SYSCON - SYSTEM CONFIGURATOR

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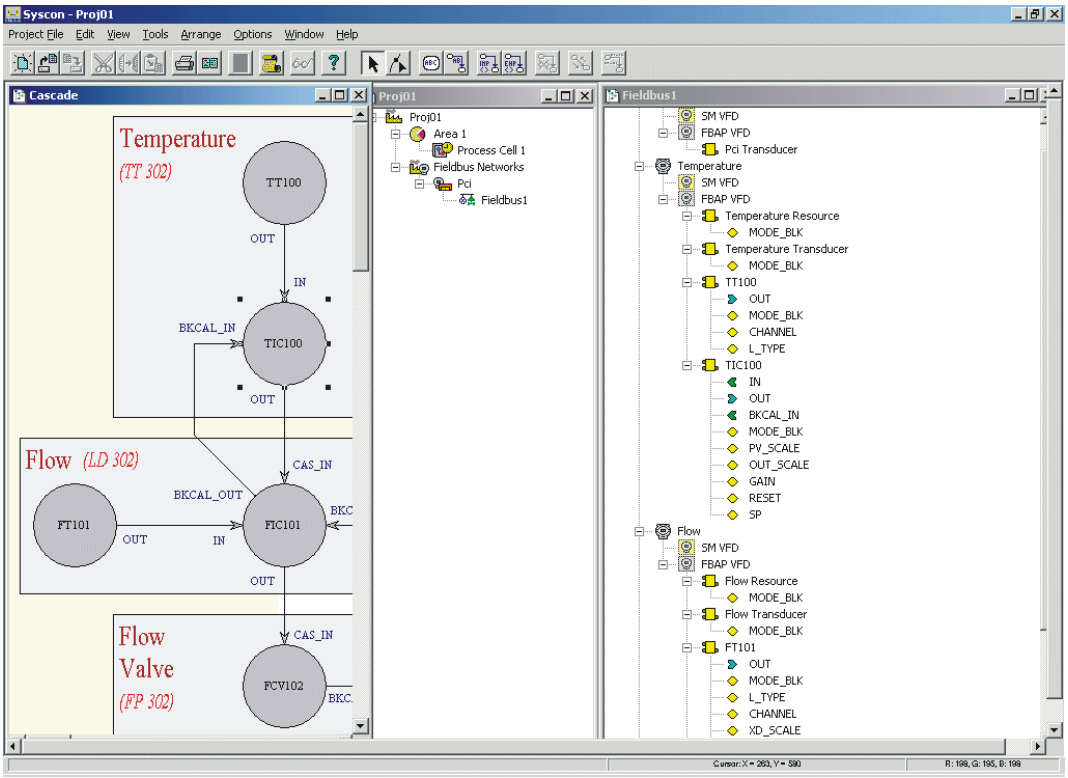
INSTALLATION AND OPERATION MANUAL

SYSCON - SYSTEM CONFIGURATOR



SEP / 04

SYSCON

VERSION 6.0

FOUNDATION™

SYSCONME

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

SYSCON - System Configurator - is a software tool especially developed to configure, maintain and operate the newest **SMAR** Fieldbus products line, by a Personal Computer with a Fieldbus interface.

The friendly Man-Machine Interface (MMI) of the SYSCON provides an efficient and productive interaction with the user, without previous knowledge of the software. The use of the Fieldbus protocol provides interoperability between the system and each piece of equipment. The physical interface with the field network - the PCI (Process Control Interface) Board or the DFI (Fieldbus Universal Bridge) - is connected to a PC bus: equipment especially developed by **SMAR** for its Fieldbus line.

SYSCON runs on Microsoft® Windows NT™ Operating System, version 4.0 or later, or Windows 2000.

This manual refers to the version 6.00 of SYSCON.

Table of Contents

1 Getting Started

1.1 System Requirements

1.1.1 Minimum:

Operational System	⇒	Windows NT 4.0 - Service Pack 6a or Windows 2000 - Service Pack 3
Processor	⇒	Pentium 233 MHz
RAM	⇒	64 MB
Free HDD Space	⇒	20 MB
Display CD-ROM	⇒	800x600 - 64 KColors

1.1.2 Recommended:

Operational System	⇒	Windows NT 4.0 - Service Pack 6a or Windows 2000 - Service Pack 3
Processor	⇒	Pentium 350 MHz
RAM	⇒	128 MB
Free HDD Space	⇒	20 MB
Display CD-ROM	⇒	1280x1024 - True Color

1.2 Preparing the Installation

It is recommended to uninstall any older versions of SYSCON before installing new versions.

Follow these steps to remove the application:

1. From the *Start* menu, select *Settings - Control Panel*.
2. Double-click the *Add/Remove Programs* icon. The *Add/Remove Programs Properties* dialog box will open.
3. Select the item *Syscon* from the list of programs.
4. Click *Add/Remove*.
5. Click *Yes* to confirm that SYSCON is to be removed.

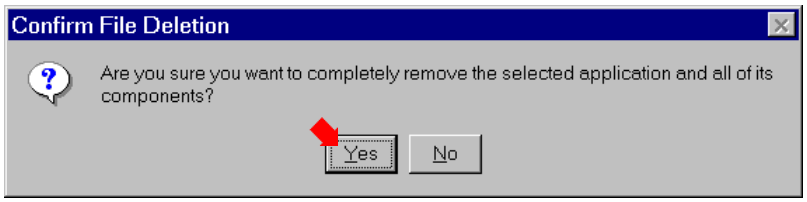


Figure 1.1. Confirm File Deletion

6. Wait a few minutes for the uninstall program to indicate that the process is complete. Click *Ok*.

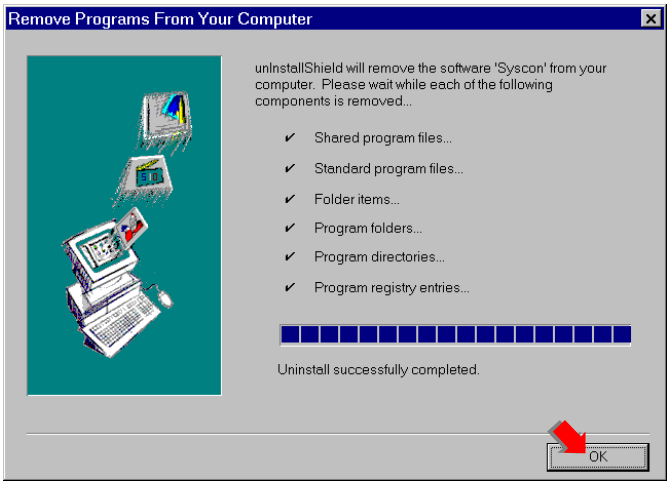


Figure 1.2. Uninstall Completed

1.3 Installing SYSCON

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

Click the *System302* button.

Follow the instructions in the dialog boxes to complete the installation. It will install SYSCON and other programs that compound *System302*, such as *Device Support* and *OLE Server*.

To initialize SYSCON click the Windows *Start* button, at the *Task Bar*, point the cursor to the item *Programs*, then point it to the item *System302*. Finally, click the item *Syscon*, as indicated in the next figure:

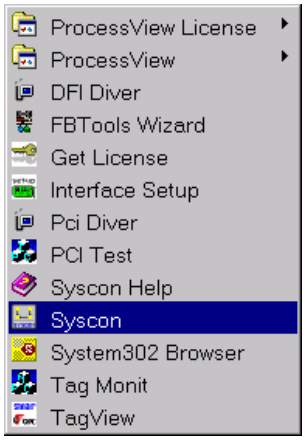


Figure 1.3. Starting SYSCON

At the first time working with SYSCON, the *License Information* dialog box will appear:

Figure 1.4. License Information Dialog Box

Run the *Get License* software, click the *Generate FaxBack* button and fill in the form. Fax the completed FAX-BACK form to **SMAR** using the Fax number listed on the ***FaxBack.txt*** file. **SMAR** will issue the user a *License Key* to authorize the installed product.

Type the license key in the *Syscon License Key* box and click the *Grant License Keys* button. After the user finished granting the *License Keys*, click *Exit*.

Now, the user can finally start using SYSCON 6.0.

2 Using SYSCON 6.0

2.1 Working with Project Files

2.1.1 New Project

To create a project file, go to the *Project File* menu and click *New*, as the following figure shows:

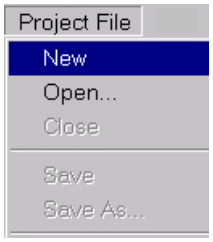


Figure 2.1. Project File Menu: New

The *Document Type* box will appear. Click the option *Project*, as indicated below:

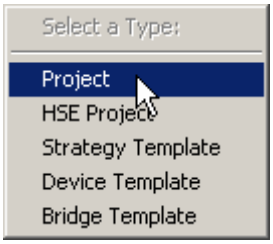


Figure 2.2. Select the File Type

The *New Project* dialog box will open:

1. Choose the folder where the project will be saved.
2. Type the name for the project in the *File Name* box.
3. Click *Save*. If the new project is not to be created, click *Cancel*.

See the following figure:

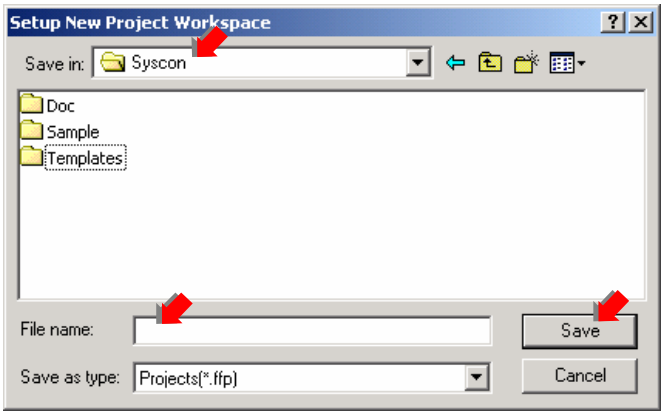


Figure 2.3. New Project Dialog Box

SYSCON will automatically create a folder with the name the user typed for the project inside the folder selected.

Shortcuts:

Toolbar: 

Since the new project has been created, the *Project* window will open:

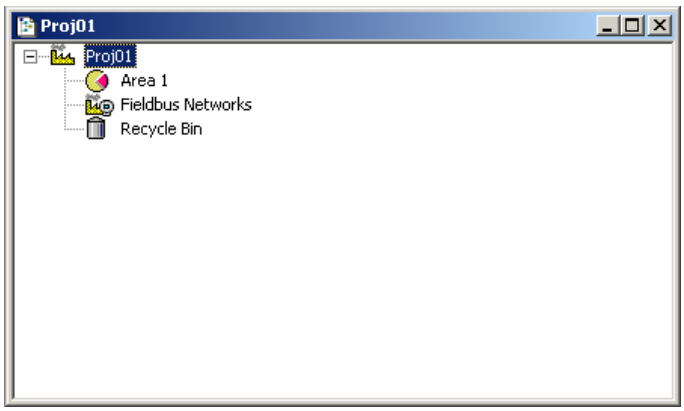


Figure 2.4. Project Window

2.1.2 New HSE Project

To create the HSE project file, go to the *Project File* menu, click *New*, and select the option *HSE Project* in the *Document Type* box. See the following figure:

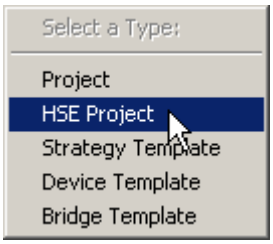


Figure 2.5. Select the File Type

The *New Project* dialog box will open. Choose the folder where the project will be saved and type the name for the project.

SYSCON will automatically create the HSE project adding the fieldbus channel and the *Foundation Fieldbus HSE Host*. The *Project* window will look like the figure below:

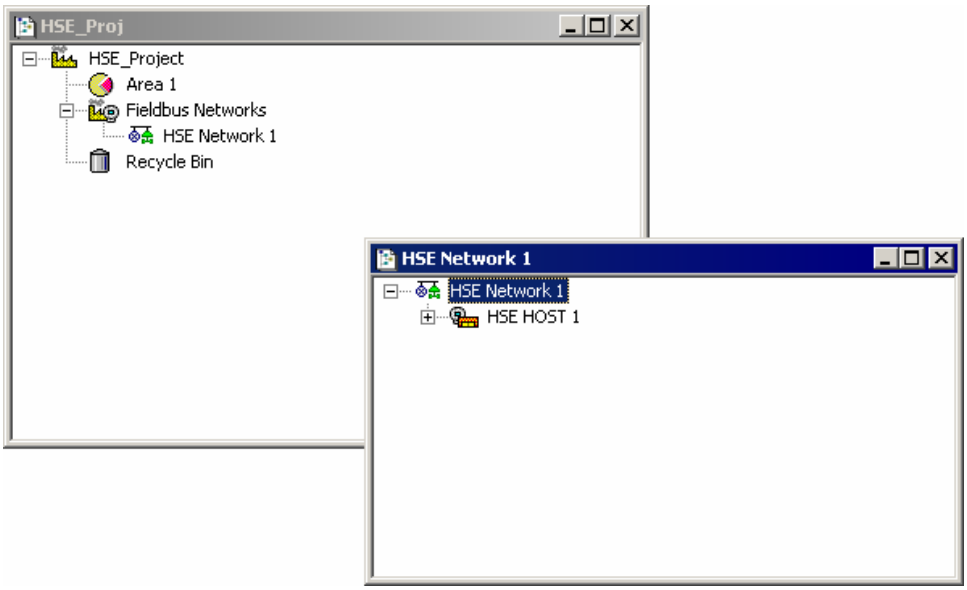


Figure 2.6. Project Window

2.1.3 Open

To open an existing project, go to the *File* menu and click *Open*, as in the following figure:

Figure 2.7. Project File Menu: Open

The *Open* dialog box will open:

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

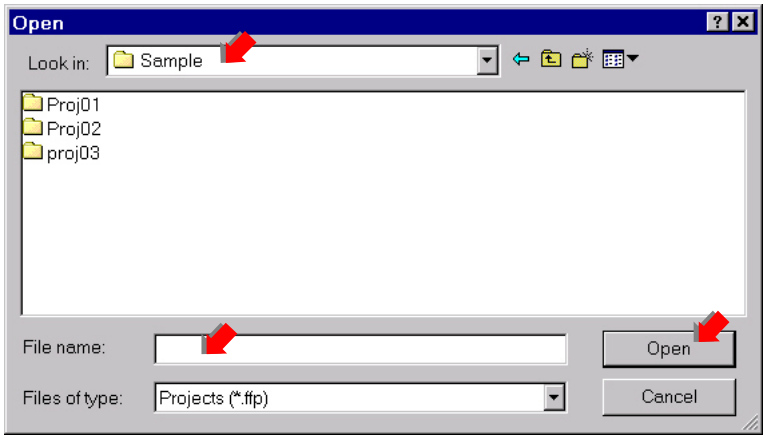


Figure 2.8. Open Project Dialog Box

Shortcuts:

Toolbar: 

Checking the version

Starting from version 5.10, SYSCON verifies if the configuration file was generated by previous or later versions.

If the user is trying to open a configuration file that was generated in an older version of SYSCON, the following message will open:

Figure 2.9. Version Mismatch Message Box

To upgrade the configuration, go to the *Project File* menu and click *Save as*, typing a new name for the project or using the same name to override the old project.

If the user upgrades the configuration converting it to the new file format, it won't be possible to open the configuration in an older version of SYSCON again.

If SYSCON detects that the user is trying to open a configuration file that was generated in a newer version, the following message will open:

Figure 2.10. Version Mismatch Message Box

NOTE
Pay close attention to this new characteristic because it only exists starting from version 5.10!

IMPORTANT
Versions prior to 5.10 do not verify the configuration file. Those versions will open the project file generated in a newer version causing no error warnings, but the consistency of the project will not be assured.

2.1.4 Save

To save the changes made to the project or any of its parts, such as the *Process Cell* window or the *Strategy* window, go to the *Project File* menu and click *Save*, as the following figure shows:

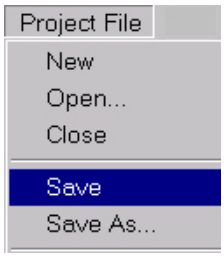


Figure 2.11. Project File Menu: Save

Shortcuts:

Toolbar: 

This procedure will save the changes made in the window that has the focus of the application.

REMEMBER
Anytime the *Project* configuration changes, do not forget to save.

