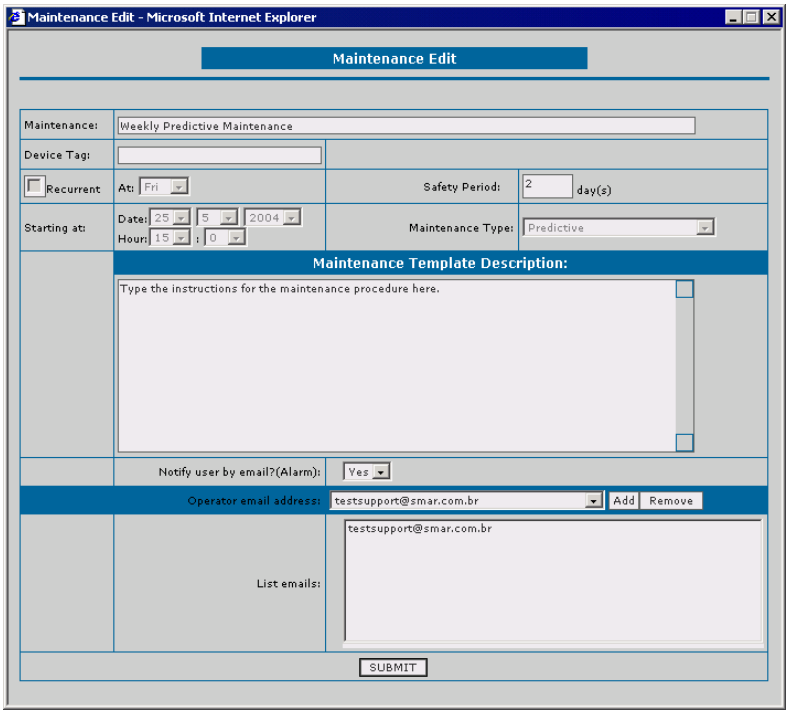



**Figure 8.4. Editing the Maintenance**

Edit the necessary information and click the button *Submit* to apply the alterations.

## 8.3 Removing a Maintenance

In the topology tree, click the link *Maintenances* > *List* to open the list of scheduled maintenances.

In the column *Action*, click the delete icon,  , related to the device.

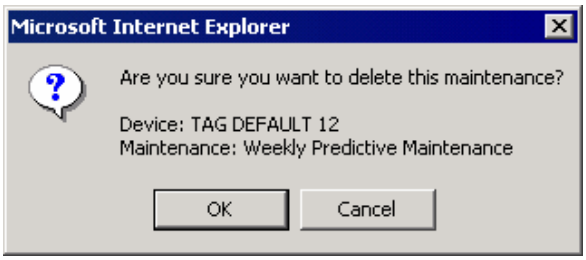



**Figure 8.5. Removing a Maintenance**

Click *Ok* to confirm the operation and remove the selected maintenance.

## 8.4 Sending Service Orders

In the topology tree, click the link *Maintenances* > *List* to open the list of scheduled maintenances.

In the column *Action*, click the send service order icon,  , related to the device. This icon will only be available if any e-mail address was assigned to the maintenance.

The window to edit the service order will open:

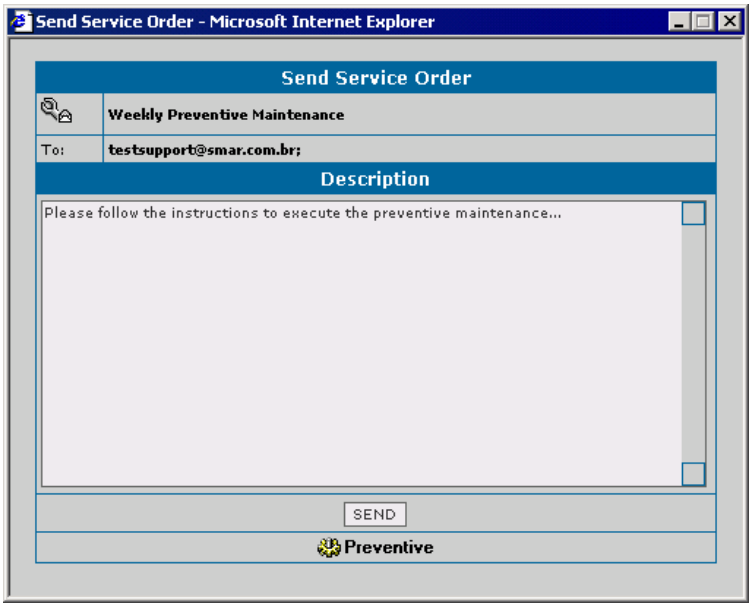



**Figure 8.6. Sending a Service Order**

Type the instructions to be sent to the user and click the button *Send* to send the e-mail.

The window showed in the figure below should appear confirming the e-mail has been sent:

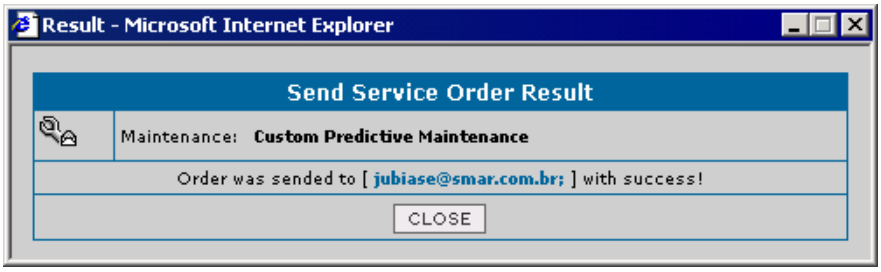



**Figure 8.7. Confirming the Service Order**

## 8.5 Searching for Maintenances

To search for a specific maintenance, click the link *Maintenances* > *Search* in the topology tree. The *Maintenance Search* page will be loaded:

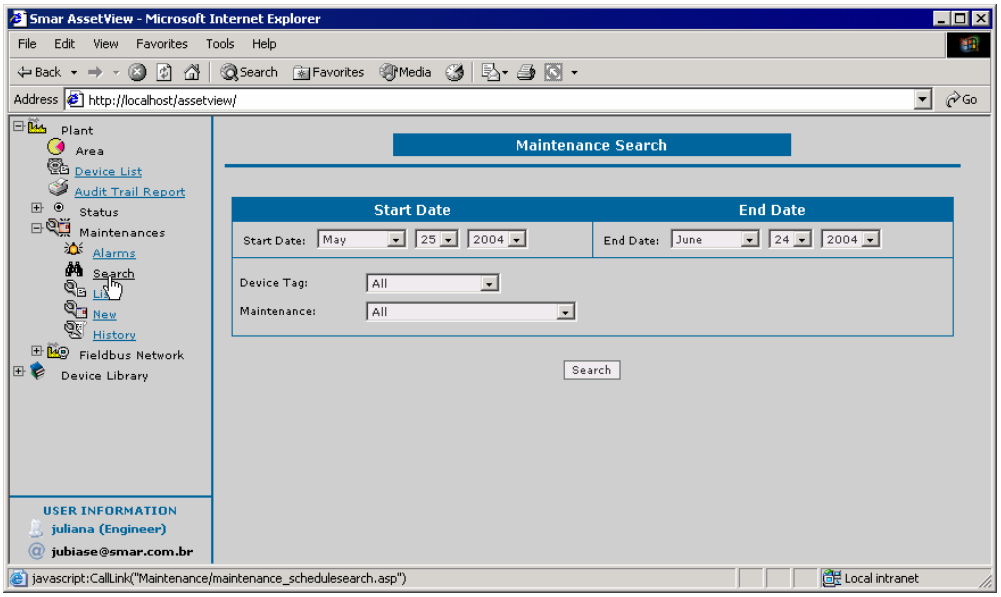



**Figure 8.8. Searching for Maintenances**

1. Select the starting date for the search in the field *Start Date*;
2. Select the ending date for the search in the field *End Date*;
3. In the field *Device Tag*, filter the tag of a specific device;
4. In the field *Maintenance*, filter the name of the maintenance defined by the user.
5. Click the button *Search* to view the results.

## *8.6 Opening the Maintenances History*

To list the maintenances that have been executed, click the link *Maintenances* > *History* in the topology tree. The *History Search* page will be loaded:

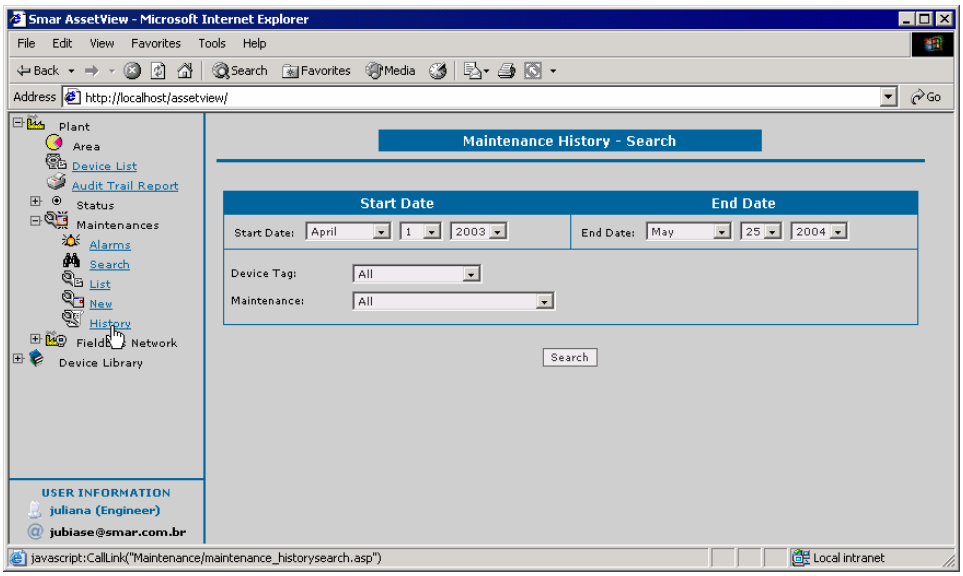



**Figure 8.9. Searching for the maintenances executed**

1. Select the starting date for the search in the field *Start Date*;
2. Select the ending date for the search in the field *End Date*;
3. In the field *Device Tag*, filter the tag of a specific device;

4. In the field *Maintenance*, filter the name of the maintenance defined by the user.
5. Click the button *Search* to view the results.

The page with the results for the search will be loaded:

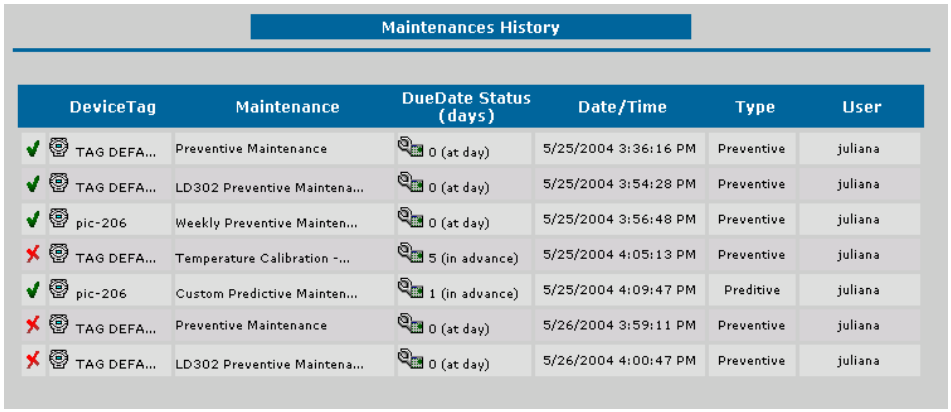



**Figure 8.10. Maintenances History**

The icon  in the first column indicates that the maintenance has been executed.

The icon  indicates that the maintenance has been removed.

## 8.7 Opening the Alarms List

To list the alarms that indicate the status of the scheduled maintenances, click the link *Maintenances* > *Alarms* in the topology tree. The page with the alarms list will be loaded:

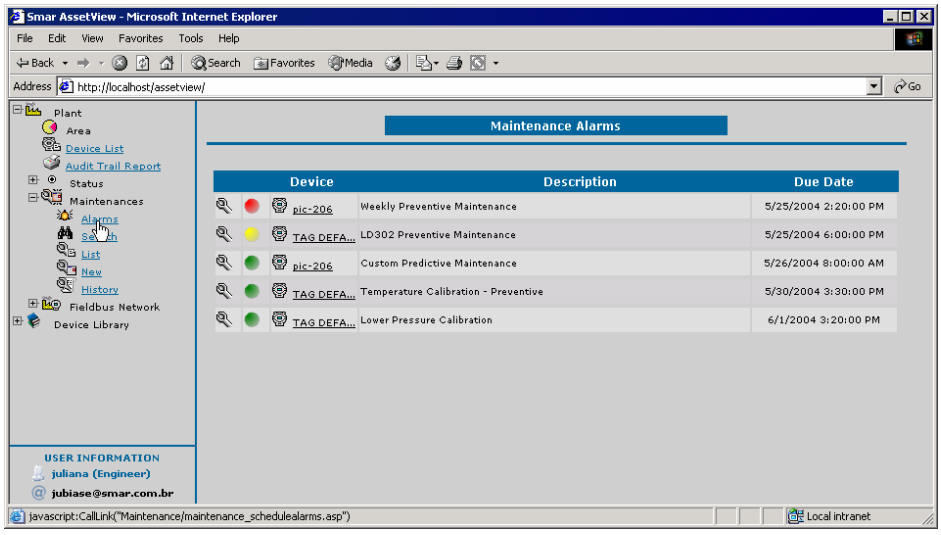



**Figure 8.11. Maintenance Alarms**

The color indicates the severity of the alarm:

 Indicates the maintenance should be executed in the near future.

 Indicates the deadline for the maintenance to be executed.

 Indicates the date of the maintenance has expired.

To register a maintenance, click the icon . The *Maintenance Registration* window will open:

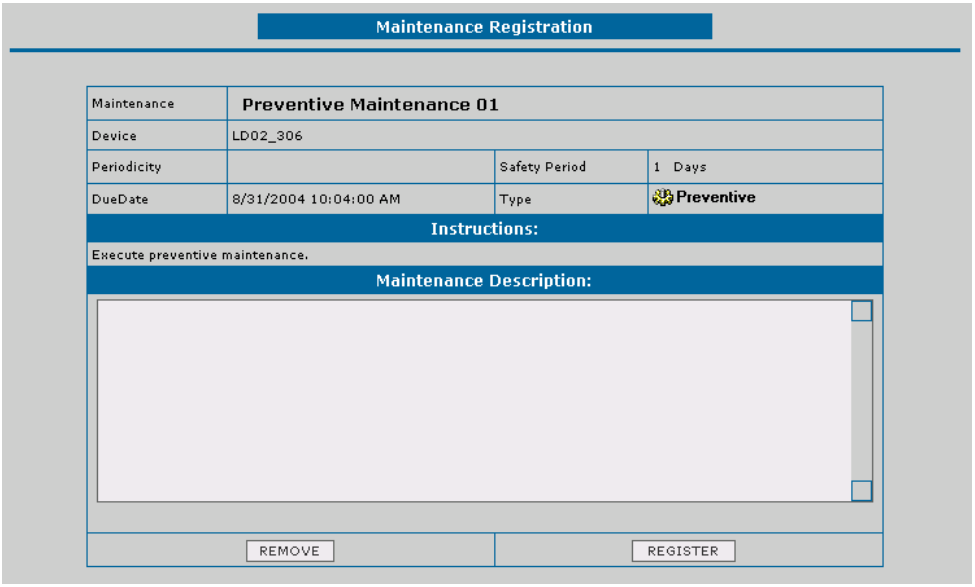



**Figure 8.12. Registering the Maintenance**

Type the description of the maintenance procedure executed and click the button *Register* to confirm that the maintenance has been executed.

To remove the scheduled maintenance, click the icon related to the maintenance and, in the *Maintenance Registration* window, type a brief explanation about cancelling the maintenance and click the button *Remove*.

# 9. DEVICE LIBRARY

The *Device Library* is a set of information provided by manufaturers related to the devices, such as users manuals, calibration procedures, preventive maintenance items, device-related diagrams and images, and notes.

Observe the example below:

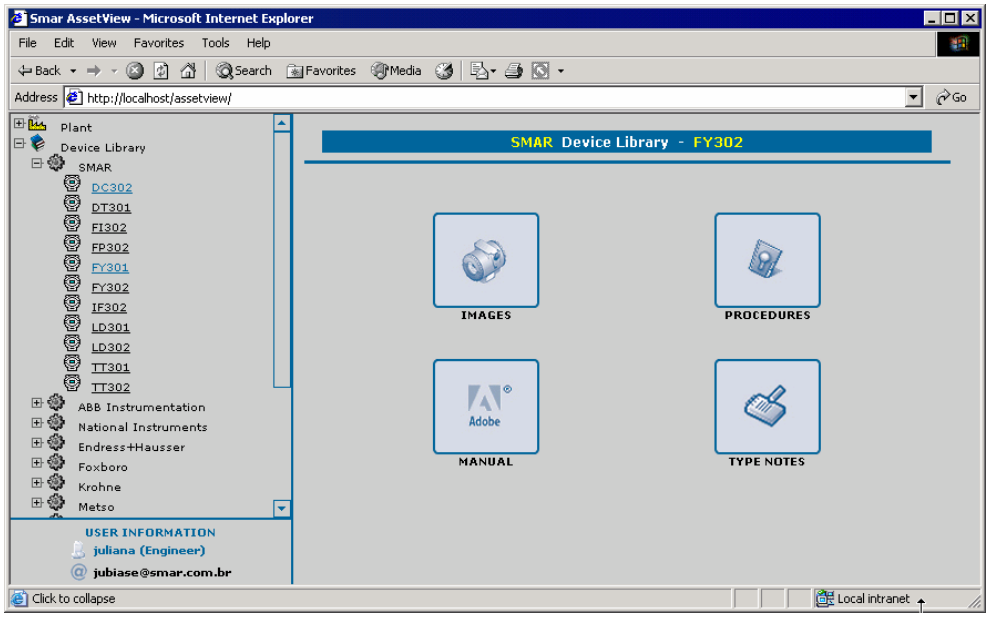



**Figure 9.1. Device Library Page**

Click the *Images* icon to open the folder that contains links to the diagrams and images of the device:

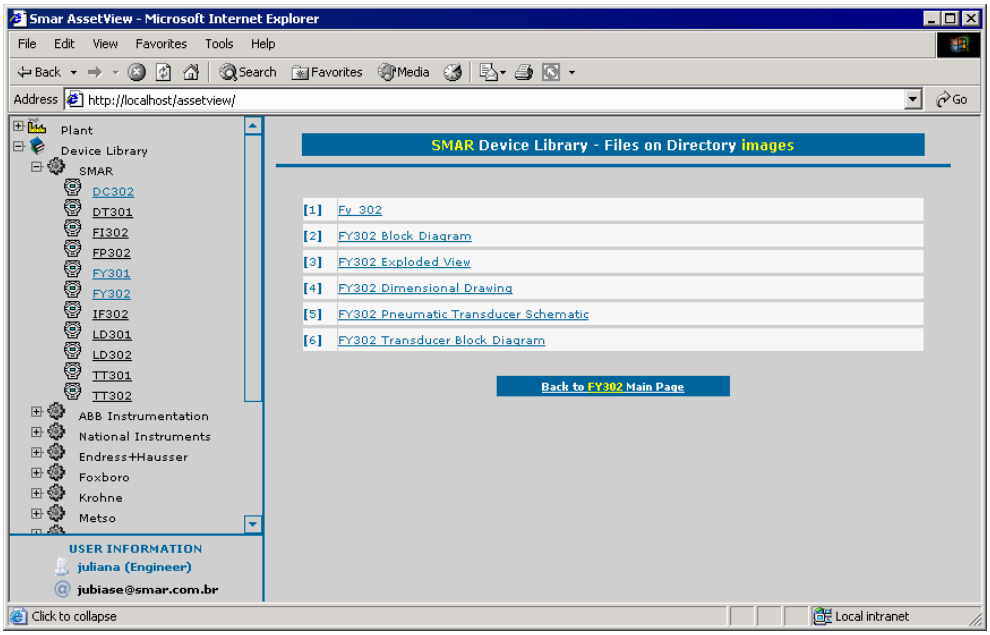



**Figure 9.2. Example of Device Images**

Click the *Manual* icon to open the folder that contains links to the documentation of the device:

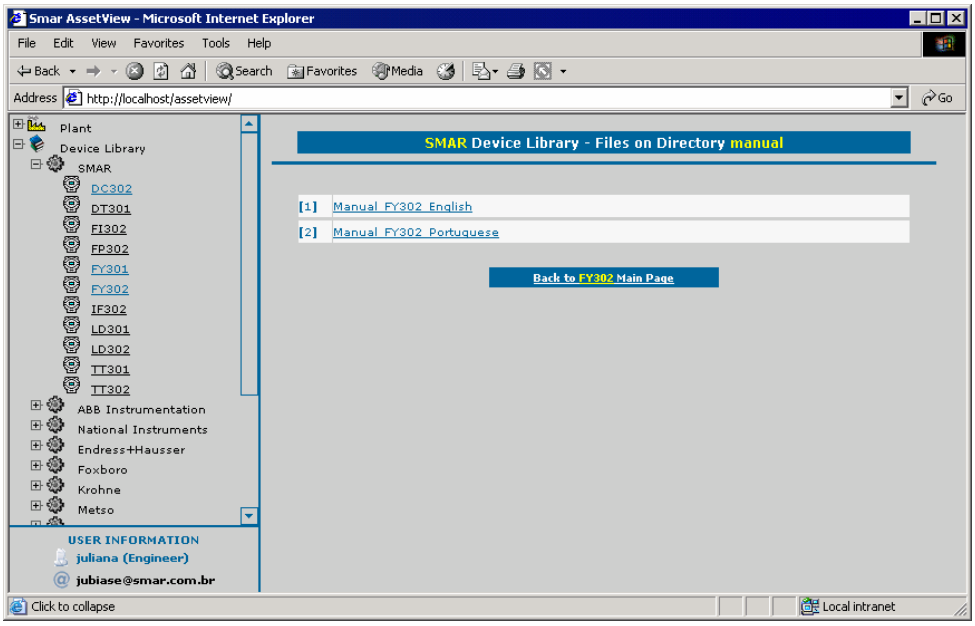



**Figure 9.3. Links to Manuals**

Click the *Type Notes* icon to open the list of notes for the device. See section *Managing Device Notes* for details.

## 9.1 Managing Device Notes

Navigate through the *Device Library* tree, browsing the manufactures and devices. Click a device icon to open the respective library page.

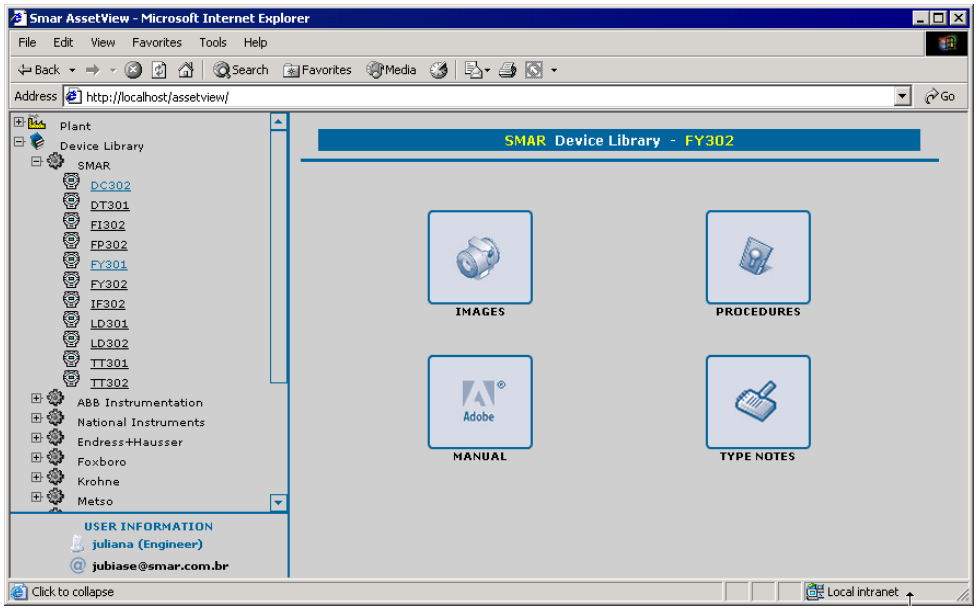



**Figure 9.4. Device Library Page**

Click the icon *Type Notes* to open the list of notes related to the device.

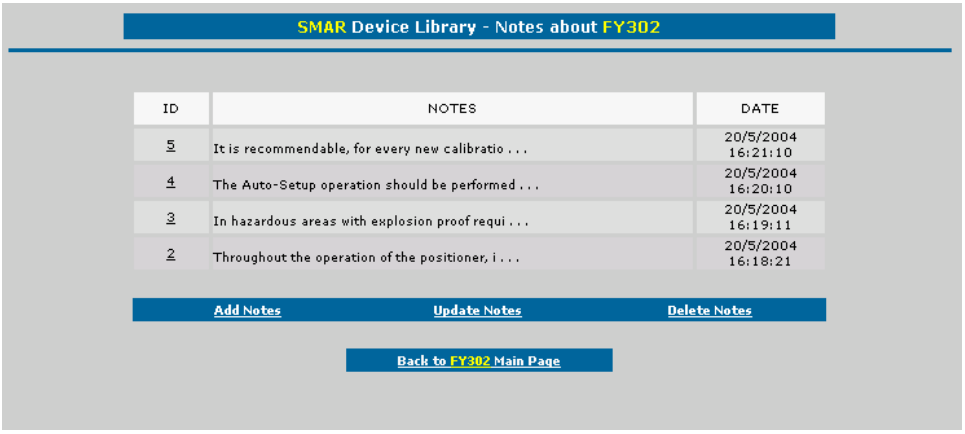



**Figure 9.5. Notes on the FY302**

### 9.1.1 Adding Notes

To add a note to a device, click the link *Add Notes* and the page below will appear.

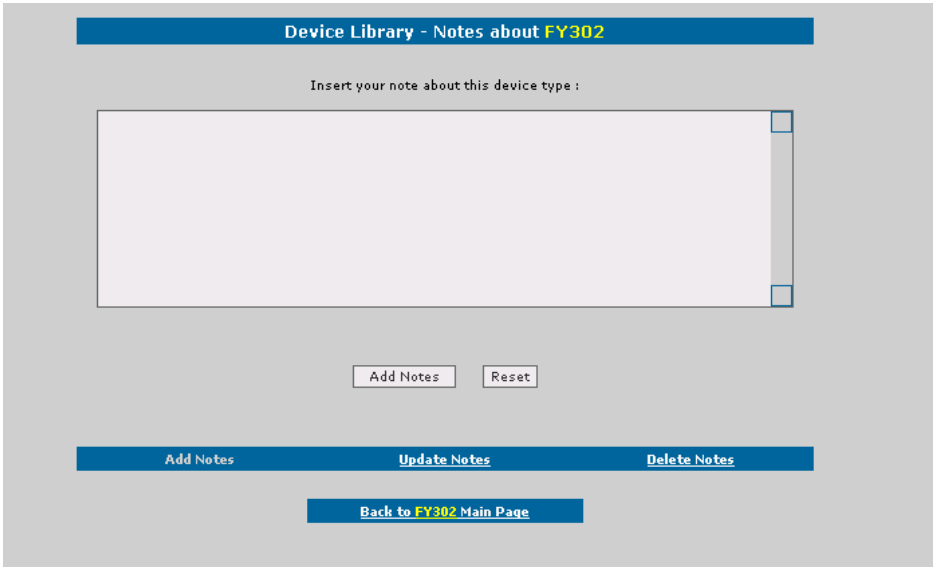



**Figure 9.6. Adding Notes**

Type the text and click the button *Add Notes*. The *Notes List* will be updated.

Click the number related to the note in the *ID* column to open a new window with the complete note text:

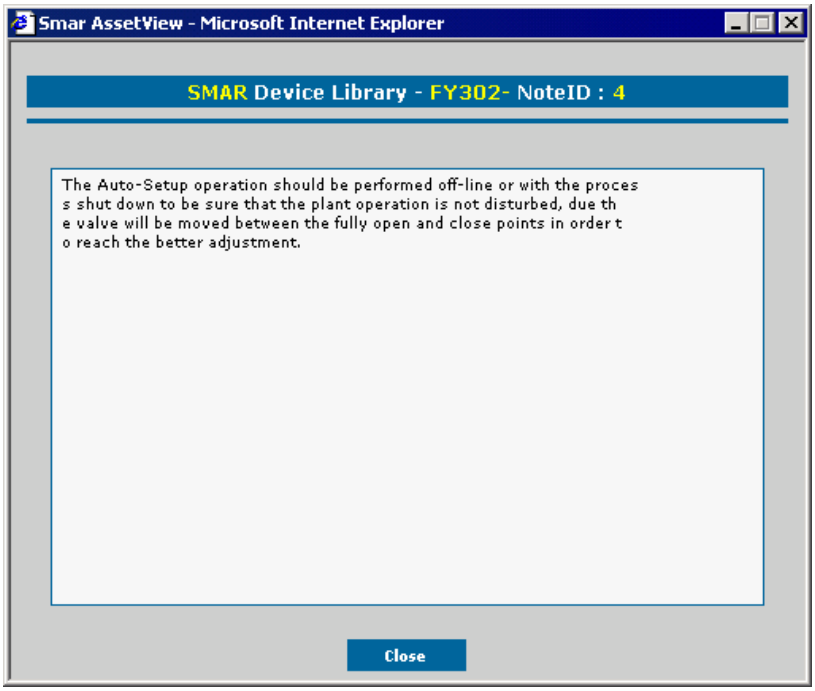



**Figure 9.7. Device Note**

### 9.1.2 Updating a Note

To update a note, click the link *Update Notes*. Select the note to be edited and click the button *Change*. The following page will appear:

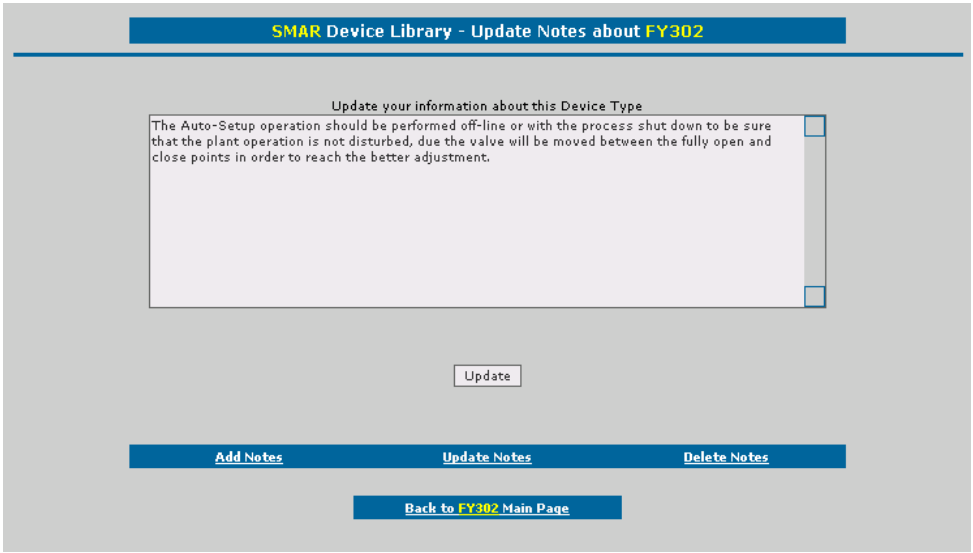



**Figure 9.8. Editing Notes**

Edit the text and click the button *Update* to apply the alterations.

### 9.1.3 Removing Notes

To remove a note, click the link *Delete Notes*. Select the note to be removed and click the button *Delete*.

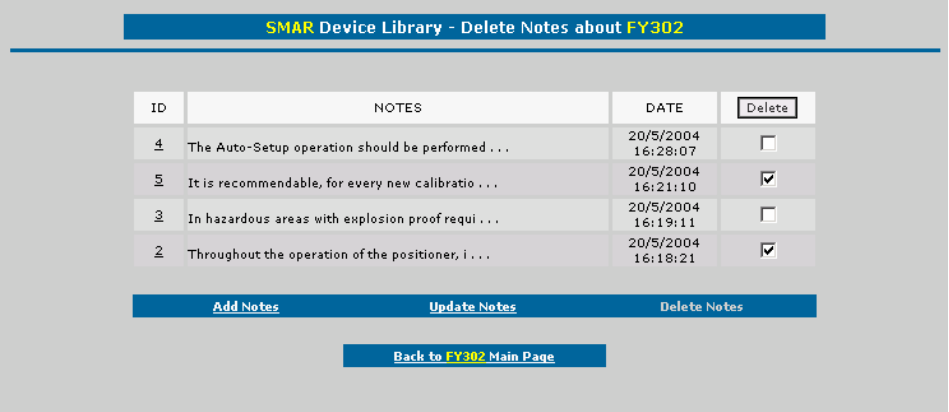



**Figure 9.9. Deleting Notes**

The user can select one or more notes to be deleted at the same time, checking the box in the *Delete* column related to the notes.

## 9.2 Creating Custom Folders

To create a custom folder for a specific device, open the Windows Explorer and locate the *AssetView* installation directory. The default path will be "`Program Files\Smar\Assetview\`".

In the directory "`Web Pages`", locate the folder "`DeviceLibrary\MANUFACTURERS`". This folder contains the manufacturers' folders that will be displayed in the topology tree of the *Device Library* in *AssetView*.

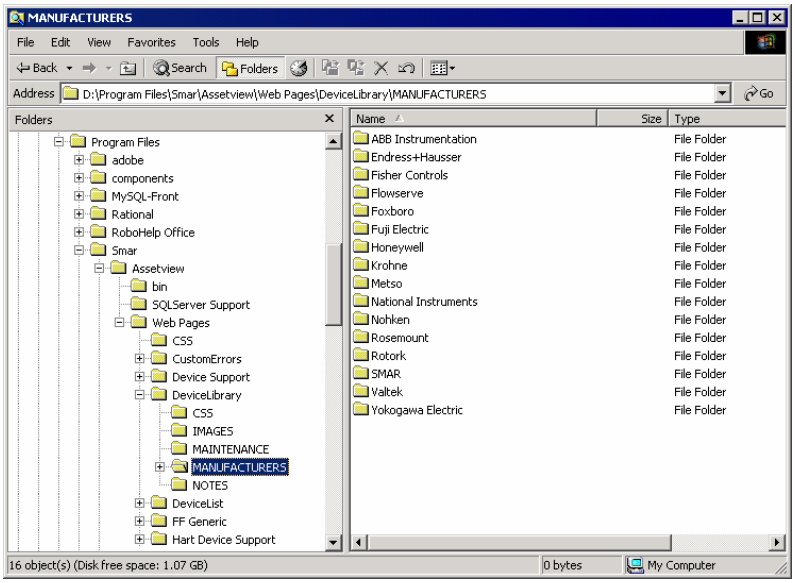



**Figure 9.10. Folder Structure fo the Device Library**

Select the directory of the device's manufacturer, open the device folder and create a new folder with the desired name. See the example below:

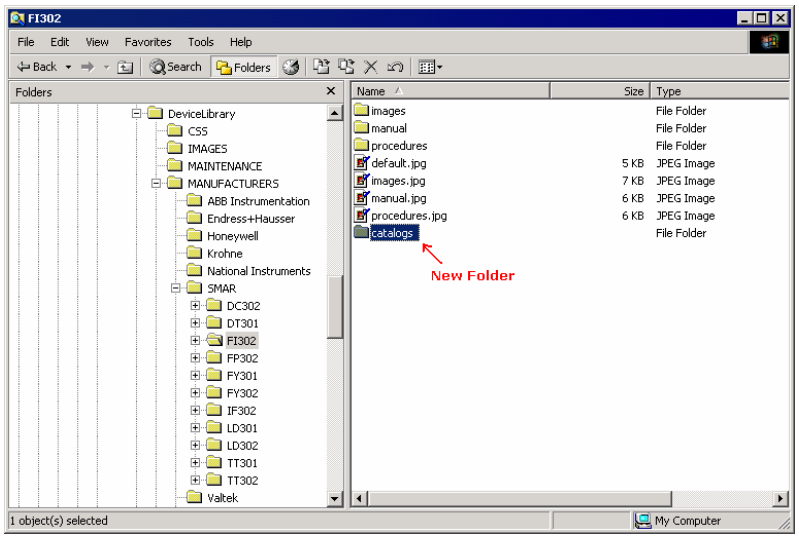



**Figure 9.11. Creating a new Folder**

If the user add a image with the same name of the folder created and the extension*.jpg*, this image will be used as the folder icon in the device's page at the *Device Library*. See the example:

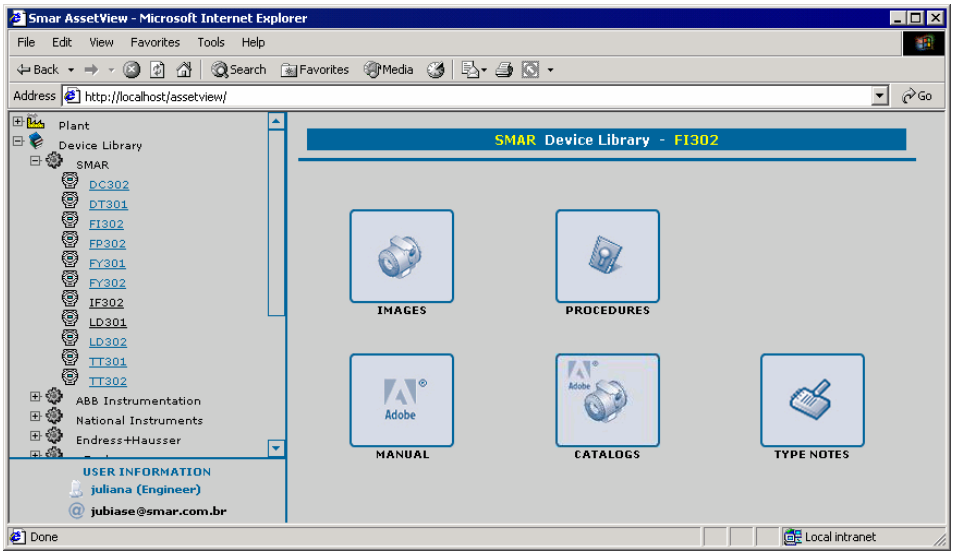


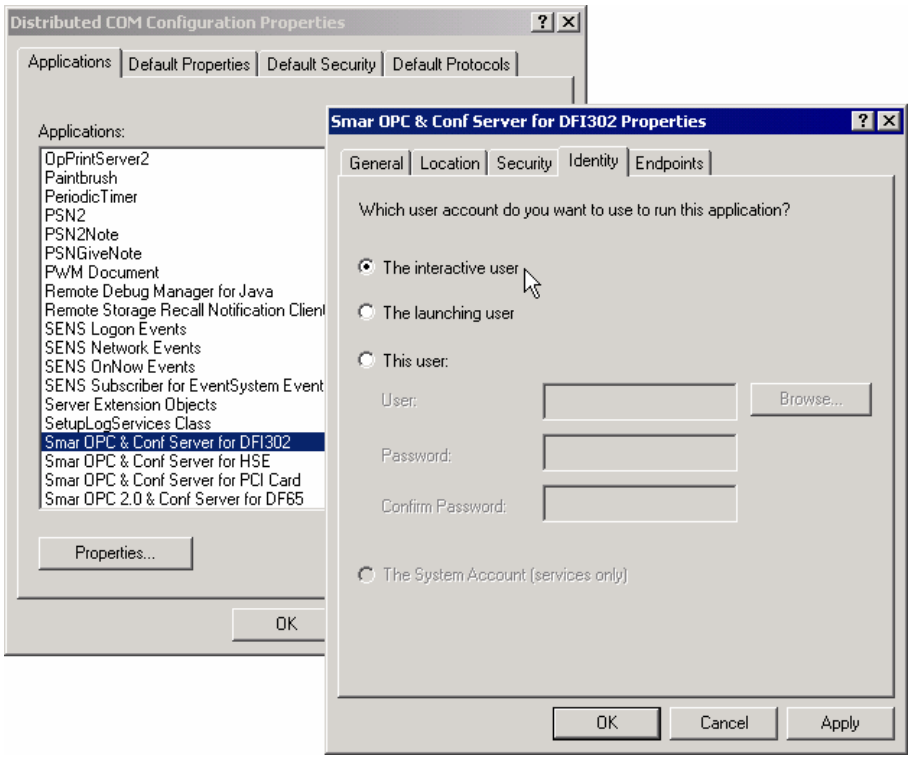

**Figure 9.12. Custom Folder in the Device Library**

| NOTE |
| --- |
| **If the user doesn't create a custom image for the new folder, the image *default.jpg* will be used as the icon of this new folder in the device page.** |

# 10. TROUBLESHOOT

1. ***AssetServer is monitoring the changes of the parameters (Tracking Activated). An online Web page from AssetView is requested and all fields in the page are blank, instead of showing the values. At the same time, the monitoring procedure (Tracking) stops.***

Run the *dcomcnfg* application, select the application "*Smar OPC & Conf Server for DFI302*" and click *Properties*. At the *Identity* tab, select the option ***The Interative User***. Click *Ok* to conclude.




2. ***When plotting charts, the plotting area starts flickering and no image is displayed.***

The user must restart the *Internet Information Server*:

- Click Start > Settings > Control Panel > Administrative Tools > Internet Services Manager.
- Right-click the machine name and click the option Restart IIS. Select Restart Internet Services on <machine name> from the drop-down menu and click Ok.
- Wait until this procedure is concluded and try plotting the charts again.

3. ***The database selected is MS SQL Server and the following error message appears when opening a Web page from AssetView:***
   ***Error Type:***
   ***SmarAssetDLL (0x80040E4D)***
   ***Method '~' of object '~' failed***
   ***/Hart Device Support/62/03/144/144diagnostic.asp. line 91***

Refer to the section *Database Configuration* > *Using SQL Server*. When configuring the **Client Side**, in the *Connection* tab of the *Data Link Properties* dialog box, make sure the ***AssetView*** database is selected in the item 3. Also, the option ***Use a specific user name and password*** must be selected in the item 2 at the *Connection* tab, where ***SA*** is the user name.

***4. When trying to execute a operation in the page, the following error message appears:***


The user logged probably doesn't belong to the *Engineers* group. Refer to the section *User Management* in the *AssetView Server*.

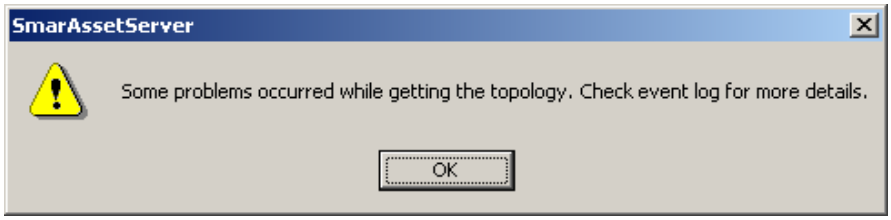
**IMPORTANT!** If the user belongs to a **domain**, the group *Engineers* must exist in the domain server and the user must be added to this group to perform specific operations.

***5. When trying to select a HART device that is not generic (that means the device has its own Web page, such as the FY301) to be registered, the following error message appears:***


This message occurs because the system was not able to read the *Device Type* from the HART device, for example because of bad communication.

Click *No* and then click *Ok* to close the *List of Devices* dialog box. On the *Standard* menu of the *AssetServer* window, click the option *Register* again.

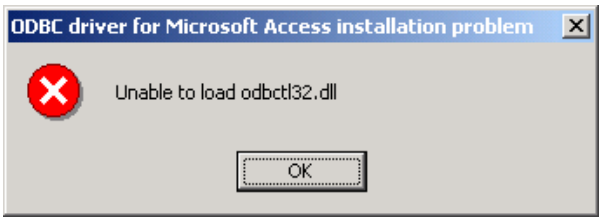
***6. When trying to start tracking the devices, the following error message appears:***




This message occurs because *AssetView* reads the online information from all of the blocks during the tracking procedure. If the communication with the blocks fails, the process will be halted by this error message.

Open the topology in the SYSCON application, and make sure the registered devices and the respective blocks are communicating properly. Then, try tracking the devices again.

***7. When trying to start the Asset Server after the installation, the following error message appears:***




This message occurs if *Windows* is not installed in the drive C and the version of the *SYSTEM302* is older than 6.1.3.3.

If the user is running the *Asset Server* with **Windows 2000**, click *Start* > *Settings* > *Control Panel* > *Administrative Tools* > *Data Sources (ODBC)*.

If the user is running the *Asset Server* with **Windows NT**, click *Start* > *Settings* > *Control Panel* > *ODBC*.

The *ODBC Data Source Administrator* dialog box will open. Click the tab *System DSN* and double-click the *Asset View* data source name to open the dialog box. Click the *Select* button and locate the file **AssetView.mdb** in the folder "`<SYSTEM302 Installation Path>\AssetView\Database\`".

Click *Ok* and close the *ODBC Data Source Administrator* dialog box.

***8. When trying to open the AssetView main page, the following error message appears: "The page cannot be found".***

The *Virtual Diretories* of the *AssetView* might not have been created correctly during the installation.

Refer to the **Appendix B** for specific information about the *Virtual Diretories*.

***9. The Device icon in the Tracking Result window doesn't have its normal state recovered after the communication is restored.***

Close the *Tracking Result* window and open it again by clicking *View* > *Tracking Result* on the main menu, or simply pressing **Ctrl + L**, on the keyboard.

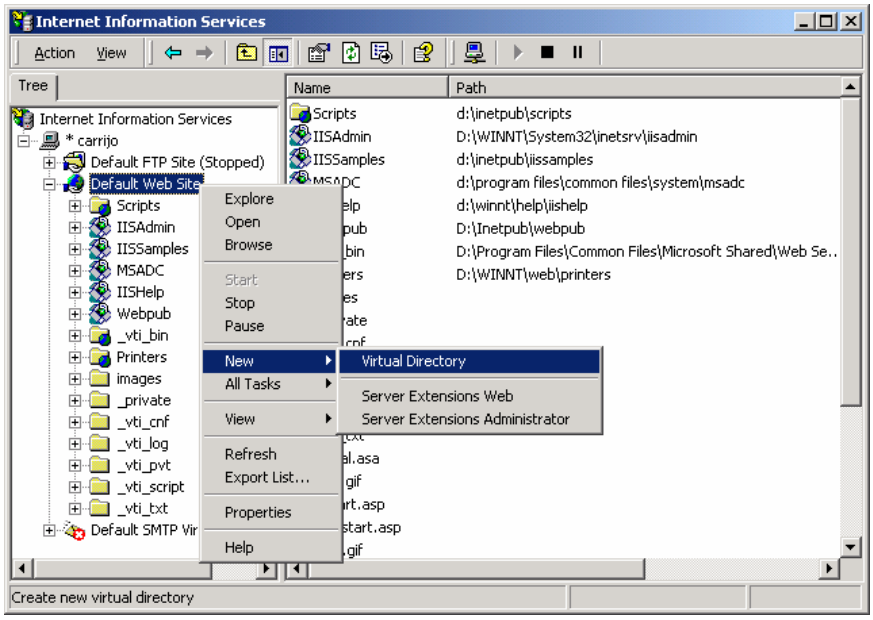
# A. ASSETVIEW VIRTUAL DIRECTORIES

## Creating the Virtual Directories

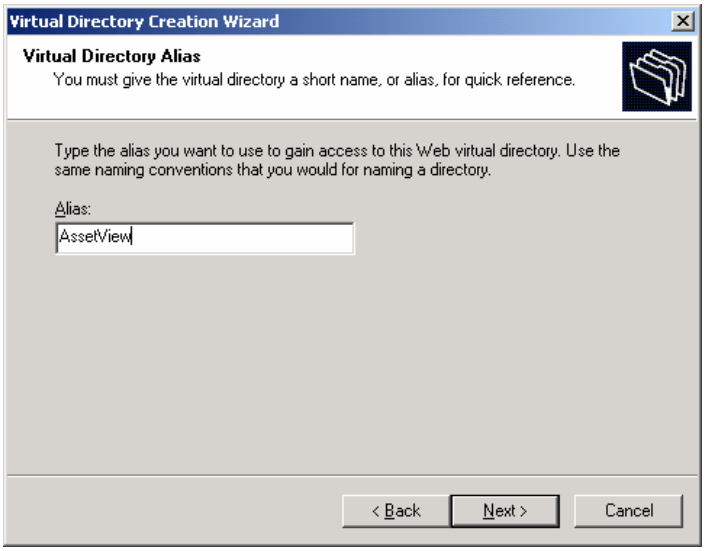
If the virtual directories were not created during the *SYSTEM302* installation, it will be necessary to create them according to the procedure described below.

Click *Start* > *Settings* > *Control Panel* and double-click *Administrative Tools*. Start the *Internet Services Manager*. The *Internet Information Services* window will open.

Expand the directory tree of the server machine and right-click the *Default Web Site* directory. Select *New* > *Virtual Directory*.

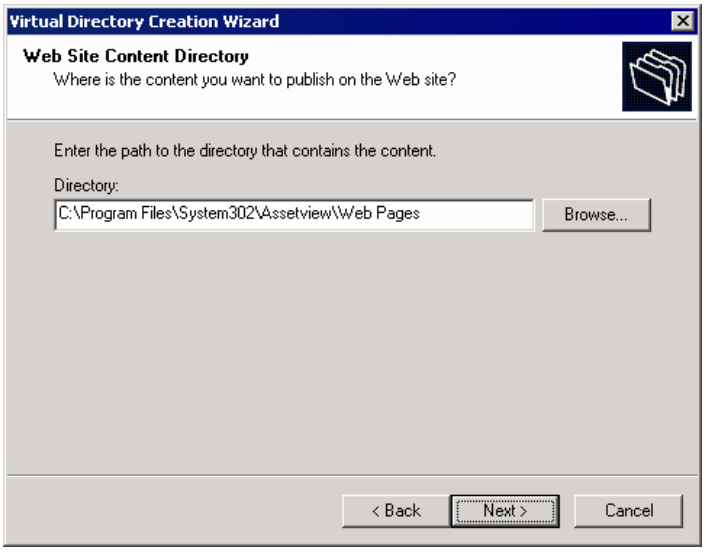



The *Virtual Directory Creation Wizard* dialog box will open. Click *Next* and type the name ***AssetView*** to create the virtual directory. Click *Next*.

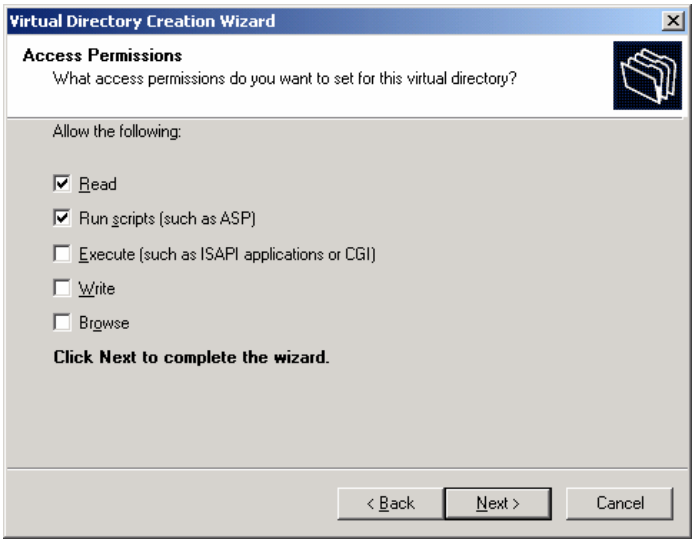


To select the path of the new virtual directory, click *Browse* and got to the *SYSTEM302* installation folder, at "**`../Program Files/System302/`**".

Select the folder "**`AssetView/Web Pages`**". Click *Ok*.




On the following dialog box, select the options *Read* and *Run scripts (such as ASP)*.



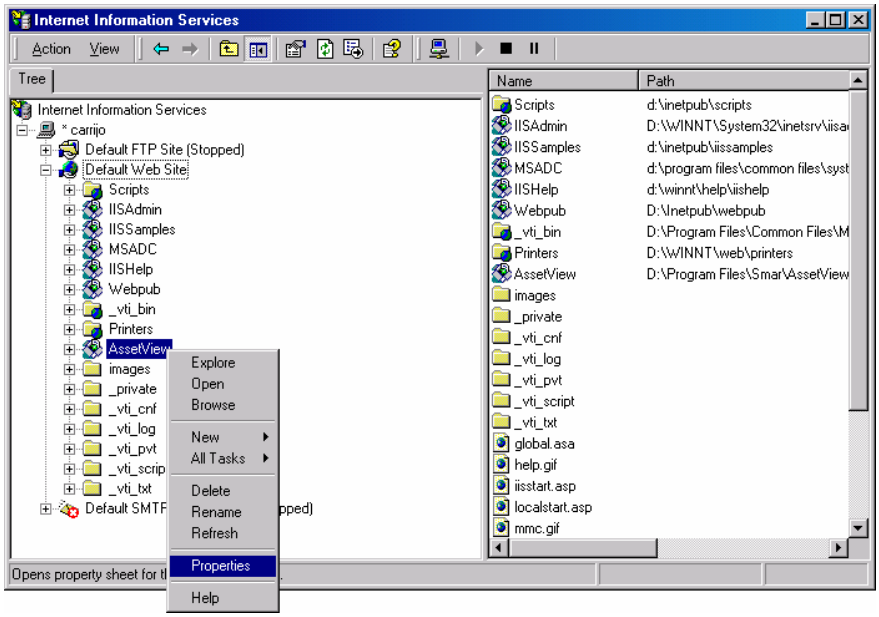

Click *Finish* to conclude this task.

At the *Internet Information Services* window, check if the virtual directory was created.

Once the virtual directory is created correctly, it will be necessary to configure the properties of the virtual directory according to the section below.

# *Configuring the Properties of the Virtual Directories*

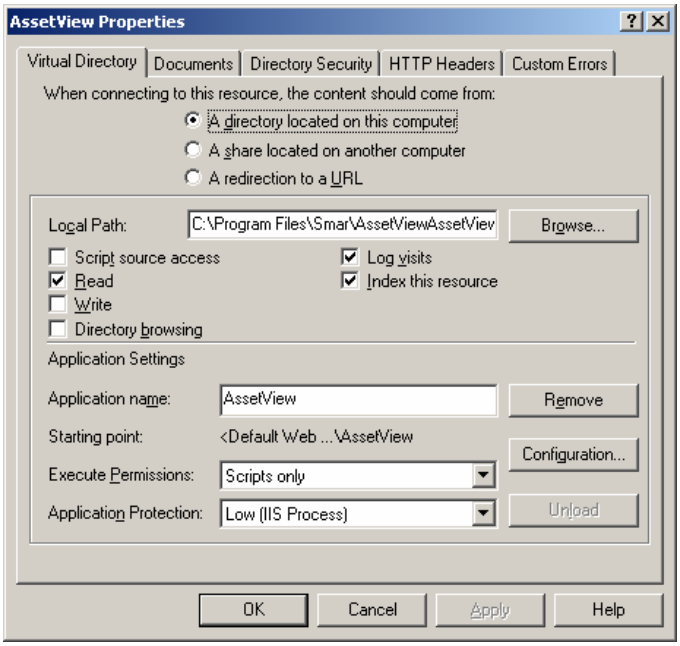
At the *Internet Information Services* window, expand the directory tree of the *Default Web Site* directory. Right-click the *AssetView* virtual directory and select *Properties* from the menu.



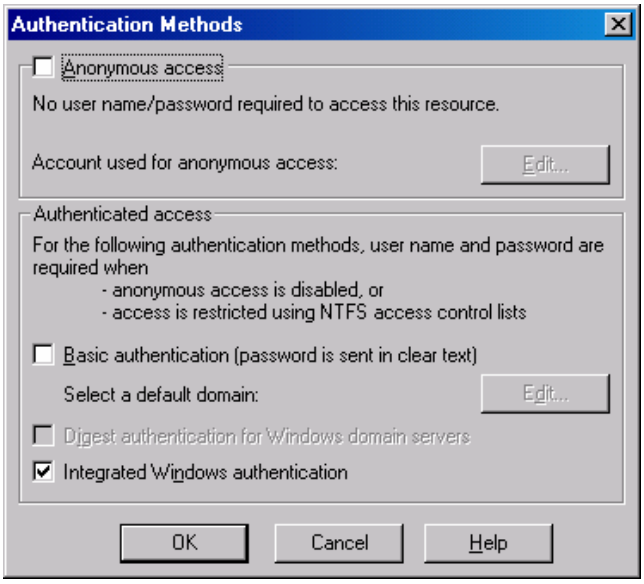

The *AssetView Properties* dialog box will open. At the *Virtual Directory* tab, select all of the options in the *Local Path* rectangle.

In the *Application Settings* rectangle:

- Click *Create* and type *AssetView* in the *Name* box.
- Select *Low (IIS Process)* in the *Application Protection* box.




At the *Directory Security* tab, click *Edit* in the *Anonymous Access and Authentication Control* rectangle. Check that the *Anonymous access* option is not selected.




Click *OK* to close the dialog box and close the *AssetView Properties* dialog box.

# B. ASSETVIEW DATABASE BACKUP PROCEDURES

Use the *AssetView Backup* application to backup the *AssetView* database. The *AssetView Backup* is easy to execute, and it can be used with the SQL Server or the MSDE database.

The *AssetView Backup* must be located in the same directory of the file "*SmarAssetServer.exe*", because these applications use the same connection ("*Assetview.udl*").

It is recommended to run the *AssetView Backup* application in the machine where the database server is installed. Even if the *AssetView Backup* is executed in a remote machine, the backup will be saved in the machine where the database server is installed.

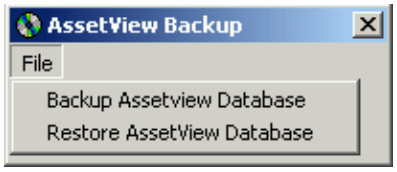
**Attention:**

- Store the backup files in a secure place. It is recommended to save three copies of each backup file and store them in different locations.
- Execute the backup procedure on regular intervals.
- Define a reasonable period of time to store old backup versions.

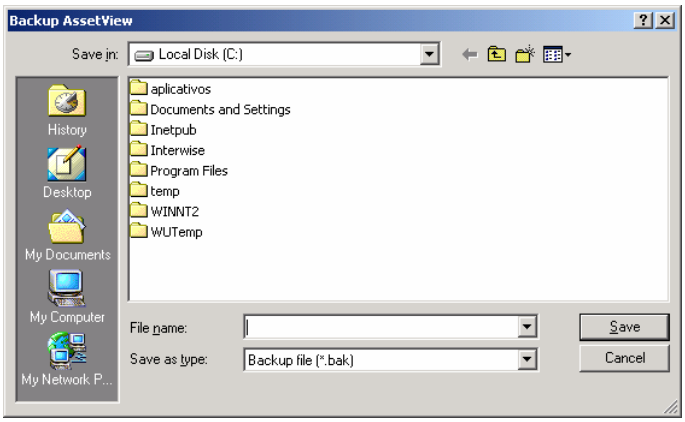
| IMPORTANT |
| --- |
| **Before executing the *AssetView Backup*, make sure that the *Asset Server* is not being executed and the *AssetView* pages are not open.** |

## Creating the Backup File

1. Locate the folder "`\AssetView\bin`" in the *AssetView* installation directory and execute the *AssetView Backup* application. The window below will open:




2. Select the option *Backup AssetView Database*. The *Backup AssetView* dialog box will open:



3. Select the folder where the backup file will be saved and type the name for the file.

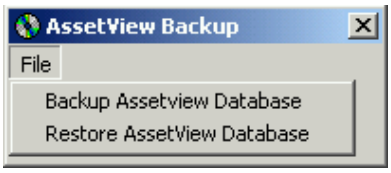
4. Click *Save* to conclude.

## *Restoring the Database*

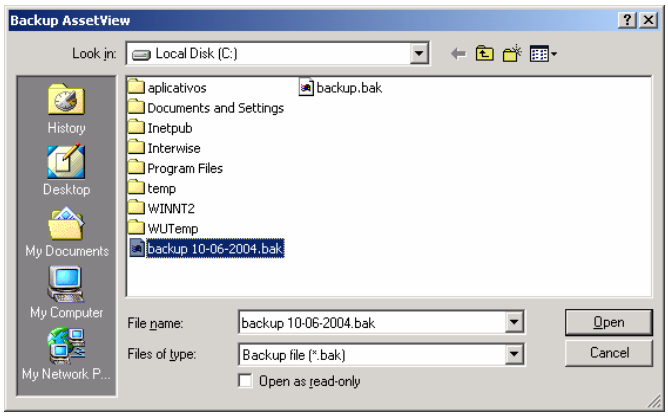
1. Make sure that the *Asset Server* is not being executed and the *AssetView* pages are not open;

2. Create a new database for *AssetView*;

3. Locate the folder "`\AssetView\bin`" in the *AssetView* installation directory and run the application *AssetView Backup*. The window below will open:




4. Select the option *Restore AssetView Database*. The *Backup AssetView* dialog box will open:




5. Select the icon of the backup file that will be restored and click *Open* to conclude.

# C. ASSETVIEW & FY302

## FY302 Home Page

The figure below shows the ***FY302*** initial page and links:

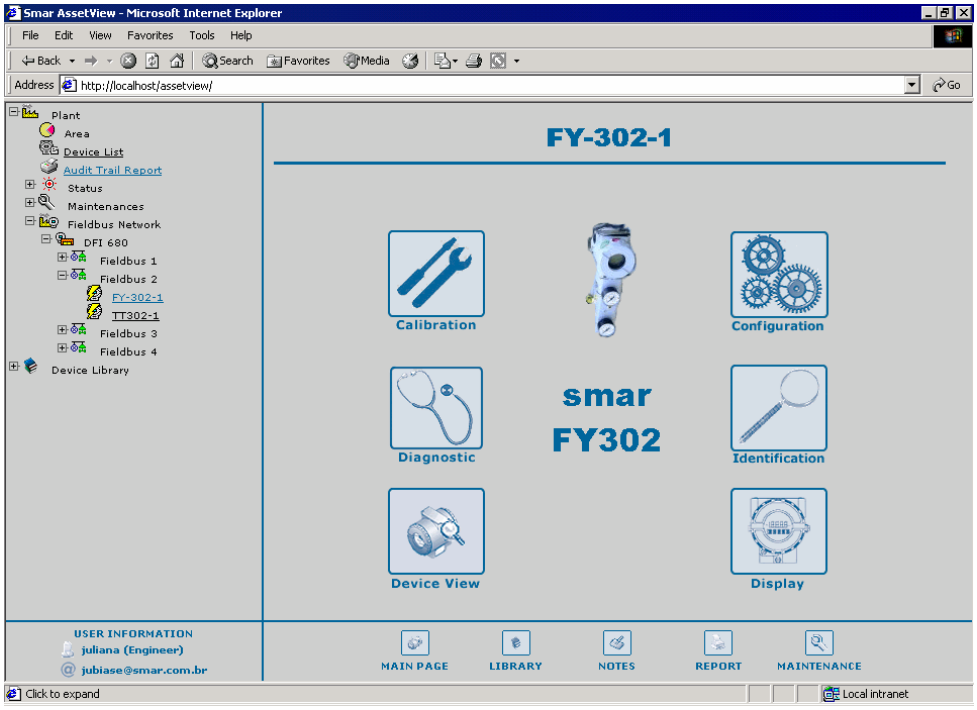



**Figure C.1**

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

## FY302 Identification Page

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

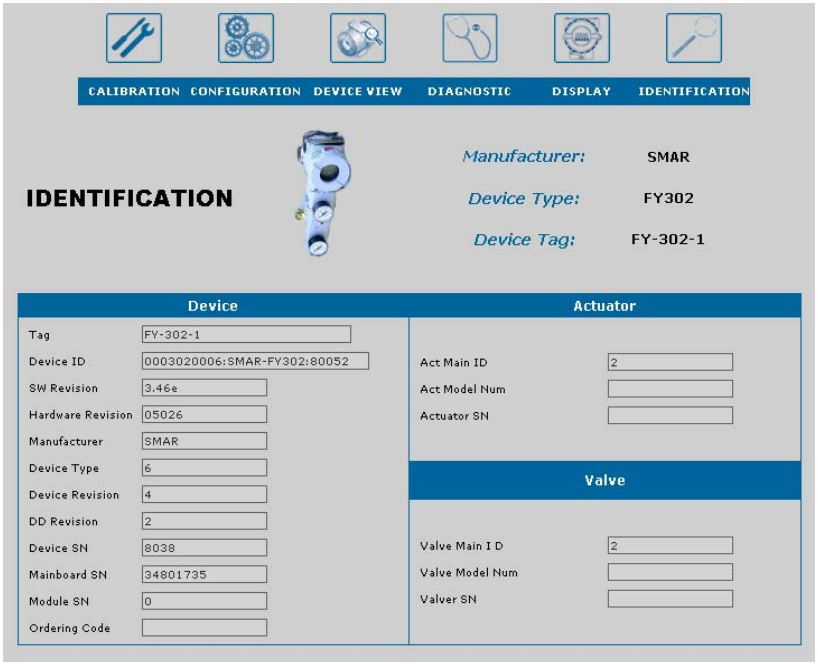



**Figure C.2**

### *Device*

| | |
|---|---|
| **TAG** | indicates the tag associated to the positioner in the physical plant. The tag can use up to 32 characters. |
| **DEVICE ID** | indicates the identification code of the positioner. This code can use up to 32 characters. |
| **SW REVISION** | indicates the software revision of the positioner. |
| **HARDWARE REVISION** | indicates the hardware revision of the positioner. |
| **MANUFACTURER** | identifies the positioner manufacturer. |
| **DEVICE TYPE** | identifies the type of the positioner for a specific manufacturer. |
| **DEVICE REVISION** | indicates the revision of the positioner. |
| **DD REVISION** | indicates the revision of the DD. |
| **DEVICE SERIAL NUMBER** | indicates the serial number of the positioner. |
| **MAINBOARD SERIAL NUMBER** | indicates the serial number of the main board. |
| **MODULE SERIAL NUMBER** | indicates the serial number of the positioner transducer module. |
| **ORDERING CODE** | indicates the ordering code of the positioner. |

### *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 serial number of the actuator. |

### *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 serial number of the valve. |

## *FY302 Configuration Page*

There are a few parameters in the FY302's transducer block that can be used in the predictive and proactive maintenance. Some of them can be read online, while other parameters requires 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 setpoint.

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 C.3**

### *Device Operation Mode*

Indicates the operation mode for the device:

| | |
|---|---|
| **OOS** | if this mode is selected, the value of the parameter *Mode Block* will be *Out of Service* for the *Resource*, *Transducer* and *Analog Output* blocks. |
| **AUTO** | if this mode is selected, the value of the parameter *Mode Block* will be *Auto* for the *Resource*, *Transducer*, *Display* and *Analog Output* blocks. |
| **MAN** | if this mode is selected, the value of the parameter *Mode Block* 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. |

### *Deviation Alert*

| | |
|---|---|
| **DEVIATION ENABLED** | enables checking the difference between the current valve position and the desired set point. If the difference exceeds the dead band for more than a given period of time, an alert will be generated and will remain active until this difference decreases. |
| **DEVIATION TIME** | set a period of time (in seconds). The valve must exceed the dead band during this period of time before generating the 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 period of time. |

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

### *Reversal Alert*

**REVERSAL:** indicates the number of times that the valve changes the direction according to the movement. The reversal total is incremented when the valve changes the direction and the movement total exceeds the specified limit.

| | |
|---|---|
| **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. |
| **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 increment the reversal total. |

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


**Figure C.4**

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

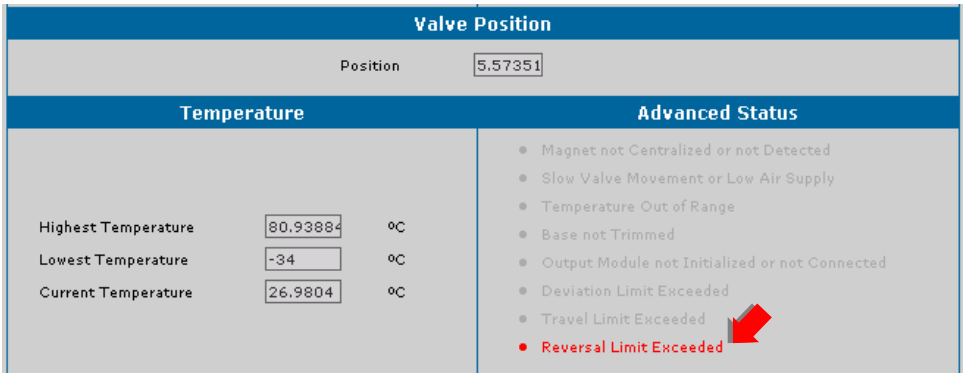



**Figure C.5**

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):** indicates the equivalent number of full strokes. The travel is incremented when the number of changes exceeds the dead band value. It is used to indicate diaphragm replacement and actuator 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 increment 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.

| | |
|---|---|
| **SENSOR PRESSURE IN HIGH LIMIT** | indicates the limit of the maximum input pressure. |
| **SENSOR PRESSURE IN LOW LIMIT** | indicates the limit of the minimum input pressure. |

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

### *Travel Control*

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

| | |
|---|---|
| **CHARACTERIZATION TYPE** | characterization type of the valve.<br>▪ LINEAR: the real position will be represented as a linear chart with the desired position.<br>▪ TABLE: the user can characterize the real positions according to its application.<br>▪ EP25, EP33, and EP50: the EP (Equal Percentage) curves provide a larger travel only for wide set point variation.<br>▪ 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*.

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

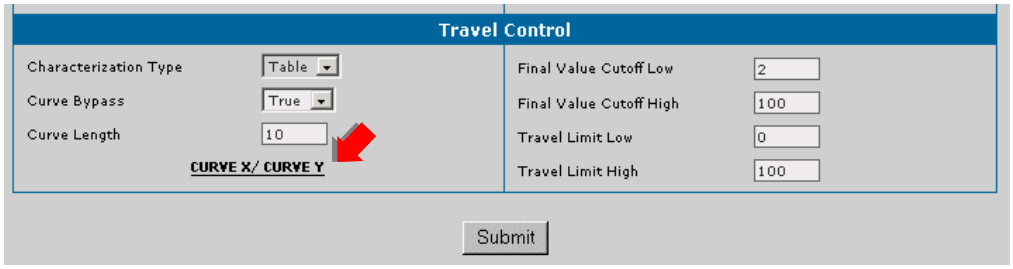



**Figura C.6**

The table with the points will open:

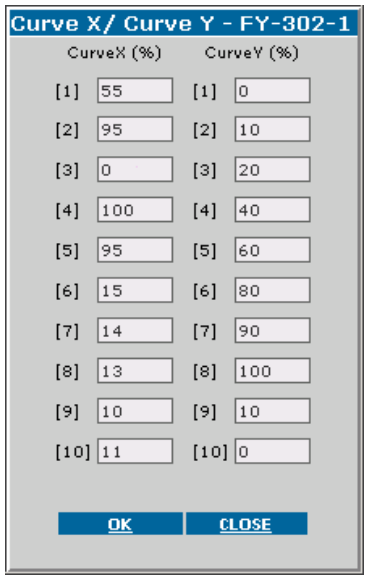



**Figura C.7**

Type the points of the curve and click *Ok* to send the values to the device. Click *Close* to close the table and return to the configuration page.