2.1.5 Save As

To save the project with another name, go to the *Project File* menu and click *Save as*, as in the following figure:

Figure 2.12. Project File Menu: Save As

The *Save As* dialog box will open:

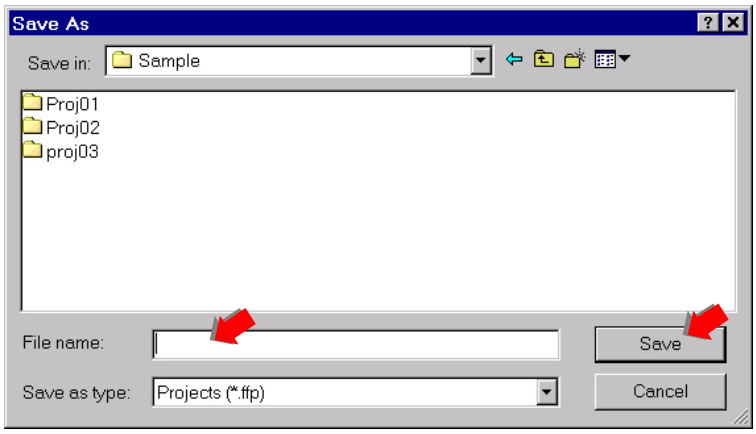


Figure 2.13. Save As Dialog Box

Type a new name for the project and click *Save*. A new folder will be created with the name of the project file and the files related to the project will be stored in this folder.

2.1.6 Save Entire Configuration

Use this option to save the entire plant project configuration. Go to the *Project File* menu and click *Save Entire Configuration*, as in the following figure:

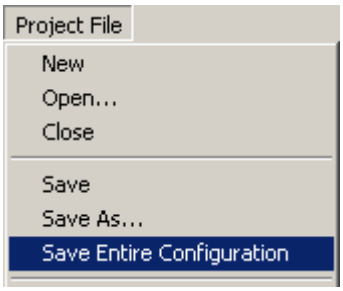


Figure 2.14. Project File Menu: Save Entire Configuration

Shortcuts:

Toolbar: 

NOTE
A *Template* is not part of the plant project configuration. It is necessary to set the focus on the *Template* window and click the *Save* button,  , to save the changes made to the template configuration.

2.1.7 Close

To close the project, click on the *Project* window, in case the focus is on another application window, go to the *File* menu and click *Close*, as in the following figure:

Figure 2.15. Project File Menu: Close

Or go to the *Window* menu and click *Close All*, as the following figure shows:

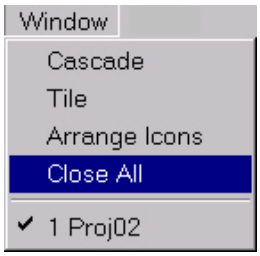


Figure 2.16. Window Menu: Close All

A quick way of closing a project is to click on the *Close* button,  , in the upper right corner of the *Project* window.

Do not forget to save the project before closing.

2.1.8 Print

This section will show SYSCON's printing options. These options can be found at the *Project File* menu. See the following figure:

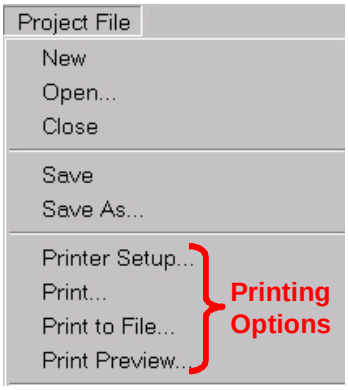


Figure 2.17. Project File Menu: Print Options

Printer Setup

This option is available to the *Project* window and the *Strategy* window. The user can configure page and printer options.

Click this item to open the *Page Setup* dialog box. See the following figure:

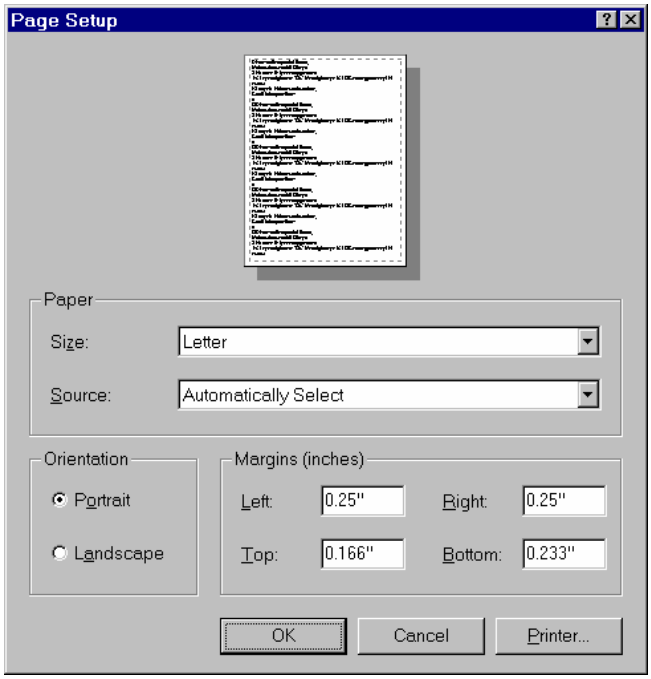


Figure 2.18. Page Setup Dialog Box

At the top of the dialog box there's an example that shows how the page layout will look like. As the options change, the page layout example will change.

Paper:

- Select the size of the paper or envelope to be used in the *Size* box.
- Select where the paper to be used is located in the printer in the *Source* box. Different printer models support different paper sources, such as the upper tray, envelope feed, and manual feed.

Orientation: select the page orientation and how the document is positioned on the page. To see a preview on the example page at the top of the dialog box, check the *Portrait* box or the *Landscape* box.

Margins (inches): set the printing area of the page, typing a value for the left, right, top and bottom margin.

Click on the *Ok* button to close the *Page Setup* dialog box and save the changes.

Click on the *Cancel* button to close the *Page Setup* dialog box without saving any changes.

Click on the *Printer* button to open the *Printer Setup* dialog box and change the printer options. See the following figure:

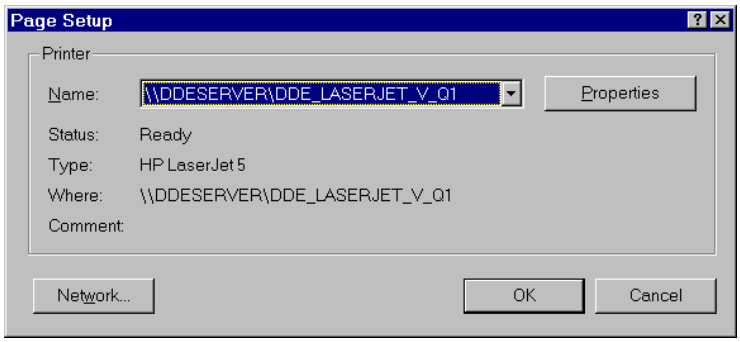


Figure 2.19. Printer Setup Dialog Box

At the *Printer* rectangle, select the printer in the *Name* box. Click the *Properties* button to set up options for the printer. The *Printer* rectangle also shows information about the selected printer.

Click on the *Ok* button to close the dialog box and save the changes.

Click on the *Cancel* button to close the dialog box without saving any changes.

Printing the Project Configuration

When the user clicks on the *Project* window and selects the option *Print*, or clicks the *Print* button,  , on the *General Operation* toolbar, the *Print Configuration* dialog box will open. The items of the project to be printed can be chosen. See the following figure:

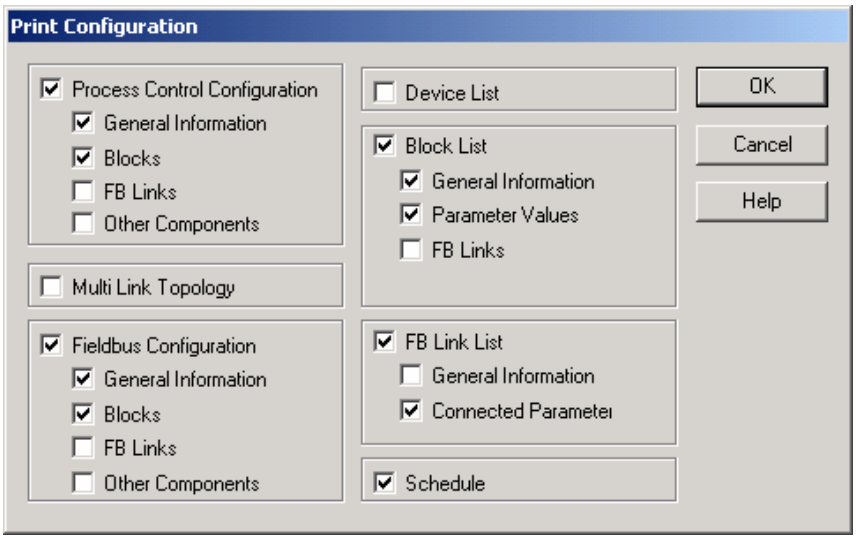


Figure 2.20. Print Configuration Dialog Box

Process Control Configuration: Select this item to print the information about the *Process Control Configuration*.

General Information: prints the general information about the configuration.

Blocks: prints the information about the blocks, listed by control modules.

FB Links: prints the information about the links between those blocks.

Other Components: prints further information about the *Process Control Configuration*.

Multi Link Topology: Select this item to print the information about the topology, with the bridges and fieldbuses.

Fieldbus Configuration: Select this item to print the information about the *Fieldbus Configuration*.

General Information: prints the information about the configuration.

Blocks: prints the information about the blocks, listed by devices.

FB Links: prints the information about the links between those blocks.

Other Components: prints further information about the *Fieldbus Configuration*.

Device List: Select this item to print the information about the devices and their attributes.

Block List: Select this item to print the information about the blocks.

General Information: prints the information about blocks, their attributes and location.

Parameter Values: prints the information about the parameters configured for the blocks.

FB Links: prints the information about the connected parameters.

FB Link List: Select this item to print the list with all of the links in the configuration.

General Information: prints the general information about the links.

Connected Parameter: prints the information about the parameters.

Schedule: Select this item to print the information about the *Schedule*, including both *Function Block Execution Schedule* and *Traffic Schedule*.

Click on the *Ok* button to close this dialog box and print the project configuration.

Click on the *Cancel* button to close the dialog box without printing the project configuration.

Click on the *Help* button to open the *Help* window.

Printing the Strategy Drawing

When the user clicks on the *Strategy* window and selects the option *Print*, or clicks the *Print* button,  , on the *General Operation* toolbar, the *Print* dialog box will open and the printer options can be configured. See the following figure:

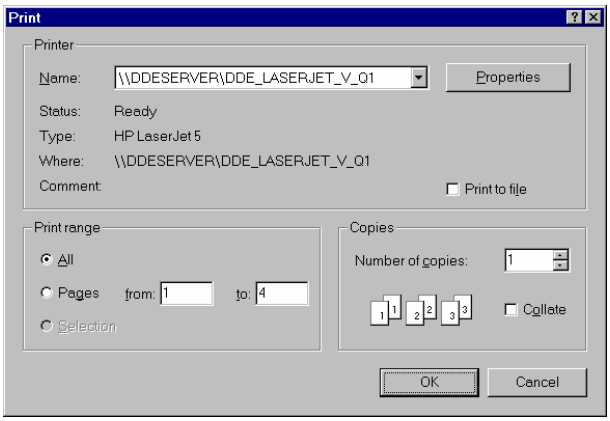


Figure 2.21. Print Dialog Box

Printer: shows information about the selected printer.

- Select the printer in the *Name* box.
- Click on the *Properties* button to set up options for the printer.

Print Range: specify whether to print the entire document or specific pages.

- Click on the *All* box to print the entire drawing area.
- Click on the *Pages* box to select the pages to be printed, typing the pages number in the *from:* box and in the *to:* box.

Copies: select the number of copies to be printed.

- Type or select a number at the *Number of copies* box.
- If more than one copy is selected, check the *Collate* box to print the document sequentially. If this box is not checked, the first page will be printed as many times as it is defined by the number of copies. The same will happen to the second page and so on.

Click on the *Ok* button to close this dialog box and print the project configuration.

Click on the *Cancel* button to close the dialog box without printing the project configuration.

Print to File

This option is only available on the *Project* window. When the user clicks this item, the *Print Configuration* dialog box will open. The user can choose the items of the project to be printed. (See the section *Printing the Project Configuration* above.)

When the user clicks *Ok*, the *Save As* dialog box will open:

1. In the *Save in* box, choose the folder where the file will be saved.
2. Type the name for the file in the *File name* box. The file will be saved as a *Report File* (**.txt*).
3. Click *Save* to conclude this task

See the following figure:

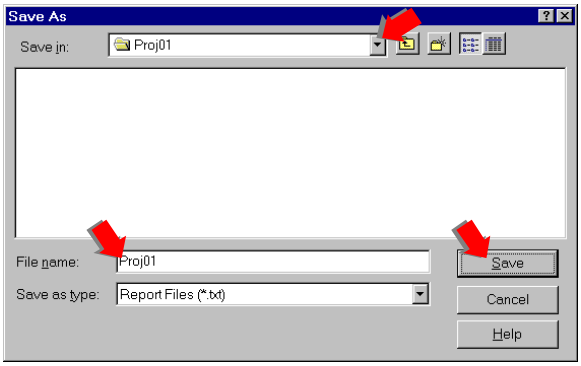


Figure 2.22. Save As Dialog Box

To print this file, open the folder that contains the file in *My Computer* or *Windows Explorer*. Select the file icon and right-click on it to activate the popup menu. Click the option *Print*. The project configuration will be printed.

Print Preview

This option is available to the *Project* window and the *Strategy* window. It allows the user to view the report before printing it. Use the *Project File* menu, item *Print Preview*, or click the *Print Preview* button,  , on the *General Operation* toolbar.

When the user clicks on the *Project* window and selects this item, the *Print Configuration* dialog box appears. The user can choose the items of the project to be printed. (See the section *Printing the Project Configuration* above.)

Click *Ok* and the *Preview* window will open. See the following figure:

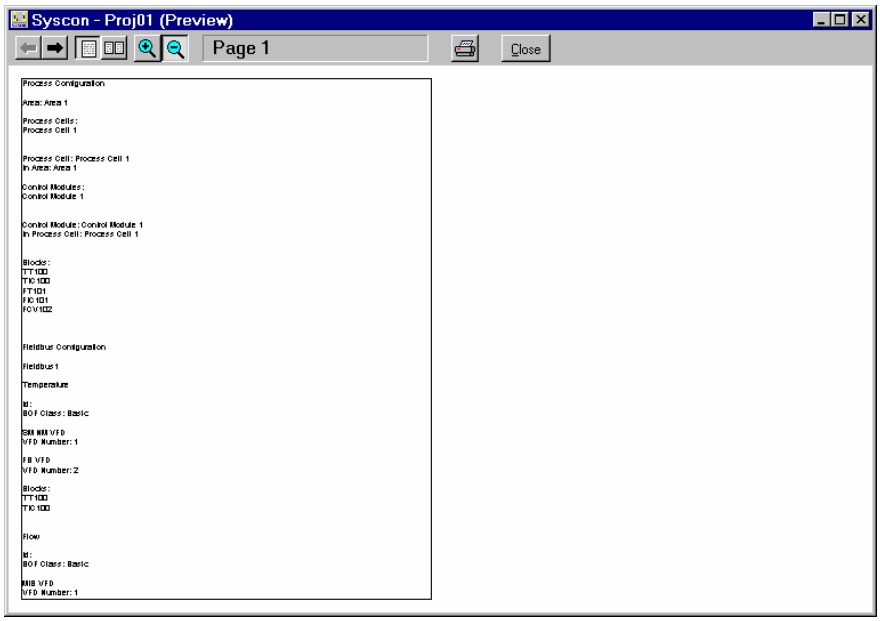


Figure 2.23. Print Preview: Project Window

The *Preview* window has its own toolbar:

Figure 2.24. Print Preview Toolbar

Read a brief explanation about the buttons:


Click this button to view the anterior page.


Click this button to view the next page.


Click this button to view the entire page in the screen.


Click this button to view two pages, at the same time, in the screen.


Click this button to activate the *Zoom* tool. Click over the page to increase the visualization size.


Click this button to deactivate the *Zoom* tool. Click over the page to decrease the visualization size.

This box shows the page(s) that are being visualized at the moment.


Click this button to print the report. It will open the *Print* dialog box.

Click this button to close the *Preview* window and return to the SYSCON browser.

When the user clicks on the *Strategy* window and selects this item, the *Preview* window automatically appears. See the following figure:

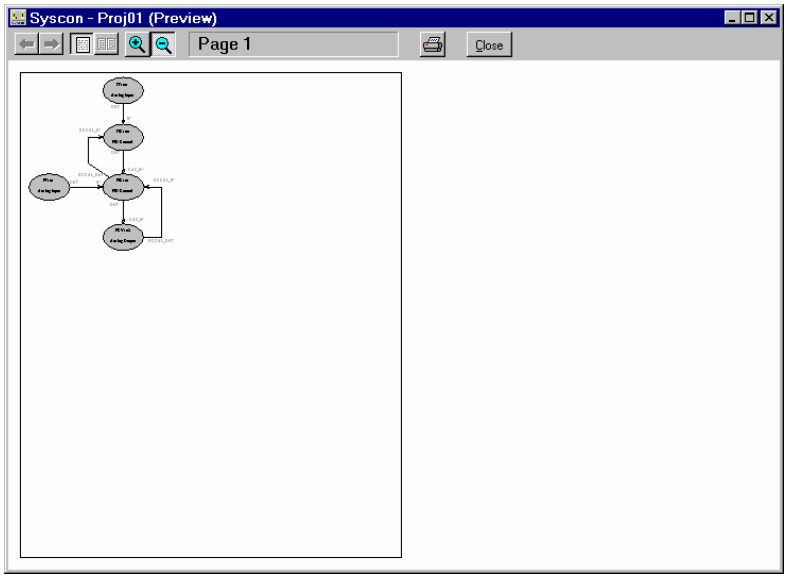


Figure 2.25. Print Preview: Strategy Window

When the user clicks the *Print* button,  , the *Print* dialog box appears. Click *Ok* to print the *Strategy* drawing. (See the section *Printing the Strategy Drawing* above.)