## *FY302 Diagnostics Page*

This page displays the device status.

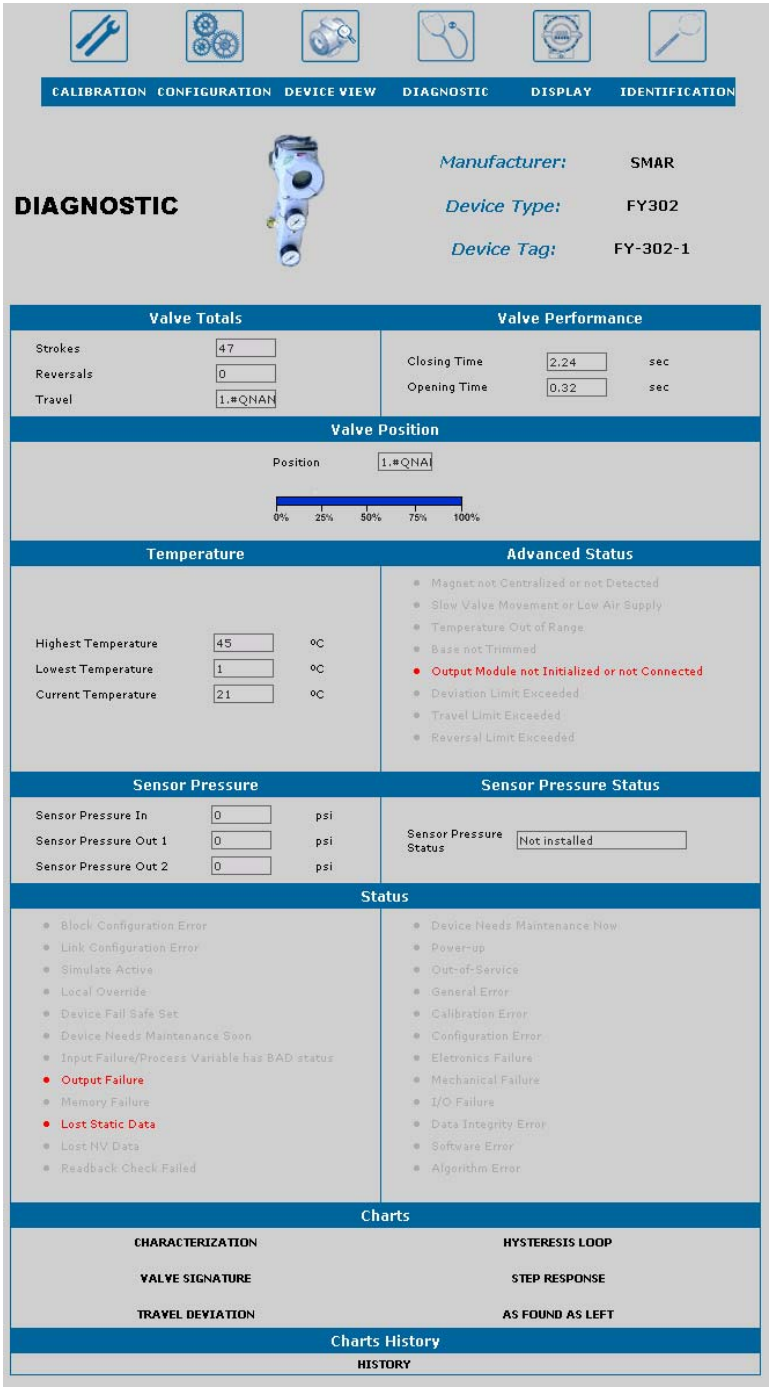



**Figure C.8**

## *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 reversal total is incremented 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 incremented when the number of changes exceeds the dead band value. It is used to indicate diaphragm replacement and actuator overhaul. |

### *Valve Performance*

| | |
|---|---|
| **CLOSING TIME** | indicates the period of time (in seconds) that the valve takes to go from fully open 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 period of time (in seconds) that the valve takes to go from fully closed to fully open. 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 temperature sensor of the positioner. |
| **LOWEST TEMPERATURE** | indicates the lowest temperature value measured by the temperature sensor of the positioner. |
| **CURRENT TEMPERATURE** | indicates the temperature value measured by the temperature sensor of the positioner. |

### *Advanced Status*

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

| | |
|---|---|
| **MAGNET NOT CENTRALIZED OR NOT DETECTED** | automatic alarm. |
| **SLOW VALVE MOVEMENT OR LOW AIR SUPPLY** | automatic alarm. |
| **TEMPERATURE OUT OF RANGE** | automatic alarm. |
| **BASE NOT TRIMMED** | automatic alarm. |
| **OUTPUT MODULE NOT INITIALIZED OR NOT CONNECTED** | automatic alarm. |
| **DEVIATION LIMIT EXCEEDED** | this alarm indicates the *Deviation Limit* configured in the configuration page. |
| **TRAVEL LIMIT EXCEEDED** | this alarm indicates the *Travel Limit* configured in the configuration page. |
| **REVERSAL LIMIT EXCEEDED** | this alarm indicates the *Reversal Limit* configured in the configuration page. |

Highlighted fields indicate the current diagnostic condition.

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

| | |
|---|---|
| **BLOCK CONFIGURATION ERROR** | indicates the error status of the hardware and software components associated with the block. |
| **LINK CONFIGURATION ERROR** | indicates the error status of a link. |
| **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** | the internal diagnostic according to the user configuration or device internal checkup has detected that the device will need maintenance soon. |
| **INPUT FAILURE/PROCESS VARIABLE HAS BAD STATUS** | the 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 checkup 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 reading the read back value. This could be caused by a hardware failure. |
| **DEVICE NEEDS MAINTENANCE NOW** | the internal diagnostic according to the user configuration or device internal checkup has detected that the device needs maintenance. |
| **POWER UP** | indicates that the device has finalized a power up 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 calibration of the device or a calibration error has been detected during the operation of the device. |
| **CONFIGURATION ERROR** | an error occurred during the configuration of the device or a configuration error has been detected while operating of the device. |
| **ELECTRONIC FAILURE** | an electronic component has failed. |
| **MECHANICAL FAILURE** | a mechanical component has failed. |
| **I/O FAILURE** | an I/O failure has occurred. |
| **DATA INTEGRITY ERROR** | indicates that data stored in the system may be no longer valid, for example, 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 could have been caused by an improper interruption of a service routine, an arithmetic overflow, a watchdog timer, etc. |
| **ALGORITHM ERROR** | the algorithm used in the transducer block generated an error. This could be due to an overflow, data reasonableness failure, etc. |

### *Charts*

**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 parameters of the positioner in the *Calibration* page, such as the Servo_Gain and the Servo_Reset, according to the application tuning and the dynamic response of the positioner (under and overshoot performance).

This chart benefits the preventive and predictive maintenance because the user can save the curves and compare them later.

When this chart 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 to manual. Open and close movements may interfere in the process.

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

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

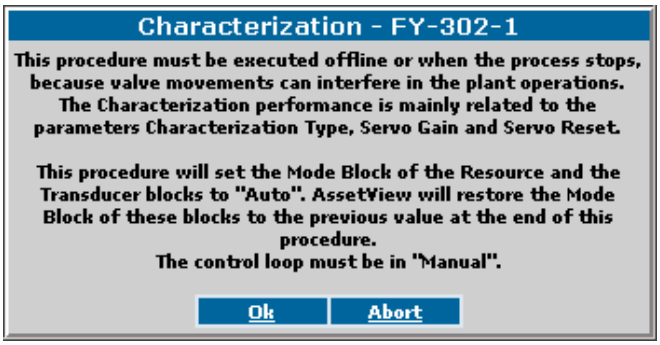



**Figure C.9**

The process starts when the user clicks *OK*.

The characterization chart is drawn with the AO Block XD_Scale set from 0 to 100%. The value of the AO Mode Block must be *Manual*. The message shown below appears if the AO Block XD_Scale is not from 0 to 100%, or the AO Mode Block parameter is not in *Manual*. At the end of this process, *AssetView* will restore the scale values.

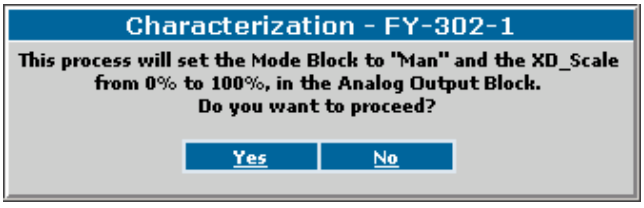



**Figure C.10**

Click *Yes* to open the window where the user will configure the delay time to get the desired position and also the time out for the graphic interface to get a valid data response from the device. If the graphic interface does not receive the data information during this time, a message to abort the procedure will appear.

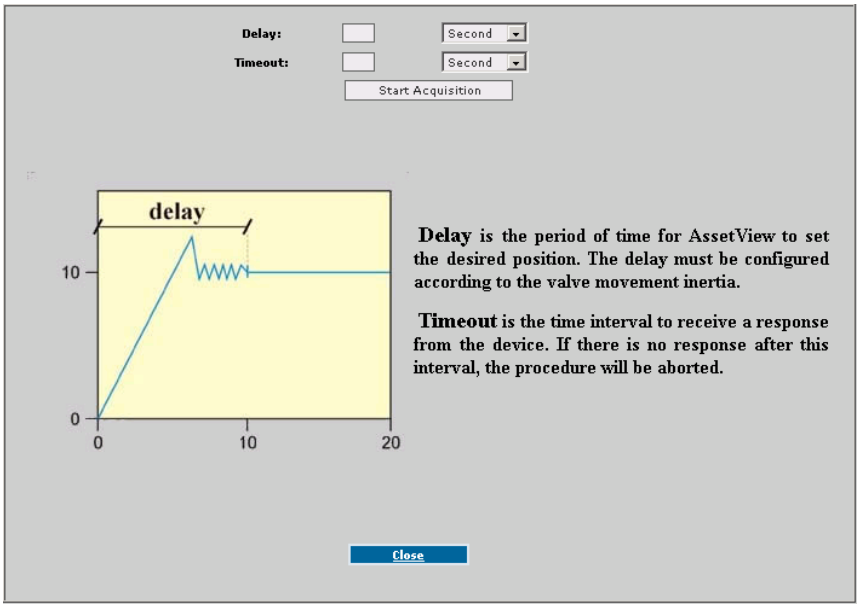



**Figure C.11**

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.

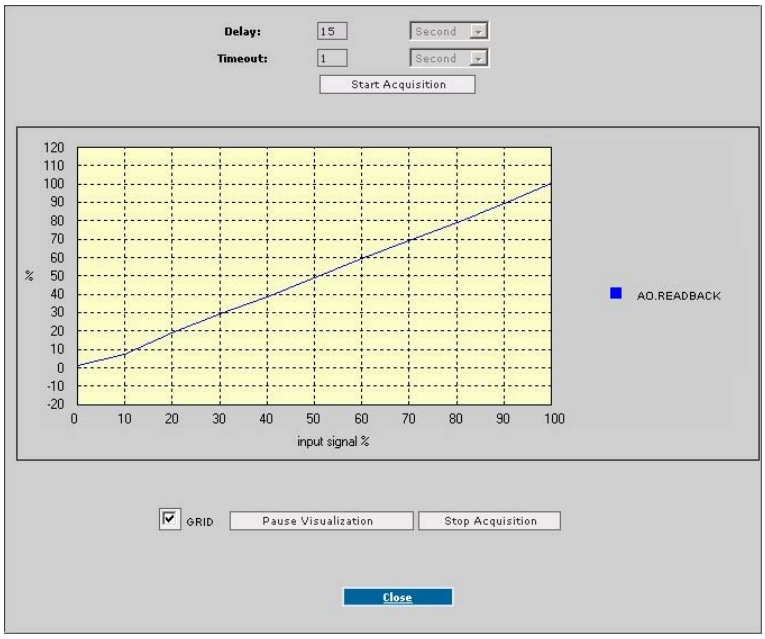



**Figure C.12**

The previous conditions are restored at the end of the process.

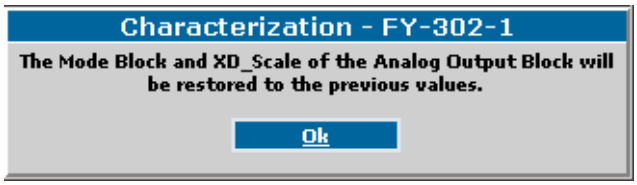



**Figure C.13**

**STEP RESPONSE**: this chart will show the behavior of the current valve position and the desired position value 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 benefits the preventive and predictive maintenance because the user can save the curves and compare them later.

When this chart 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 to manual. Open and close movements may interfere in the process.

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

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

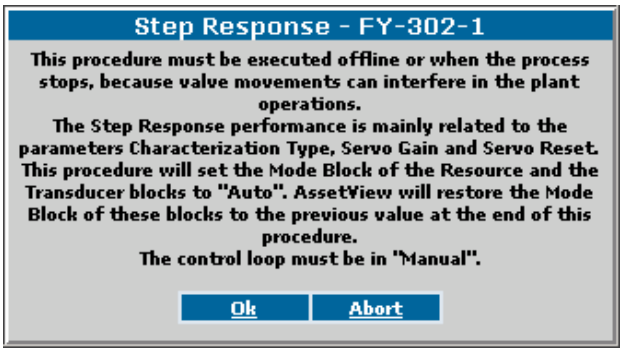



**Figure C.14**

The process starts when the user clicks *OK*.

The step response chart is drawn with the AO Block XD_Scale set from 0 to 100%. The value of the AO Mode Block must be *Manual*. The message shown below appears if the AO Block XD_Scale is not from 0 to 100%, or the AO Mode Block parameter is not in *Manual*. At the end of this process, *AssetView* will restore the scale values.

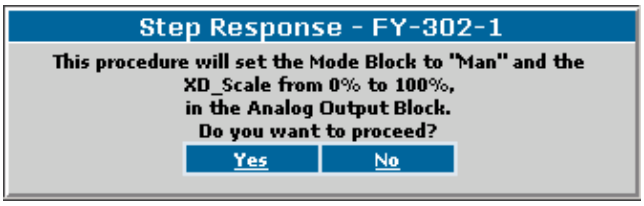



**Figure C.15**

Click *Yes* to open the window where the user will configure the Total Sample Time (monitoring time) and the Scan Time (time between readings). 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.

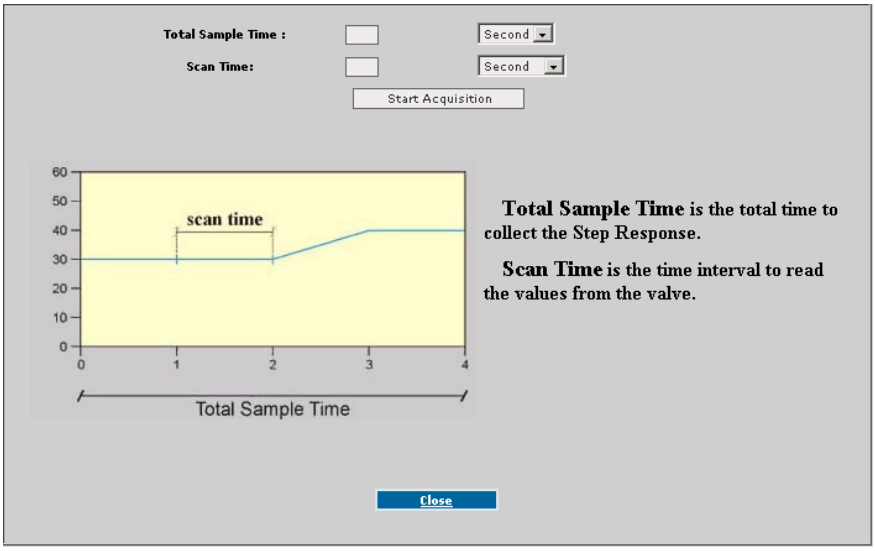



**Figure C.16**

The user sets the set point value. This chart lets the user skim in the time coordinates during the analysis.

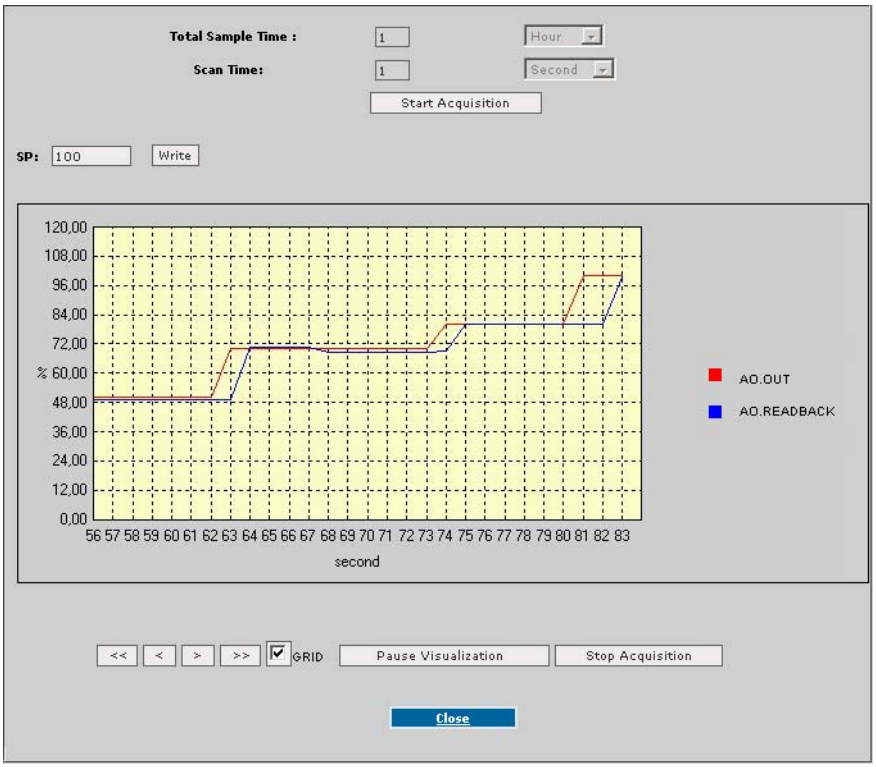



**Figure C.17**

The previous conditions are restored at the end of the process.

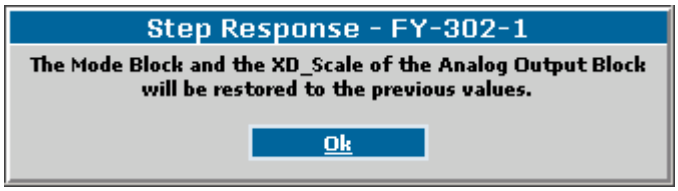



**Figure C.18**

**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 the commissioning procedure 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.** |

When this chart 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. Open and close movements may interfere in the process.

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

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

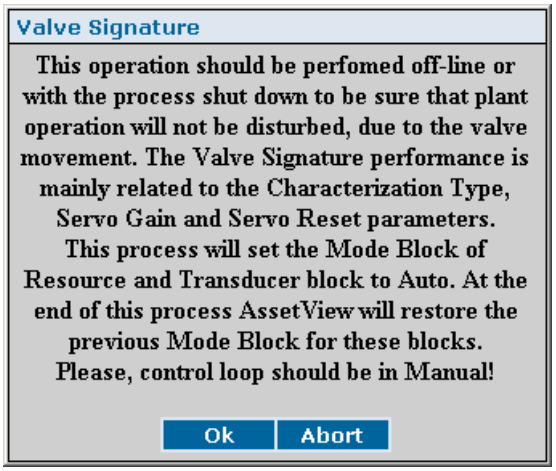



**Figure C.19**

The process starts when the user clicks *OK*.

The valve signature chart is drawn with the AO Block XD_Scale set from 0 to 100%. The AO Mode Block must be set at Manual. The message shown in the figure below appears if the AO Block XD_Scale is not from 0 to 100%, or the AO Mode Block parameter is not in *Manual*. At the end of this process, the *AssetView* will restore the scale values.

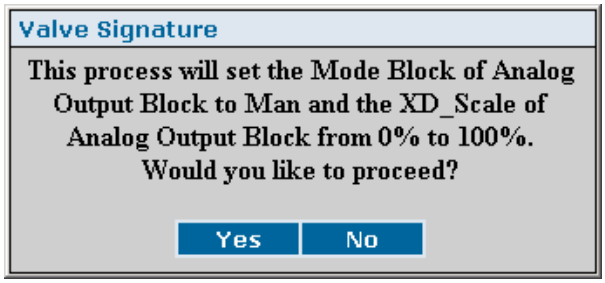



**Figure C.20**

Click *Yes* to open the window where the user will configure the delay time to get to the desired position and the time out for the graphic interface to get a valid data response from the device. If the graphic interface does not receive the data information during this time, a message to abort the procedure will appear.

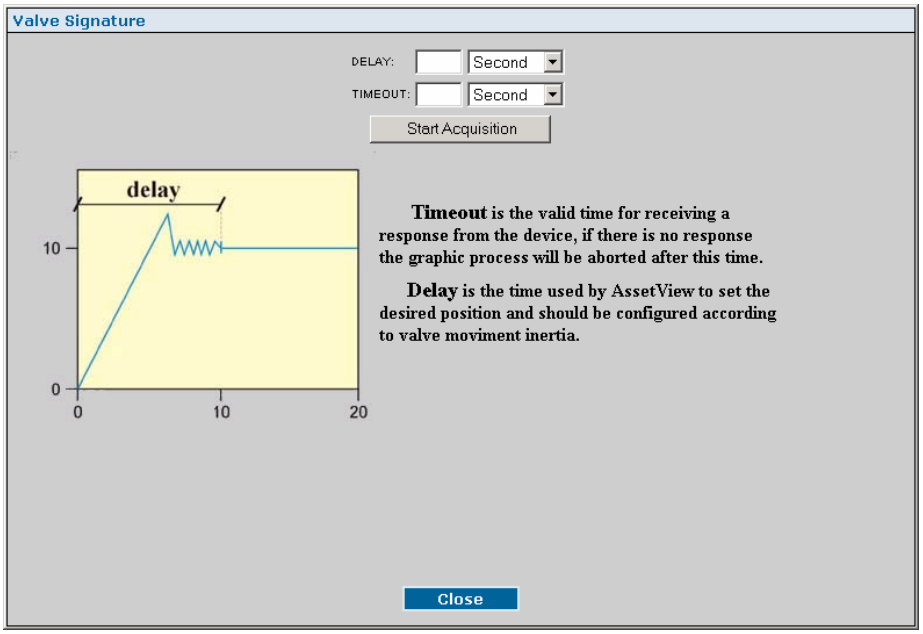



**Figure C.21**

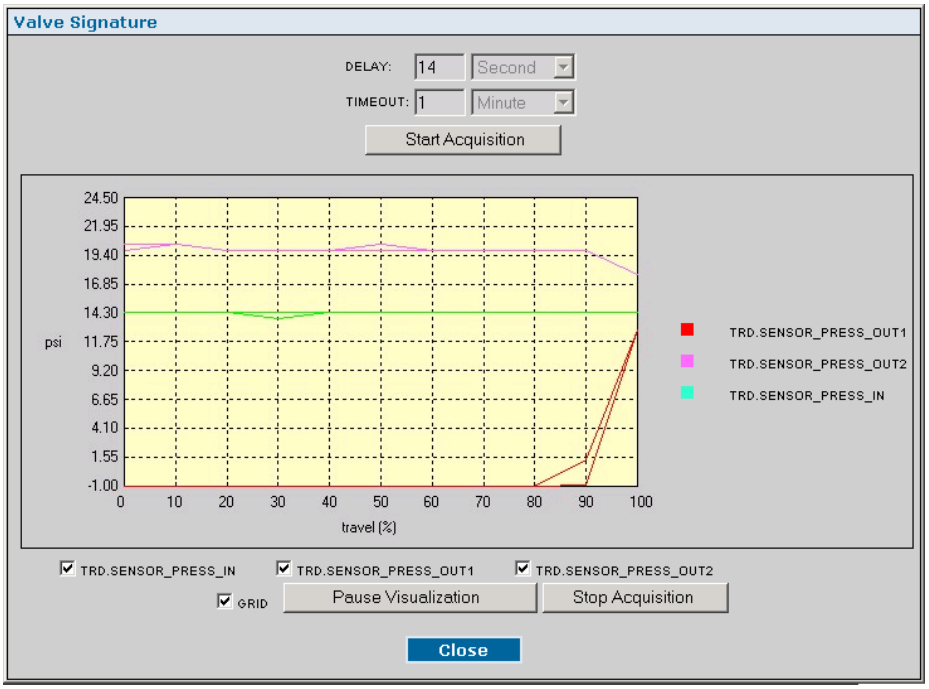



**Figure C.22**

The previous conditions are restored at the end of the process.

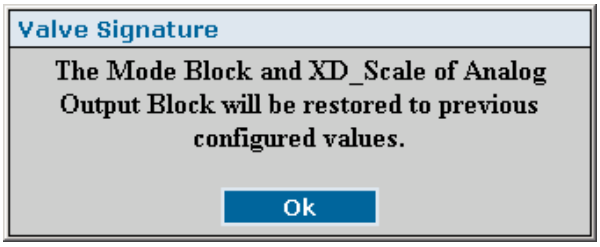



**Figure C.23**

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

The value displayed in the histogram is the arithmetic average of 10 acquisitions.

In stuck conditions the error accumulated would tend to increase because the instantaneous error would increase. This fact can be verified once the servo PID action increases.


**Figure C.24**

The user must configure the time between readings.

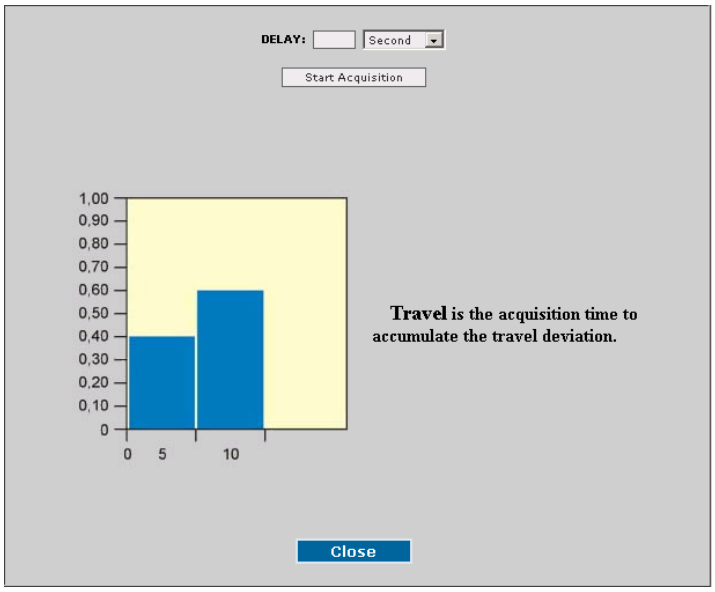



**Figure C.25**

Click *Start Acquisition* to generate the chart:

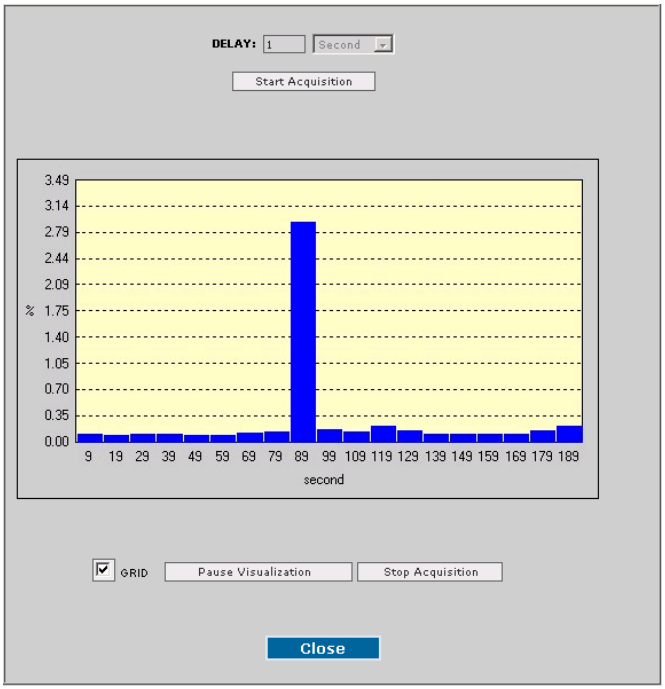



**Figure C.26**

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

The user must configure the time between readings.

When this chart 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. Open and close movements may interfere in the process.

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

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

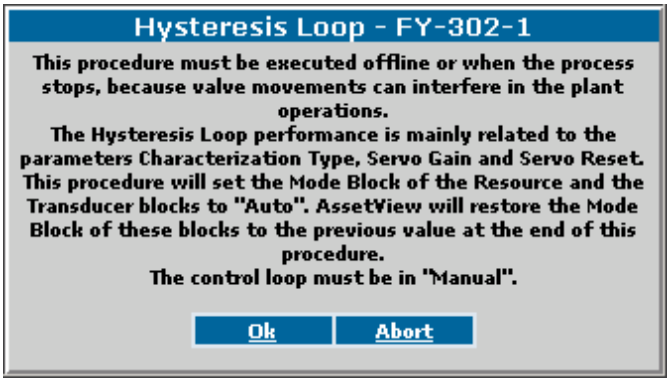



**Figure C.27**

The process starts when the user clicks *OK*.

The chart is drawn with the AO Block XD_Scale set from 0 to 100%. The AO Mode Block must be set at Manual. The message shown below appears if the AO Block XD_Scale is not from 0 to 100%, or the AO Mode Block parameter is not in *Manual*. At the end of this process, the *AssetView* will restore the scale values.

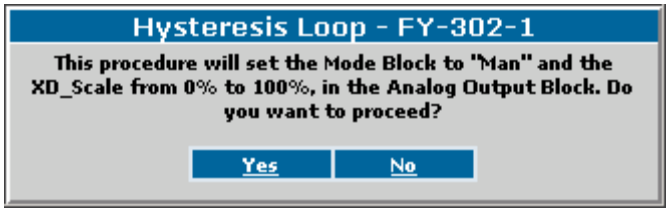



**Figure C.28**

Click *Yes* to open the window where the user will configure the delay time to get to the desired position and the time out for the graphic interface to get a valid data response from the device. If the graphic interface does not receive the data information during this time, a message to abort the procedure will appear.

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.

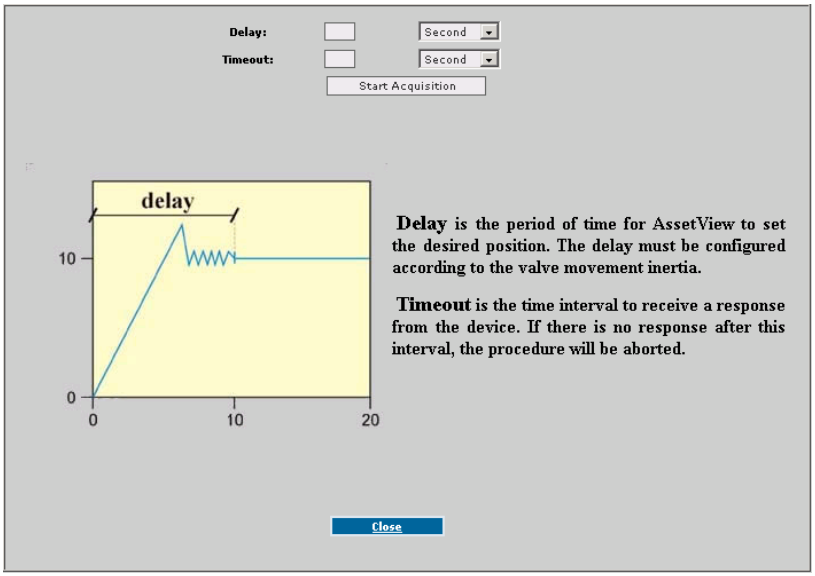



**Figure C.29**

Click *Start Acquisition* to generate the chart:

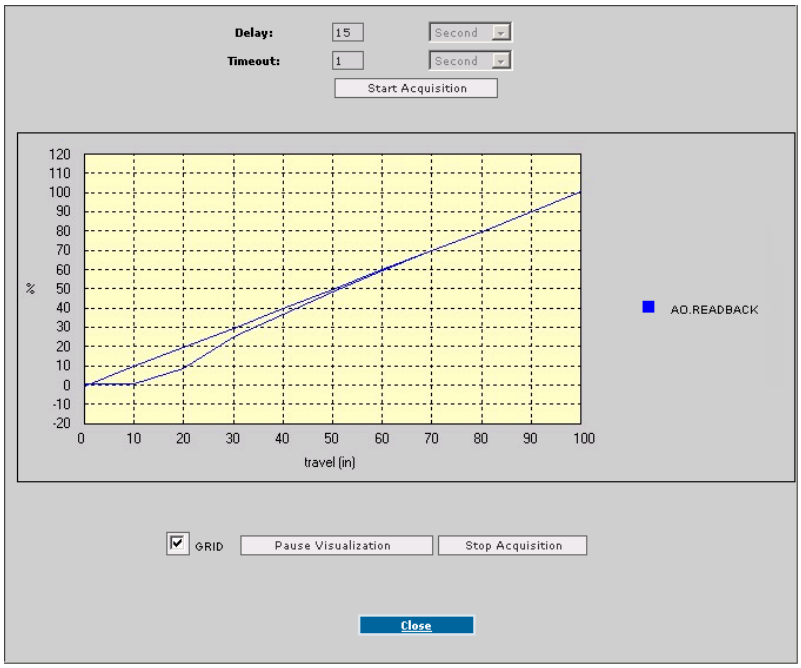



**Figure C.30**

The previous conditions are restored at the end of the process.

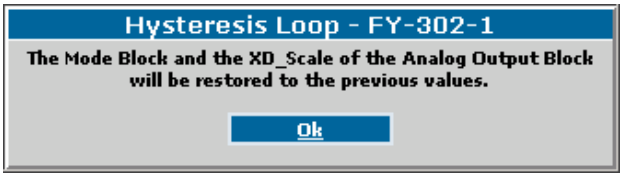



**Figure C.31**

**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.

When this chart 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 to manual. Open and close movements may interfere in the process.

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

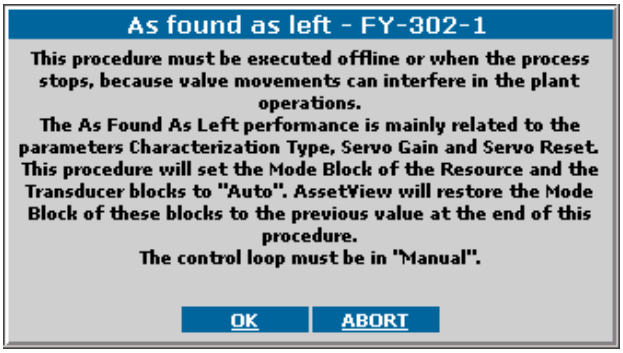



**Figure C.32**

The process starts when the user clicks *OK*.

The chart is drawn with the parameter XD_Scale of the AO block set from 0 to 100%. The value of the parameter *Mode Block* of the AO block must be *Manual*. The message shown below appears if the XD_Scale of the AO block is not from 0 to 100%, or the AO Mode Block parameter is not in *Manual*. At the end of this process, *AssetView* will restore the scale values.

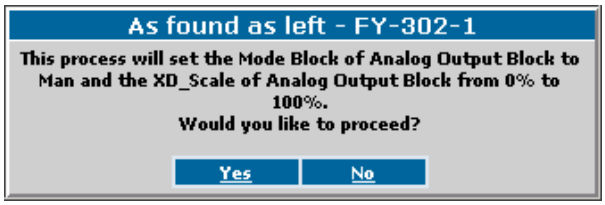



**Figure C.33**

Click *Yes* to open the window where the user will configure the scan time to read the values from the valve and the number of writings made in the device.

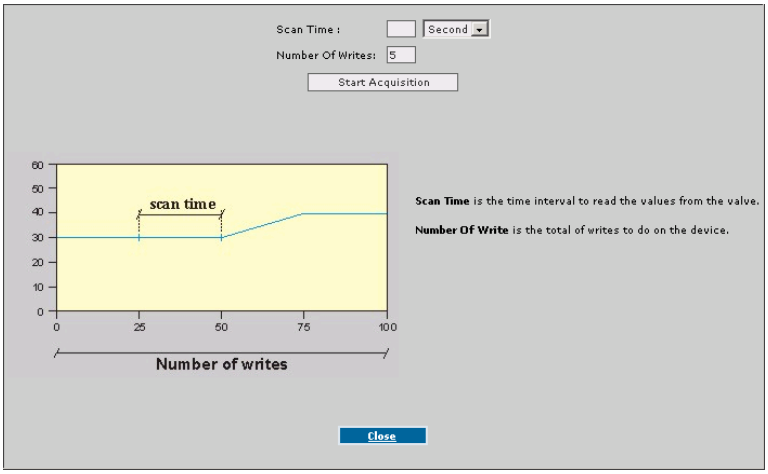



**Figure C.34**

Click *Start Acquisition* to generate the chart:

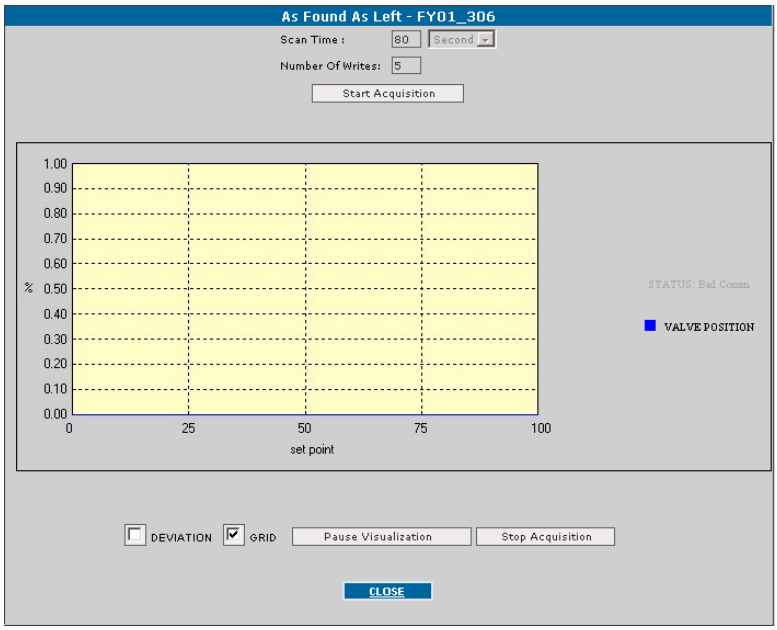



**Figure C.35**

Select the option *Deviation* to display the values of the error for each point written in the instrument.

The previous conditions are restored at the end of the process.

## *Charts History*

After saving the charts, it will be possible to view the charts history:

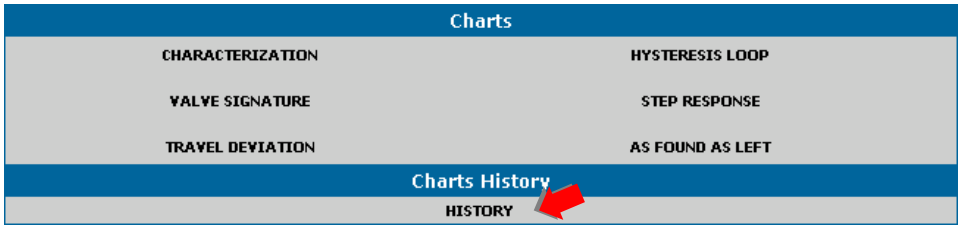



**Figure C.36**

Click the link *Hystory* in the *Charts History* field:

a) In the *Type* list box, select the type of the desired chart;

b) Type a start and/or end date to search for the saved charts;

c) The *Hystory* list box will display the list of charts generated for the selected type.

See the example below:

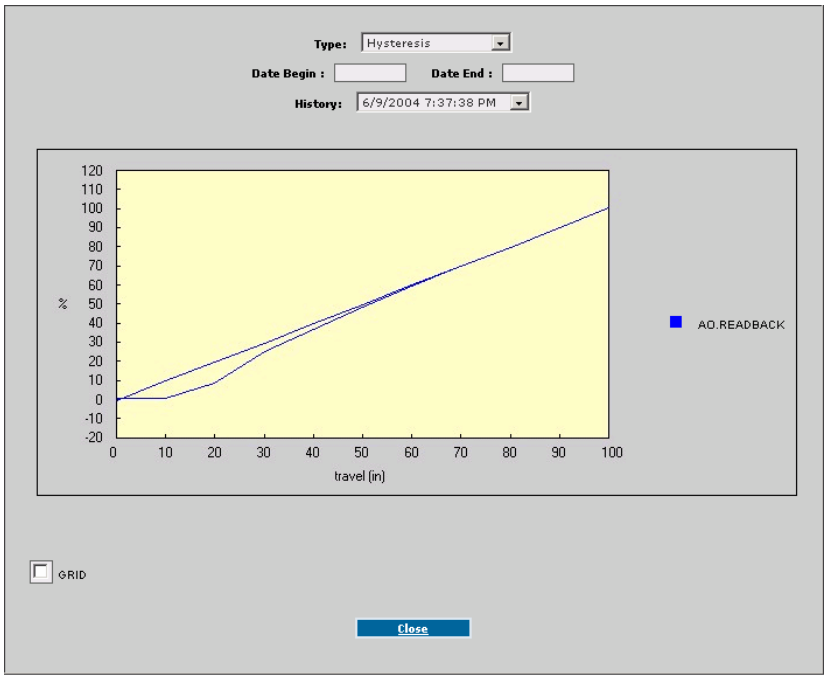



**Figure C.37**

# FY302 Calibration Page

This page displays configuration data used in the calibration procedures.

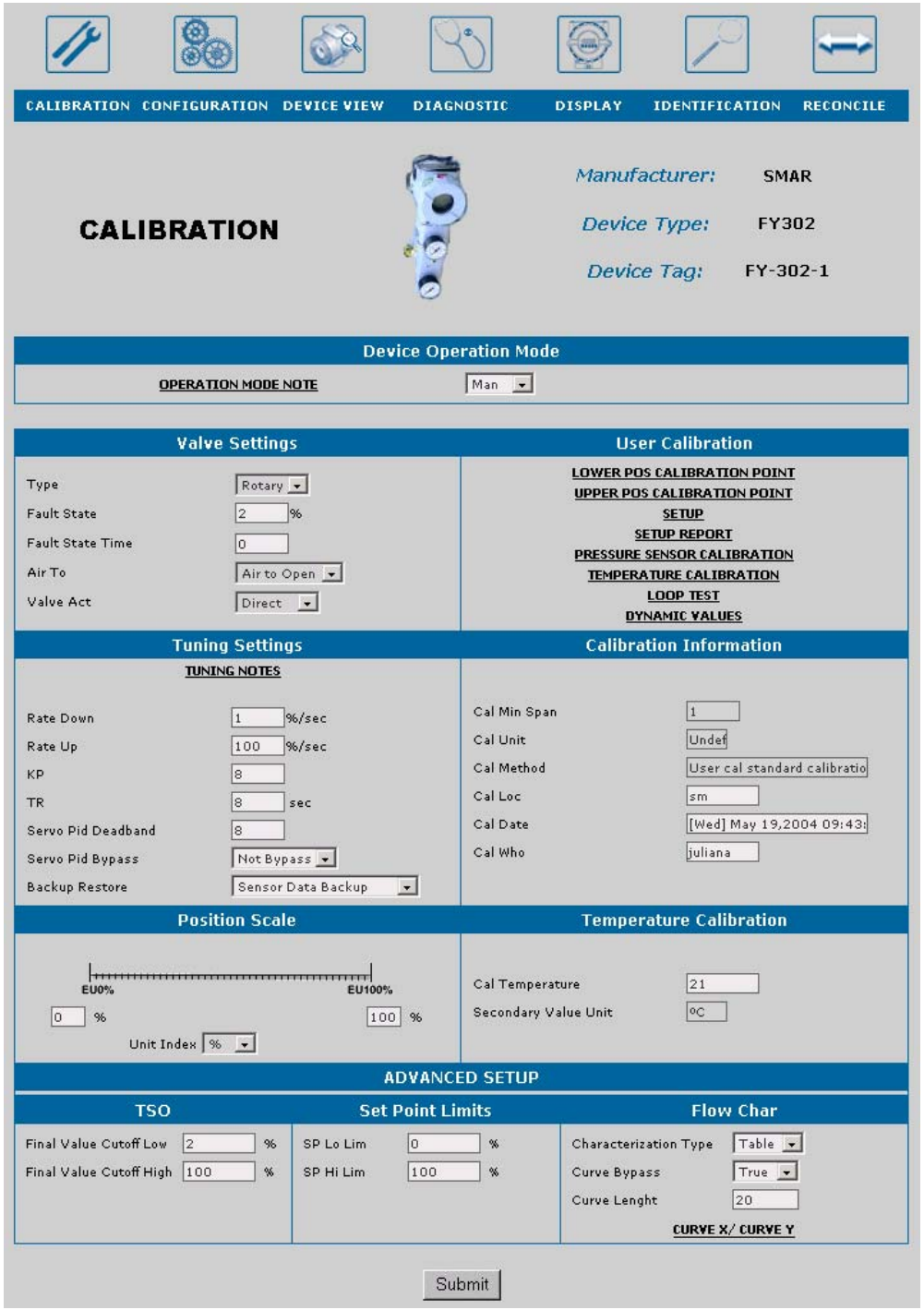



**Figure C.38**

### *Device Operation Mode*

Indicates the operation mode for the device:

| | |
|---|---|
| **OOS** | if this mode is selected, the value of the parameter *Mode Block* will be *Out of Service* for the *Resource*, *Transducer* and *Analog Output* blocks. |
| **AUTO** | if this mode is selected, the value of the parameter *Mode Block* will be *Auto* for the *Resource*, *Transducer*, *Display* and *Analog Output* blocks. |
| **MAN** | if this mode is selected, the value of the parameter *Mode Block* 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. |

### *Tuning Settings*

| | |
|---|---|
| **RATE DOWN** | the user configures the set point step-down rate (in percentage) related to the time. |
| **RATE UP** | the user 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 "*Sensor Data Backup*" option after the auto-calibration process (setup). |

### Calibration Information

| | |
|---|---|
| **CAL MIN SPAN** | indicates the smallest difference allowed between the calibration upper position and the calibration lower position. |
| **CAL UNIT** | indicates the calibration unit, in percentage always. |
| **CAL METHOD** | indicates the calibration method. Before the device is released, it is calibrated according to the manufacturer criteria. If the user calibrates the positioner, it will indicate that the user executed the calibration. |
| **CAL LOC** | indicates the location of the calibration, such as a laboratory, area 1, etc. |
| **CAL DATE** | indicates the date of the executed calibration. |
| **CAL 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). |

To change the scale and the unit, *AssetView* will display a message indicating that the AO Mode Block will be set at a safe condition, with the value *OOS* (out of service).

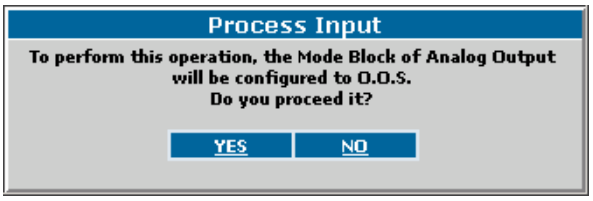



**Figure C.39**

Click *Yes* and configure the scale limits:

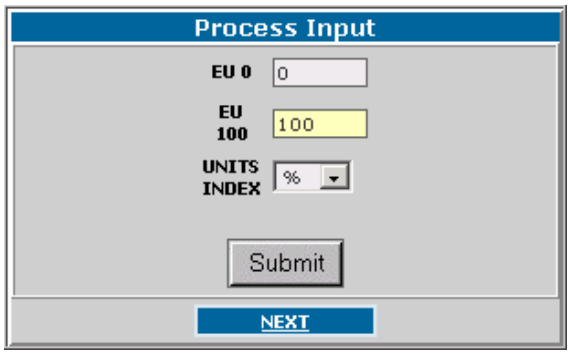



**Figure C.40**

Edit the values and click the button *Submit*. Wait until the values are sent to the device and then click *Next* to conclude. The AO Mode Block will be restored:

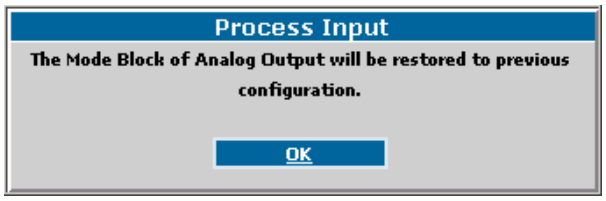



**Figure C.41**

Click *Ok* to conclude.

### *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$^{O}$ Celsius 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 open. 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** | characterization type of the valve.<br>▪ LINEAR: the real position will be represented as a linear chart with the desired position.<br>▪ TABLE: the user can characterize the real positions according to its application.<br>▪ EP25, EP33, and EP50: the EP (Equal Percentage) curves provide a larger travel only for wide set point variation.<br>▪ 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 below:

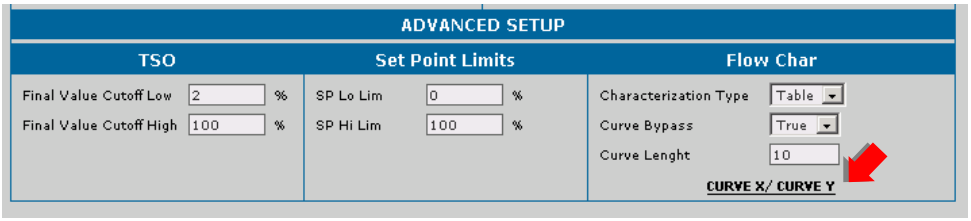



**Figura C.42**

The table with the points will open:

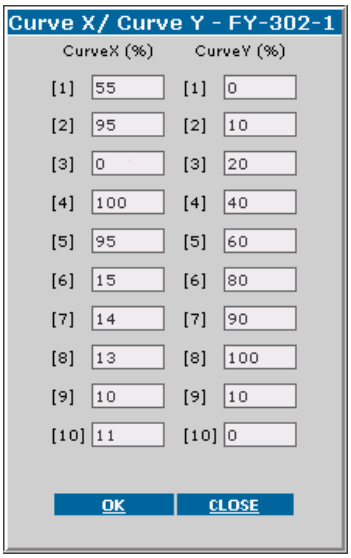



**Figura C.43**

Type the points of the curve and click *Ok* to send the values to the device. Click *Close* to close the table and 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 fix 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 positioner 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. Open and close movements may interfere in the process.

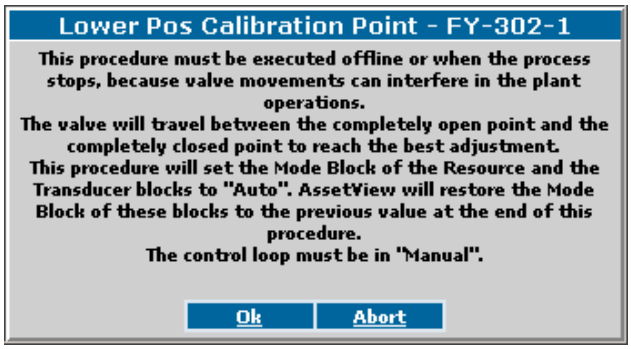



**Figure C.44**

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

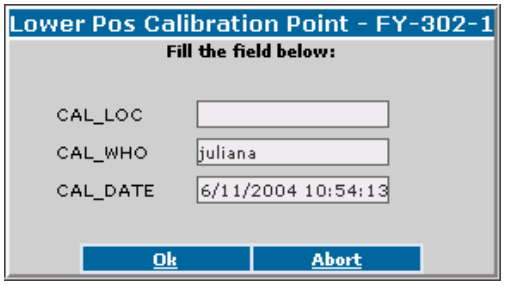



**Figure C.45**

The valve will move to the lower position. The message shown in the figure below appears. Wait until the valve stabilizes the position.

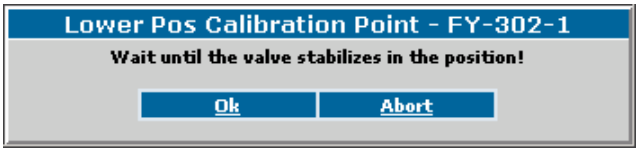



**Figure C.46**

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:

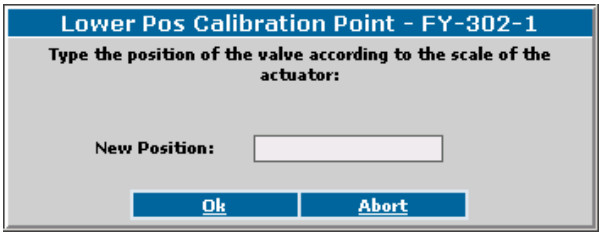



**Figure C.47**

Suppose that the value read in the actuator scale is 10.0%. Once the user types this value and click *Ok*, the positioner will correct the lower position (set at around 0%). After visual check, the user indicates whether the correction was successful or the calibration procedure must be executed again.

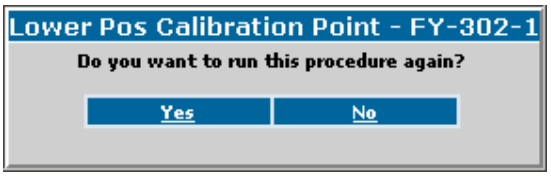



**Figure C.48**

If the correction was successful, click *No*. It is possible to save the calibration in the EEPROM memory of the positioner transducer module, which is recommended.

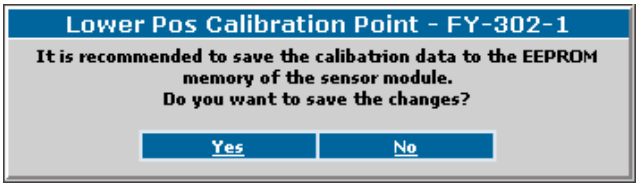



**Figure C.49**

Otherwise, if the calibration is not suitable, click *Yes* in the message showed in Figure C.48. 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.

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

**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. Open and close movements may interfere in the process.

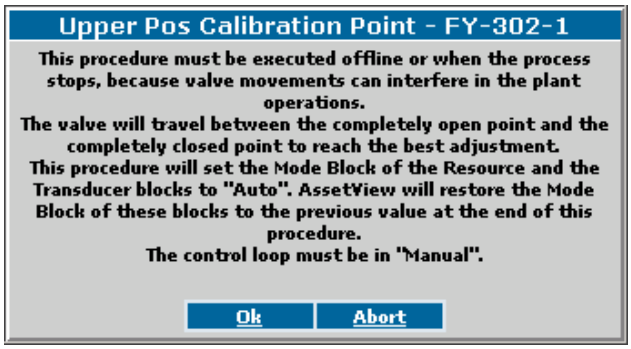



**Figure C.50**

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

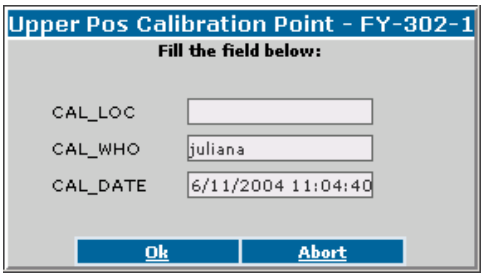



**Figure C.51**

The valve will move to the upper position. The message shown in the figure below appears. The user must wait until the valve stabilizes the position.

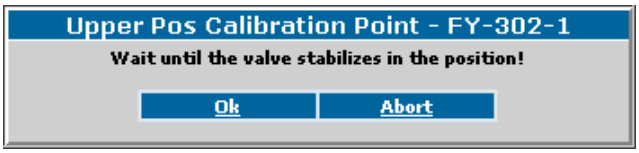



**Figure C.52**

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:

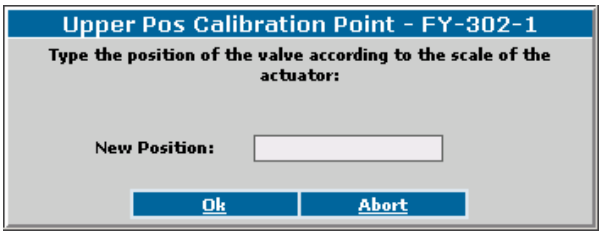



**Figure C.53**

Suppose that the value read in the actuator scale is 90.0%. Once the user types this value and click *Ok*, the positioner will correct the upper position (set at around 100%). After visual check, the user indicates whether the correction was successful or the calibration procedure must be executed again.

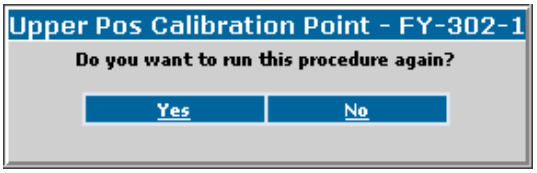



**Figure C.54**

If the correction was successful, click *No*. It is possible to save the calibration in the EEPROM memory of the positioner transducer module, which is recommended.

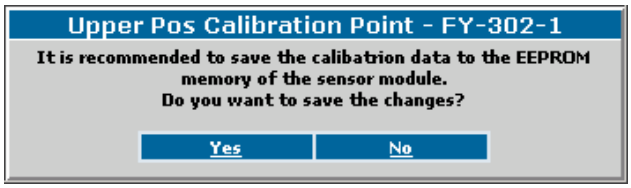



**Figure C.55**

Otherwise, if the calibration is not suitable click *Yes* in the message showed in Figure C.54. 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.

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

**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. Open and close movements may interfere in the process. Please refer to the positioner manual for setup details.

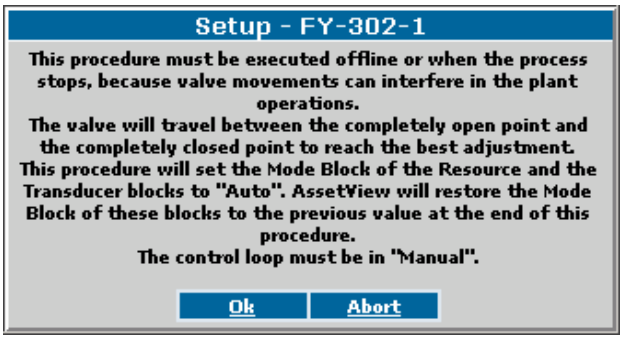



**Figure C.56**

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.

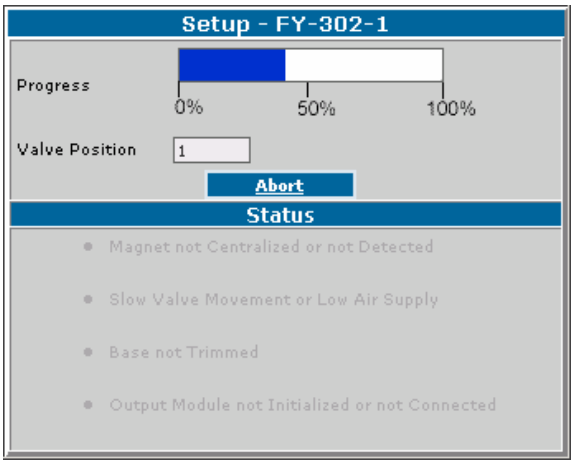



**Figure C.57**

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

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


**Figure C.58**

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

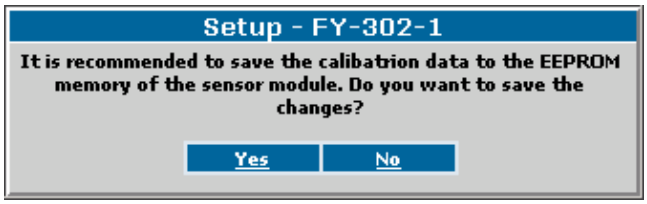



**Figure C.59**

**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 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 of a fixed position. If the voltage is out of this band the mechanical calibration will be necessary at the PIEZO sensor.


**Figure C.60**

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

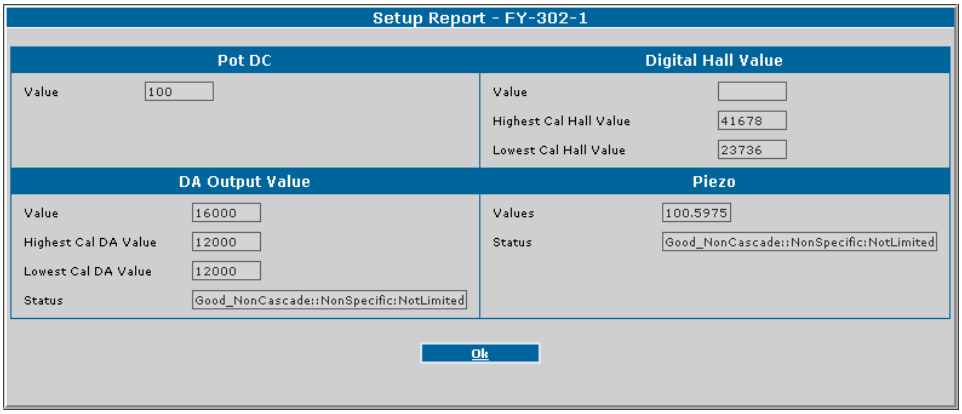



**Figure C.61**

### *Pot DC:*

| | |
|---|---|
| **VALUE** | digital information of the hardware used to control the position. |

### *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.

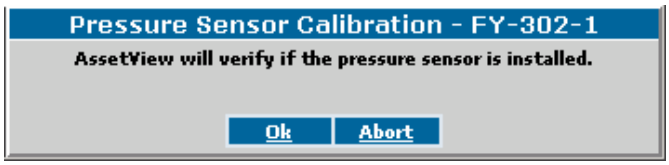



**Figure C.62**

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

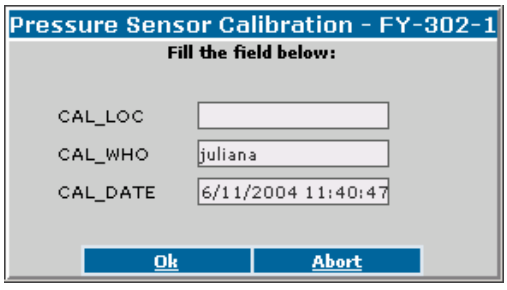



**Figure C.63**

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. Open and close movements may interfere in the process.

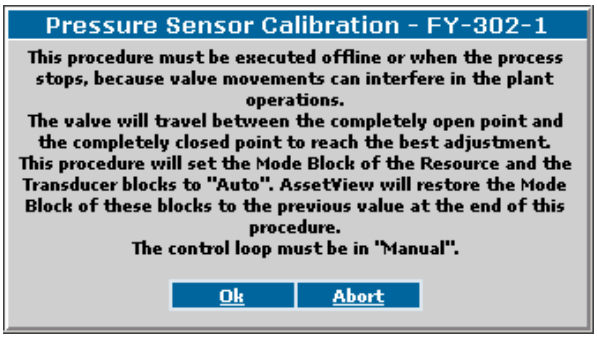



**Figure C.64**

Select the sensor that will be calibrated (*Input*, *Output1* or *Output2*) and click *Ok*:

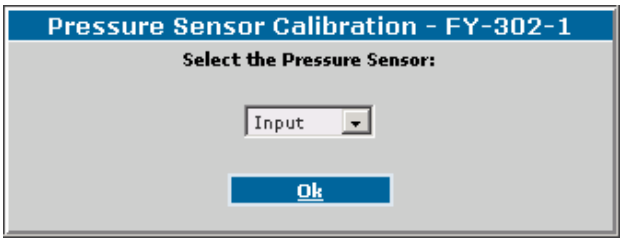



**Figure C.65**

Choose between upper calibration and lower calibration and click *Ok*:

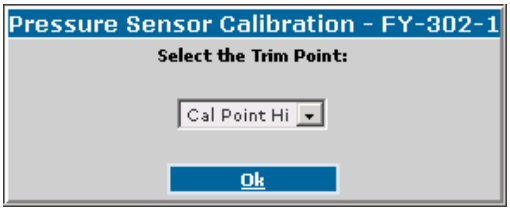



**Figure C.66**

The pressure of the sensor selected will be displayed according to the pressure measured. Click *Yes* to confirm if the pressure is correct:

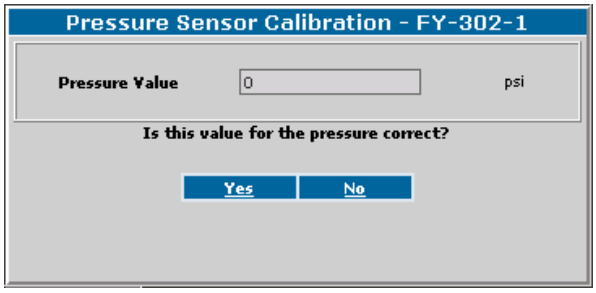



**Figure C.67**

If the user clicks *No* it will be necessary to indicate the pressure applied. Observe the values in the manometer of the positioner:

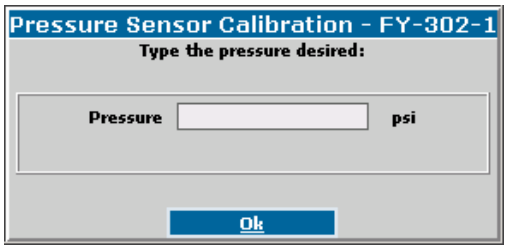



**Figure C.68**

If the pressure is correct, the user will be asked to save the data in the transducer module:

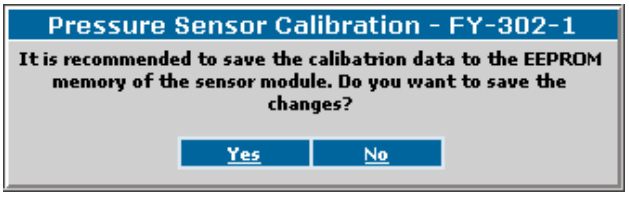



**Figure C.69**

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

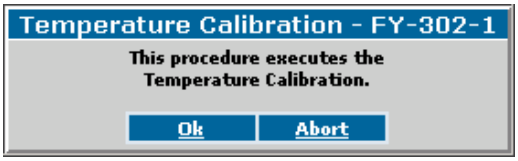



**Figure C.70**

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

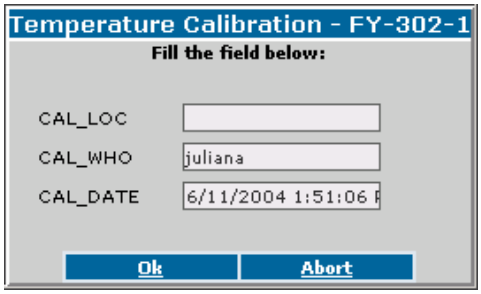



**Figure C.71**

Click *Ok* to initiate the calibration. The user will have to verify the value of the reference temperature for the device.

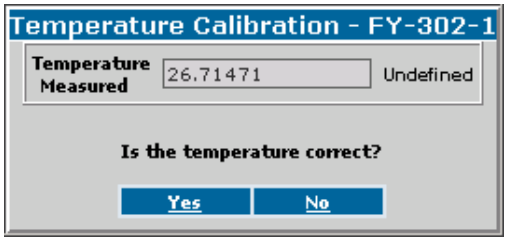



**Figure C.72**

If the temperature measured is correct, click *Yes* to complete the calibration procedure. If the temperature value indicated is not correct, click *No*. The dialog box will appear and the user can type the temperature value:

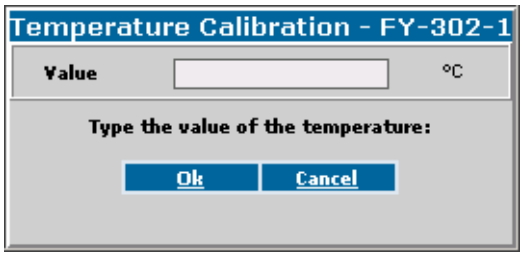



**Figure C.73**

Click *Ok* to conclude the *Temperature Calibration*.

**LOOP TEST**: selecting this method, the user can verify the position desired according to a previous Set Point. The message box will appear instructing the user about the safe procedures:

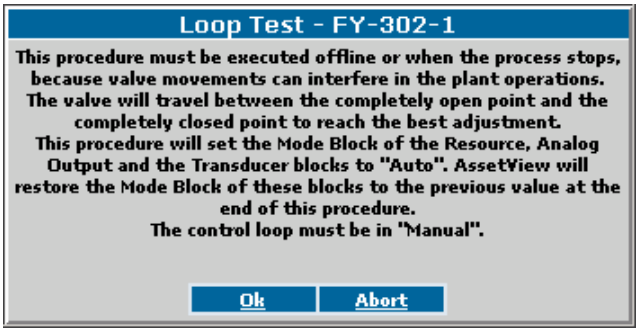



**Figure C.74**

Click *Ok* to initiate the process. Select the Set Point value and click *Ok*.

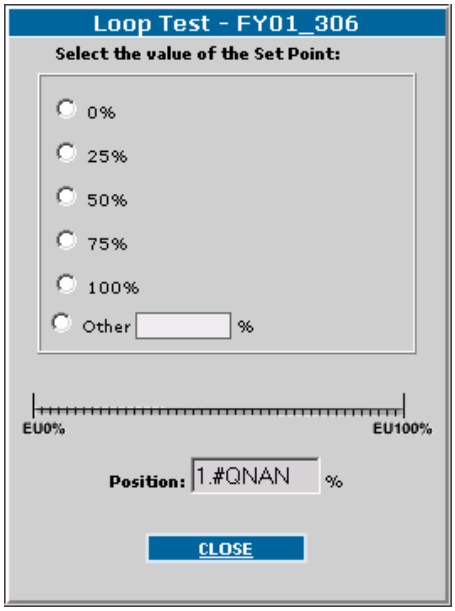



**Figure C.75**

The message shown below will open. Click *Ok* to proceed:

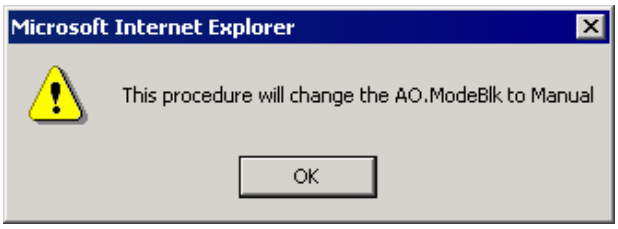



**Figure C.76**

Wait a few seconds for the valve position to be updated in the field *Position*.

Select another value for the Set Point to test the valve position again.

Click *Close* to conclude the test and the message will appear indicating to the user that the previous configuration will be restored.

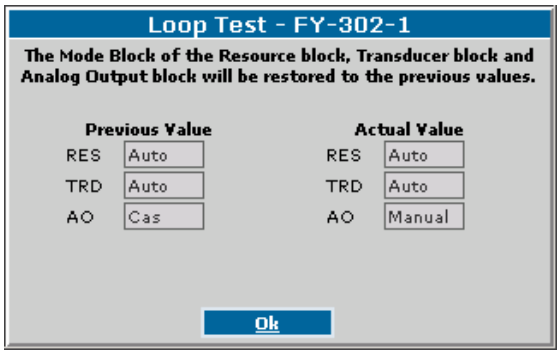



**Figure C.77**

Click *Ok* to conclude.