2.1.9 Pack Project

SYSCON can pack all of the project configuration files, including the DD and CF files, in a single compacted file or as a project folder, according to the preferences set by the user (See section ***2.2.4 Pack and Go Tab***).

Follow this procedure to pack the project configuration files:

1. Open the desired configuration project.
2. Go to the Project File menu and click Pack Project.
3. A dialog box will open warning the user to check if the Device Support has all of the DDs and CFs files used in the project. Click Ok to continue.
4. Select the directory where the project package folder or the compacted file will be created and click Ok.
5. A message box will appear informing the user if the operation was successful.
6. Click Ok to conclude.

2.1.10 Unpack Project

Follow this procedure to unpack a project configuration:

1. Go to the *Project File* menu and click *Unpack Project*.
2. Select the directory where the project package folder (or the compacted file) is located and click *Ok*.
3. Select the directory where the project package folder (or the compacted file) will be saved and click *Ok*.
4. A message box will appear informing the user that the operation was successful.
5. Click *Ok* to conclude.

2.2 Preferences

To set the project preferences, go to the *Project File* menu and click *Preferences*. The *Preferences* dialog box will open:

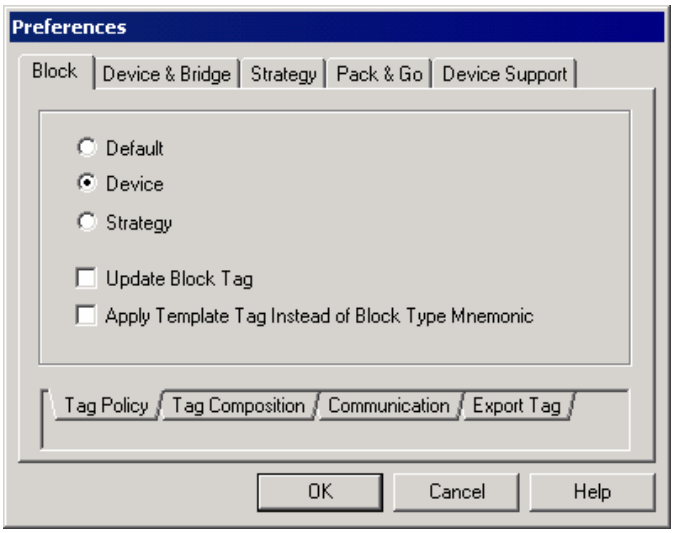


Figure 2.26. Preferences Dialog Box

2.2.1 Block Tab

Tag Policy: choose one of the options for the block tag name generation:

- *Default*: when creating a block, attached to the Strategy or to the device, its tag will have the default format: ["block" + id number].
- *Device*: when creating a new block, attached to the device, its tag will have the device tag concatenated with the block mnemonic and an internal sequential number: [device tag + separator + block mnemonic + id number].
- *Strategy*: when creating a new block, attached to the Strategy, its tag will have the Strategy tag concatenated with the block mnemonic and an internal sequential number: [strategy tag + separator + block mnemonic + id number].

Update Block Tag: if this option is selected, the block tag will be updated when the block is moved to another device or control module, or when the device tag or the control module tag is changed, according to the options selected by the user to automatically generate block tags.

HINT
Leave this option unmarked to prevent the block tag to be accidentally changed when the block is moved or the device is renamed, for example.

Apply Template Tag Instead of Block Type Mnemonic: if this option is selected, the block tag from the *Template* file will be used instead of the block mnemonic, when importing a Device, Bridge or Strategy template.

NOTE
If the tag based on the device or the Strategy exceeds 32 characters, that is [device or strategy tag + separator + block mnemonic + id number] has more than 32 characters, the block tag will be generated according to the *Default* option: ["block" + id number].

See the section *Automatic Block Tag Generation* for further details.

Tag Composition: this tab will be available if the block tag name generation is based on device or the Strategy tag.

The *Mnemonic Separator* is a set of alphanumeric characters that separates the name of the d*evice* or Strategy from the name of the block.

The user can choose if the device or Strategy tag should be applied as a prefix or suffix in the block tag.

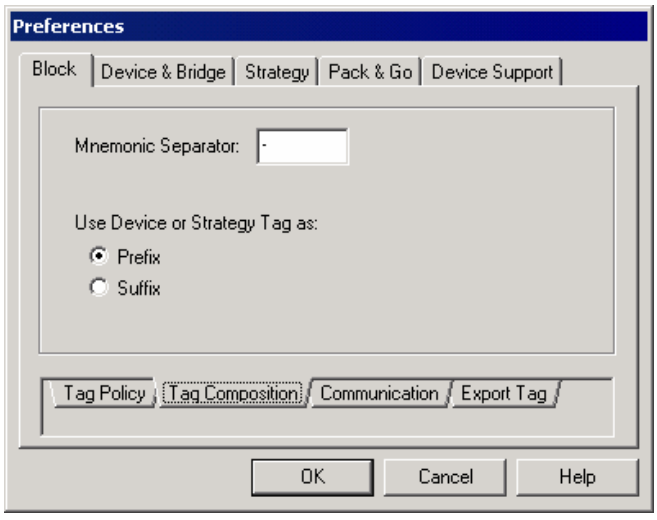


Figure 2.27. Additional Options

Communication: enable the Automatic Checking for the block events by selecting the *Block List Events* option. The *Automatic Checking* verifies if the list of block attached to the device match the list of block attached to the corresponding device in the field, for all devices on the *Fieldbus* windows that are open. If this option is not selected, the Checking will be executed when the user opens the *Block List*.

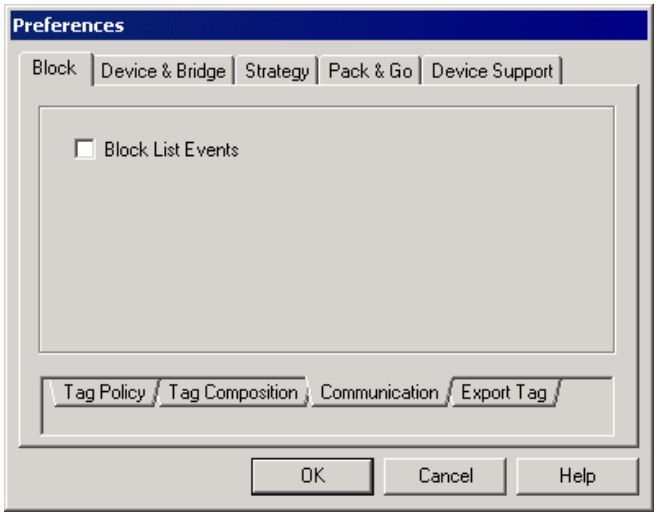


Figure 2.28. Communication Option

NOTE
It is necessary to re-initialize the communication every time the *Preferences* for the *Block List Events* option change, so the changes will take effect.

Export Tag: select the mode for the *Export Tags* operation and the path for the *taginfo.ini* file, where the tags will be saved.

- *Manual:* the user must execute the *Export Tags* command to update the information in the *taginfo.ini* file.
- *Automatic:* the *Export Tags* operation will be executed every time a relevant online procedure requires the tag to be exported. In this mode, a message box will open for the user to confirm the *Export Tags* operation.

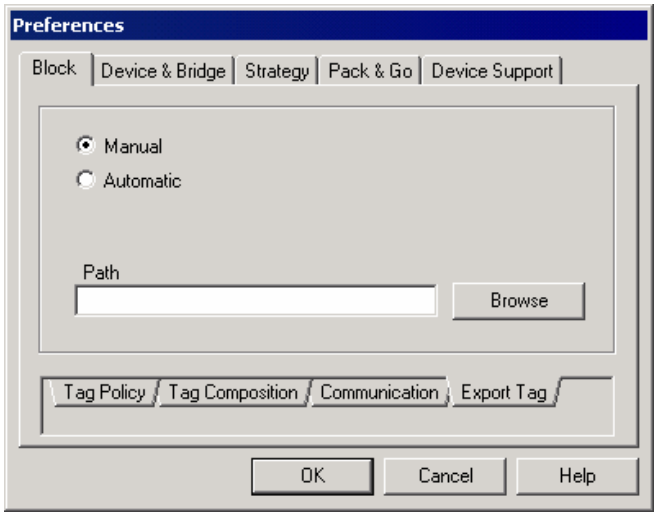


Figure 2.29. Export Tag Options

2.2.2 Device and Bridge Tab

The user can set the options to automatically create and configure blocks, parameters and internal links when a device or bridge is added to the configuration, according to the *Capabilities File*.

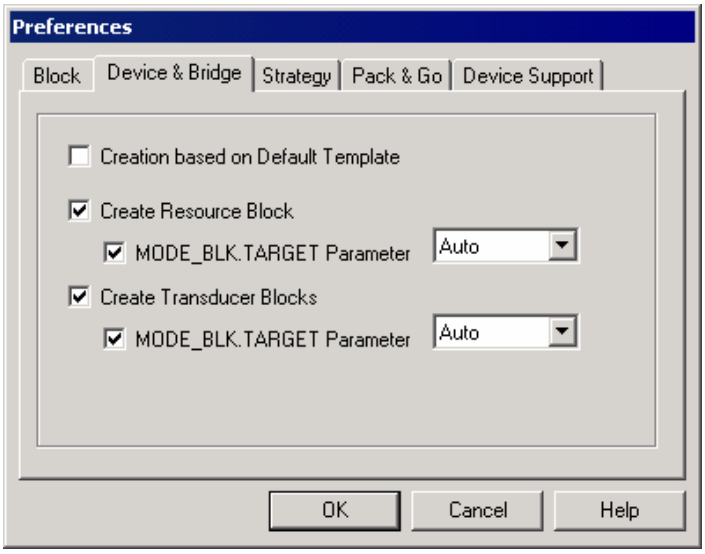


Figure 2.30. Device & Bridge Options

Creation Based on Default Template: Select this option to create the blocks, parameters and internal links based on the *Default Template* file of the device being created, located in the corresponding *Device Support* folder. If the *Default Template* is not found, SYSCON will automatically create the *Resource Block* and the *Transducer Blocks* of the selected device.

Create Resource Block: Select this option to automatically create the *Resource Block* of the selected device, according to the *Capabilities File*.

MODE_BLK.TARGET Parameter: Select the default initial value for the *Mode Block Parameter*: *AUTO* or *OOS*.

Create Transducer Blocks: Select this option to automatically create the *Transducer Blocks* of the selected device, according to the *Capabilities File*.

MODE_BLK.TARGET Parameter: Select the default initial value for the *Mode Block Parameter*: *AUTO* or *OOS*.

2.2.3 Strategy Tab

Select the default block format to be used when a block is added to the Strategy window. The ellipse (more exactly a circle) is the default graphical representation for a block in SYSCON.

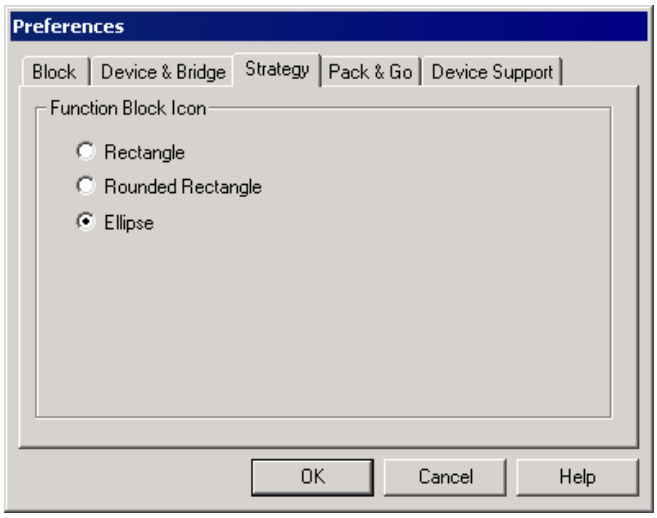


Figure 2.31. Strategy Options

The following figure shows the different block formats:

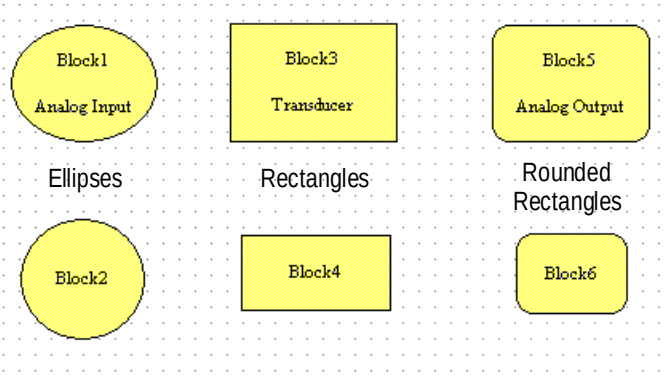


Figure 2.32. Block Formats

2.2.4 Pack and Go Tab

All of the project configuration files, including the DD and CF files, can be packed and sent to another machine, where SYSCON will unpack the files.

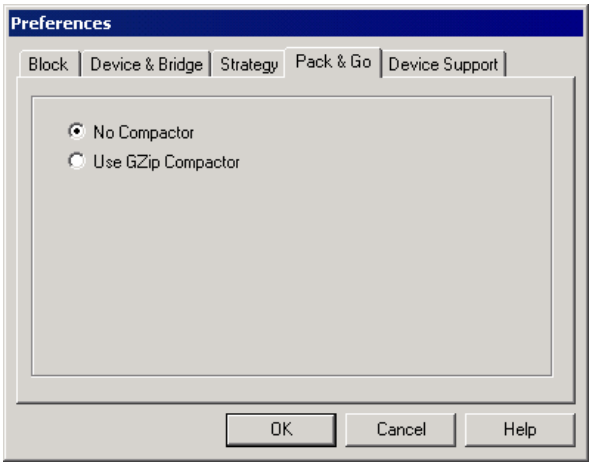


Figure 2.33. Pack & Go Options

Select one of the options:

No Compactor: the configuration package will be a folder that contains all of the necessary files.

Use GZip Compactor: the configuration package will be a compacted file. The application used is the *GZip Compactor*. The ***GZip*** installation file is included in the SYSTEM302 Installation CD, at the *Tools* folder. The compacted file will have the extension **.tgz*, and it is compatible with *Winzip* and other applications.

2.2.5 Device Support Tab

Select the default path to browse for files that are missing in the *Device Support*, using the option *Import Device Support* from the *Project File* menu.

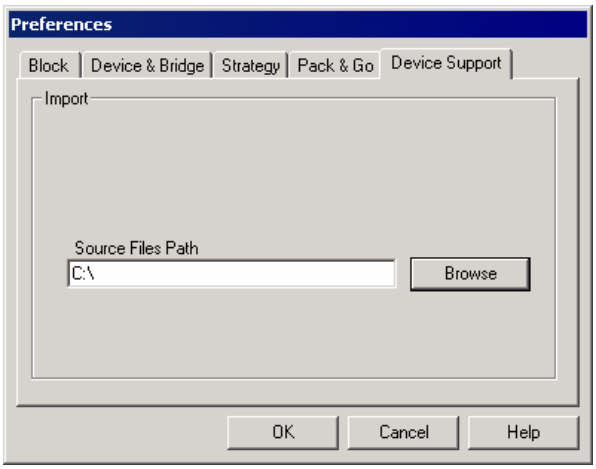


Figure 2.34. Device Support Options

If the user selects another folder while importing the files, this new path will be the default one. This means that SYSCON will always store the last path selected by the user.

2.3 Automatic Block Tag Generation

When the user creates a new block and does not define a tag to it, the tag is automatically generated and assigned to the block, based on the *Preferences* settings.

2.3.1 Default Block Tag

The default tag for a new block is described as follow:

["Block" + id number]

Where:

Block: the default text for a block.
id number: a sequential number that identifies the block internally in the project.

2.3.2 Block Tag Based On Device Tag

When the tag generation is based on the device tag, if a new block is created in a device and the user does not define a tag to it, then the block tag will have the following format:

- *Using the Device Tag as prefix:*
  [device tag + separator + block mnemonic + id number]

- *Using the Device Tag as suffix:*
  [block mnemonic + id number + separator + device tag]

Where:

device tag: the tag of the device where the block is attached to.

separator: a set of alphanumeric characters that separates the name of the device from the name of the block.

block mnemonic: a set of characters related to the block type.

id number: a sequential number related to the mnemonic of the block.

NOTE
Assuming that the option *Update Block Tag* is selected in the *Preferences* dialog box: • If the user changes the device tag, the tag of all blocks attached to this device will be updated based on the new device tag. • If the block is moved from one device to another, its tag will be automatically updated based on the tag of the target device.

If a new block is created in the Strategy and the user does not define a tag to it, the block tag will be generated based on the Strategy tag since the block is not attached to any device yet. Once the user attaches the block to a device, the block tag will be automatically updated based on this device tag.

Yet, if a block is detached from a device, the block tag will be updated again based on the Strategy tag.

NOTE
The general rule is if the block is not attached to a device but is attached to a Strategy, the block tag will be automatically generated based on the Strategy tag, even if the tag generation method chosen is based on device tag.

2.3.3 Block Tag Based On Strategy Tag

When the tag generation is based on the Strategy tag, if a new block is created in a Strategy and the user does not define a tag to it, then the block tag will have the following format:

- *Using the Strategy Tag as prefix:*
  [strategy tag + separator + block mnemonic + id number]

- *Using the Strategy Tag as suffix:*
  [block mnemonic + id number + separator + strategy tag]

Where:

strategy tag: the tag of the Strategy where the block is attached to.

separator: a set of alphanumeric characters that separates the name of the Strategy from the name of the block.

block mnemonic: a set of characters related to the block type.

id number: sequential number related to the mnemonic of the block.

NOTE

Assuming that the option Update Block Tag is selected in the Preferences dialog box:

- If the user changes the Strategy tag, the tag of all blocks attached to this Strategy will be updated based on the new Strategy tag.
- If the block is moved from one Strategy to another, its tag will be automatically updated based on the tag of the destination Strategy.

If a new block is created in the device and the user does not define a tag to it, the block tag will be generated based on the device tag since the block is not attached to any Strategy yet. Once the user attaches the block to a Strategy, the block tag will be automatically updated based on this Strategy tag.

Yet, if a block is detached from a Strategy, the block tag will be updated again based on the device tag.

NOTE

The general rule is if the block is not attached to a Strategy but is attached to a device, the block tag will be automatically generated based on the device tag, even if the tag generation method chosen is based on Strategy tag.

2.4 Exporting and Importing Information

SYSCON can export and import the list of *Blocks* in the *Exchange File Format*. The user must provide the file to be exported, or imported, with the tags of the blocks.

From SYSCON version 6.0 on, any configuration project can be exported as a *XML* file, that will have all the information found in the *FFP* file. When importing the configuration, the *XML* file is validated by a *XML Schema* and the configuration consistency is checked.

2.4.1 Exporting the List of Blocks

Before exporting the list of blocks, it is necessary to generate the ***.ini*** file that contains the tags of all blocks that will be exported. The ***.ini*** file has the following format:

```
[Block 1]
Block_Tag = "block 1"

[Block 2]
Block_Tag = "block 2"
        .
        .
        .
[Block n]
Block_Tag = "block n"
```

Figure 2.35. Export File Format

To export the list of blocks, go to the *Project File* menu and click *Export* > *List of Blocks*, as the following figure shows:

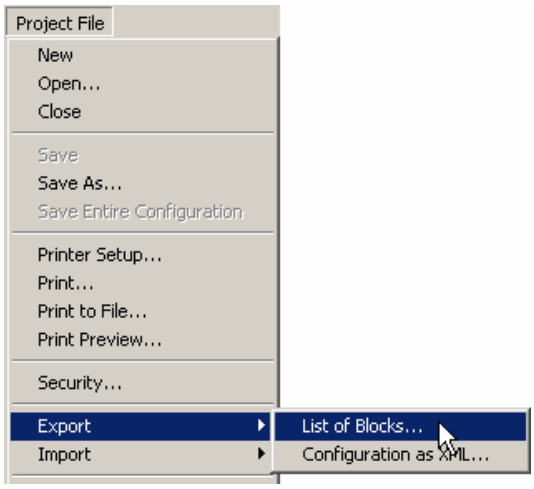


Figure 2.36. Project File Menu: Export List of Blocks

The dialog box will open:

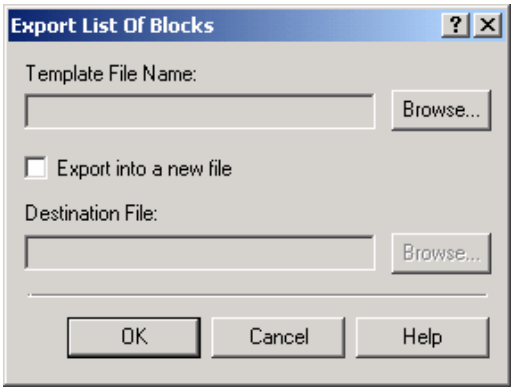


Figure 2.37. Export List of Blocks dialog box

Click the *Browse* button to search for the *Export Template File*, assuming that the user has previously created the file with the tags of the blocks. See section *Exporting Tags* for further information.

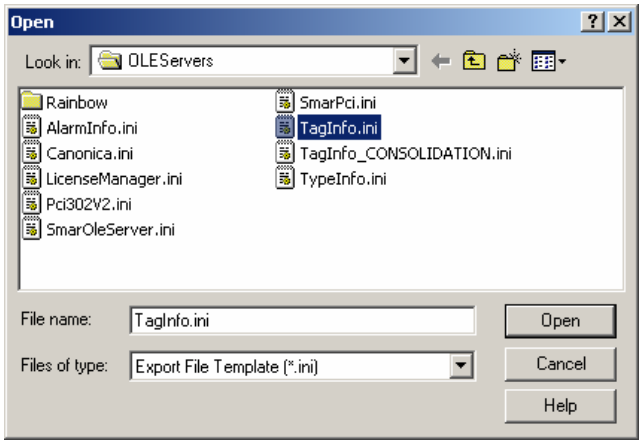


Figure 2.38. Selecting the Template File

Select the option *Export into a new file* to create a new file for the list of blocks. Then select the destination file clicking the corresponding *Browse* button.

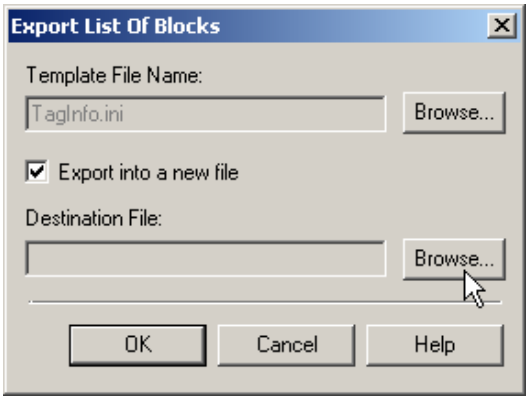


Figure 2.39. Selecting the Destination File

Click *Ok* to export the list of blocks and conclude this task.

2.4.2 Importing the List of Blocks

The figure below shows an example of a file in the *Exchange File Format* that can be import in the SYSCON application:

```
// Function Block
[Block 1]
Block_Index  = 257
Block_Tag  = "AI-101"
Period_Of_Execution   = 1000
Next_Block_To_Execute  = 0

[Block 1 Parameters]
TAG_DESC  =  2
STRATEGY  = 0
ALERT_KEY  = 1
XD_SCALE  = 1000, 0,1047,1
OUT_SCALE  = 100, 0,1147,1
IO_OPTS  = 0x0020
STATUS_OPTS  = 0x1380
CHANNEL  = 1
L_TYPE   = 1
LOW_CUT  = 40
PV_FTIME  = 2
ACK_OPTION  = 0
ALARM_HYS  = 0.5
HI_HI_PRI  = 1
HI_HI_LIM  = 1000
HI_PRI  = 1
HI_LIM  = 990
LO_PRI  = 1
LO_LIM  = 100
LO_LO_PRI  = 1
LO_LO_LIM  = 0
// Manufacturer parameters
AUX_VAR1  = 10
```

Figure 2.40. Export File Format

To import the list of blocks, go to the *Project File* menu and click *Import > List of Blocks*, as the following figure shows:

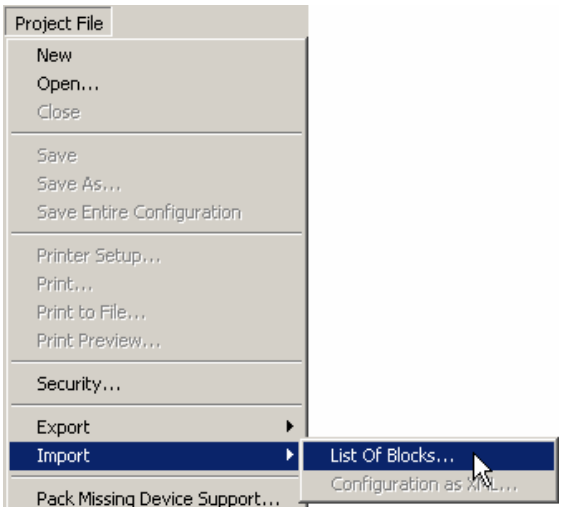


Figure 2.41. Project File Menu: Import List of Blocks

The dialog box will open:

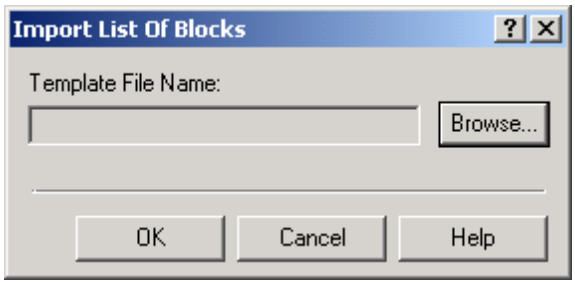


Figure 2.42. Import List of Blocks dialog box

Click the *Browse* button to search for the *Import Template File*.

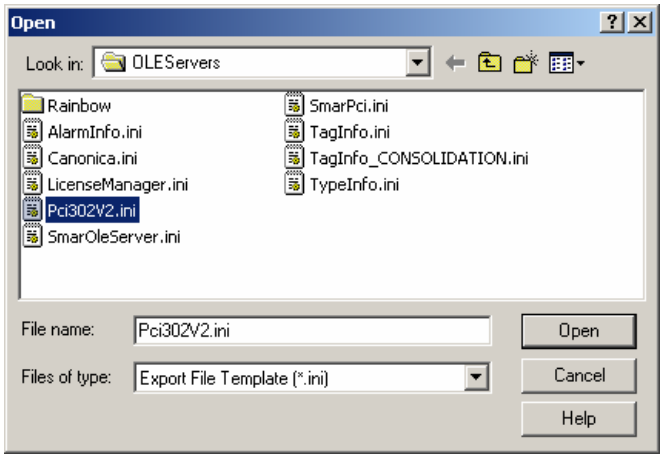


Figure 2.43. Selecting the Template File

Click *Ok* to import the list of blocks and conclude this task.

2.4.3 Exporting the Configuration as XML

To export the configuration as a XML file, go to the *Project File* menu and click *Export* > *Configuration as XML*, as the following figure shows:

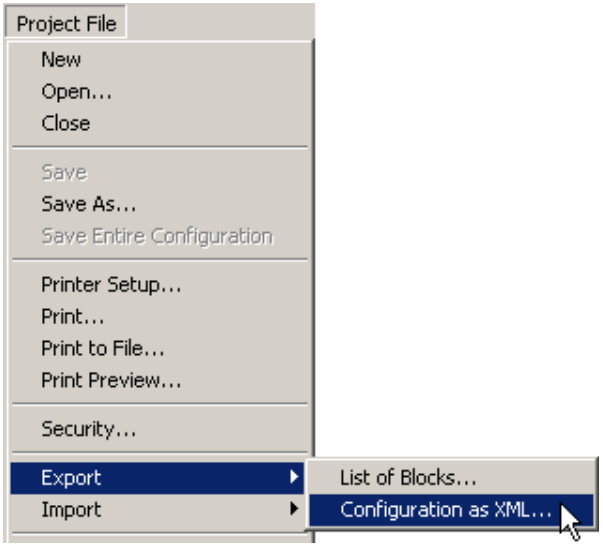


Figure 2.44. Project File Menu: Export Configuration as XML

The dialog box will open:

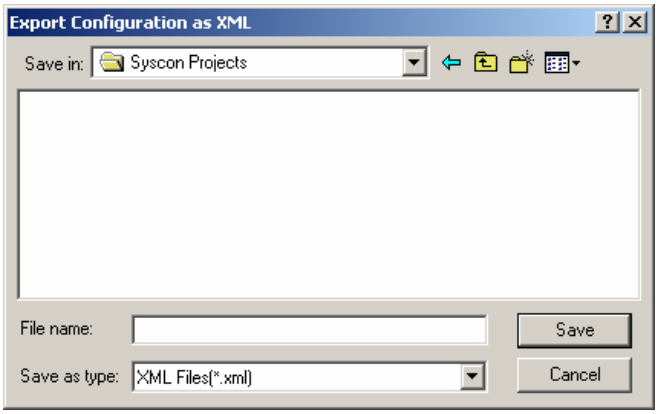


Figure 2.45. Export Configuration as XML dialog box

Type a name for the XML file and click *Save*.

2.4.4 Importing the Configuration as XML

To import the configuration from a XML file, go to the *Project File* menu and click *Import* > *Configuration as XML*, as the following figure shows:

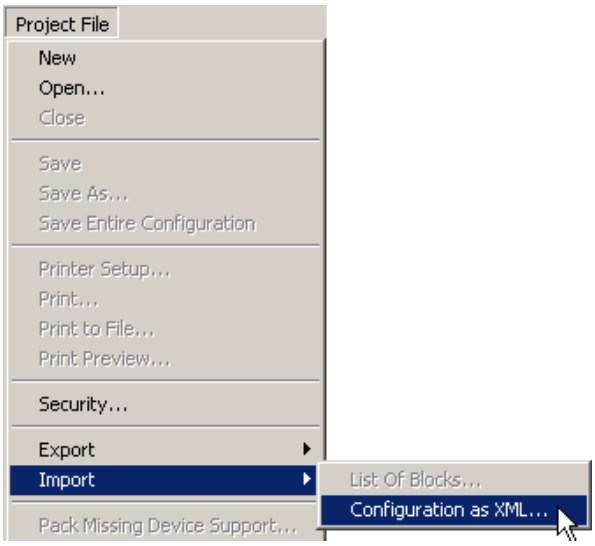


Figure 2.46. Project File Menu: Import Configuration as XML

The dialog box will open:

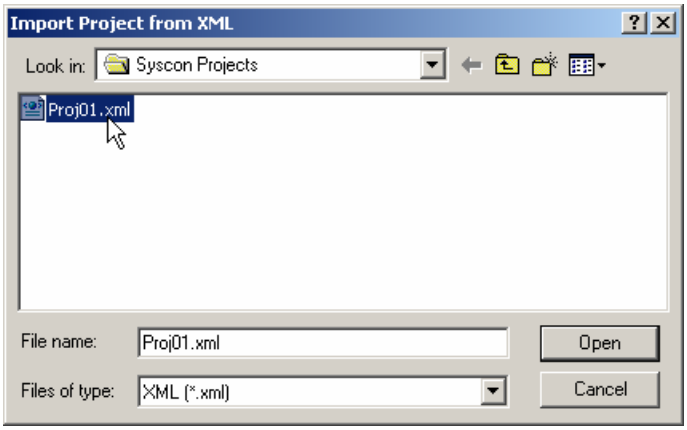


Figure 2.47. Import Configuration as XML dialog box

Select the XML file to be imported and click *Open*.

2.5 Security

With SYSCON 6.0, it is possible to prevent the configuration file to be open by unauthorized users.

The users database must be installed with the application.

Only the user "*Administrator*" can change and configure the user's database. The *Administrator* is the default user of the *Security Manager*. It can't be removed from the list, but the password can be changed.

IMPORTANT
When using the *Security Manager* for the first time, the default user will be *Administrator* and the default password will be *UnitXVI*.

2.5.1 Enabling the Security

Only the *Administrator* can activate and deactivate the *Security Manager*.