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

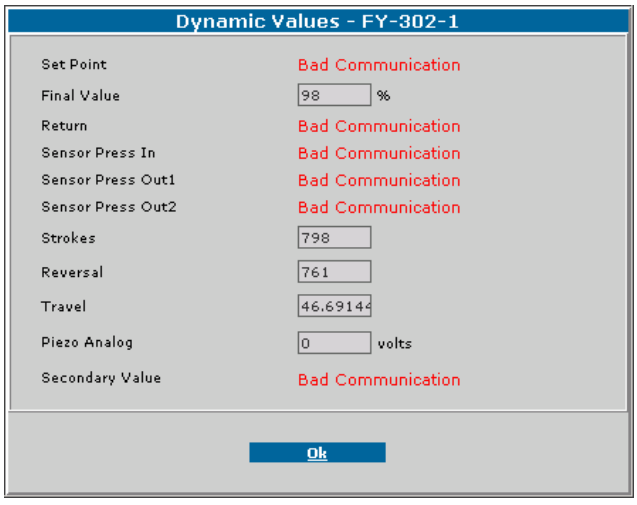



**Figure C.78**

# FY302 Display Page

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

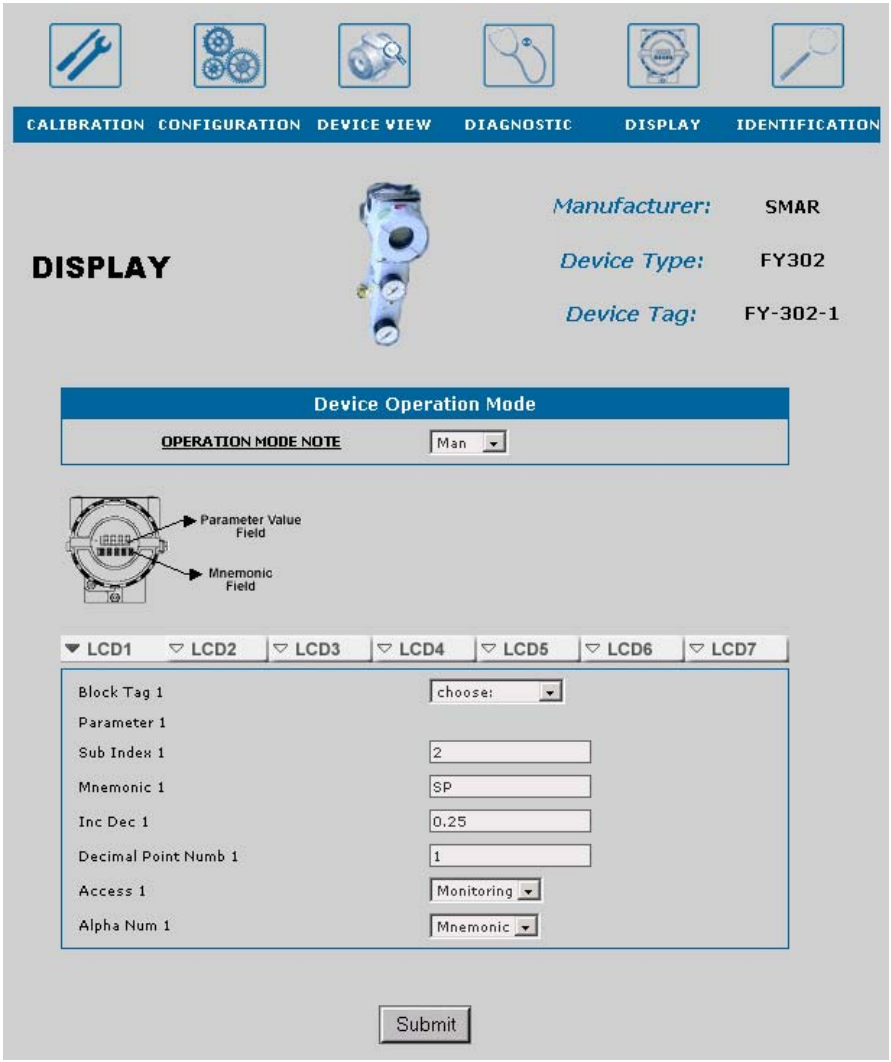



**Figure C.79**

## Device Operation Mode

Indicates the operation mode for the device:

| | |
|---|---|
| **OOS** | if this mode is selected, the value of the parameter *Mode Block* will be *Out of Service* for the *Resource*, *Transducer* and *Analog Output* blocks. |
| **AUTO** | if this mode is selected, the value of the parameter *Mode Block* will be *Auto* for the *Resource*, *Transducer*, *Display* and *Analog Output* blocks. |
| **MAN** | if this mode is selected, the value of the parameter *Mode Block* 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. |

### Display

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

## FY302 Device View Page

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

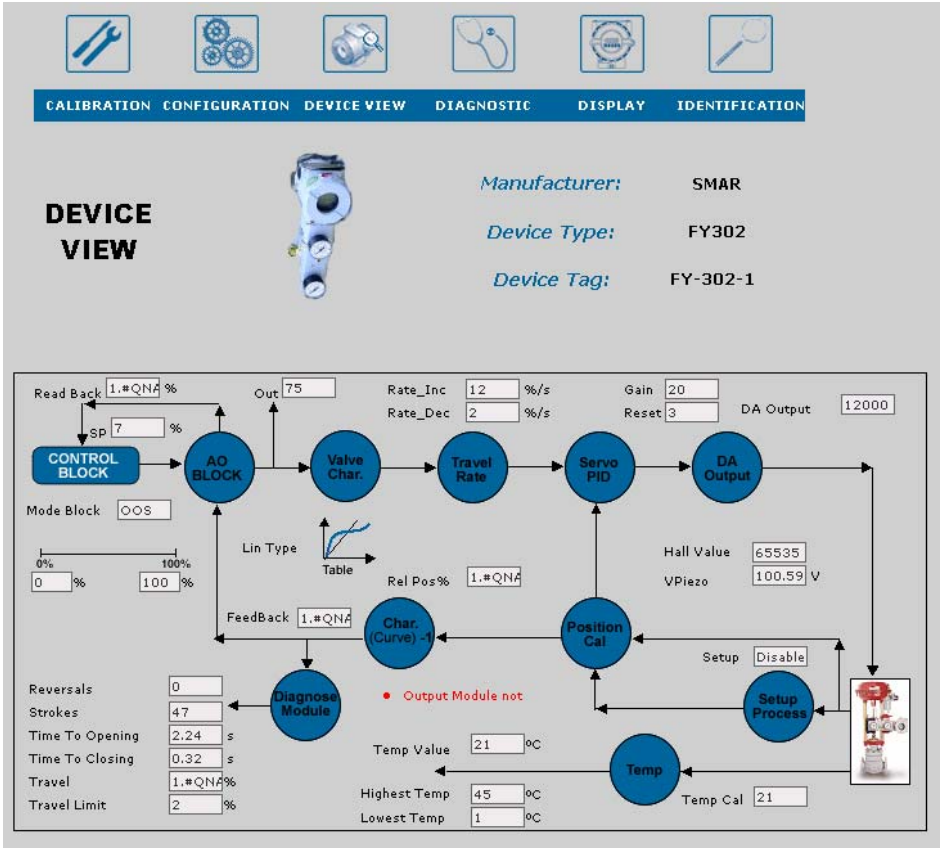



**Figure C.80**

## *Diagnostic and Maintenance for Positioners*

With *AssetView*, the user can take advantage of the digital information provided by the Fieldbus and Hart protocol.

The *AssetView* is a powerful tool for configuring the parameters of positioners and control valves, assisting the management of the control system and the predictive maintenance. It provides the information on the network, performance tests online (charts and trends), configuration/calibration for the positioners, performance monitoring and online diagnostics. The user can also analyze the data stored from several periods ("as found, as left"), reconciliate 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 an 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 extension.

The use of the *AssetView* starts during the commissioning of the devices 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. Monitoring the diagnostics online allows the user to easily detect the status of the positioners and the valves being monitored. In the Calibration page, the user can execute the *Auto Setup* and calibrate the position, assuring the operation performance of the positioners and the 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 idle time of the plant. Configuring the process to manual or off-line, it is possible to monitor and test the performance to evaluate the general operation condition of the positioners and valves.

The service and the calibration of the positioners are executed to assure the precision and the best performance from the valves. 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 struck.

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 tune. 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 a technician.

The advantage of the digital technology is the qualitative information, not only the values of the process, added 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 view online diagnostics safely, without interrupting the process. It is possible to configure the travel limits, strokes, reversals, and alarms. The user can track the condition of the device 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 diagnostic potential of the field devices allow monitoring and registering the conditions, such as valve wearing. 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.

# D. ASSETVIEW & TT302

## TT302 Home Page

The figure below shows the ***TT302*** initial page and its options:

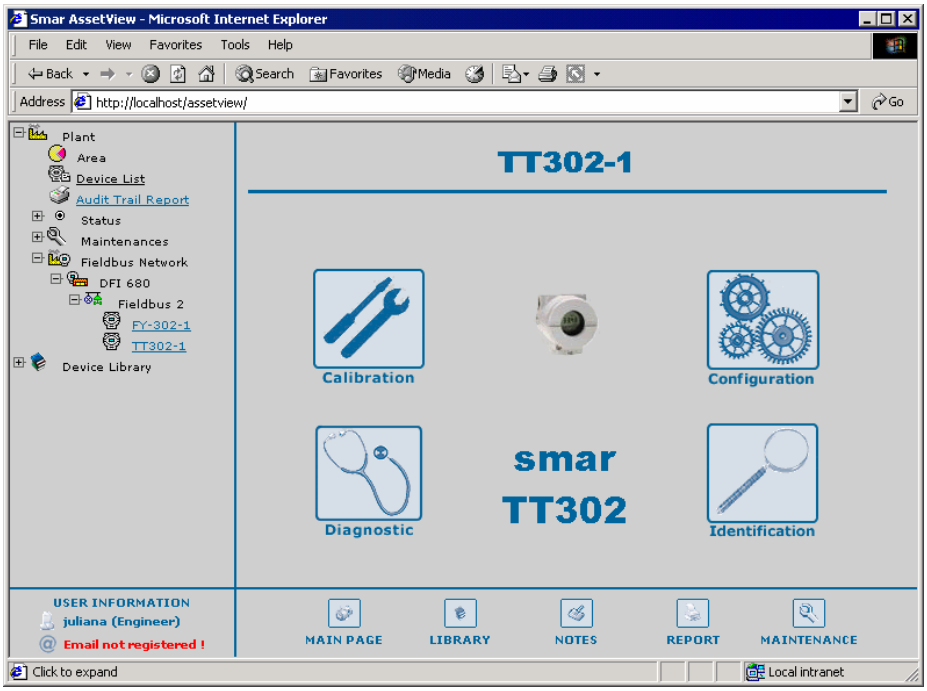



**Figure D.1**

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

## TT302 Identification Page

This page displays information relevant to the temperature transmitter. The user can easily identify and specify the transmitter in the physical plant.

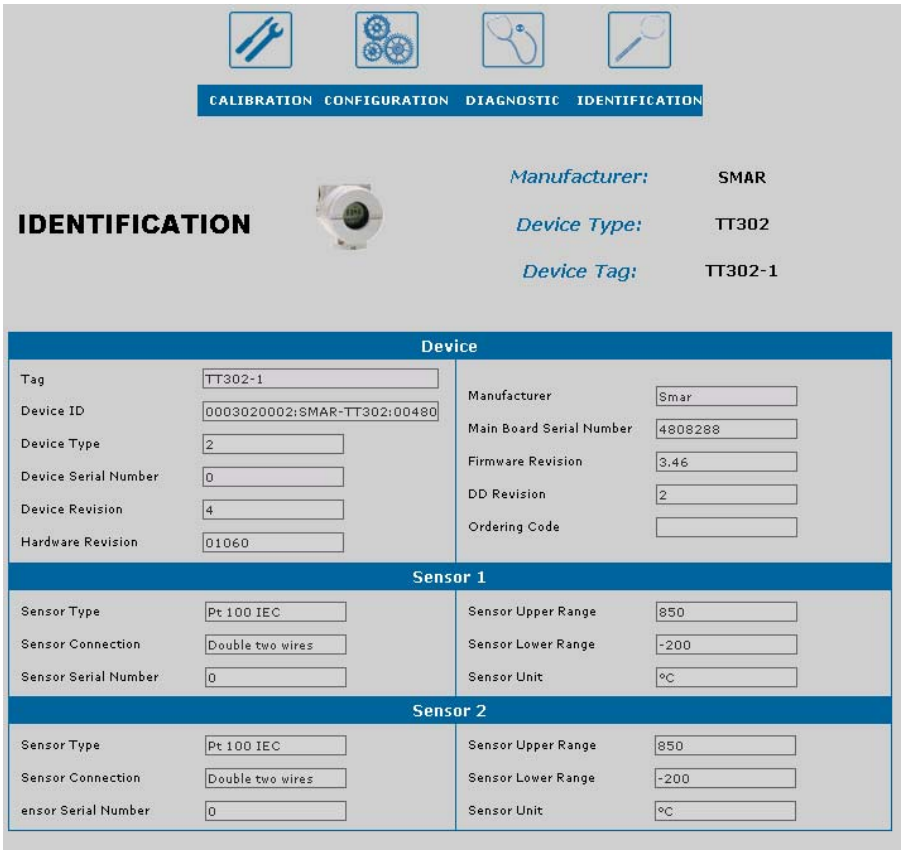



**Figure D.2**

### *Device*

| | |
|---|---|
| **TAG** | indicates the tag associated to the transmitter in the physical plant. The tag can use up to 32 characters. |
| **DEVICE ID** | indicates the identification code of the transmitter. This code can use up to 32 characters. |
| **DEVICE TYPE** | identifies the type of the transmitter for a specific manufacturer. |
| **DEVICE SERIAL NUMBER** | indicates the serial number of the transmitter. |
| **DEVICE REVISION** | indicates the revision of the transmitter. |
| **HARDWARE REVISION** | indicates the hardware revision of the transmitter. |
| **MANUFACTURER** | identifies the transmitter manufacturer. |
| **MAIN BOARD SERIAL NUMBER** | indicates the serial number of the main board. |
| **FIRMWARE REVISION** | indicates the software revision of the transmitter. |
| **DD REVISION** | indicates the revision of the DD. |
| **ORDERING CODE** | indicates the ordering code of the transmitter. |

### *Sensor 1 and Sensor 2*

| | |
|---|---|
| **SENSOR TYPE** | indicates the type of the sensor. |
| **SENSOR CONNECTION** | indicates the number of wires used by the sensor. |
| **SENSOR SERIAL NUMBER** | indicates the serial number of the sensor. |
| **SENSOR UPPER RANGE** | indicates the upper range of the sensor. |
| **SENSOR LOWER RANGE** | indicates the lower range of the sensor. |
| **SENSOR UNIT** | indicates the unit of the sensor. |

## *TT302 Configuration Page*

This page configures the sensor connected to the transmitter, the type of measurement and the working unit. Instead working with the *Primary Value* in temperature units, it is possible to work with percentage values. It is also possible to calibrate the transmitter with no reference.

The user can check the general diagnostic status in the *TT302 Diagnostic Page* (see the next section). This status is generated according to the user configuration in the *TT302 Configuration Page*.

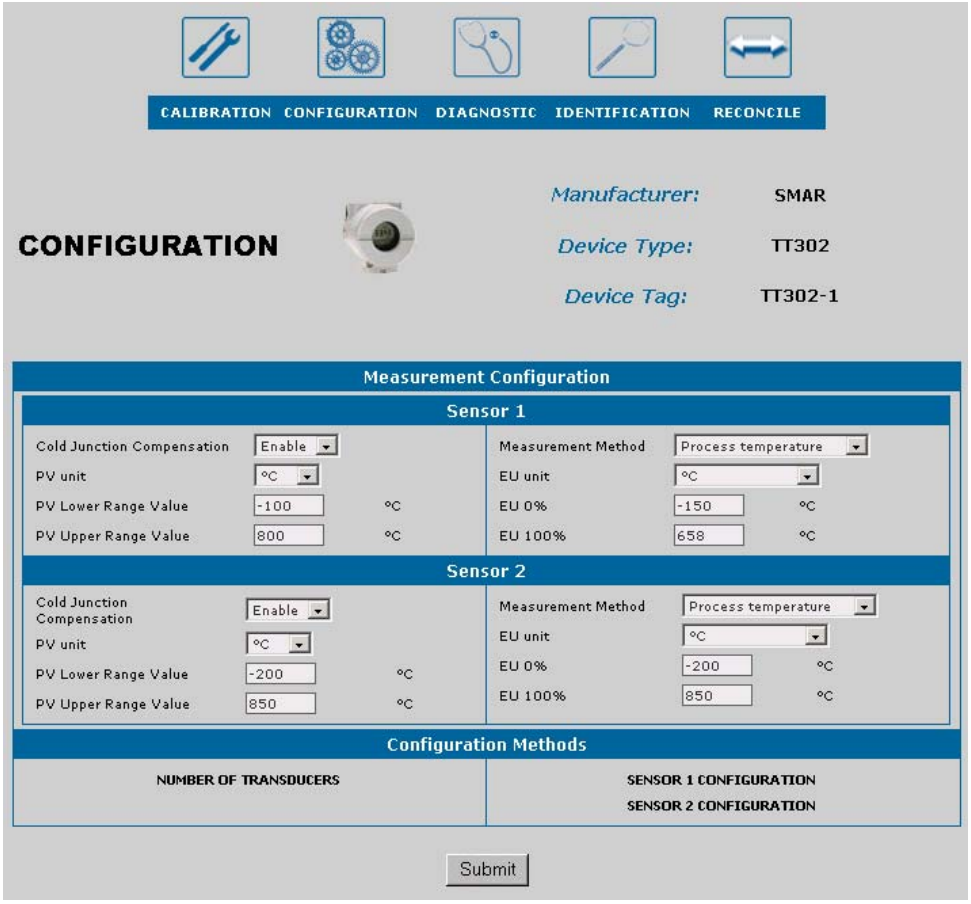



**Figure D.3**

### *Measurement Configuration - Sensor 1 and Sensor 2*

| | |
|---|---|
| **COLD JUNCTION COMPENSATION** | enables the cold junction compensation for thermocouple sensors. |
| **PV UNIT** | unit of the process variable. |
| **PV LOWER RANGE VALUE** | lower limit of the process variable. |
| **PV UPPER RANGE VALUE** | upper limit of the process variable. |
| **MEASUREMENT METHOD** | the user selects the method of measurement (single or differential). |
| **EU UNIT** | engineering unit. |
| **EU 0%** | value of the temperature corresponding to 0%, in EU. |
| **EU 100%** | value of the temperature corresponding to 100%, in EU. |

### *Configuration Methods*

**NUMBER OF TRANSDUCERS**: this method enables the transmitter to work with two independent sensors. If there is only one sensor, the transducer number will be one.


**Figure D.4**

After selecting the number of transducers, the message will appear confirming the configuration:


**Figure D.5**

**SENSOR 1 CONFIGURATION**: this method selects the type of the primary sensor and the number of wires. Select the type of the sensor and click *Ok*:

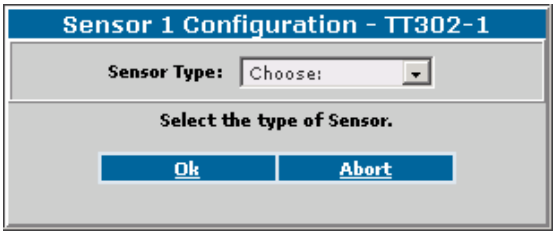



**Figure D.6**

Select the type of the connection:

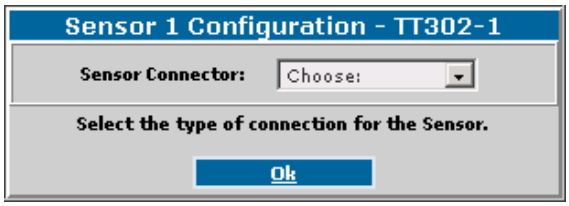



**Figure D.7**

If there are two sensors, the "*Double two wires*" connection must be selected.

The message will appear confirming the configuration:


**Figure D.8**

**SENSOR 2 CONFIGURATION**: this method selects the type of the secondary sensor.

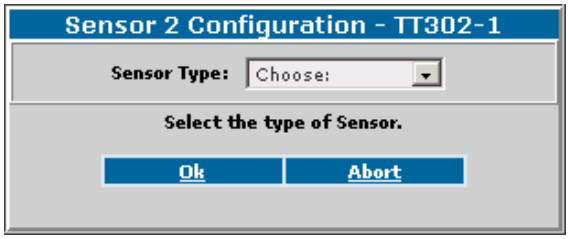



**Figure D.9**

The message will appear confirming the configuration:


**Figure D.10**

It will not be necessary to select the sensor connection because the only option available when using two sensors is the "*Double two wires*" connection.

## *TT302 Diagnostics Page*

This page displays the device status.

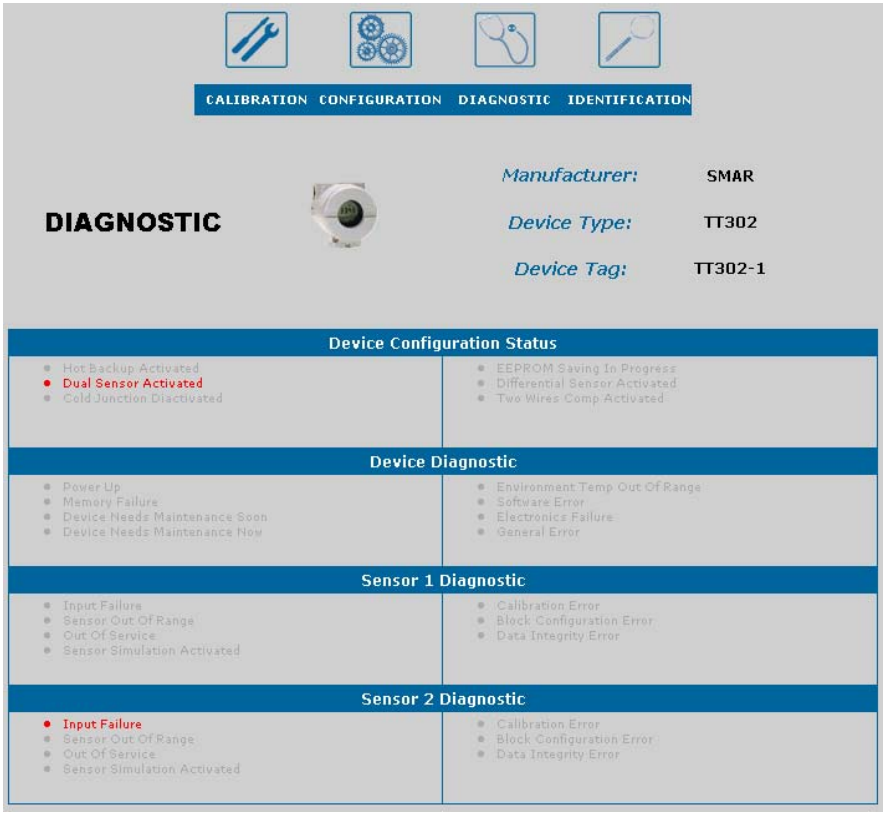



**Figure D.11**

### *Device Configuration Status*

| | |
|---|---|
| **HOT BACKUP ACTIVATED** | indicates that the transmitter is operating with redundant sensors. |
| **DUAL SENSOR ACTIVATED** | indicates that the transmitter is operating with two independent sensors. |
| **COLD JUNCTION DEACTIVATED** | indicates that the compensation of the cold junction is deactivated for the thermocouple sensor. |
| **EEPROM SAVING IN PROGRESS** | indicates that data is being saved in the serial EEPROM memory. |
| **DIFFERENTIAL SENSOR ACTIVATED** | indicates that the differential measurement type is activated. |
| **TWO WIRES COMPENSATION ACTIVATED** | indicates that the compensation of the leads of the two wires sensor is activated. |

### Device Diagnostic

| | |
|---|---|
| **POWER UP** | indicates that the device has executed the power up procedure. |
| **MEMORY FAILURE** | indicates an electronic failure according to the internal checkup process, such as an incorrect checksum detected in the main memory. |
| **DEVICE NEEDS MAINTENANCE SOON** | the internal diagnostic according to the user configuration or device internal checkup has detected that the device will need maintenance soon. |
| **DEVICE NEEDS MAINTENANCE NOW** | the internal diagnostic according to the user configuration or device internal checkup has detected that the device needs maintenance. |
| **ENVIRONMENT TEMP OUT OF RANGE** | indicates that the temperature measured by the terminal temperature sensor is out of limits. |
| **SOFTWARE ERROR** | the software has detected an error that could have been caused by an improper interruption of a service routine, an arithmetic overflow, a watchdog timer, etc. |
| **ELECTRONICS FAILURE** | an electronic component has failed. |
| **GENERAL ERROR** | a general error related to the device has been detected. |

### Sensor 1 Diagnostic and Sensor 2 Diagnostic

| | |
|---|---|
| **INPUT FAILURE** | indicates that the sensor is broken or disconnected. |
| **SENSOR OUT OF RANGE** | indicates that the temperature value is out of range for the sensor. |
| **OUT OF SERVICE** | indicates that the function block is out of service. |
| **SENSOR SIMULATION ACTIVATED** | indicates that the temperature is tracked by a programmed value instead of the temperature measured. |
| **CALIBRATION ERROR** | indicates that an error occurred during the calibration of the device, or that a calibration error has been detected while operating the device. |
| **BLOCK CONFIGURATION ERROR** | indicates that there is an error related to the XD_SCALE parameter in the AI function block. |
| **DATA INTEGRITY ERROR** | indicates that data stored in the system may be no longer valid, for example, because the checksum of the data in the RAM memory has failed when compared to the data in the non-volatile memory. |

## TT302 Calibration Page

This page displays configuration data used in the calibration procedures.

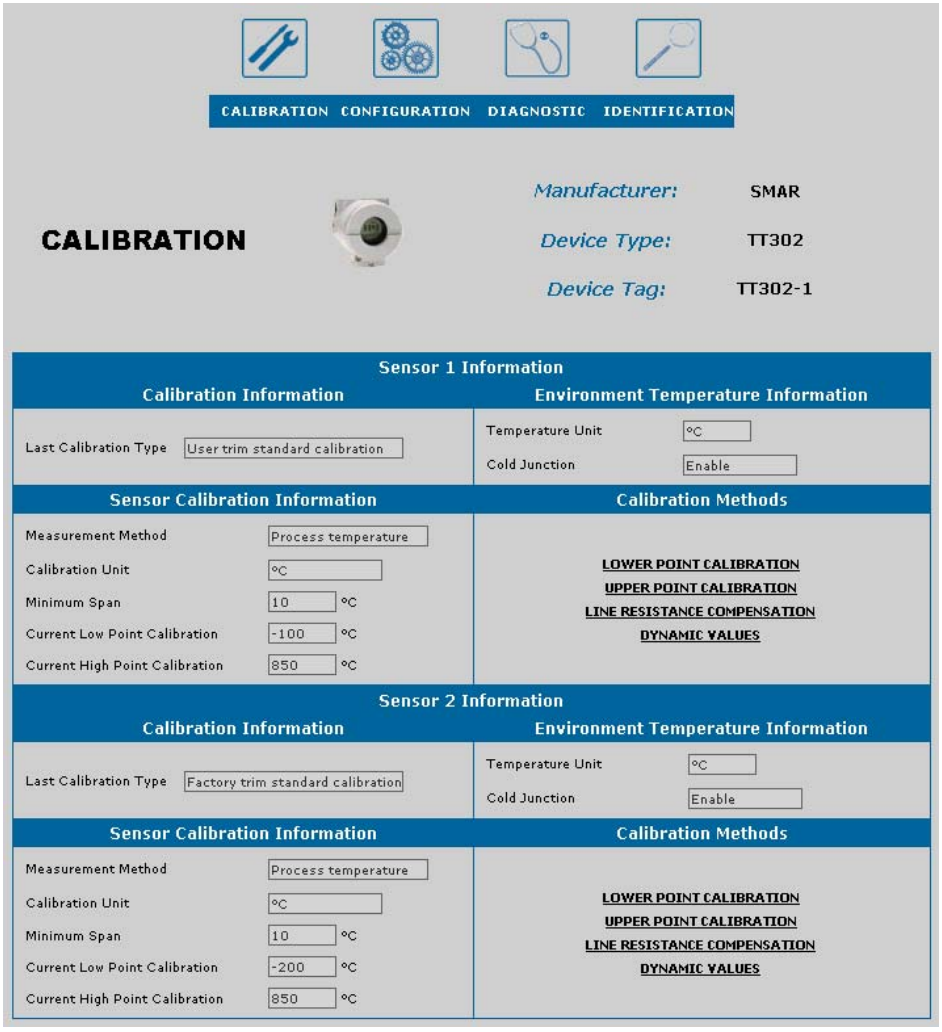



**Figure D.12**

### *Sensor 1 Information and Sensor 2 Information*

Displays the information for the respective sensor.

### *Calibration Information*

| | |
|---|---|
| **LAST CALIBRATION TYPE** | indicates the method used in the last calibration. |

### *Environment Temperature Information*

| | |
|---|---|
| **TEMPERATURE UNIT** | set the unit of the terminal temperature sensor. |
| **COLD JUNCTION** | enable the cold junction compensation for the thermocouple sensors. |

### *Sensor Calibration Information*

| | |
|---|---|
| **MEASUREMENT METHOD** | indicates the type of measurement. |
| **CALIBRATION UNIT** | indicates the unit for the temperature calibration procedure. |
| **MINIMUM SPAN** | indicates the minimum value allowed between the lower and upper points of the calibration. |
| **CURRENT LOW POINT CALIBRATION** | indicates the last lower point of the temperature calibration. |
| **CURRENT HIGH POINT CALIBRATION** | indicates the last higher point of the temperature calibration. |

### *Calibration Methods*

**LOWER POINT CALIBRATION**: this method is used when calibrating the temperature with the user's reference instead of the manufacturer's reference.

When this method is selected, a message box appears warning the user to wait for the temperature to stabilize.

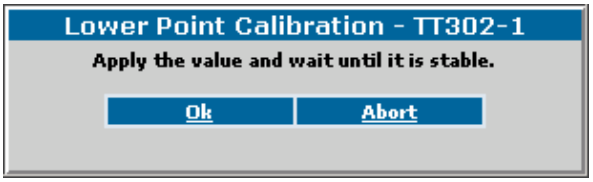



**Figure D.13**

Click *OK* and the temperature measured will be displayed.

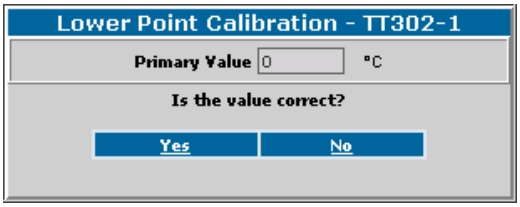



**Figure D.14**

If the value displayed is correct, click *Yes* to conclude this procedure. Otherwise, click *No* and type the temperature value:

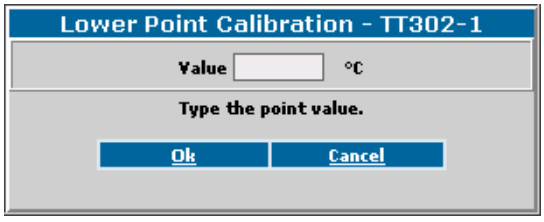



**Figure D.15**

Click *OK* to apply the new temperature value and then click *Yes* to confirm the alteration, as shown in Figure D.14.

**UPPER POINT CALIBRATION**: this method is similar to the *Lower Point Calibration* procedure described above. It is used when calibrating the temperature with the user's reference instead of the manufacturer's reference.

When this method is selected, a message box appears warning the user to wait for the temperature to stabilize.

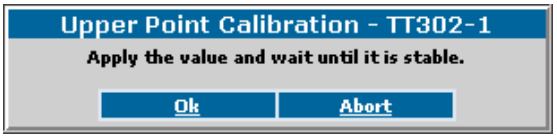



**Figure D.16**

Click *OK* and the temperature measured will be displayed.

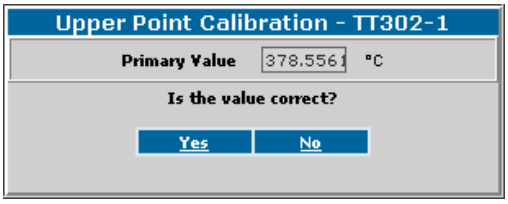



**Figure D.17**

If the value displayed is correct, click *Yes* to conclude this procedure. Otherwise, click *No* and type the temperature value:

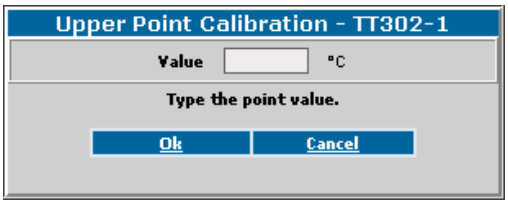



**Figure D.18**

Click *OK* to apply the new temperature value and then click *Yes* to confirm the alteration, as shown in Figure D.17.

**LINE RESISTANCE COMPENSATION**: this method is used to compensate the lead resistance when two sensors are connected.

It is necessary to short-circuit the sensor in the field to determine the total lead resistance.


**Figure D.19**

After the procedure is completed, the sensor can be reconnected.


**Figure D.20**

Check if the temperature is correct:

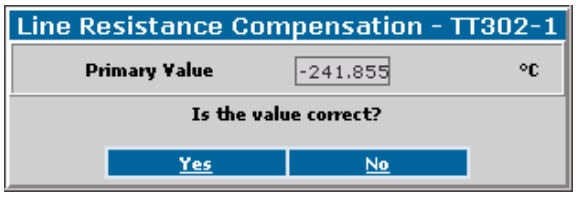



**Figure D.21**

If the value displayed is correct, click *Yes* to conclude this procedure. Otherwise, click *No* and execute the short-circuit procedure again.

**DYNAMIC VALUES**: this method displays the dynamic parameters of the respective sensor.


**Figure D.22**

Click *Ok* to proceed. The following dialog box will display the values of the temperature and the sensor terminal temperature.

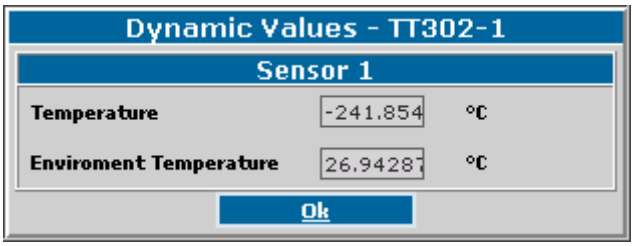



**Figure D.23**

These values are not monitored continuously. The user will have to repeat this procedure to update the values.

# E. ASSETVIEW & LD302

## LD302 Home Page

The figure below shows the ***LD302*** initial page and its options:

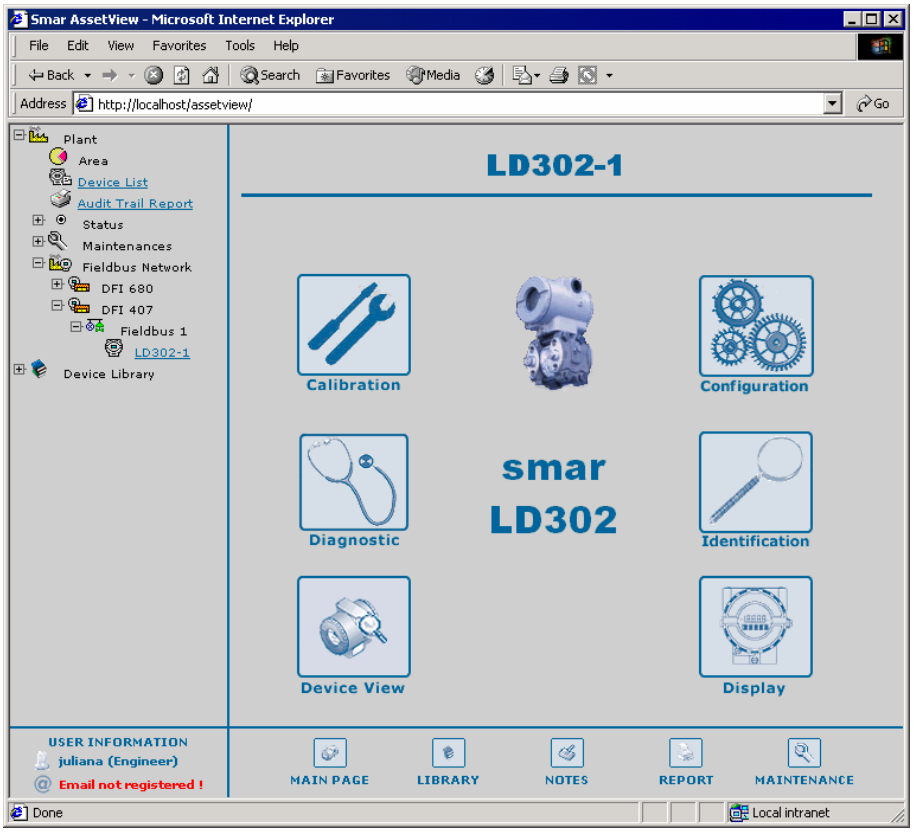



**Figure E.1**

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

## LD302 Identification Page

This page displays information relevant to the pressure transmitter. The user can easily identify and specify the transmitter in the physical plant.

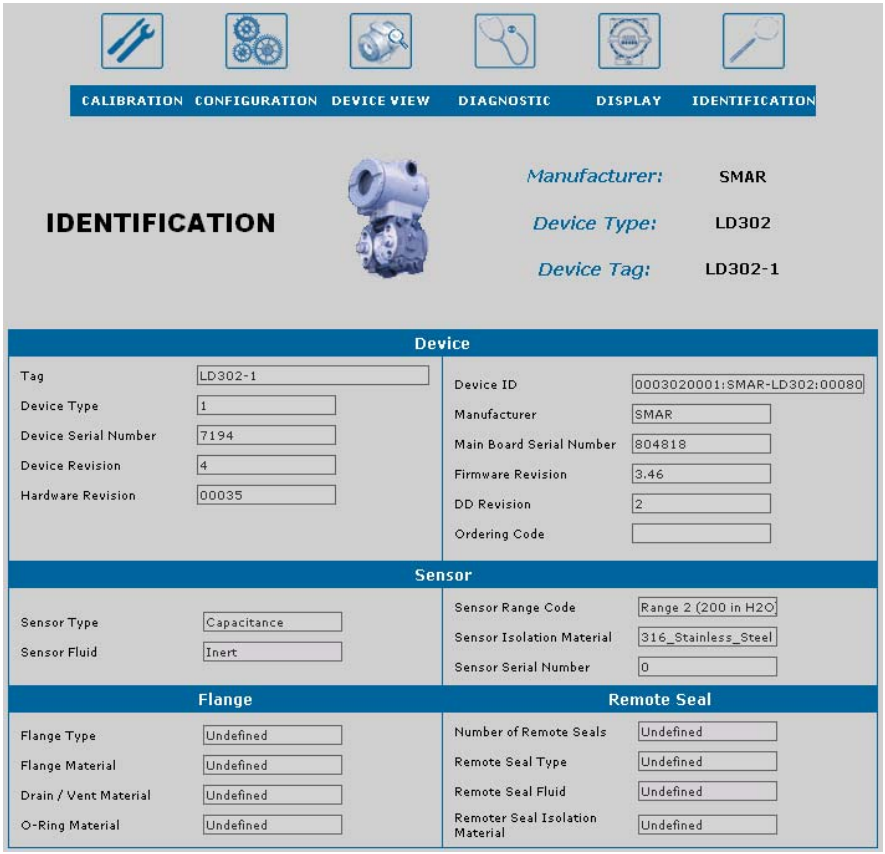



**Figure E.2**

### *Device*

| | |
|---|---|
| **TAG** | indicates the tag associated to the transmitter in the physical plant. The tag can use up to 32 characters. |
| **DEVICE TYPE** | identifies the type of the transmitter for a specific manufacturer. |
| **DEVICE SERIAL NUMBER** | indicates the serial number of the transmitter. |
| **DEVICE REVISION** | indicates the revision of the transmitter. |
| **HARDWARE REVISION** | indicates the hardware revision of the transmitter. |
| **DEVICE ID** | indicates the identification code of the transmitter. This code can use up to 32 characters. |
| **MANUFACTURER** | identifies the transmitter manufacturer. |
| **MAIN BOARD SERIAL NUMBER** | indicates the serial number of the transmitter main board. |
| **FIRMWARE REVISION** | indicates the firmware revision of the transmitter. |
| **DD REVISION** | indicates the revision of the DD. |
| **ORDERING CODE** | indicates the ordering code of the transmitter. |

### *Sensor*

| | |
|---|---|
| **SENSOR TYPE** | indicates the sensor type of the transmitter. |
| **SENSOR FLUID** | indicates the fluid of the transmitter's sensor. |
| **SENSOR RANGE CODE** | indicates the range of the transmitter's sensor. |
| **SENSOR ISOLATION MATERIAL** | indicates the isolation material of the sensor. |
| **SENSOR SERIAL NUMBER** | indicates the sensor serial number of the transmitter. |

### *Flange*

| | |
|---|---|
| **FLANGE TYPE** | indicates the type of the flange. |
| **FLANGE MATERIAL** | indicates the material of the flange. |
| **DRAIN/VENT MATERIAL** | indicates the material of the drain/vent. |
| **O-RING MATERIAL** | indicates the material of the o-ring. |

### *Remote Seal*

| | |
|---|---|
| **NUMBER OF REMOTE SEALS** | indicates the number of remote seals. |
| **REMOTE SEAL TYPE** | indicates the type of the remote seal. |
| **REMOTE SEAL FLUID** | indicates the fluid of the remote seal. |
| **REMOTE SEAL ISOLATION MATERIAL** | indicates the isolation material of the remote seal. |

## *LD302 Configuration Page*

There are some parameters in the LD302 transducer block that can be used in the predictive and proactive maintenance. It is possible to detect the performance decreasing by comparing the current parameters with the standard values and then schedule the maintenance.

The user can check the general diagnostic status in the *LD302 Diagnostic Page* (see the next section). This status is generated according to the user configuration in the *LD302 Configuration Page*. For example, there can be a "*Sensor Failure*" caused by an overpressure or a burnout sensor.

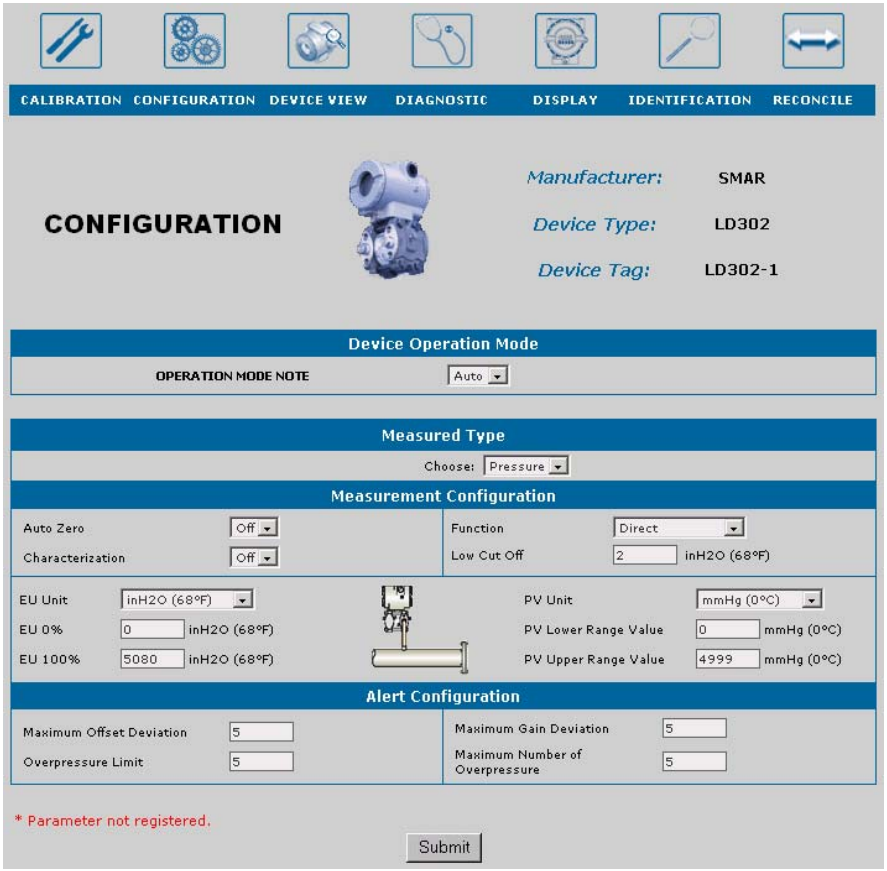



**Figure E.3**

### *Device Operation Mode*

Indicates the operation mode for the device:

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

### *Measured Type*

Select the type of the measured variable:

| | |
|---|---|
| **LEVEL** | indicates the transmitter is measuring the level. |
| **PRESSURE** | indicates the transmitter is measuring the pressure. |
| **FLOW** | indicates the transmitter is measuring the flow. |

### *Measurement Configuration*

| | |
|---|---|
| **AUTO ZERO** | flag that enables and disables the zero cutoff. |
| **CHARACTERIZATION** | flag that enables and disables the pressure characterization. |
| **FUNCTION** | indicates the function that acts in the *Primary Value*: *Linear* or *Table*. |
| **LOW CUT OFF** | indicates the value of the pressure cutoff. If the pressure value is lower than the value indicated by *Low Cur Off*, zero (“0”) will be displayed. |
| **EU UNIT** | engineering unit. |
| **EU 0%** | value of the pressure corresponding to 0%, in EU. |
| **EU 100%** | value of the pressure corresponding to 100%, in EU. |
| **PV UNIT** | unit of the process variable. |
| **PV LOWER RANGE VALUE** | lower limit of the process variable. |
| **PV UPPER RANGE VALUE** | upper limit of the process variable. |

### *Alert Configuration*

| | |
|---|---|
| **MAXIMUM OFFSET DEVIATION** | indicates the maximum offset deviation that occurs before the alarm goes off. |
| **OVERPRESSURE LIMIT** | limit for the overpressure. |
| **MAXIMUM GAIN DEVIATION** | indicates the maximum gain deviation that occurs before the alarm goes off. |
| **MAXIMUM NUMBER OF OVERPRESSURE** | indicates the maximum number of overpressure that occurs before the alarm goes off. |

## *LD302 Diagnostics Page*

The user can check the general diagnostic status in the *LD302 Diagnostic Page*.

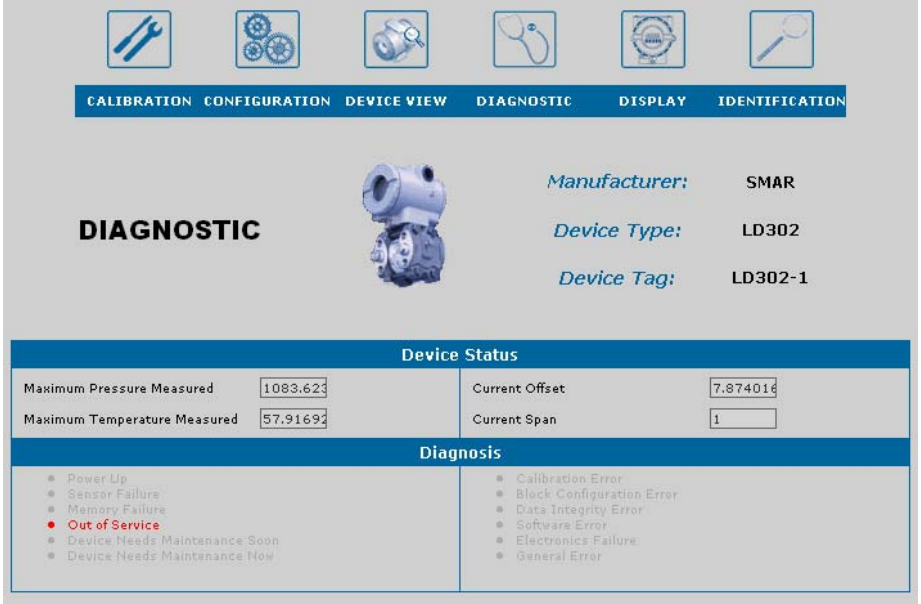



**Figure E.4**

### *Device Status*

| | |
|---|---|
| **MAXIMUM PRESSURE MEASURED** | maximum pressure measured in the sensor. |
| **MAXIMUM TEMPERATURE MEASURED** | maximum temperature measured in the sensor. |
| **CURRENT OFFSET** | current offset of the calibration curve. |
| **CURRENT SPAN** | current span of the calibration curve. |

### *Diagnosis*

Shows the status of the continuous diagnostic for the device, including the condition of the function block, the electronic module and the sensor.

| | |
|---|---|
| **POWER UP** | indicates that the device has executed the power up procedure. |
| **SENSOR FAILURE** | indicates a failure in the sensor, such as burnout or overpressure. |
| **MEMORY FAILURE** | indicates an electronic failure according to the internal checkup process, such as an incorrect checksum detected in the main memory. |
| **OUT OF SERVICE** | indicates that the function block is out of service. |
| **DEVICE NEEDS MAINTENANCE SOON** | the internal diagnostic according to the user configuration or device internal checkup has detected that the device will need maintenance soon. This diagnostic is related to overpressure in the sensor. |
| **DEVICE NEEDS MAINTENANCE NOW** | the internal diagnostic according to the user configuration or device internal checkup has detected that the device needs maintenance. This diagnostic is related to the sensor of the calibration. |

| | |
|---|---|
| **CALIBRATION ERROR** | indicates that an error occurred during the calibration of the device, or that a calibration error has been detected while operating the device. |
| **BLOCK CONFIGURATION ERROR** | indicates that there is an error related to the XD_SCALE parameter in the AI function block. |
| **DATA INTEGRITY ERROR** | indicates that data stored in the system may be no longer valid, for example, 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 could have been caused by an improper interruption of a service routine, an arithmetic overflow, a watchdog timer, etc. |
| **ELECTRONICS FAILURE** | an electronic component has failed. |
| **GENERAL ERROR** | a general error related to the device has been detected. |

## *LD302 Calibration Page*

This page displays configuration data used in the calibration procedures.

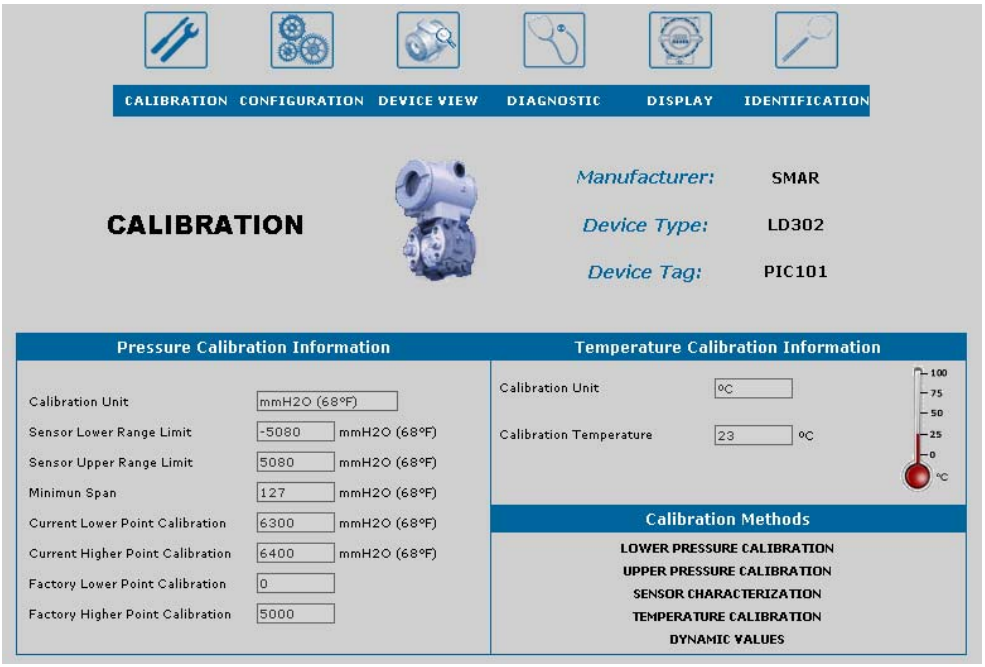



**Figure E.5**

### *Pressure Calibration Information*

| | |
|---|---|
| **CALIBRATION UNIT** | indicates the unit for the pressure calibration procedure. |
| **SENSOR LOWER RANGE LIMIT** | indicates the lower limit for the sensor. |
| **SENSOR UPPER RANGE LIMIT** | indicates the upper limit for the sensor. |
| **MINIMUM SPAN** | indicates the minimum value allowed between the lower and upper points of the calibration. |

| | |
|---|---|
| **CURRENT LOW POINT CALIBRATION** | indicates the last lower point of the pressure calibration. |
| **CURRENT HIGH POINT CALIBRATION** | indicates the last higher point of the pressure calibration. |
| **FACTORY LOW POINT CALIBRATION** | indicates the last lower point of the pressure calibration according to the manufacturer's procedure. |
| **FACTORY HIGH POINT CALIBRATION** | indicates the last higher point of the pressure calibration according to the manufacturer's procedure. |

### *Temperature Calibration Information*

| | |
|---|---|
| **CALIBRATION UNIT** | indicates the unit for the temperature calibration procedure. |
| **CALIBRATION TEMPERATURE** | indicates the value of the last calibration of the temperature. |

### *Calibration Methods*

| NOTE |
|---|
| **When the transmitter is installed, it is recommended to run the *Lower Pressure Calibration* procedure to minimize the mounting. Please refer to the transmitter manual for further details.** |

**LOWER PRESSURE CALIBRATION**: this method is used when calibrating the lower pressure point. The user can select the calibration unit and type the value of the pressure applied as a reference value to the transmitter, observing the sensor limits and the minimum span.

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 to manual.

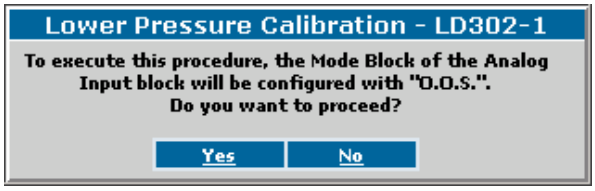



**Figure E.6**

Click *Yes*, apply the pressure and wait for the sensor to stabilize.

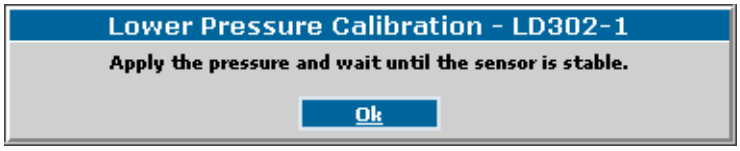



**Figure E.7**

Click *OK* and the pressure measured will be displayed.

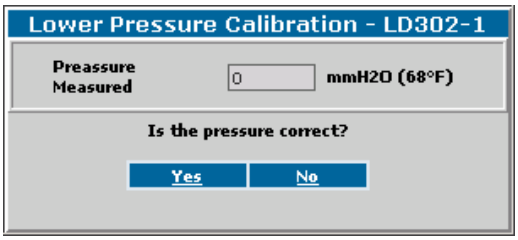



**Figure E.8**

If the value displayed is correct, click *Yes* to conclude this procedure. Otherwise, click *No* and type the pressure value:

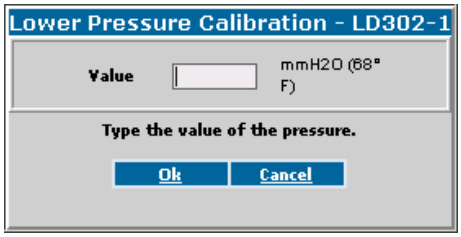



**Figure E.9**

Click *OK* to apply the new pressure value and then click *Yes* to confirm the alteration, as shown in Figure E.8.

**UPPER PRESSURE CALIBRATION**: this method is similar to the *Lower Pressure Calibration* procedure described above. It is used when calibrating the pressure with the user's reference instead of the manufacturer's reference.

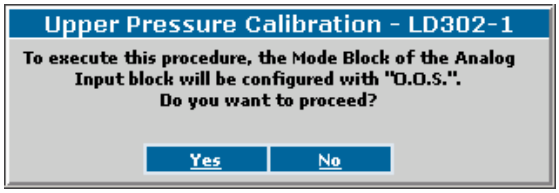



**Figure E.10**

Click *Yes*, apply the pressure and wait for the sensor to stabilize.

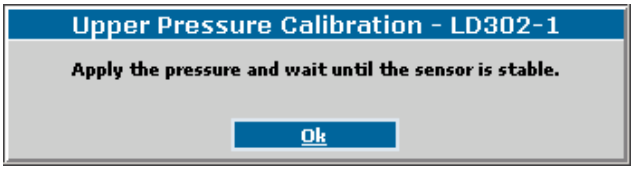



**Figure E.11**

Click *OK* and the pressure measured will be displayed.

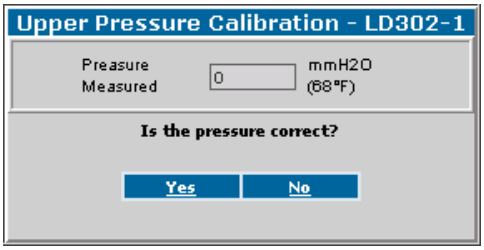



**Figure E.12**

If the value displayed is correct, click *Yes* to conclude this procedure. Otherwise, click *No* and type the pressure value:

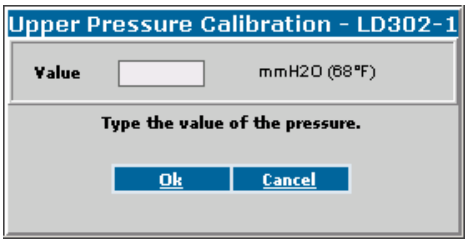



**Figure E.13**

Click *OK* to apply the new pressure value and then click *Yes* to confirm the alteration, as shown in Figure E.12.

**SENSOR CHARACTERIZATION**: this method is used to correct the sensor reading in several points. Use a pressure source accurate and stable, such as a dead-weight tester, to guarantee the accuracy to be at least three times better than the transmitter accuracy.

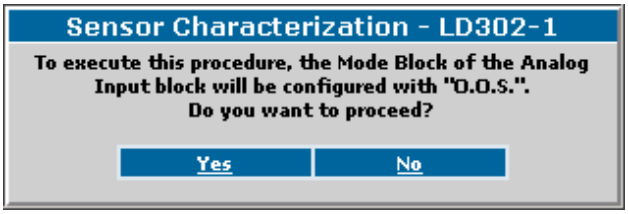



**Figure E.14**

Click *Yes* and wait for the pressure to stabilize before performing the trim. The characteristic curve of the sensor can be slightly nonlinear at a certain temperature and for certain ranges. This non-linearity can be corrected by the *Characterization Trim*. The user can characterize the transmitter with the operating range to obtain a better accuracy. The characterization is determined from two up to five points.

Apply the pressure to the transmitter:

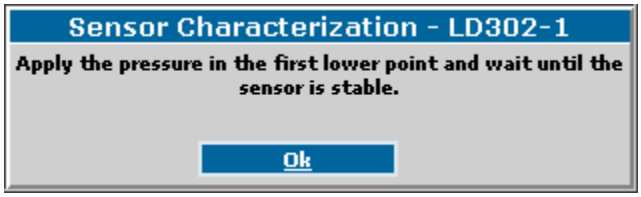



**Figure E.15**

The pressure measured will be displayed. Click *Ok* if the pressure is stable.

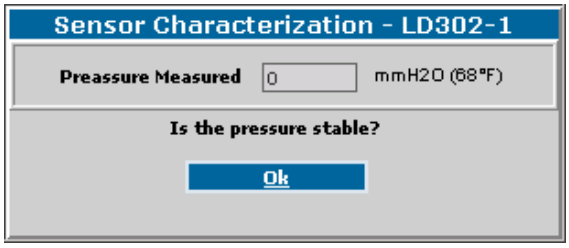



**Figure E.16**

Type the value of the pressure that is being applied and click *Ok*:

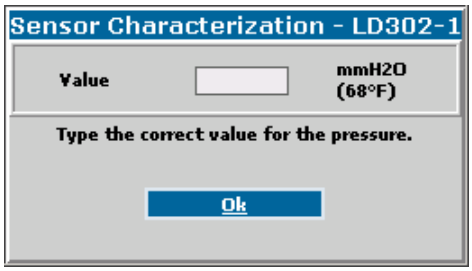



**Figure E.17**

Apply the pressure for the second point:

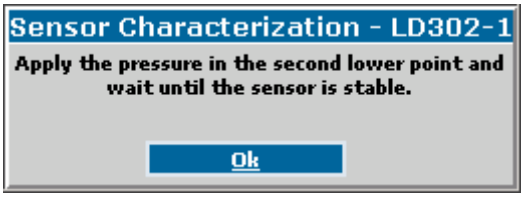



**Figure E.18**

The pressure measured will be displayed:

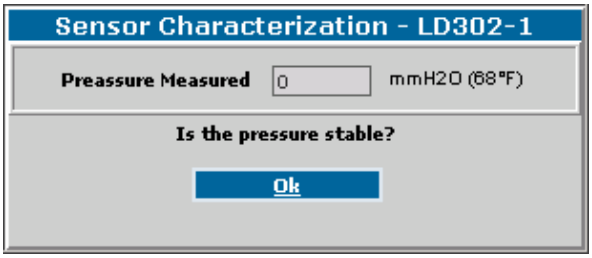



**Figure E.19**

Type the value of the pressure and click *Ok*:

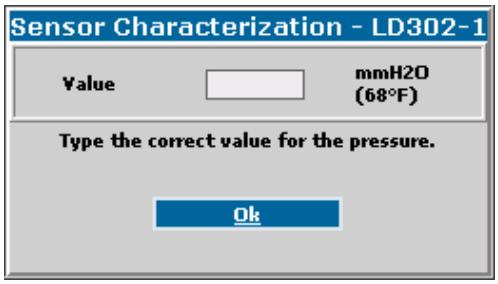



**Figure E.20**

To calibrate another point, click *Yes* in the following box and repeat the procedure described above for the first point. Otherwise, click *No* to conclude.

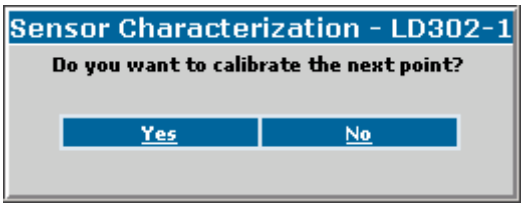



**Figure E.21**

**TEMPERATURE CALIBRATION**: this method is used to calibrate the temperature sensor.

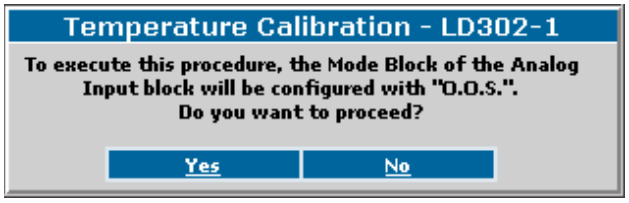



**Figure E.22**

Click *Yes*, apply the temperature and wait for the sensor to stabilize.

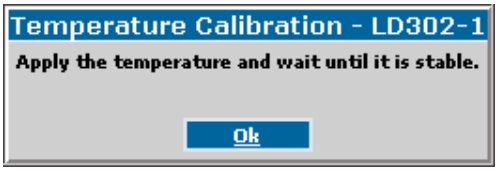



**Figure E.23**

Click *Ok* to start the calibration. The temperature measured will be displayed:

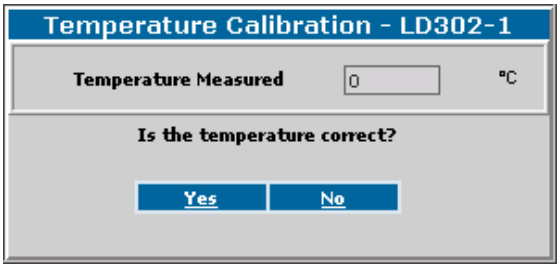



**Figure E.24**

If the value displayed is correct, click *Yes* to conclude this procedure. Otherwise, click *No* and type the temperature value:

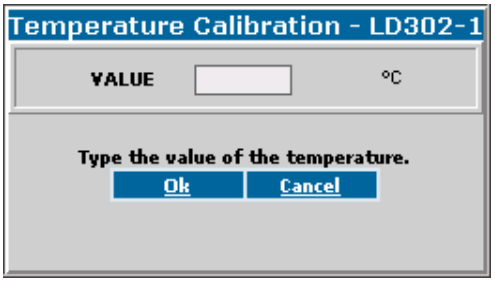



**Figure E.25**

Click *OK* to apply the new temperature value and then click *Yes* to confirm the alteration, as shown in Figure E.24.

**DYNAMIC VALUES**: this method displays the dynamic parameters of the sensor.

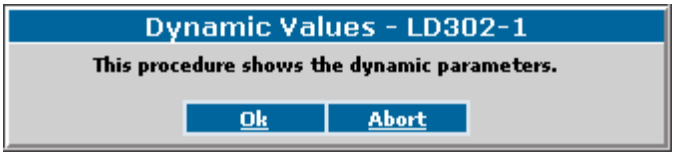



**Figure E.26**

Click *Ok* to proceed. The following dialog box will display the values of the temperature and the sensor terminal temperature.

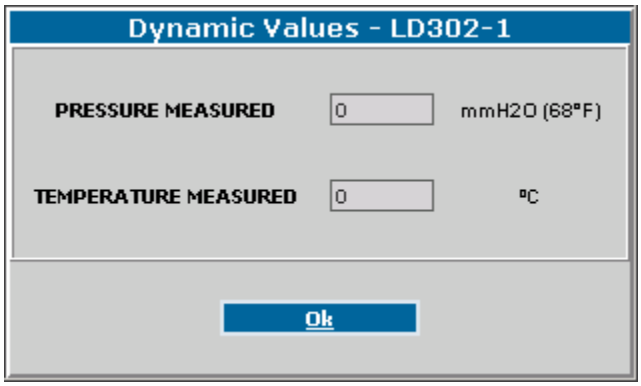



**Figure E.27**

The **Measured Pressure** indicates the value of the pressure measured by the sensor.

These values are not monitored continuously. The user will have to repeat this procedure to update the values.

## *LD302 Display Page*

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

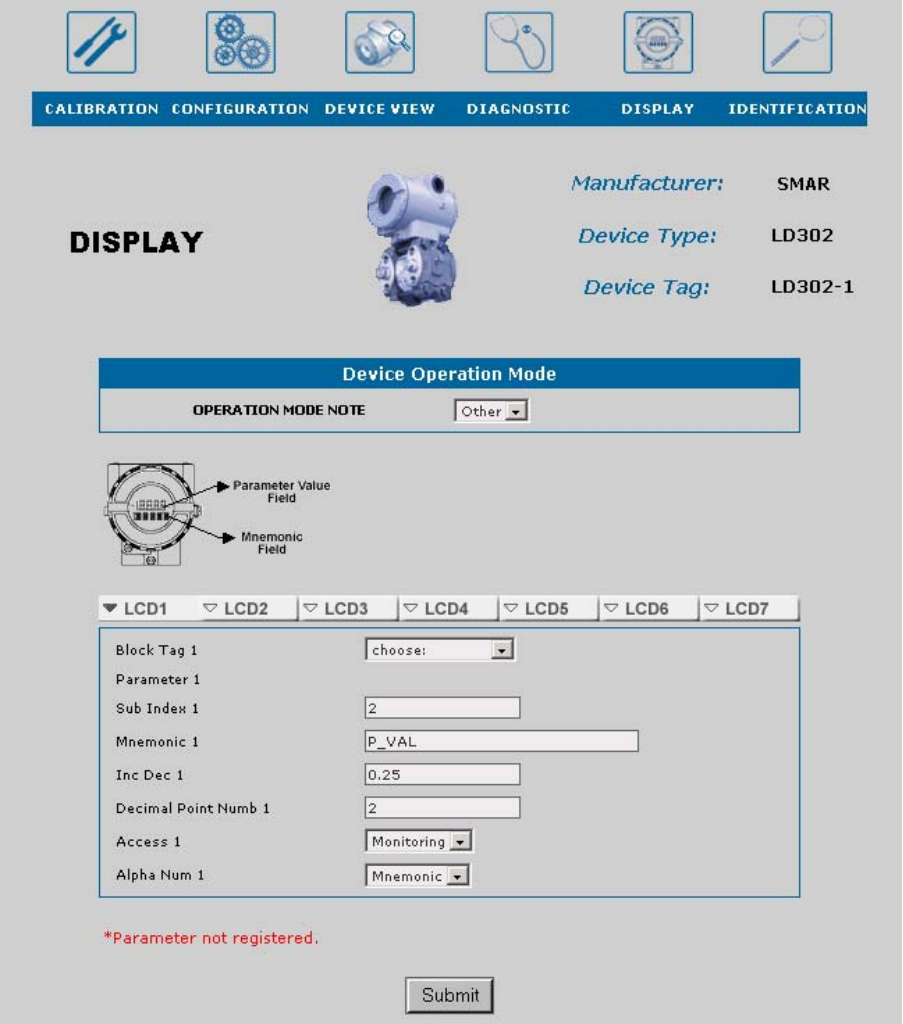



**Figure E.28**

### *Device Operation Mode*

Indicates the operation mode for the device:

| | |
|---|---|
| **OOS** | if this mode is selected, the value of the parameter *Mode Block* will be *Out of Service* for the *Resource*, *Transducer* and *Analog Output* blocks. |
| **AUTO** | if this mode is selected, the value of the parameter *Mode Block* will be *Auto* for the *Resource*, *Transducer*, *Display* and *Analog Output* blocks. |
| **MAN** | if this mode is selected, the value of the parameter *Mode Block* 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. |

### *Display*

| | |
|---|---|
| **BLOCK TAG** | shows the list of the tags for the instantiated blocks available. |
| **PARAMETER** | shows the list of parameters available to be displayed in the LCD for the block selected in the *Block Tag* option. |

| | |
|---|---|
| **SUB INDEX** | indicates the sub-index of the selected parameter. |
| **MNEMONIC** | indicates the mnemonic of the parameter selected in the *Parameter* option. |
| **INC DEC** | indicates the value to be added or subtracted when acting the parameter via local tuning. |
| **DECIMAL POINT NUMB** | indicates the digits to the right of the decimal point for the parameter being displayed in the LCD. |
| **ACCESS** | the user can select the type of access to the selected parameter: monitoring or action. |
| **ALPHA NUM** | indicates if the alphanumeric field will be used for the mnemonic or for the value. |

## *LD302 Device View Page*

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

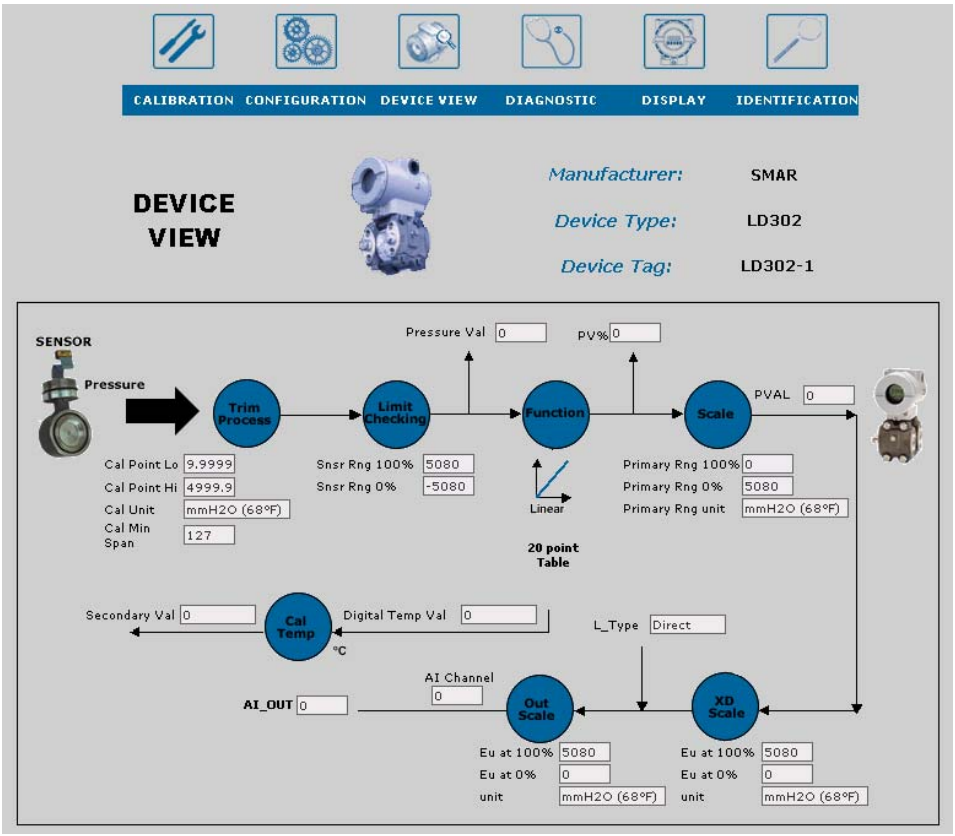



**Figure E.29**

# Appendix F

# F.ASSETVIEW & DT301

## DT301 Home Page

The figure below shows the ***DT301*** initial page and its options:

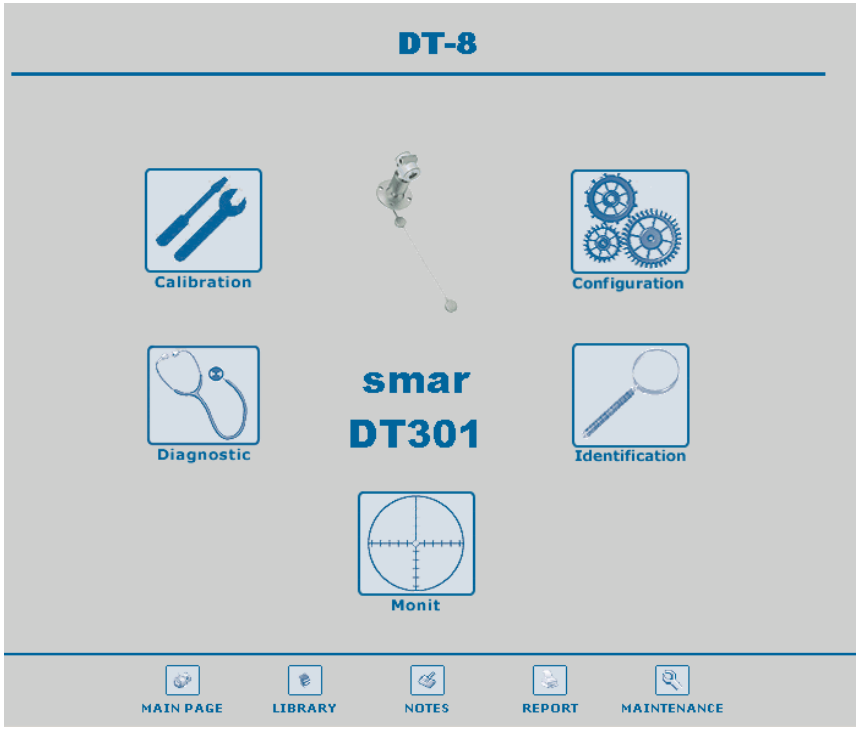



**Figure F.1**

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

| NOTE |
| --- |
| **Remember that *AssetView* monitors HART instruments through Smar's HI302 (HART/Foundation Fieldbus Interface). It is necessary to update the HI302 firmware version to 0301 (3.15 or higher) and create the blocks configuration for the HI302. Please refer to the *HI302 User's Manual* (Chapter 3) for further information** |

## DT301 Identification Page

This page displays information relevant to the density transmitter. The user can easily identify and specify the transmitter in the physical plant.