Go to the *Project File* menu and click *Security*, as the following figure shows:

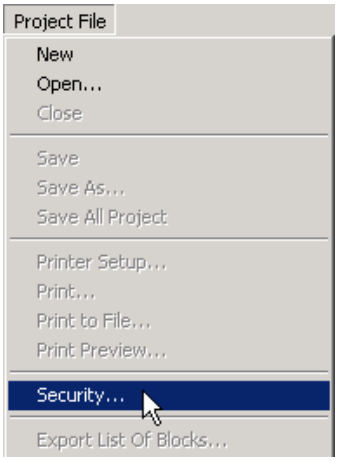


Figure 2.48. Project File Menu: Security

The *Security* dialog box will open:

1. Type *Administrator* as the *User Name*.
2. Type the *Password*.
3. Click the *Login* button.

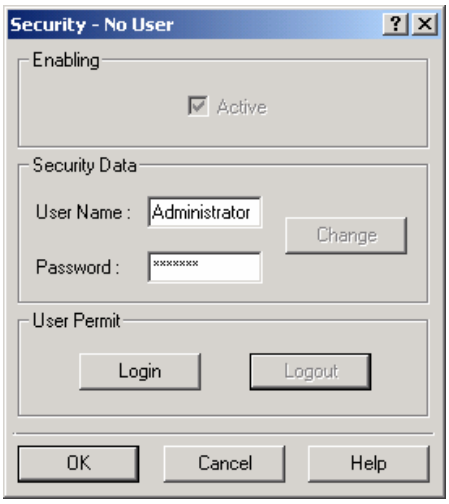


Figure 2.49. Administrator Login

The *Active* box will become enabled.

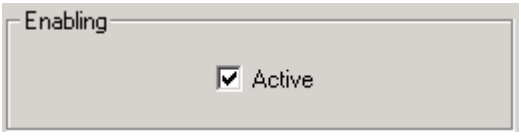


Figure 2.50. Security Manager Enabled

To activate the *Security Manager*, select the option *Active*. It will be necessary to log to the SYSCON before opening the application.

To deactivate the *Security Manager*, clear the option *Active*. The *Security Manager* will not verify users access and any user can run the SYSCON and open a configuration file.

NOTE
The *Security Manager* is deactivated by default. It is necessary to follow this procedure and activate the *Security* when using SYSCON for the first time.

2.5.2 User Login

Go to the *Project File* menu and click *Security*, as the following figure shows:

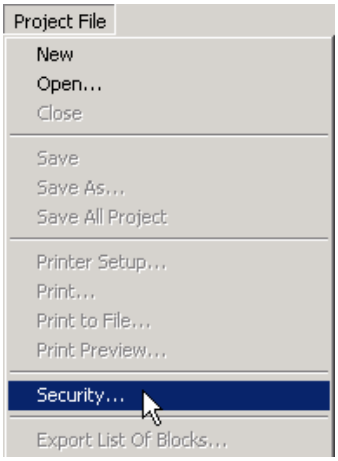


Figure 2.51. Project File Menu: Security

The *Security* dialog box will open:

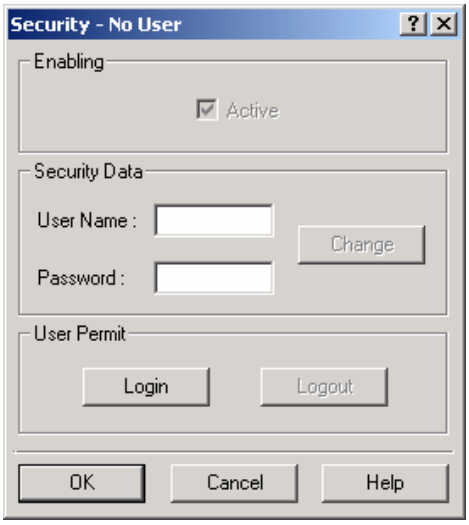


Figure 2.52. Security dialog box

1. Type the *User Name*.
2. Type the *Password*.
3. Click the *Login* button.

If the information is correct, the user will be logged in the application. Click *Ok* to close the *Security* dialog box and start using SYSCON.

REMEMBER
The *User Name* and the *Password* are case sensitive.

2.5.3 User Logout

To logout from the *Security Manager*, go to the *Project File* menu and click *Security*, to open the dialog box.

Click the button *Logout*. A message box will open to confirm the operation.

2.5.4 Users Management

The user with the *Administrator* profile can change any attribute of a user.

The user with the *User* profile can only change the password.

To manage the users in the database, click the *Change* button in the *Security* dialog box.

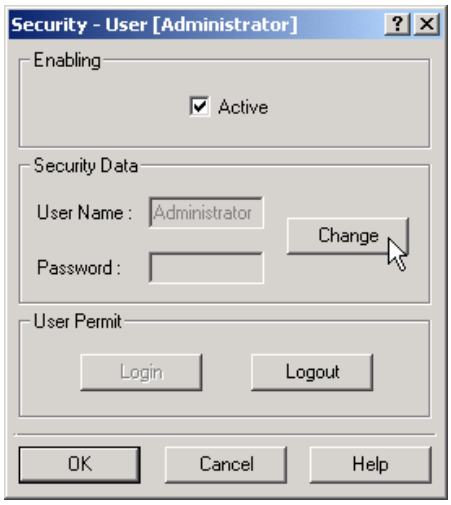


Figure 2.53. Security dialog box

The dialog box will expand:

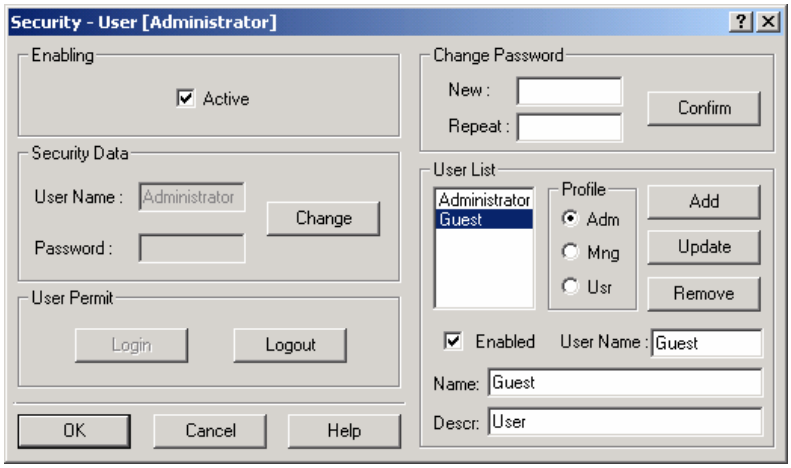


Figure 2.54. Security dialog box: User Attributes

The *Change Password* area is used to change the user's password. The password must have at least four alphanumeric characters.

The *User List* displays the users that can log to the SYSCON application.

The option *Enabled* is used to enable or disable an user account. When an user account is disabled, the account still exist in the database but the user will not be able to log in or run the SYSCON application.

Creating a User

Only an user with the *Administrator* profile can add users to the *Security Manager*.

To add a new user to the *User List*:

1. Type the login name for the user in the *User Name* text box.
2. Type the new password in the *New* text box and re-type the password in the *Repeat* text box.
3. Type the full name of the user in the *Name* text box.
4. Type a description of the user in the *Descr* text box.
5. Click *Add* to include the new user.

User Profile

The *Profile* option determines the type of access for the user.

Figure 2.55. Profile Options

The *Adm* profile allows the user to create, update or remove users from the database. It is not possible to change the information about the *Administrator*.

The *Mng* profile allows the user to modify the password and verify the information about the other users. It is not allowed to create, update or remove users from the database.

The *Usr* profile allows the user to log and run the SYCON application. This user doesn't have access to the information about the other users. The *Change* button will be disabled.

Updating the Attributes for the User

The user with the *Administrator* profile can change any attribute of a user.

The user with the *User* profile can only change the password.

To update the attributes for a user, select the name from the *User List*. The information about the user will be displayed in the *Security* dialog box.

The password, the profile, the name, the description and also the user name can be changed.

Enter the new information about the user and click the button *Update* to save the values.

Changing the Password

To change the password:

1. Select the name of the user in the *User List*.
2. Type the new password in the *New* text box.
3. Re-type the password in the *Repeat* text box.

4. Click *Confirm*.
5. Click *Yes* to apply the changes to the password.

Removing a User

Only an user with the *Administrator* profile can remove users from the *Security Manager*.

To remove a user from the database, select the user name in the *User List* and click the button *Remove*.

A message box will be displayed to confirm this operation. Click *Yes* to remove the user or click *No* to cancel.

NOTE
It is not possible to remove a user that is logged to the system.

3 Fieldbus Configuration

3.1 Plant

3.1.1 Changing Plant Attributes

To change the plant name, right-click the plant icon and select the item *Attributes*.

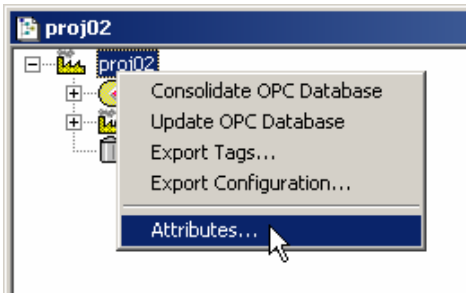


Figure 3.1. Plant Attributes

NOTE
Using the mouse with left hand, check whether the Right Button Configuration of the mouse, on the Mouse Properties window, is set to open the “Context Menu”. If not, use the Left Mouse Button to open the “Popup Menu”, instead of the Right Mouse Button.

The *Plant Attributes* dialog box will open. Type the new plant tag and click *OK*.

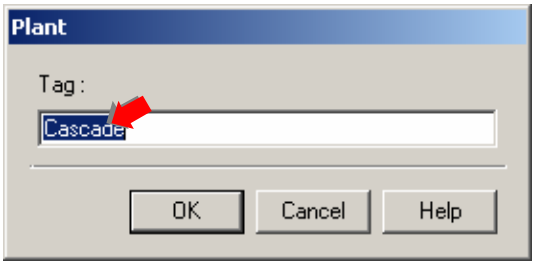


Figure 3.2. Plant Attributes Dialog Box

3.2 Areas

3.2.1 Changing Area Attributes

To change the area tag, select the area icon, go to the *Edit* menu and click *Attributes*. Or activate the area popup menu, right-clicking its icon and selecting the item *Attributes*.

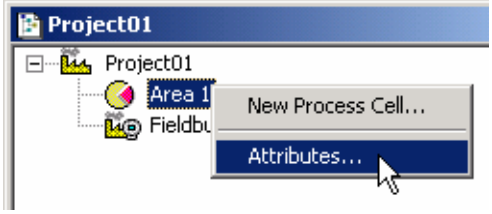


Figure 3.3. Area Attributes

The *Area Attributes* dialog box will open. Type the new area tag and click *OK*.

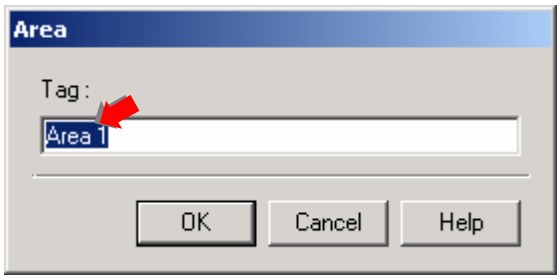


Figure 3.4. Area Attributes Dialog Box

3.3 Process Cells

3.3.1 Creating Process Cells

To create a process cell, select the area icon, go to the *Edit* menu and click *New Process Cell*. Or activate the area popup menu, right-clicking its icon and selecting the item *New Process Cell*.

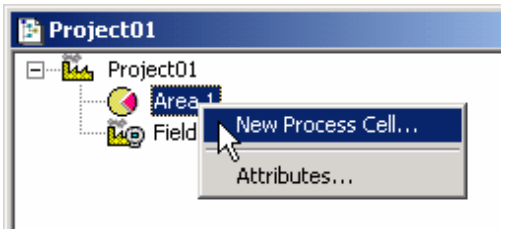


Figure 3.5. New Process Cell

The *Process Cell* dialog box will open. Type the process cell tag and click *OK*.

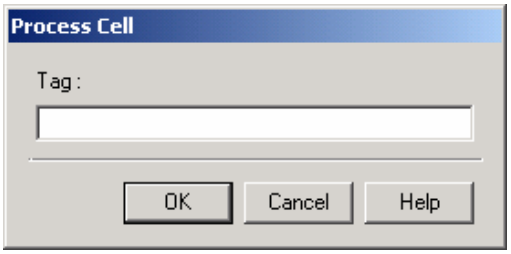


Figure 3.6. Process Cell Dialog Box

NOTE
If a new tag is not typed, *Process Cell n* will be the default, where *n* is a sequential number for the process cells.

After creating the process cell, the *Project* window will look like the following figure:

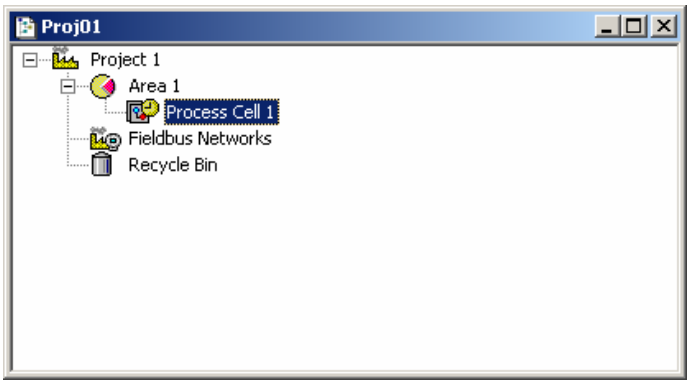


Figure 3.7. Project Window

The process cell has its own window: click the process cell icon, go to the *View* menu and click *Expand* to activate this window. Or activate the process cell popup menu, right-clicking its icon and selecting the item *Expand*, as indicated below:

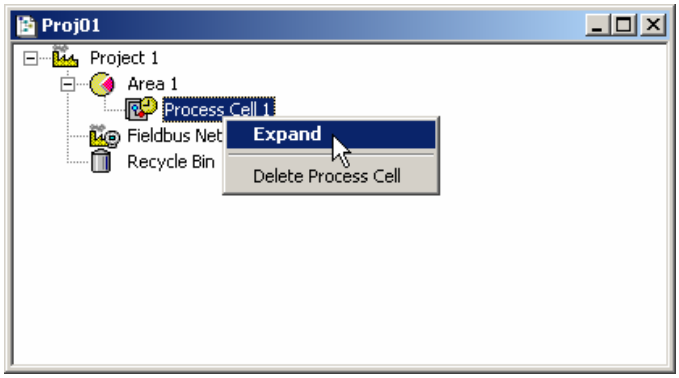


Figure 3.8. Expanding the Process Cell Window

The *Process Cell* window will open:

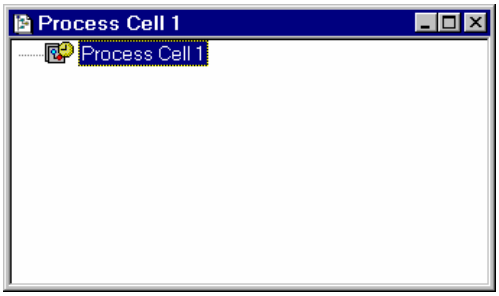


Figure 3.9. Process Cell Window

Another easy way of opening the *Process Cell* window is to double-click the process cell icon on the *Project* window.

3.3.2 Changing Process Cell Attributes

To change the process cell attributes, select the process cell icon on the *Process Cell* window, go to the *Edit* menu and click *Attributes*. Or activate the process cell popup menu, right-clicking its icon on the *Process Cell* window and selecting the item *Attributes*.

Figure 3.10. Process Cell Attributes

The *Process Cell* dialog box will open. Type the new process cell tag and click *OK*.

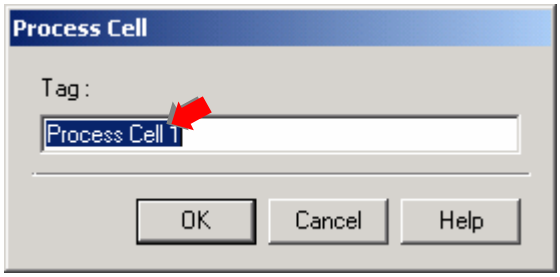


Figure 3.11. Process Cell Dialog Box

3.3.3 Deleting Process Cells

To remove a process cell, select its icon on the *Project* window, go to the *Edit* menu and click *Delete Process Cell*. Or activate the process cell popup menu, right-clicking its icon and selecting the item *Delete Process Cell*.

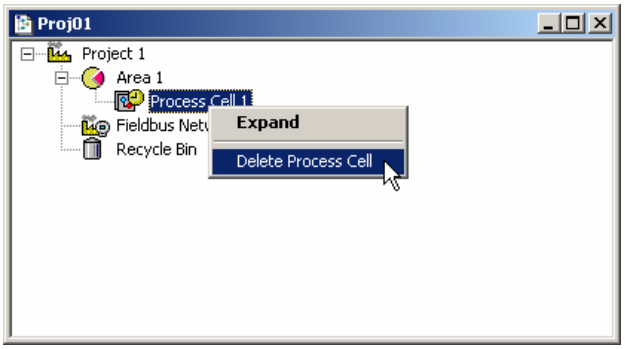


Figure 3.12. Deleting the Process Cell

A quick way of removing a process cell is to select its icon on the *Project* window and press the *Delete* key, on the keyboard.

The *Warning* dialog box will open. To confirm the deletion, click *Yes*.

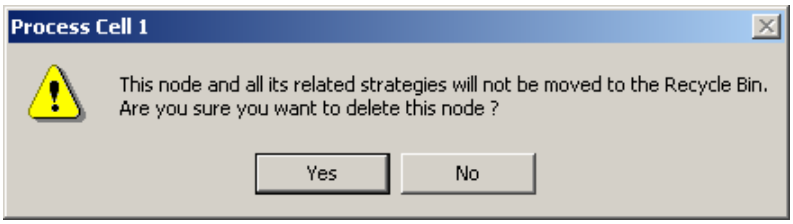


Figure 3.13. Confirm Deletion Dialog Box

NOTE
If the user confirms the operation, the process cell and the control modules will be removed from the project and will not be sent to the *Recycle Bin*.

3.4 Control Modules

3.4.1 Creating Control Modules

To create a control module, open the *Process Cell* window and select the process cell icon. Go to the *Edit* menu and click *New Control Module*. Or activate the process cell popup menu, right-clicking its icon on the *Process Cell* window and selecting the item *New Control Module*.

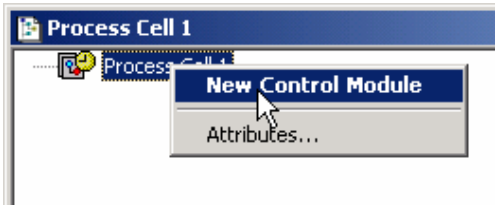


Figure 3.14. New Control Module

The *Control Module* dialog box will open. Type the control module tag and click *OK*.

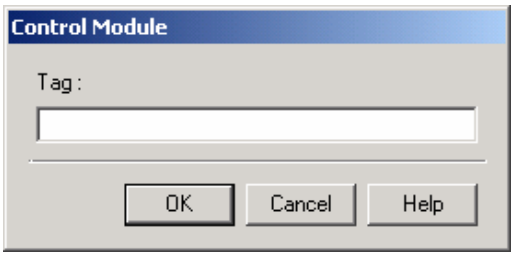


Figure 3.15. Control Module Dialog Box

NOTE
If a new tag is not typed, *Control Module n* will be the default, where *n* is a sequential number for the control modules.

The *Process Cell* window will look like the following figure:

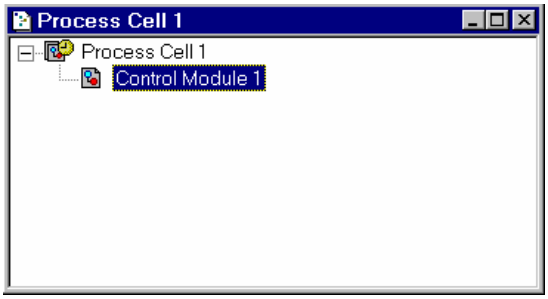


Figure 3.16. Process Cell Window

3.4.2 Changing Control Module Attributes

To change the control module attributes, select its icon, go to the *Edit* menu and click *Attributes*. Or activate the control module popup menu right-clicking its icon and selecting the item *Attributes*:

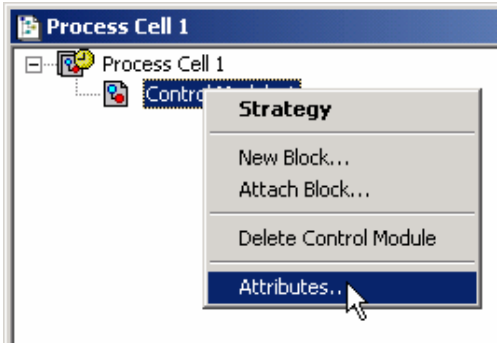


Figure 3.17. Control Module Attributes

The *Control Module* dialog box will open:

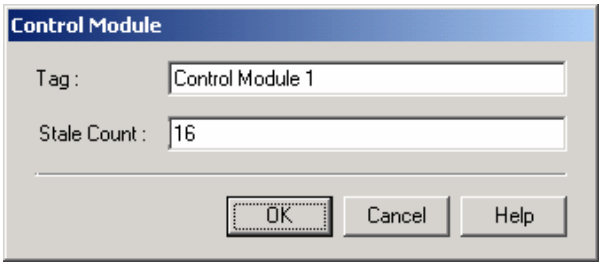


Figure 3.18. Control Module Attributes Dialog Box

Type the new control module tag.

The user can also set a value for the *Stale Count*. The *Stale Count* is the number of *Macrocycles* used to signal that the data was not updated in the *Link*.

Click *OK* to close this dialog box.

3.4.3 Deleting Control Modules

To remove a control module from a process cell, select its icon, go to the *Edit* menu and click *Delete Control Module*. Or activate the control module popup menu right-clicking its icon and selecting the item *Delete Control Module*:

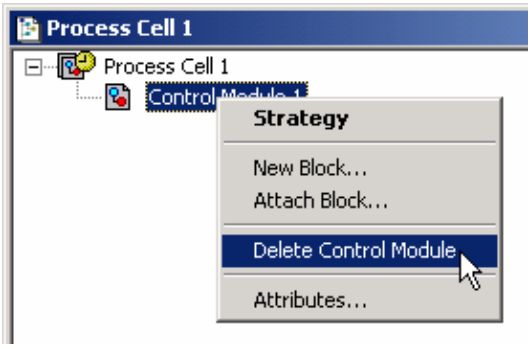


Figure 3.19. Deleting the Control Module

A quick way of removing a control module is to select its icon on the *Process Cell* window and press the *Delete* key, on the keyboard.

The *Warning* dialog box will open. To confirm the deletion, click *Yes*.

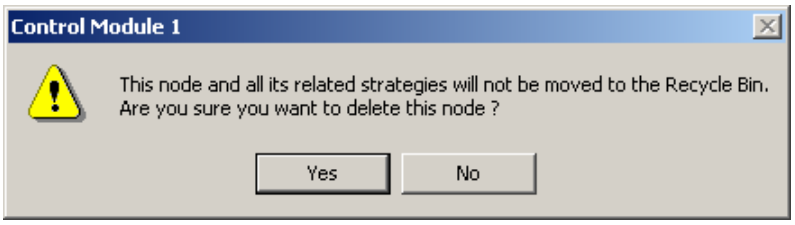


Figure 3.20. Confirm Deletion Dialog Box

NOTE
If the user confirms the operation, the control module and the related Strategy will be removed from the project and will not be sent to the *Recycle Bin*.

3.5 Fieldbus Networks

3.5.1 Creating Fieldbuses

To create a fieldbus, select the fieldbus networks icon, go to the *Edit* menu and click *New Fieldbus*. It is also possible to activate the fieldbus networks popup menu, right-clicking its icon and selecting the item *New Fieldbus*.

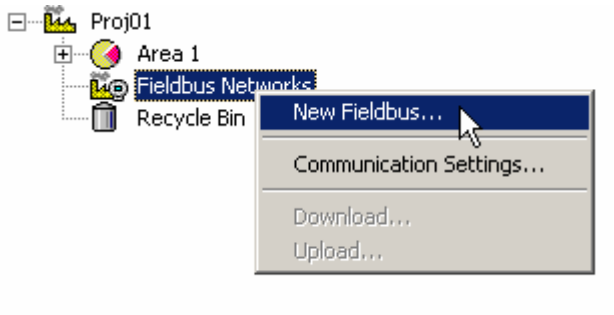


Figure 3.21. New Fieldbus

The *New Fieldbus* dialog box will open. Select the communication type for the fieldbus and type the tag in the *Tag* text box, and then click *OK*.

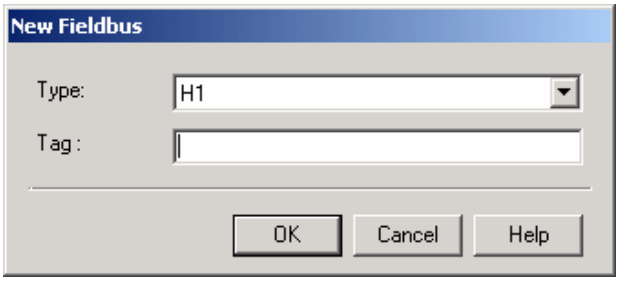


Figure 3.22. Fieldbus Dialog Box

NOTE
If the *HSE* type is selected, the *HSE Host* will be automatically added to the fieldbus channel and the *HSE OLE Server* will be automatically selected in the *Communication Settings*.

If the user doesn't type a tag, the default one will be *Fieldbus n*, where *n* is a sequential number for the fieldbuses. The *Fieldbus Network* doesn't have a direct correspondence to any of the existing process cells.

When the user is finished creating the fieldbus, the *Project* window should look like the following figure:

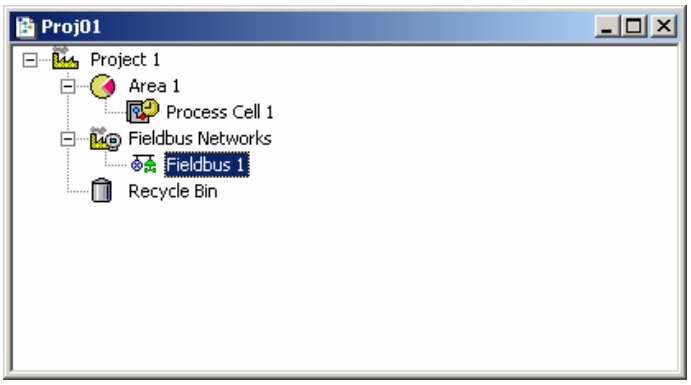


Figure 3.23. Project Window

The fieldbus has its own window: click the fieldbus icon, go to the *View* menu and click *Expand* to activate this window. Or activate the fieldbus popup menu, right-clicking its icon and selecting the item *Expand*:

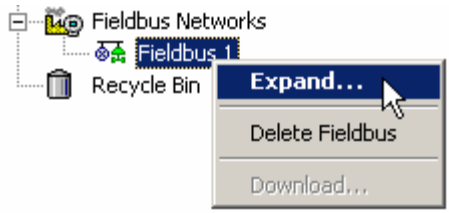


Figure 3.24. Expanding the Fieldbus Window

The *Fieldbus* window will open:

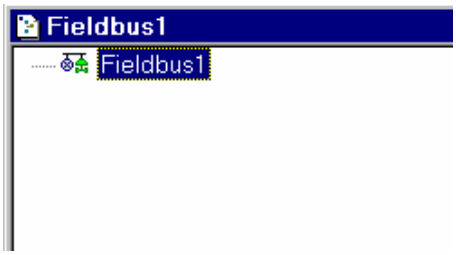


Figure 3.25. Fieldbus Window

Another easy way to open the *Fieldbus* window is to double-click the fieldbus icon on the *Project* window.

3.5.2 Changing Fieldbus Attributes

To change the fieldbus attributes, select the fieldbus icon on the *Fieldbus* window, go to the *Edit* menu and click *Attributes*. Or activate the fieldbus popup menu, right-clicking its icon on the *Fieldbus* window and selecting the item Attributes.

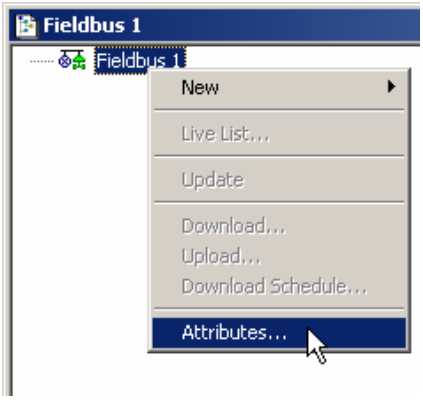


Figure 3.26. Fieldbus Attributes

The *Fieldbus* dialog box will open.

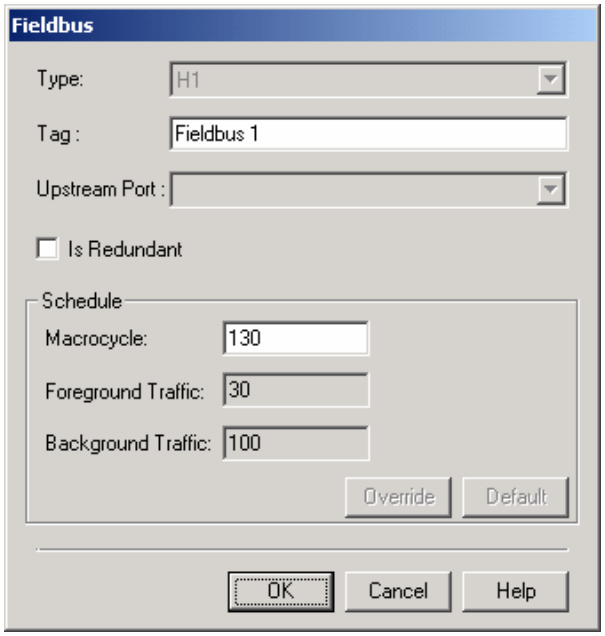


Figure 3.27. Fieldbus Dialog Box

Type the new fieldbus tag.

The user is now able to determine the time dedicated to the *Background Traffic*. The *Background Traffic* (in **ms)** will affect the refreshing time of the variables under supervision. The minimum value is 100 ms. The macrocycle is automatically updated.

To set the macrocycle:

1. Type the new value for the macrocycle.
2. Click *Override*.

The values for the *Background Traffic* and the *Foreground Traffic* are calculated.

Click *Ok* to accept these values and conclude this task.

In case the user wants to restore the macrocycle to the default value, click *Default* and then click *Ok*, as the following figure shows:

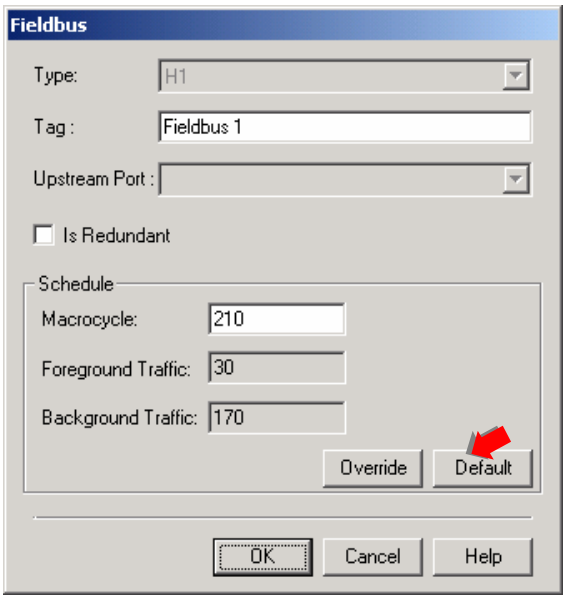


Figure 3.28. Fieldbus Macrocycle Default Value

After clicking *Override* or *Default* (before closing the *Fieldbus* dialog box) the previous value of the macrocycle can be restored by clicking *Cancel*.

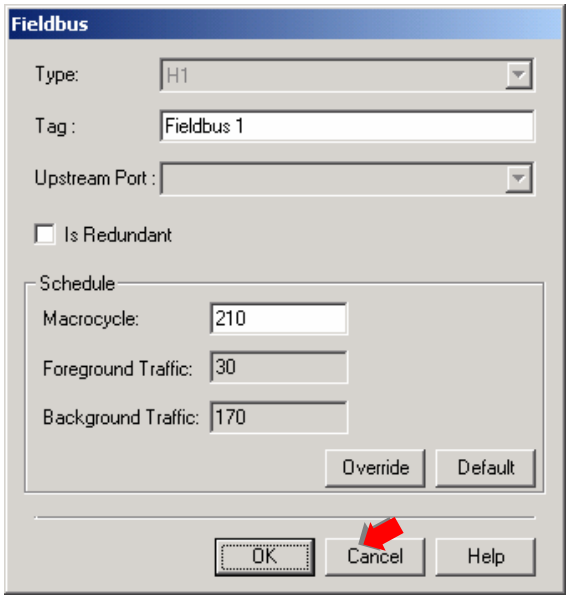


Figure 3.29. Cancel Button

NOTE
Click the button *Cancel* to quit the dialog box without applying the changes to the fieldbus. All modifications will be discarded, and all fieldbus parameters will be restored to the initial state.

3.5.3 Deleting Fieldbuses

To remove a fieldbus, select its icon on the *Project* window, go to the *Edit* menu and click *Delete Fieldbus*. Or activate the fieldbus popup menu, right-clicking its icon and selecting the item *Delete Fieldbus*.

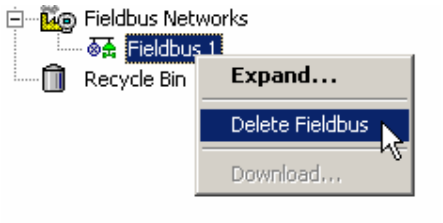


Figure 3.30. Deleting the Fieldbus

A quick way of removing a fieldbus is to select its icon on the *Project* window and press the *Delete* key, on the keyboard.