**Figure F.2**

## *Device*

| | |
|---|---|
| **TAG** | indicates the tag associated to the transmitter in the physical plant. The tag can use up to 8 characters. |
| **DESCRIPTOR** | 16-characters field for additional identification of the transmitter. It can be used to identify a location or a service. |
| **MESSAGE** | 32-characters field for any other information, such as the name of the responsible for the last calibration, specific prodecures, etc. |
| **DATE** | identifies a relevant date, such as the last calibration, the next calibration or the installation date. The date is stored as bytes: DD = [1,..31], MM = [1..12], YY = [0..255], where the effective year is calculated by [Year = 1900 + YY]. |
| **MANUFACTURER** | identifies the transmitter manufacturer. |
| **DEVICE TYPE** | identifies the type of the transmitter for a specific manufacturer. |
| **DEVICE ID** | indicates the identification code of the transmitter. This code can use up to 32 characters. |
| **HART POLLING ADDRESS** | indicates the transmitter's address in multidrop mode (0 to 15) or controller mode (0). |
| **WRITE PROTECT MODE** | indicates if the transmitter is protected from writing. |
| **DEVICE SERIAL NUMBER** | indicates the serial number of the transmitter. |
| **SENSOR SERIAL NUMBER** | indicates the serial number of the sensor. |
| **FIRMWARE REVISION** | indicates the firmware revision of the transmitter. |

| | |
|---|---|
| **HARDWARE REVISION** | indicates the hardware revision of the transmitter. |
| **ORDERING CODE** | indicates the ordering code of the transmitter. |
| **HART REVISION** | indicates the HART protocol revision used in the transmitter. |
| **SPECIFIC REVISION** | indicates the specific revision of the instrument. |
| **DISPLAY** | indicates if the display is installed in the instrument. |

### *Probe Info*

| | |
|---|---|
| **FLANGE TYPE** | indicates the type of the flange. |
| **PROBE MATERIAL** | indicates the material in the probe. |
| **O-RING MATERIAL** | indicates the type of material for the o-ring. |
| **INSTALLATION TYPE** | indicates the installation type: top mounting (direct) or side mounting (reverse). |
| **PROBE TYPE** | indicates the probe type: sanitary or industrial. |
| **PROBE FLUID** | indicates the fluid used in the probe. |
| **DIAPHRAGM MATERIAL** | indicates the type of the material that composes the diaphragm. |
| **ELECTRICAL CONNECTION** | indicates the type of the electrical connection. |
| **RANGE** | indicates the reading range of the probe. |

## *DT301 Configuration Page*

The Smart Density Transmitter DT301 has a very comprehensive set of HART commands that allow the user to access any implemented functionality. The DT301 configuration page allows the user to configure parameters such as input limits, work range, linearization table, etc.

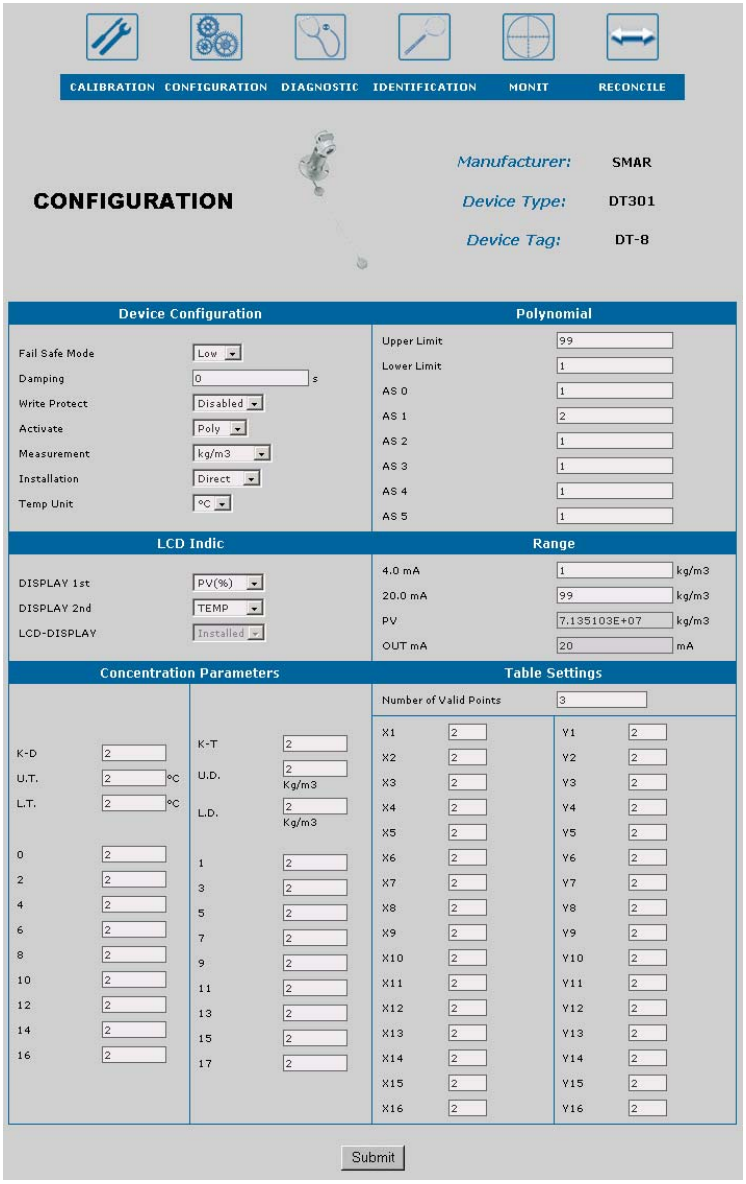



**Figure F.3**

## *Device Configuration*

| | |
|---|---|
| **FAIL SAFE MODE** | indicates the transmitter action when the instrument is on fail safe mode (in case there is a fail). |
| **DAMPING** | the *damping* is a digital filter that adjusts the time constant between 0 and 32 seconds. |
| **WRITE PROTECT** | indicates if the transmitter is protected from writing. |
| **ACTIVATE** | activates the polynomial or the linearization table. |
| **MEASUREMENT** | indicates the measurement unit. |
| **INSTALLATION** | indicates the installation type: top mounting (direct) or side mounting (reverse). |
| **TEMP UNIT** | indicates the temperature unit defined by the user. |

### *Polynomial*

| | |
|---|---|
| **UPPER LIMIT** | indicates the upper limit of the polynomial. |
| **LOWER LIMIT** | indicates the lower limit of the polynomial. |
| **AS 0 ... AS 5** | defines the parameters values of the polynomial. |

### *LCD Indic*

| | |
|---|---|
| **DISPLAY 1ST** | indicates the first variable selected by the user. |
| **DISPLAY 2ND** | indicates the second variable selected by the user. |
| **LCD DISPLAY** | indicates if the display is installed in the instrument. |

### *Range*

| | |
|---|---|
| **4.0 mA** | indicates the lower limit for the reading range. |
| **20.0 mA** | indicates the upper limit for the reading range. |
| **PV** | process variable. |
| **OUT mA** | process variable in mA. |

### *Concentration Parameters*

| | |
|---|---|
| **K-T** | temperature constant. |
| **U-T** | temperature upper limit. |
| **L-T** | temperature lower limit. |
| **K-D** | density constant. |
| **U-D** | density upper limit. |
| **L-D** | density lower limit. |
| **0 … 17** | polynomial parameters (Conc.). |

### *Table Settings*

| | |
|---|---|
| **NUMBER OF VALID POINTS** | defines the number of points used in the user table. |
| **(Xi,Yi)** | values of the table points. This value must be in percentage. |

## *DT301 Diagnostics Page*

The user can check the general diagnostic status in the *DT301 Diagnostic Page*.

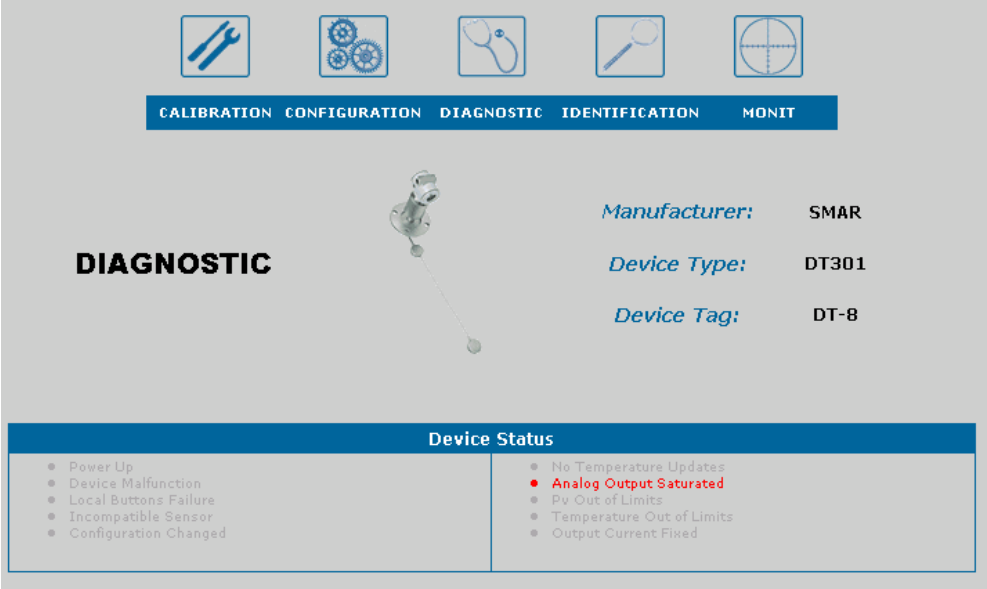



**Figure F.4**

### *Device Status*

| | |
|---|---|
| **POWER UP** | indicates that the device has executed the power up procedure. |
| **DEVICE MALFUNCTION** | indicates a failure in the sensor or the sensor is disconnected. |
| **CONFIGURATION CHANGED** | indicates that parameters of the transmitter were altered. |
| **ANALOG OUTPUT SATURATED** | indicates the pressure is out of the limits of the calibrated values or at burn-out (output current at 3,90 or 21,00 mA). |
| **PV OUT OF LIMITS** | indicates the pressure is out-of-limits, the sensor is damaged, the sensor module is not connected, or the transmitter has a false configuration. |
| **TEMPERATURE OUT OF LIMITS** | indicates the temperature is out-of-limits. |
| **OUTPUT CURRENT FIXED** | indicates the output is in constant mode or the transmitter is in multidrop mode. |

## *DT301 Calibration Page*

This page displays configuration data used in the calibration procedures.

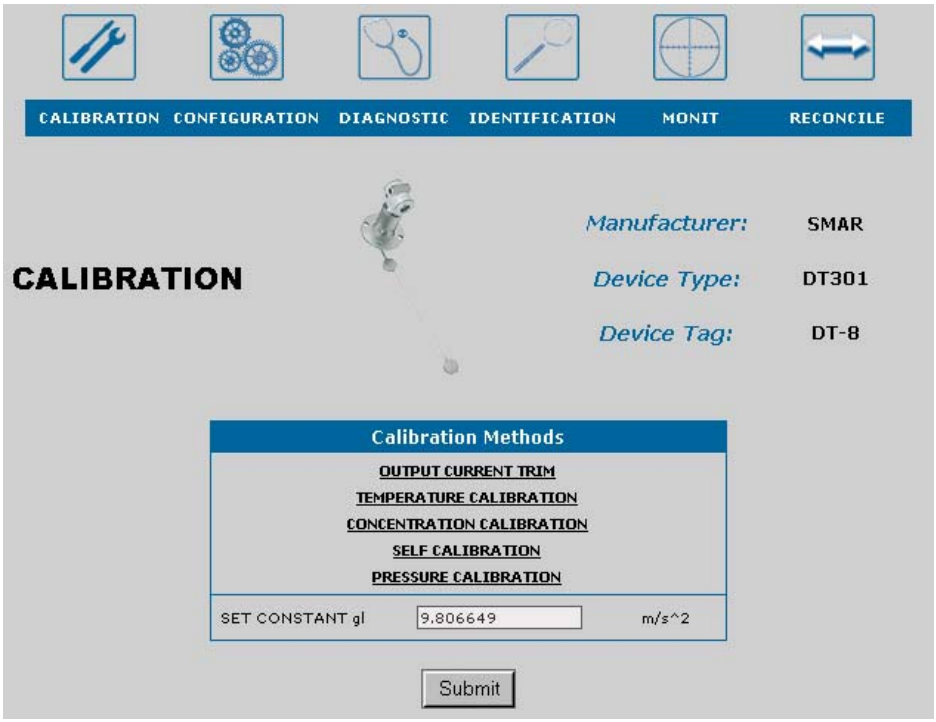



**Figure F.5**

### *Calibration Methods*

| | |
|---|---|
| **SET CONSTANT GL** | constant that defines the local gravity acceleration where the instrument is installed. |

**OUTPUT CURRENT TRIM**: when the microprocessor generates a 0% output signal, the Digital/Analog converter and the components associated provides a 4mA output. If the signal is 100%, the output should be 20mA. There might be a slight difference between the Smar's current standards and the plant current standard. In this case, follow the steps described below to adjust the current.


**Figure F.6**

Make sure the transmitter is *off-line*. Click *Ok*.


**Figure F.7**

Connect the multimeter to the test point. Click *Ok* to continue.

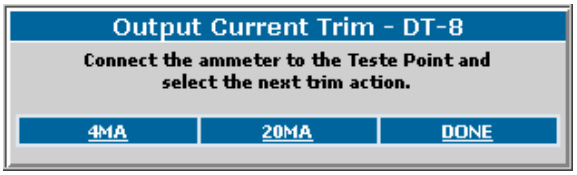



**Figure F.8**

Connect the ammeter to the test point and select the value of the current that will be calibrated.

The current measured will be displayed:

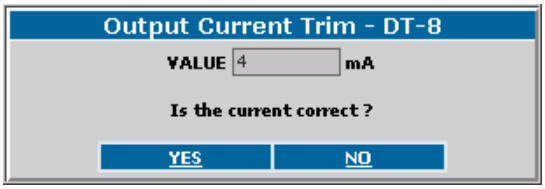



**Figure F.9**

If the value displayed is correct, click *Yes* to conclude this procedure. Otherwise, click *No* and type the current value:

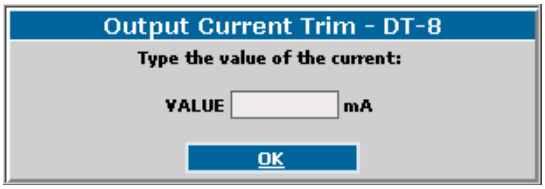



**Figure F.10**

Click *OK* to apply the new current value and then click *Yes* to confirm the alteration, as shown in Figure F.9.

The user can select another current calibration, as showed in the figure below. Select the current value and repeat the steps described above, or click *Done* to conclude the output current calibration procedure.

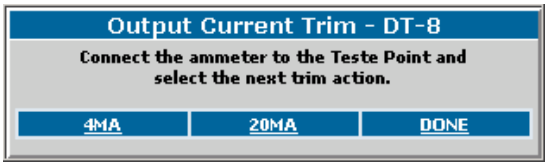



**Figure F.11**

**TEMPERATURE CALIBRATION**: this method is used to calibrate the temperature sensor.

Wait until the temperature stabilizes and click *Ok*.

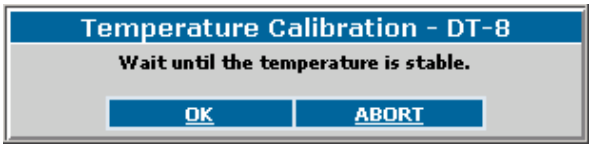



**Figure F.12**

The temperature measured will be displayed:

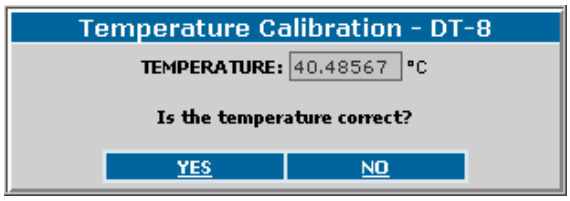



**Figure F.13**

If the value displayed is correct, click *Yes* to conclude this procedure. Otherwise, click *No* and type the temperature value:

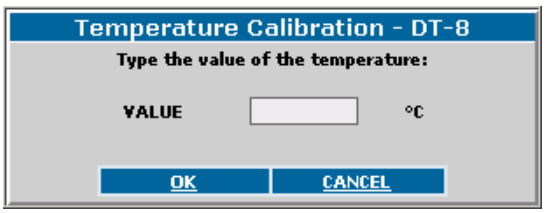



**Figure F.14**

Click *OK* to apply the new temperature value and then click *Yes* to confirm the alteration, as shown in Figure F.13.

**CONCENTRATION CALIBRATION**: this method is used to calibrate measurements from the DT301 related to the users standard, that is, to calibrate the concentration or density the user must inform the transmitter the value of the concentration or density that the DT301 should read when in contact with the solution.

It is recommended to use at least two standards: one standard shows the lower concentration and the other, the upper concentration.

Set the DT301 in contact with the standard solution and wait until the value measured is stable. Select the calibration range for the solution where the DT301 is submerged.


**Figure F.15**

| NOTE |
| --- |
| **It is recommended to execute this calibration for the lower limit and then for another concentration with a higher value. The calibration procedure for the *Lower* option is the same as for the *Upper* option.** |

Wait until the DT301 is stable and click *Ok* to proceed.

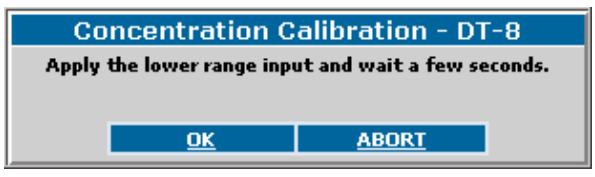



**Figure F.16**

The density value will be displayed:

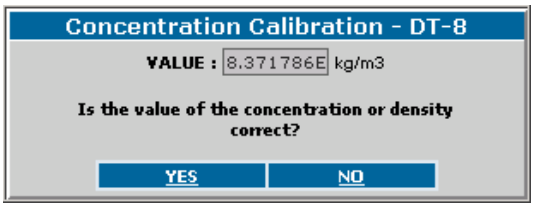



**Figure F.17**

If the value displayed is correct, click *Yes* to conclude this procedure. Otherwise, click *No* and type the density value that the DT301 should have read:

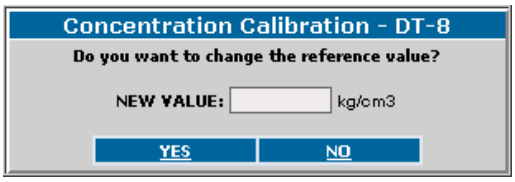



**Figure F.18**

Click *Yes* to apply the changes or click *No* and the value won't be updated.

Click *Yes* to confirm the density value, as showed in Figure F.17.

The correct value of the density or concentration will be displayed. In case it is not correct, repeat this calibration procedure.

To alter the calibration unit, for example using Brix degree, the user must change the parameter **Measurement** in the DT301 configuration page.

**SELF CALIBRATION**: this method calibrates the transmitter using the air density or the water density in Brix degree as a reference. According to the measurement parameter configured: if it is air, the unit kg/m3 must be configured; if it is water, select the unit Brix.


**Figure F.19**

Select the variable to be calibrated. Notice that the test point must be in contact with the selected element.


**Figure F.20**

Click *Ok* to continue. The calibration error will be displayed:

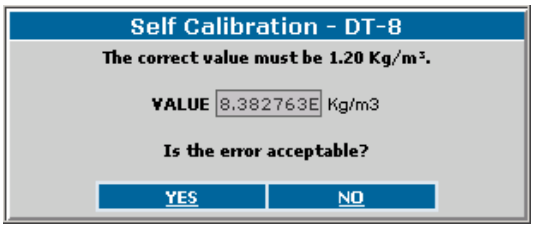



**Figure F.21**

If the error is acceptable, click *Yes* to conclude the procedure. Otherwise, click *No* to read the value again.

Repeat this step until the error is acceptable and then click *Yes* to conclude.

If the user selectes the water, the dialog box below will open before starting the calibration to alert the user that the variable unit must be Brix degree. To change the unit, open the DT301 configuration page and edit the parameter **Measurement**.

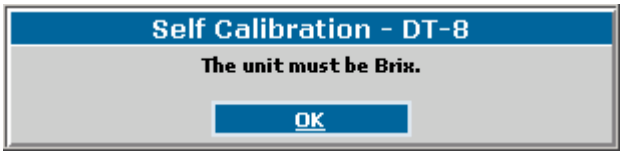



**Figure F.22**

The calibration steps are the same as described for the air, but the Brix degree value in the water is always zero.

**PRESSURE CALIBRATION**: this method corrects any distortions that have occurred in the sensor's mechanical gain, acting on the transference curve span. The upper pressure adjustment is identical to the lower pressure, except for the reference point. The user can select the calibration unit and type the value of the pressure that will be used as a reference value for the transmitter, respecting the range limit of the sensor and the minimum span.

| OBSERVAÇÃO |
| --- |
| **A specific device must be used to apply the pressure.** |

The transmitter must be in off-line mode.

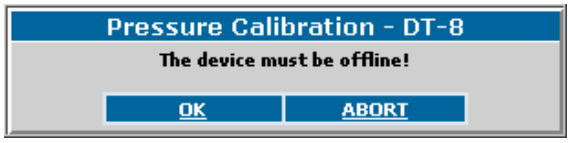



**Figure F.23**

Click *Ok* and select the value to be calibrated:


**Figure F.24**

Apply the input value and wait until the transmitter is stable:

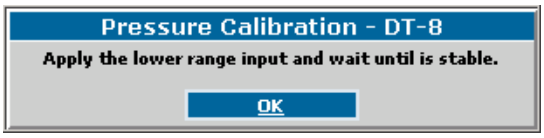



**Figure F.25**

Click *OK* and the pressure will be displayed.

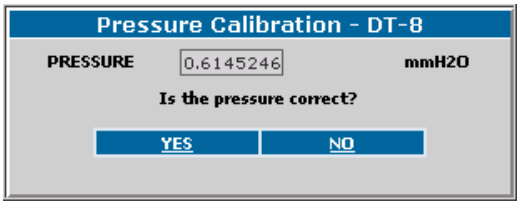



**Figure F.26**

If the value displayed is correct, click *Yes* to conclude this procedure. Otherwise, click *No* and type the pressure value:

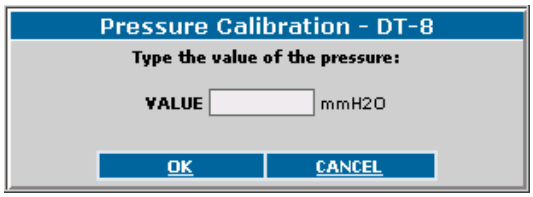



**Figure F.27**

Click *OK* to apply the new pressure value and then click *Yes* to confirm the alteration, as shown in Figure F.26.

## *DT301 Monitoring Page*

This page displays the parameters and monitoring data of the density transmitter.

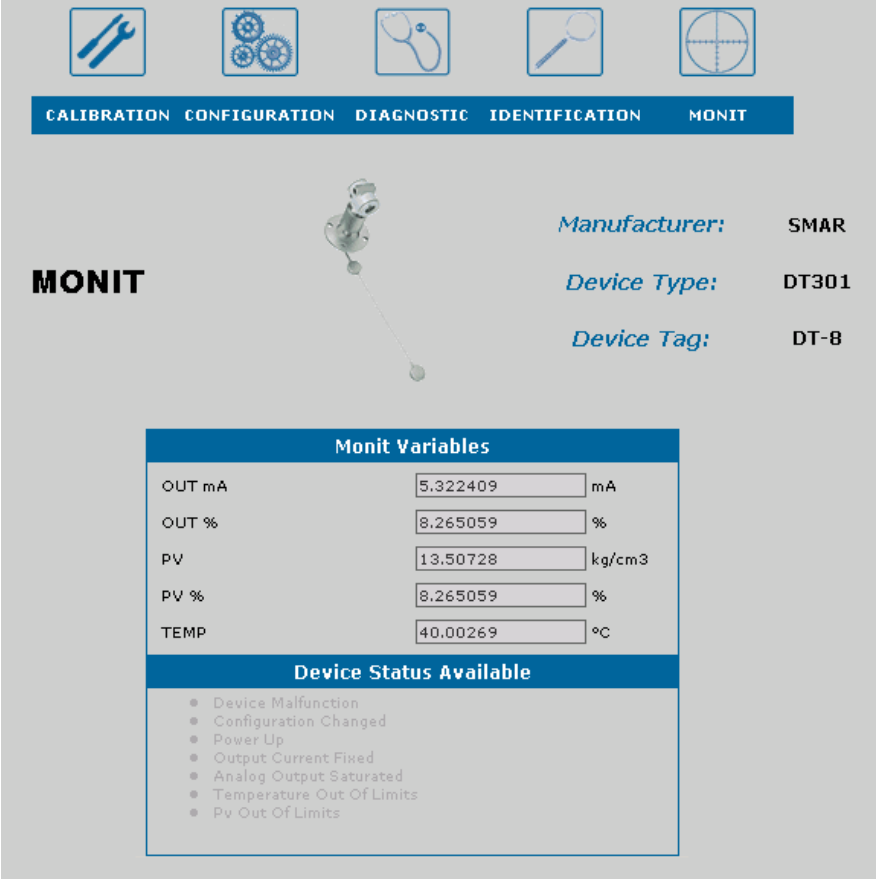



**Figure F.28**

### *Monit Variables*

| | |
|---|---|
| **OUT mA** | output value in mA. |
| **OUT %** | output value in percentage. |
| **PV** | process variable. |
| **PV %** | value of the process variable, in percentage. |
| **TEMP** | temperature value. |

### *Device Status Available*

| | |
|---|---|
| **DEVICE MALFUNCTION** | indicates a failure in the sensor or the sensor is disconnected. |
| **CONFIGURATION CHANGED** | indicates that parameters of the transmitter were altered. |
| **POWER UP** | indicates that the device has executed the power up procedure. |
| **OUTPUT CURRENT FIXED** | indicates the output is in constant mode or the transmitter is in multidrop mode. |
| **ANALOG OUTPUT SATURATED** | indicates the pressure is out of the limits of the calibrated values or at burn-out (output current at 3,90 or 21,00 mA). |

| | |
|---|---|
| **TEMPERATURE OUT OF LIMITS** | indicates the temperature is out-of-limits. |
| **PV OUT OF LIMITS** | indicates the pressure is out-of-limits, the sensor is damaged, the sensor module is not connected, or the transmitter has a false configuration. |

# G. ASSETVIEW & FI302

## FI302 Home Page

The figure below shows the ***FI302*** initial page and its options:

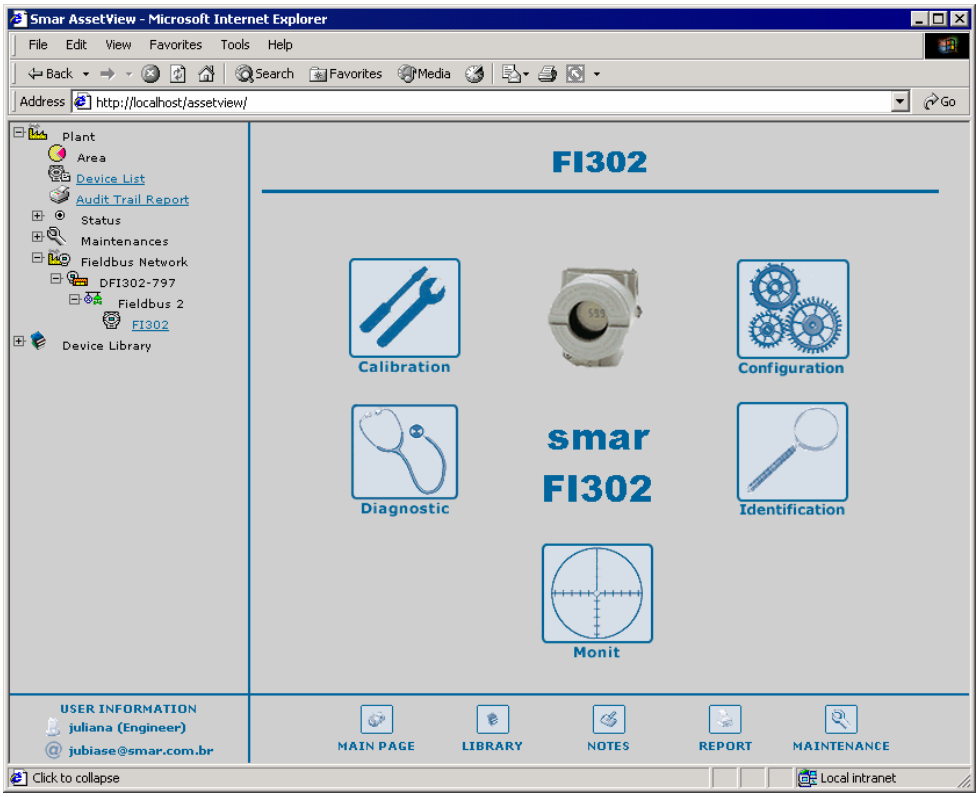



**Figure G.1**

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

## FI302 Identification Page

This page displays information relevant to the converter. The user can easily identify and specify the device in the physical plant.

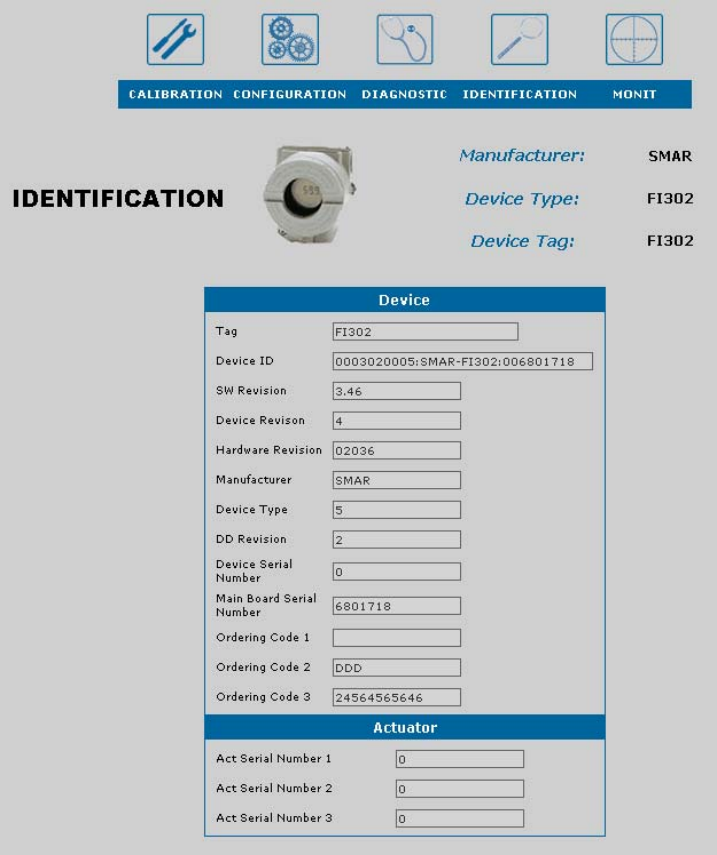



**Figure G.2**

### *Device*

| | |
|---|---|
| **TAG** | indicates the tag associated to the converter in the physical plant. The tag can use up to 32 characters. |
| **DEVICE ID** | indicates the identification code of the converter. This code can use up to 32 characters. |
| **SW REVISION** | indicates the software revision of the converter. |
| **DEVICE REVISION** | indicates the revision of the converter. |
| **HARDWARE REVISION** | indicates the hardware revision of the converter. |
| **MANUFACTURER** | identifies the converter manufacturer. |
| **DEVICE TYPE** | identifies the type of the converter for a specific manufacturer. |
| **DD REVISION** | indicates the revision of the DD. |
| **DEVICE SERIAL NUMBER** | indicates the serial number of the converter. |
| **MAIN BOARD SERIAL NUMBER** | indicates the serial number of the main board. |
| **ORDERING CODE 1 ... 3** | indicates the ordering code of the converter. |

### *Actuator*

| | |
|---|---|
| **ACT SERIAL NUMBER 1 ... 3** | indicates the serial number of the actuator. |

# FI302 Configuration Page

The FI302 contains three output transducer blocks. The channel number of the AO block corresponds to the terminal block with the same number.