The *Warning* dialog box will appear. To confirm the deletion, click *Yes*.

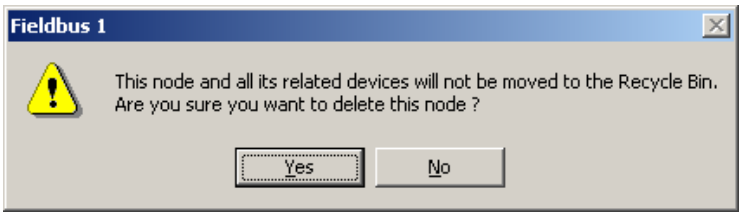


Figure 3.31. Confirm Deletion Dialog Box

NOTE
If the user confirms the operation, the fieldbus and the devices will be removed from the project and will not be sent to the *Recycle Bin*.

3.6 Devices

3.6.1 Creating Devices

To create a device, open the *Fieldbus* window and select the fieldbus icon. Go to the *Edit* menu and click *New Device*. Or activate the fieldbus popup menu, right-clicking its icon in the *Fieldbus* window and selecting the item *New* > *Device*.

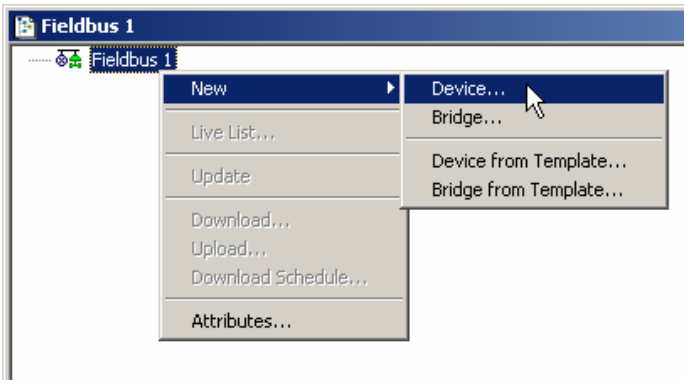


Figure 3.32. New Device

The *New Device* dialog box will open:

1. Select a *Device Manufacturer* from the list.
2. Select the *Device Type* provided by the manufacturer selected.
3. Select the *Device Revision*.

4. Select the *DD Revision* and the *CF Revision*, or check the option ***Follow the Latest DD/CF Revision*** to apply the latest revision for the selected device.

NOTE
If the option *Follow the Latest DD/CF Revision* is selected, SYSCON will update the device with the latest revision of the *DD* and *CF* everytime the configuration file is opened. To disable the automatic update, right-click the device icon, select *Exchange* from the menu and clear this option.

5. Type the *Device ID*.
6. Type a related tag for the device.

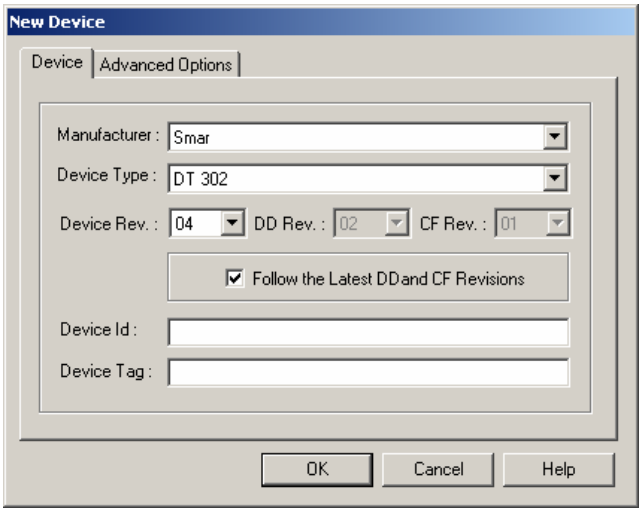


Figure 3.33. Device Dialog Box

At the *Advanced Options* tab:

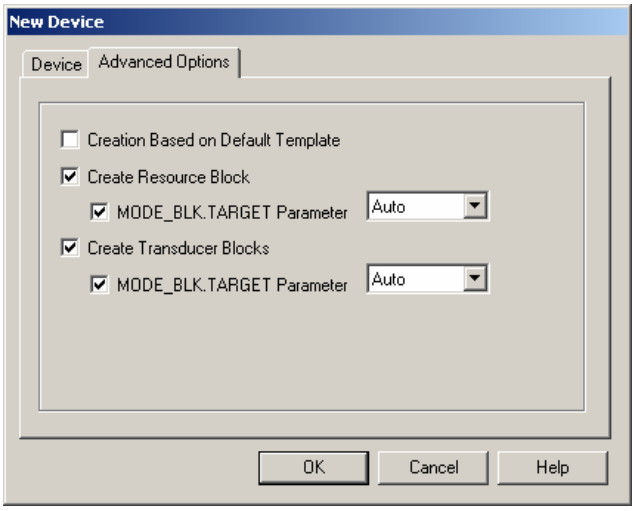


Figure 3.34. Advanced Options

Select the option **Creation Based on Default Template** to create the device based on the *Default Template* file for the selected *Device Revision*, located in the corresponding *Device Support* folder.

Select the option **Create Resource Block** to automatically create the *Resource Block* of the selected device. The user can set the initial value for the *Mode Block Parameter*.

Select the option **Create Transducer Blocks** to automatically create the *Transducer Blocks* of the selected device. The user can set the initial value for the *Mode Block Parameter*.

Click *Ok* to add the device to the configuration.

NOTE
If the *Default Template* file is not found, SYSCON will automatically created the *Resource* and *Transducer Blocks* for the selected device. If the user does not type a tag, *Device n* will be the default, where *n* is a sequential number for the devices.

The *Fieldbus* window should look like the following figure:

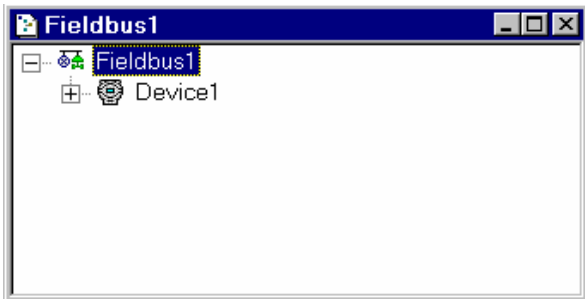


Figure 3.35. Fieldbus Window

IMPORTANT
The *HSE Device* can only be added to the *HSE Fieldbus*. Equally, the *H1 Device* can only be added to the *H1 Fieldbus*.

3.6.2 Creating Device from Template

To create a device based on a *Device Template File*, select the fieldbus icon, go to the *Edit* menu and click *Import Device Template*. Or activate the fieldbus popup menu, right-clicking its icon in the *Fieldbus* window and selecting the item *New > Device from Template*.

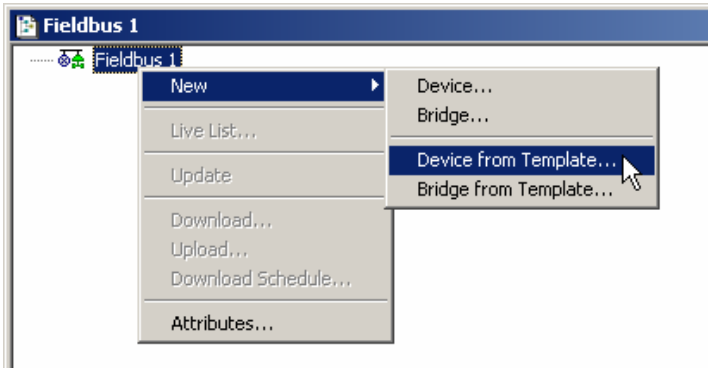


Figure 3.36. Creating Device from Template

The dialog box will open:

1. Select the directory where the file is located.
2. Select the *Device Template* file and click *Open*.
3. A message box will open to confirm the operation. Click *Ok* to import the *Device Template*.

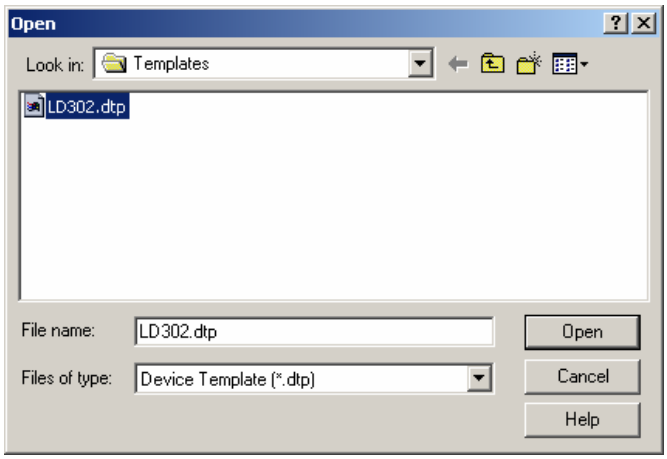


Figure 3.37. Selecting the Device Template

The *Tag Table* will open, showing the list with the block tags based on the preferences settings and the old block tags used in the *Template* file. To edit a tag, right-click the block or device icon at the *New Tag* column and click *Rename*. Type the new tag and click *Enter* on the keyboard.

Click *Ok* to close *Tag Table* dialog box and add the device to the configuration.

3.6.3 Changing Device Attributes

To change the device attributes, select its icon, go to the *Edit* menu and click *Attributes*. Or activate the device popup menu, right-clicking its icon and selecting the item *Attributes*.

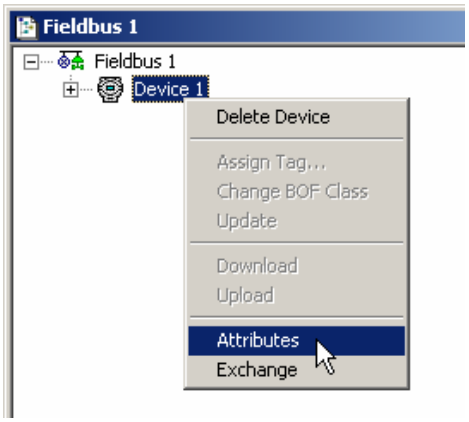


Figure 3.38. Device Attributes

The *Device Attributes* dialog box will open. Change the attributes of the device and click *OK*:

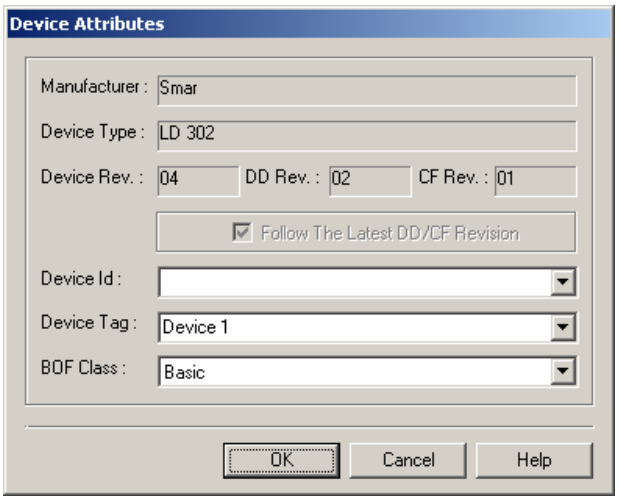


Figure 3.39. Device Attributes Dialog Box

NOTE
When SYSCON is operating in On-line mode, the *Device ID* list box will show the devices that haven't been instantiated in the project yet. If the user selects *Unspecified* in the *Device Tag* list box and applies it to the device, SYSCON will automatically generate a new default tag for the device, based on the *Preferences*.

Master Backup Device

To make a device work as a *Master Backup*, a *Link Master* should be selected:

1. Click the down arrow of the *BOF Class* box.
2. Select the option *Link Master*.
3. Click *Ok*.

See the following figure:

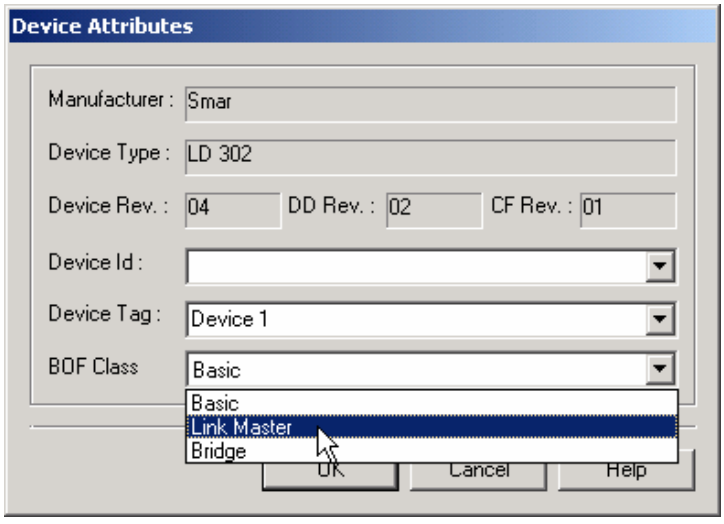


Figure 3.40. Configuring the Link Master Device

When SYSCON is online, activate the device menu and select the option *Change BOF Class*. SYSCON will promptly show a message asking to re-initialize the device. The device will operate as a *Link Master*.

NOTE
During the download, all *Master Backups* in the *Fieldbus Network* will be configured with the *Traffic Schedule*.

3.6.4 Deleting Devices

To remove a device from the *Fieldbus* window, select its icon, go to the *Edit* menu and click *Delete Device*. Or activate the device popup menu, right-clicking its icon and selecting the item *Delete Device*:

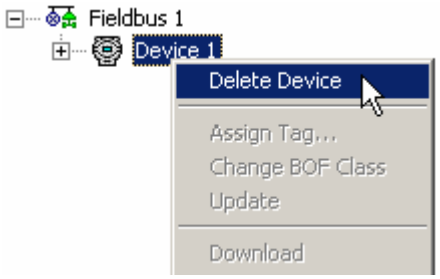


Figure 3.41. Delete Device

A quick way of removing a device is to select its icon on the *Fieldbus* window and press the *Delete* key, on the keyboard.

The *Warning* dialog box will appear. To confirm the deletion, click *Yes*.

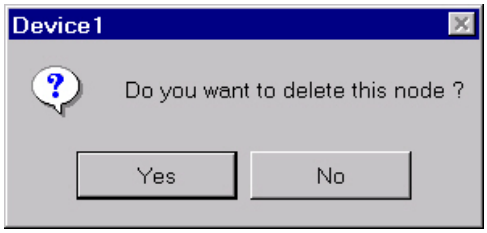


Figure 3.42. Confirm Deletion Dialog Box

3.6.5 Ordering Devices

Select a device icon and drag it over the other device icon. The device selected will be placed above the first one on the list.

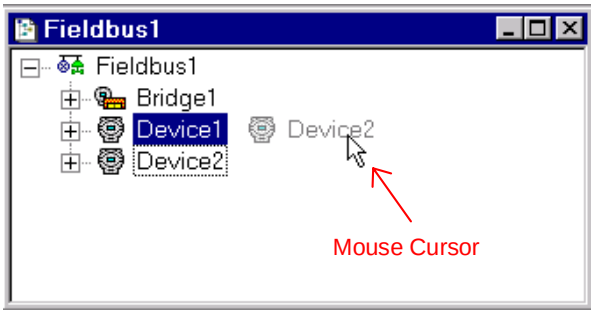


Figure 3.43. Ordering Devices at the Fieldbus Window

The *Fieldbus* window should look like the following figure:

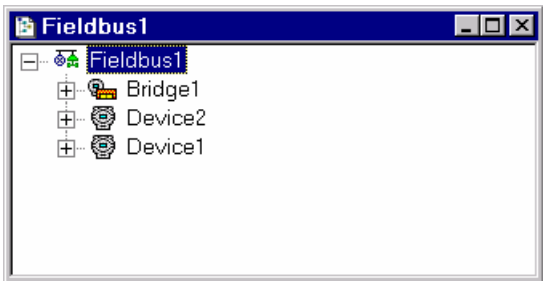


Figure 3.44. Fieldbus Window

3.6.6 Moving Devices

Click to select the device icon and drag it over the icon of the target *Fieldbus* window.