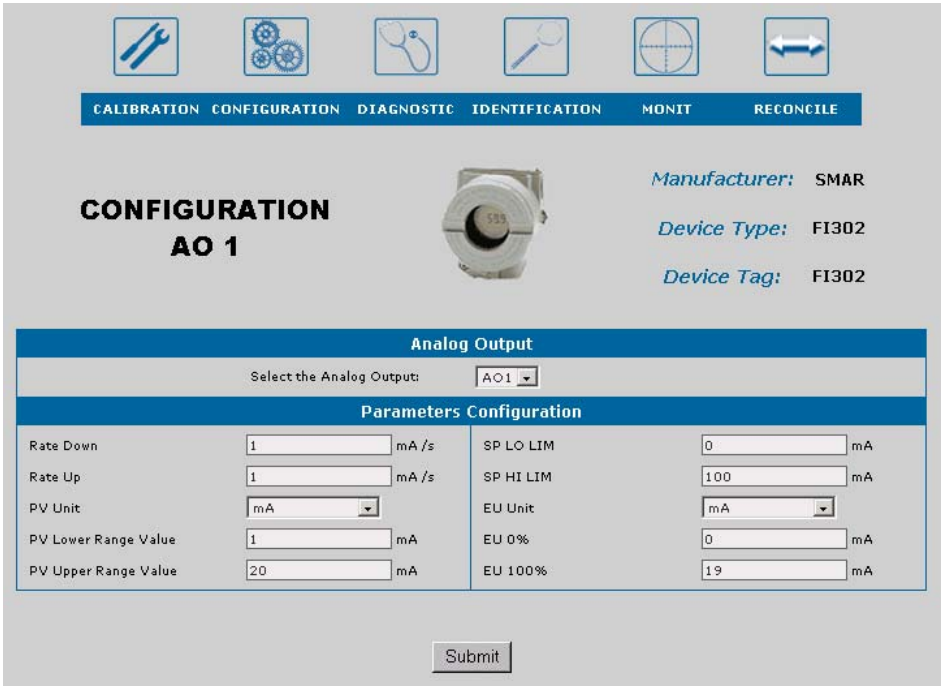



**Figure G.3**

### *Select the Analog Output*

Select the AO block to be configured.

### *Parameters Configuration*

| | |
|---|---|
| **RATE DOWN** | configures the set point rate down related to the time. |
| **RATE UP** | configures the set point rate up related to the time. |
| **PV UNIT** | unit of the process variable. |
| **PV LOWER RANGE VALUE** | lower limit of the process variable. |
| **PV UPPER RANGE VALUE** | upper limit of the process variable. |
| **SP LO LIM** | lower limit of the AO block set point. |
| **SP HI LIM** | upper limit of the AO block set point. |
| **EU UNIT** | engineering unit. |
| **EU 0%** | value of the measuring corresponding to 0%, in EU. |
| **EU 100%** | value of the measuring corresponding to 100%, in EU. |

# FI302 Diagnostics Page

This page displays the device status.


**Figure G.4**

## Diagnosis

Displays the diagnostic status of the device, including the status of the function block, mechanical module and sensor.

| | |
|---|---|
| **POWER UP** | indicates that the device has executed the power up procedure. |
| **SENSOR FAILURE** | indicates the sensor of the final element has failed (open current loop, for example). |
| **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 checkup process, such as an incorrect checksum detected in the main memory. |
| **OUT OF SERVICE** | indicates that the function block is out of service. |
| **DEVICE NEEDS MAINTENANCE SOON** | the internal diagnostic according to the user configuration or device internal checkup has detected that the device will need maintenance soon. This diagnostic is related to the output current generated. |
| **DEVICE NEEDS MAINTENANCE NOW** | the internal diagnostic according to the user configuration or device internal checkup has detected that the device needs maintenance. This diagnostic is related to the calibration, for example. |
| **BLOCK CONFIGURATION ERROR** | indicates that there is an error related to the XD_SCALE parameter in the AO function block. |

| | |
|---|---|
| **CALIBRATION ERROR** | indicates that an error occurred during the calibration of the device, or that a calibration error has been detected while operating the device. |
| **DATA INTEGRITY ERROR** | indicates that data stored in the system may be no longer valid, for example, 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 could have been caused by an improper interruption of a service routine, an arithmetic overflow, a watchdog timer, etc. |
| **ELECTRONICS FAILURE** | an electronic component has failed. |
| **GENERAL ERROR** | a general error related to the device has been detected. |

## *FI302 Calibration Page*

This page displays configuration data used in the calibration procedures.

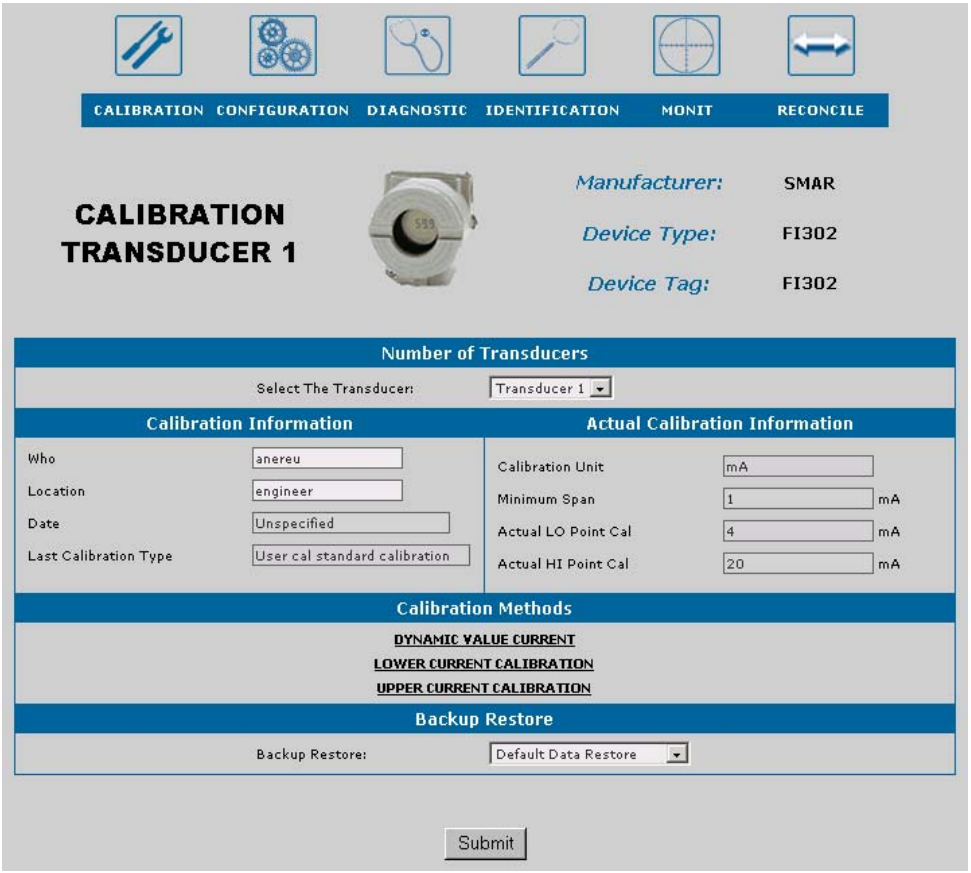



**Figure G.5**

### *Number of Transducers*

Select the transducer block to be calibrated.

### *Calibration Information*

| | |
|---|---|
| **WHO** | indicates the person responsible for the executed calibration. |
| **LOCATION** | indicates the location of the calibration. |
| **DATE** | indicates the date of the executed calibration. |
| **LAST CALIBRATION TYPE** | indicates the method used in the last calibration. |

### *Actual Calibration Information*

| | |
|---|---|
| **CALIBRATION UNIT** | indicates the unit for the calibration procedure. |
| **MINIMUM SPAN** | indicates the minimum value allowed between the lower and upper points of the calibration. |
| **ACTUAL LO POINT CAL** | indicates the last lower point of the current calibration. |
| **ACTUAL HI POINT CAL** | indicates the last higher point of the current calibration. |

### *Calibration Methods*

**DYNAMIC VALUE CURRENT**: this method shows the current parameters of the converter.

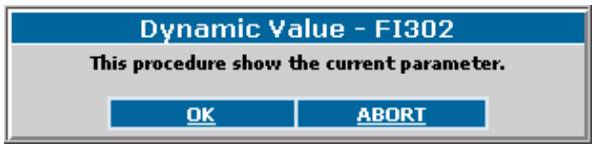



**Figure G.6**

Click *Ok* to proceed. The dialog box will display the current value measured, as indicated below.

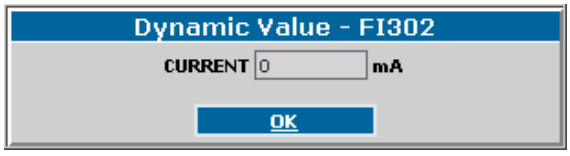



**Figure G.7**

**LOWER CURRENT CALIBRATION**: this method is used when the user wants to calibrate the lower current. The user can select the calibration unit and type the value of the applied current to be used as the reference value of the converter, respecting the limits and the minimum span.

When this method is selected, a message box appears warning the user that this procedure must be executed when the plant control is set at manual. Connect the ammeter to the corresponding output channel of the FI302.

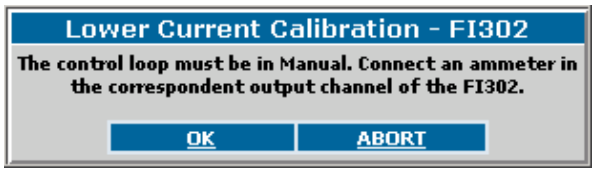



**Figure G.8**

Click *Ok* and wait until the current value is stable.

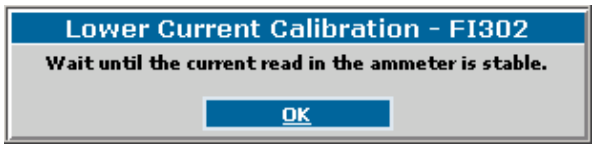



**Figure G.9**

Click *OK* and the current will be displayed.

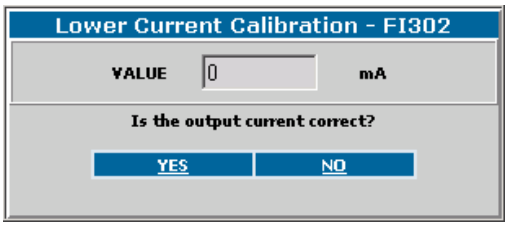



**Figure G.10**

If the value displayed is correct, click *Yes* to conclude this procedure. Otherwise, click *No* and type the current value:

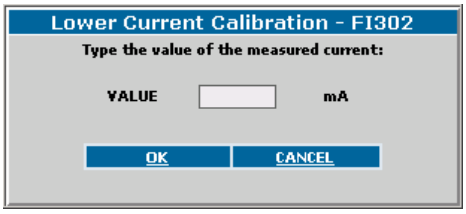



**Figure G.11**

Click *OK* to apply the new current value and then click *Yes* to confirm the alteration, as shown in Figure G.10.

**UPPER CURRENT CALIBRATION**: this method is similar to the *Lower Current Calibration* described above.

When this method is selected, a message box appears warning the user that this procedure must be executed when the plant control is set at manual. Connect the ammeter to the corresponding output channel of the FI302.

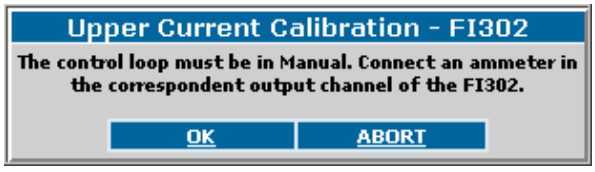



**Figure G.12**

Click *Ok* and wait until the current value is stable.

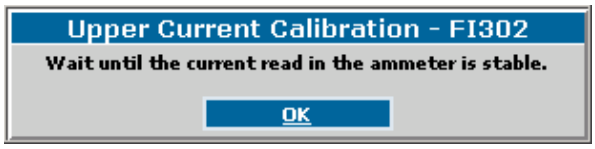



**Figure G.13**

Click *OK* and the current will be displayed.

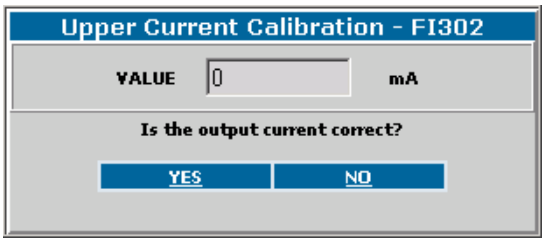



**Figure G.14**

If the value displayed is correct, click *Yes* to conclude this procedure. Otherwise, click *No* and type the current value:

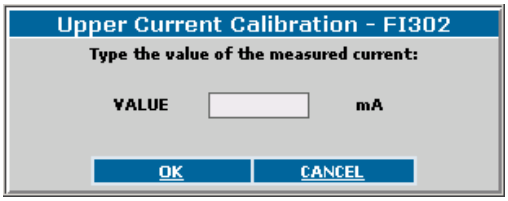



**Figure G.15**

Click *OK* to apply the new current value and then click *Yes* to confirm the alteration, as shown in Figure G.14.

### *Backup Restore*

Select the method to save the calibration data or restore the configuration data.

| | |
|---|---|
| **NONE** | Ok. |
| **FACTORY CAL RESTORE** | restores the factory calibration data. |
| **LAST CAL RESTORE** | restores data from the last calibration. |
| **DEFAULT DATA RESTORE** | restores default data from the flash memory. |
| **SENSOR DATA RESTORE** | restores sensor data. |
| **FACTORY CAL BACKUP** | saves the factory calibration data. |
| **LAST CAL BACKUP** | saves data from the last calibration. |
| **SENSOR DATA BACKUP** | saves sensor data. |

# FI302 Monitoring Page

This page displays the parameters of the transducer blocks.

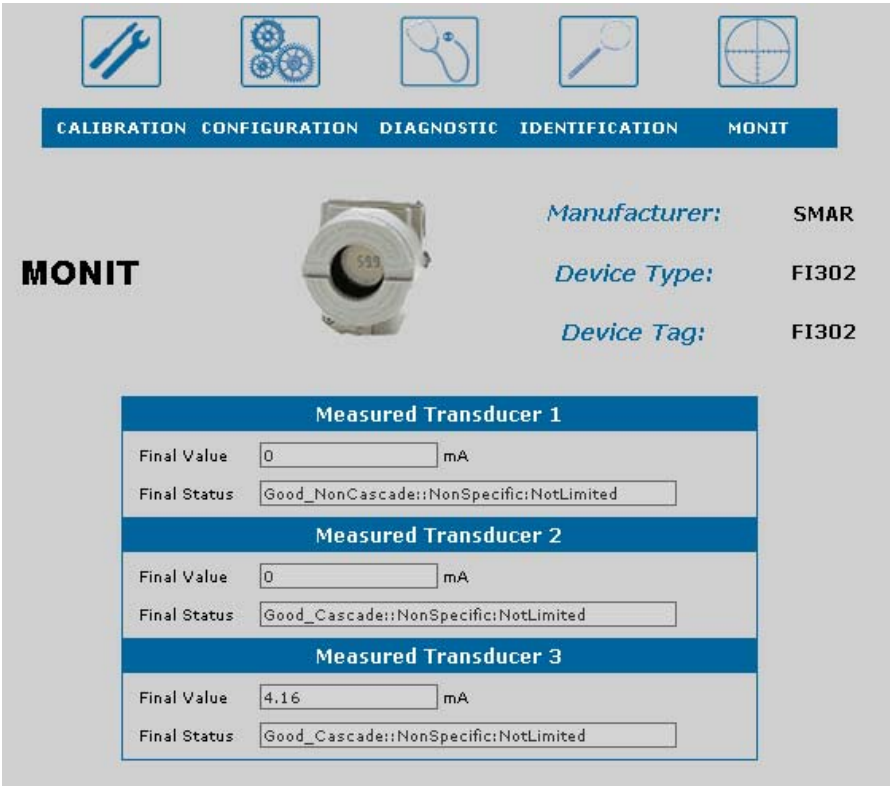



**Figure G.16**

## Measured Transducer

| | |
|---|---|
| **FINAL VALUE** | indicates the final value of the current in the corresponding transducer block. |
| **FINAL STATUS** | indicates the final status of the current in the corresponding transducer block. |

# H. ASSETVIEW & IF302

## IF302 Home Page

The figure below shows the ***IF302*** initial page and its options:

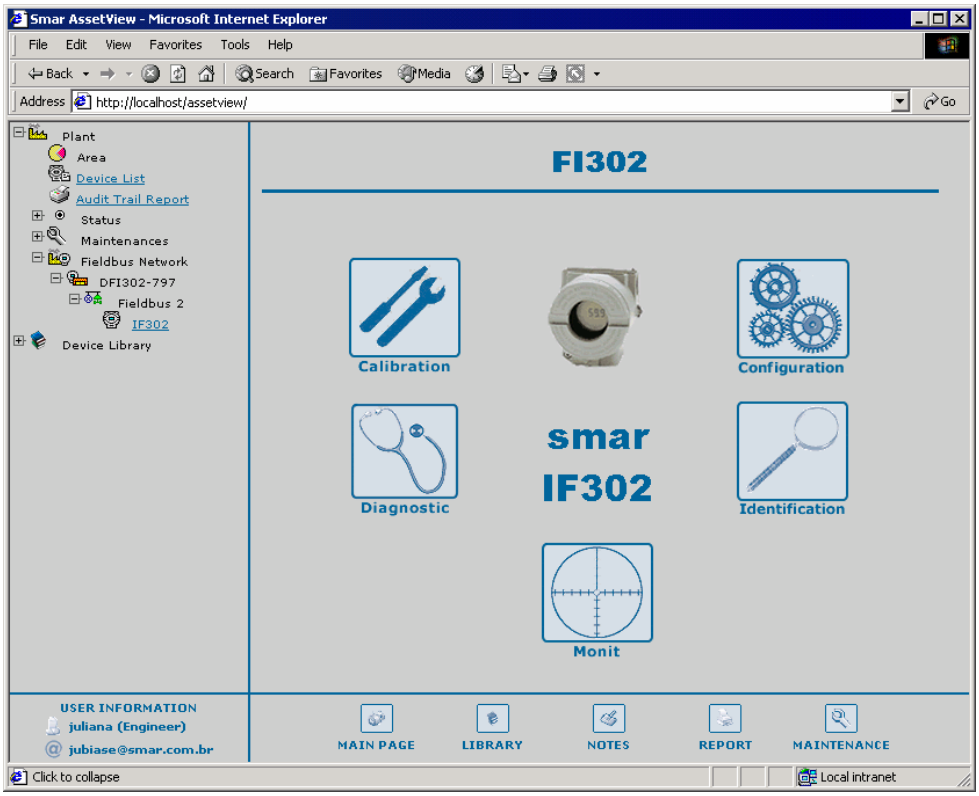



**Figure H.1**

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

## IF302 Identification Page

This page displays information relevant to the converter. The user can easily identify and specify the device in the physical plant.


**Figure H.2**

### *Device*

| | |
|---|---|
| **TAG** | indicates the tag associated to the converter in the physical plant. The tag can use up to 32 characters. |
| **DEVICE ID** | indicates the identification code of the converter. This code can use up to 32 characters. |
| **DEVICE SERIAL NUMBER** | indicates the serial number of the converter. |
| **DEVICE REVISION** | indicates the revision of the converter. |
| **DD REVISION** | indicates the revision of the DD. |
| **FIRMWARE REVISION** | indicates the firmware revision of the converter. |
| **HARDWARE REVISION** | indicates the hardware revision of the converter. |
| **DEVICE TYPE** | identifies the type of the converter for a specific manufacturer. |
| **MANUFACTURER** | identifies the converter manufacturer. |
| **MAIN BOARD SERIAL NUMBER** | indicates the serial number of the main board. |
| **ORDERING CODE** | indicates the ordering code of the converter. |

### *Sensor*

| | |
|---|---|
| **SENSOR SERIAL NUMBER** | indicates the serial number of the sensor. |

# IF302 Configuration Page

The IF302 contains three input transducer blocks. The channel number of the AI block corresponds to the terminal block with the same number.

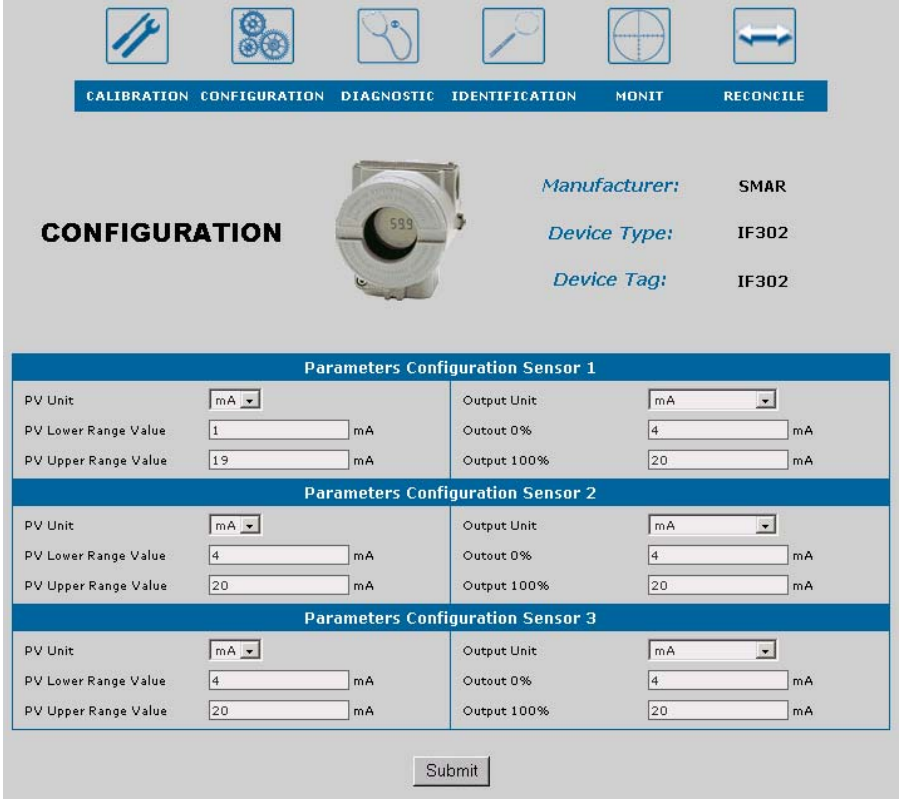



**Figure H.3**

### *Parameters Configuration*

| | |
|---|---|
| **PV UNIT** | unit of the process variable. |
| **PV LOWER RANGE VALUE** | lower limit of the process variable. |
| **PV UPPER RANGE VALUE** | upper limit of the process variable. |
| **OUTPUT UNIT** | output parameter unit. |
| **OUTPUT 0%** | value of the output parameter corresponding to 0%. |
| **OUTPUT 100%** | value of the output parameter corresponding to 100%. |

# IF302 Diagnostics Page

This page displays the device status.


**Figure H.4**

### *Diagnosis*

Displays the diagnostic status of the device, including the status of the function block, mechanical module and sensor.

| | |
|---|---|
| **POWER UP** | indicates that the device has executed the power up procedure. |
| **SENSOR FAILURE** | indicates the device sensor has failed (pressure exceeded, for example, in a 4-20mA transmitter). |
| **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 checkup process, such as an incorrect checksum detected in the main memory. |
| **OUT OF SERVICE** | indicates that the function block is out of service. |
| **DEVICE NEEDS MAINTENANCE SOON** | the internal diagnostic according to the user configuration or device internal checkup has detected that the device will need maintenance soon. |
| **DEVICE NEEDS MAINTENANCE NOW** | the internal diagnostic according to the user configuration or device internal checkup has detected that the device needs maintenance. This diagnostic is related to the 4-20mA calibration. |
| **BLOCK CONFIGURATION ERROR** | indicates that there is an error related to the XD_SCALE parameter in the AI function block. |
| **CALIBRATION ERROR** | indicates that an error occurred during the calibration of the device, or that a calibration error has been detected while operating the device. |
| **DATA INTEGRITY ERROR** | indicates that data stored in the system may be no longer valid, for example, 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 could have been caused by an improper interruption of a service routine, an arithmetic overflow, a watchdog timer, etc. |
| **ELECTRONICS FAILURE** | an electronic component has failed. |
| **GENERAL ERROR** | a general error related to the device has been detected. |

## *IF302 Calibration Page*

This page displays configuration data used in the calibration procedures.

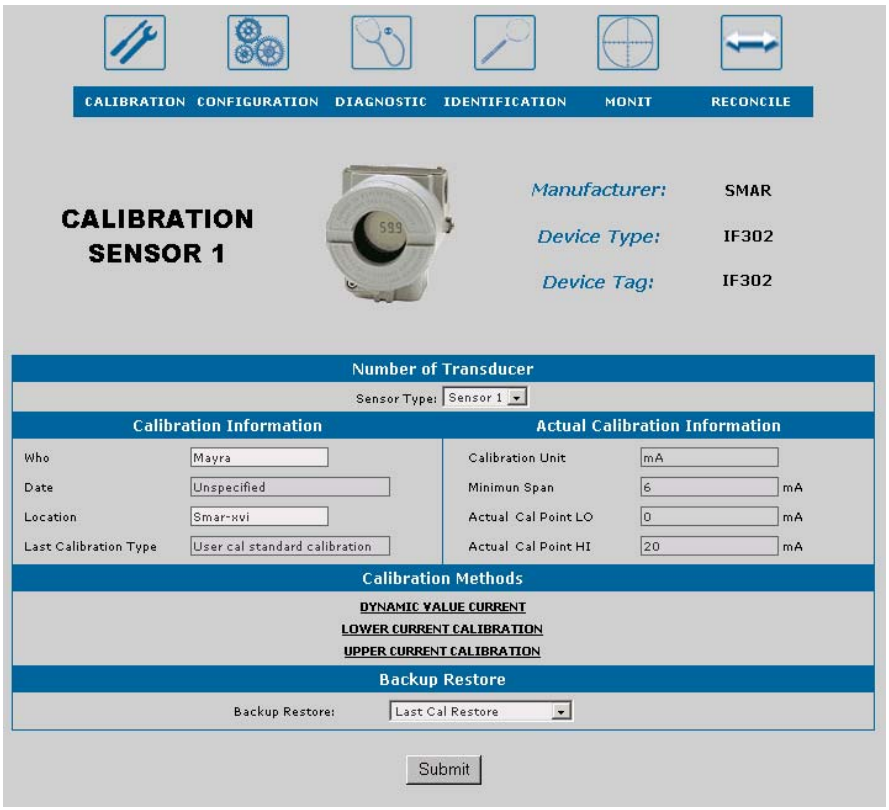



**Figure H.5**

### *Number of Transducers*

Select the transducer block to be calibrated.

### *Calibration Information*

| | |
|---|---|
| **WHO** | indicates the person responsible for the executed calibration. |
| **LOCATION** | indicates the location of the calibration. |
| **DATE** | indicates the date of the executed calibration. |
| **LAST CALIBRATION TYPE** | indicates the method used in the last calibration. |

### Actual Calibration Information

| | |
|---|---|
| **CALIBRATION UNIT** | indicates the unit for the calibration procedure. |
| **MINIMUM SPAN** | indicates the minimum value allowed between the lower and upper points of the calibration. |
| **ACTUAL CAL POINT LO** | indicates the last lower point of the current calibration. |
| **ACTUAL CAL POINT HI** | indicates the last higher point of the current calibration. |

### Calibration Methods

**DYNAMIC VALUE CURRENT**: this method shows the current parameters of the converter.

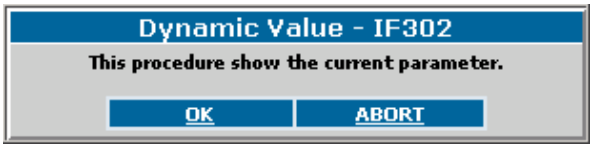



**Figure H.6**

Click *Ok* to proceed. The dialog box will display the current value measured, as indicated below.

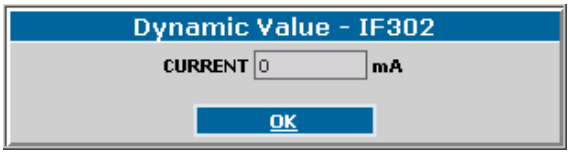



**Figure H.7**

**LOWER CURRENT CALIBRATION**: this method is used when the user wants to calibrate the lower current. The user can select the calibration unit and type the value of the applied current to be used as the reference value of the converter, respecting the limits and the minimum span.

Connect the current generator to the IF302's input channel to be calibrated and apply the lower current value.

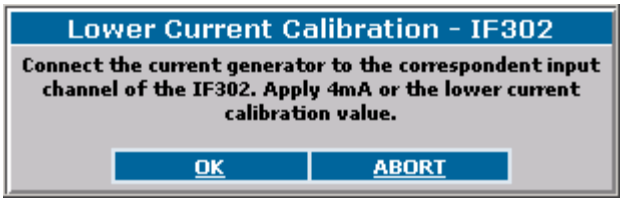



**Figure H.8**

Click *Ok* and wait until the current value is stable.


**Figure H.9**

Click *Continue* and the current will be displayed.

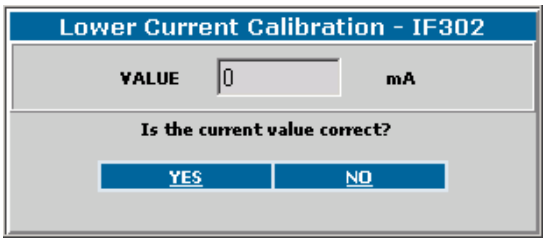



**Figure H.10**

If the value displayed is correct, click *Yes* to conclude this procedure. Otherwise, click *No* and type the current value:

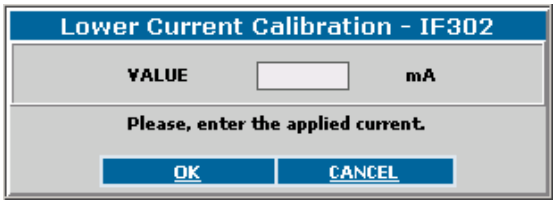



**Figure H.11**

Click *OK* to apply the new current value and then click *Yes* to confirm the alteration, as shown in Figure H.10.

**UPPER CURRENT CALIBRATION**: this method is similar to the *Lower Current Calibration* described above.

Connect the current generator to the IF302's input channel to be calibrated and apply the upper current value.

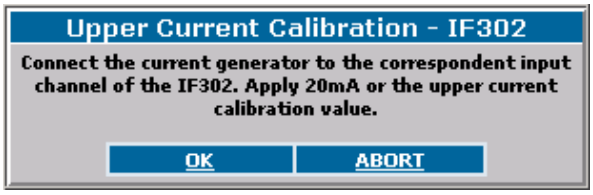



**Figure H.12**

Click *Ok* and wait until the current value is stable.


**Figure H.13**

Click *Continue* and the current will be displayed.

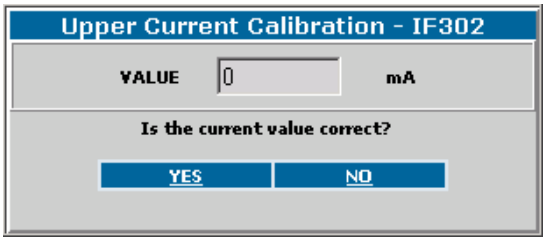



**Figure H.14**

If the value displayed is correct, click *Yes* to conclude this procedure. Otherwise, click *No* and type the current value:

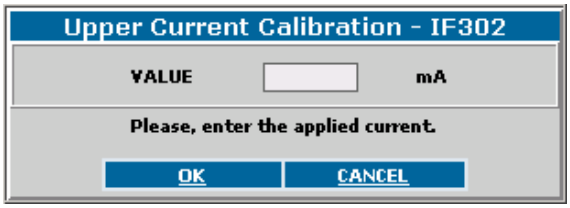



**Figure H.15**

Click *OK* to apply the new current value and then click *Yes* to confirm the alteration, as shown in Figure H.14.

### *Backup Restore*

Select the method to save the calibration data or restore the configuration data.

| | |
|---|---|
| **NONE** | Ok. |
| **FACTORY CAL RESTORE** | restores the factory calibration data. |
| **LAST CAL RESTORE** | restores data from the last calibration. |
| **DEFAULT DATA RESTORE** | restores default data from the flash memory. |
| **SENSOR DATA RESTORE** | restores sensor data. |
| **FACTORY CAL BACKUP** | saves the factory calibration data. |
| **LAST CAL BACKUP** | saves data from the last calibration. |
| **SENSOR DATA BACKUP** | saves sensor data. |

# IF302 Monitoring Page

This page displays the parameters of the transducer blocks.

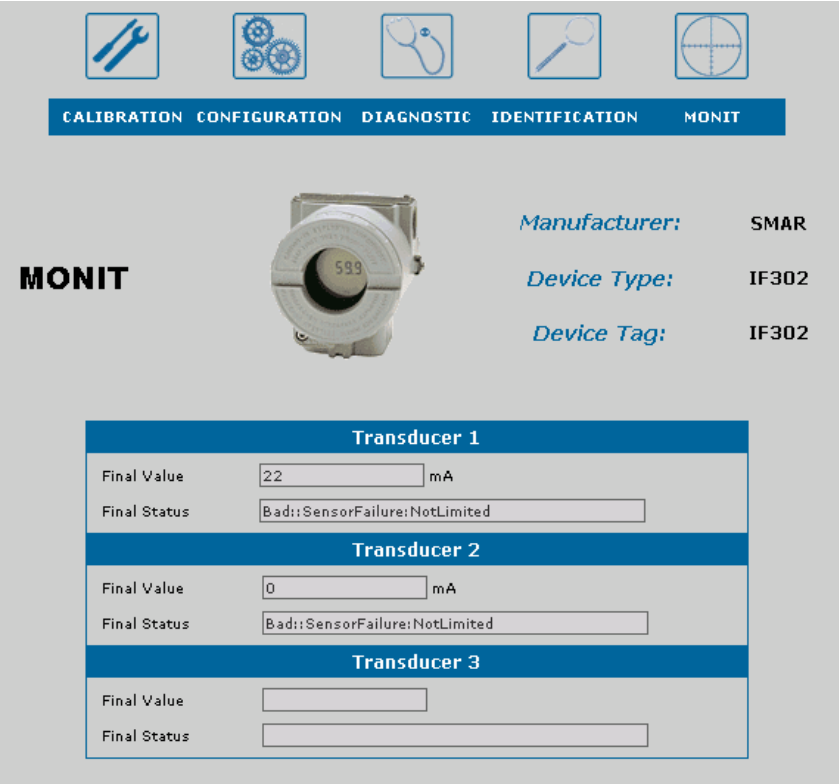



**Figure H.16**

## *Measured Transducer*

| | |
|---|---|
| **PRIMARY VALUE** | indicates the value of the current output in the corresponding transducer block. |
| **PRIMARY VALUE STATUS** | indicates the status of the current in the corresponding transducer block. |