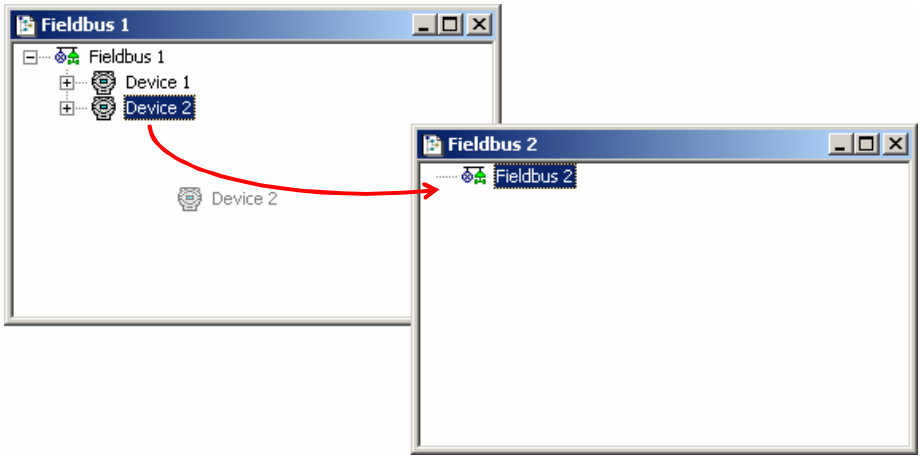


Figure 3.45. Moving a Device to Another Fieldbus Window

If there are any block links connecting the device to its original *Fieldbus* window, these links may no longer be available for the communication, because no logical path would be found in the topology. The unrealized links will be identified by a dotted line in the Strategy window.

3.6.7 Device Exchange

When a defective device must be replaced by a new device that has a newer or different *Device Revision*, it is possible to exchange these devices easily without modifying the existing configuration. Another scenario occurs when the user wants to change the *Device Revision* for a device.

If SYSCON is operating in the *on-line* mode, the user will be able to exchange the *Device ID*.

The *Device Exchange* verifies the inconsistencies, incompatibilities and interchangeability problems, and generate a report about the changes that will affect the configuration.

To exchange a device, select its icon, go to the *Edit* menu and click *Exchange*. Or right-click the device icon and click the item *Exchange*.

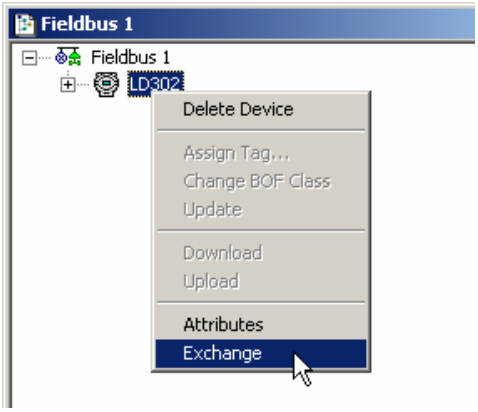


Figure 3.46. Device Exchange

The *Exchange* dialog box will open:

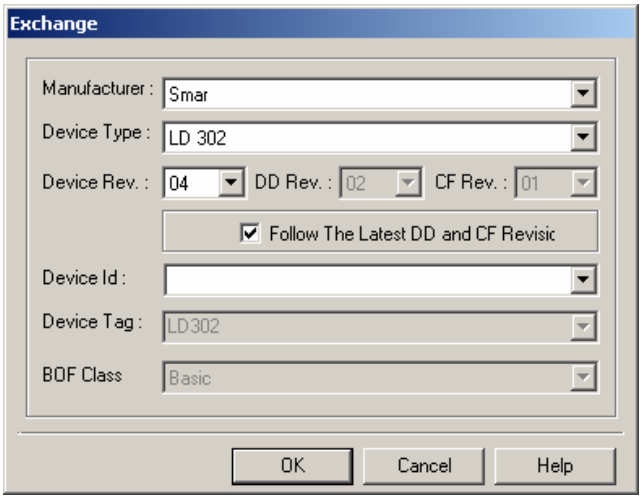


Figure 3.47. Device Exchange Dialog Box

The user can change the *Manufacturer*, the *Device Type* and the *Device Revision*.

SYSCON will compare the new device configuration with the previous one and display the incompatibilities at the *Device Exchange Deviations* dialog box.

The *Deviations* dialog box shows detailed information of the device, the blocks and parameters, indicating to the user the functionalities that can be lost when exchanging the device.

See the example below:

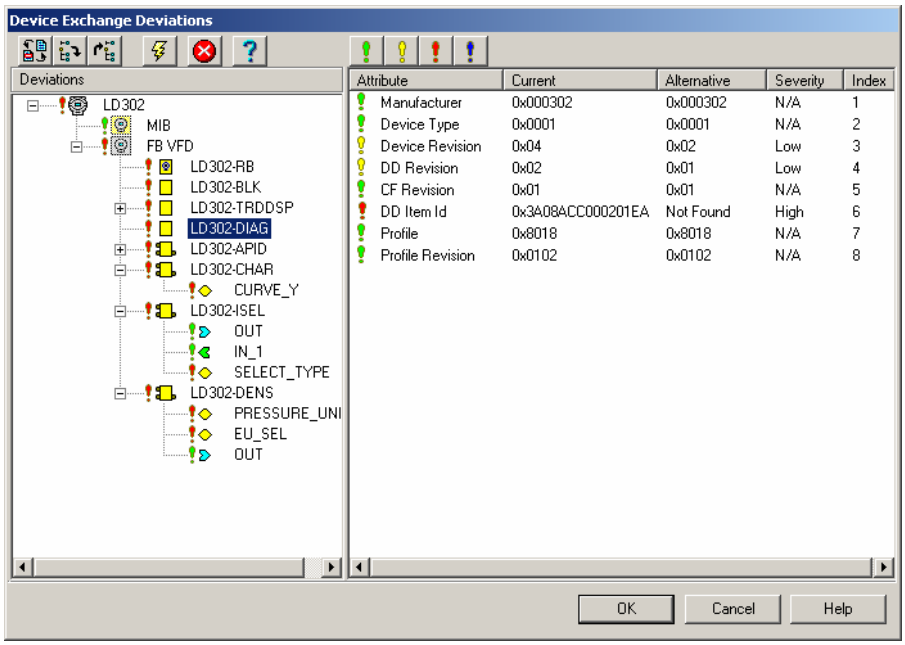


Figure 3.48. Device Deviations Dialog Box

Click the column headers (*Attribute*, *Current*, *Alternative*, *Severity* or *Index* column) on the right panel to sort the *Parameters* list. Clicking the column header will toggle between ascendant or descendent sorting.

The *Deviations* dialog box has its own toolbar. The following table describes the functionalities of the buttons:

	Click this button to refresh the information on the dialog box.
	Click this button to expand all nodes.
	Click this button to collapse all nodes.
	Click this button to accept the changes and close the *Deviations* dialog box.
	Click this button to cancel the exchange procedure and close the *Deviations* dialog box.
	Click this button to open the SYSCON Help.

The *Deviations* dialog box has four filter levels that classifies all of the blocks and parameters attributes for the device:

	The attributes classified by this filter are compliant with the device.
	The *Low Severity* filter indicates that the attributes are not compliant but the information won't be lost.
	The *High Severity* filter indicates that the attributes are not compliant and the information can be lost or converted.
	This filter will display all of the attributes.

Click *Ok* to confirm the exchange procedure. SYSCON will verify the compatibility of the blocks. If a block is not available in the target device, a message box will alert the user that the block is not compliant. The user should search for a compatible block by clicking *Yes*. The *Block* dialog box will open:

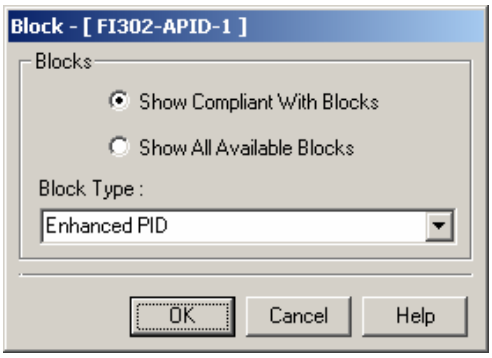


Figure 3.49. Selecting a Compatible Block

Select the option **Show Compliant With Blocks** to display the list of compatible blocks types in the target device or select the option **Show All Available Blocks** to display the list of all blocks types available for the target device. Select the block type and click *Ok* to accept the changes.

This *Block* dialog box will appear for each unavailable block until all blocks are evaluated.

Blocks that cannot be converted will be removed from the configuration and sent to the *Recycle Bin*.

Parameters cannot be converted. If there is no identical parameter in the new device, the parameter will be deleted and will not be sent to the *Recycle Bin*.

NOTE
In the on-line operation mode, when the *Exchange* procedure is complete, a dialog box alerts the user that it is necessary to execute a *Device Download* and assign the tags. Click *Yes* to execute the download or click *No* to postpone the download.

3.7 Bridges

Use bridges when the user wants a block to supply a value to another block but these block are inside different fieldbus links.

3.7.1 Creating Bridges

To create a bridge, select the fieldbus icon, on the *Fieldbus* window, go to the *Edit* menu and click *New Bridge*. Or activate the fieldbus popup menu, right-clicking its icon and selecting the item *New > Bridge*.

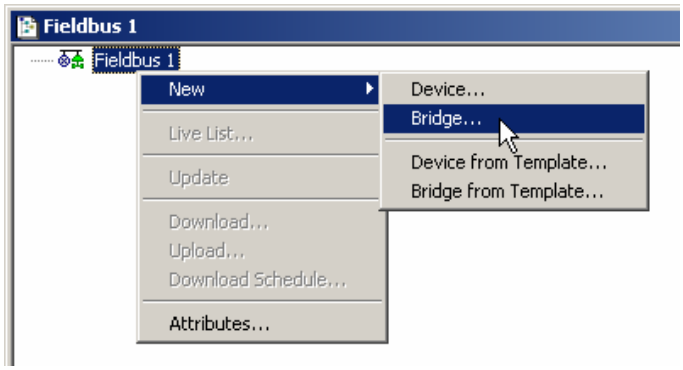


Figure 3.50. New Bridge

The *New Bridge* dialog box will open:

1. Select a *Bridge Manufacturer* from the list.
2. Select the *Device Type* provided by the manufacturer selected.
3. Select the *Device Revision*.
4. Select the *DD Revision* and the *CF Revision*, or check the option ***Follow the Latest DD/CF Revision*** to apply the latest revision for the selected bridge.

NOTE
If the option *Follow the Latest DD/CF Revision* is selected, SYSCON will update the *Bridge* with the latest revision of the *DD* and *CF* everytime the configuration file is opened. To disable the automatic update, right-click the *Bridge* icon, select *Exchange* from the menu and clear this option.

5. Type the *Device ID*.
6. Type a related tag for the bridge.

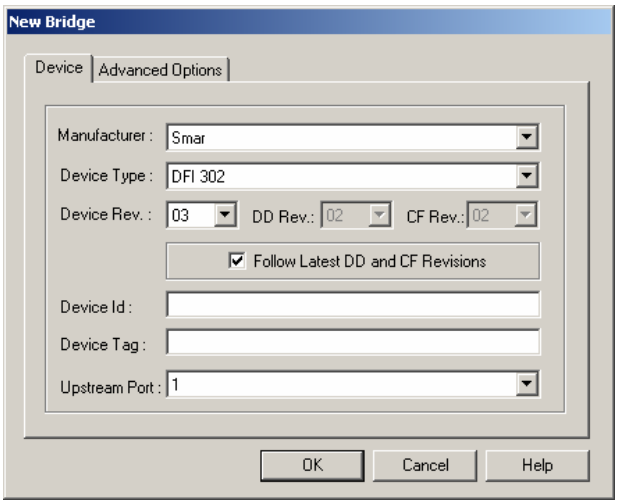


Figure 3.51. Bridge Dialog Box

At the *Advanced Options* tab:

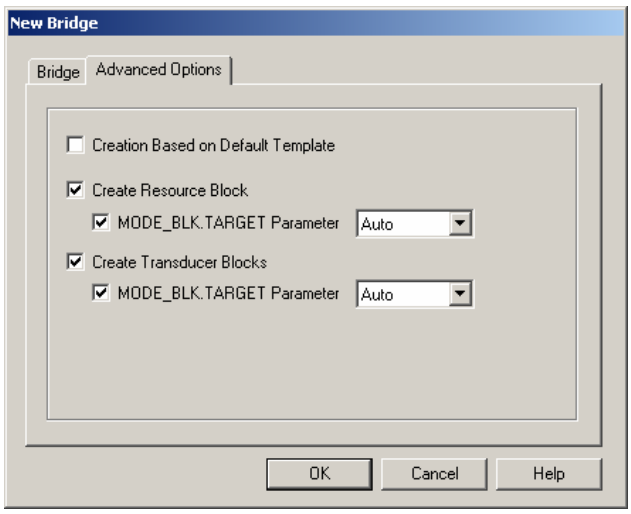


Figure 3.52. Advanced Options

Select the option **Creation Based on Default Template** to create the bridge based on the *Default Template* file for the selected *Device Revision*, located in the corresponding *Device Support* folder.

Select the option **Create Resource Block** to automatically create the *Resource Block* of the selected bridge. The user can set the initial value for the *Mode Block Parameter*.

Select the option **Create Transducer Blocks** to automatically create the *Transducer Blocks* of the selected bridge. The user can set the initial value for the *Mode Block Parameter*.

Click *Ok* to add the bridge to the configuration.

NOTE
If the *Default Template* file is not found, SYSCON will automatically created the *Resource* and *Transducer Blocks* for the selected bridge. If the user does not type a tag, the default one will be *Bridge n*, where *n* is a sequential number for the bridges.

When the user is finished creating the bridge, the *Project* and *Fieldbus* window should look like the following figure:

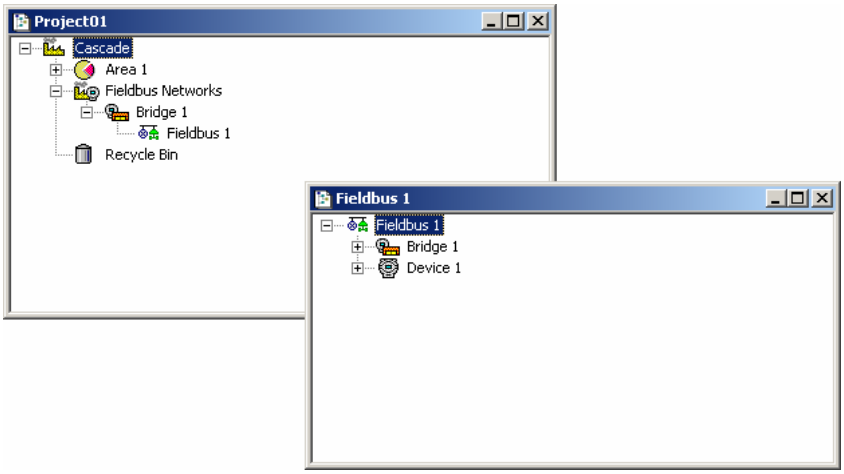


Figure 3.53. Project and Fieldbus Window

In the *Project* window, the bridge contains the fieldbus.

IMPORTANT
The *HSE Host*, *linking devices* and *I/O Gateways* can only be added to the *HSE Fieldbus*. Equally, the *H1 Bridge* can only be added to the *H1 Fieldbus*.

3.7.2 Creating Bridge from Template

To create a bridge based on a *Bridge Template File*, select the fieldbus icon, go to the *Edit* menu and click *Import Bridge Template*. Or activate the fieldbus popup menu, right-clicking its icon in the *Fieldbus* window and selecting the item *New > Bridge from Template*.

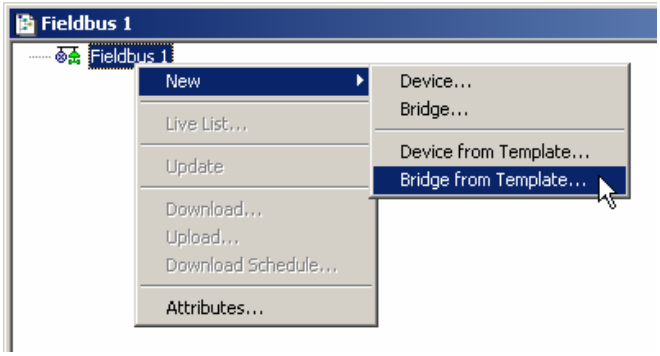


Figure 3.54. Creating Bridge from Template

The dialog box will open:

1. Select the directory where the file is located.
2. Select the *Bridge Template* file and click *Open*.
3. A message box will open to confirm the operation. Click *Ok* to import the *Bridge Template*.

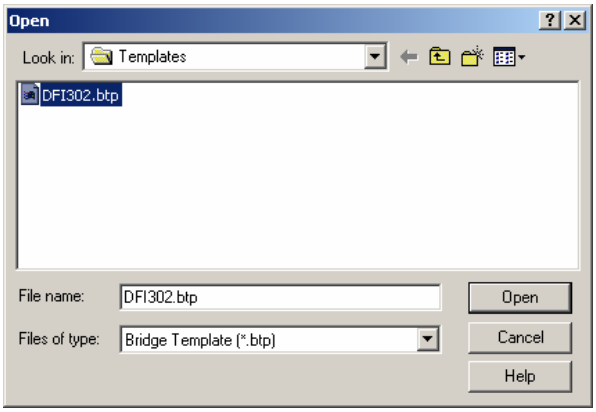


Figure 3.55. Selecting the Bridge Template

The *Tag Table* will open, showing the list with the block tags based on the preferences settings and the old block tags used in the *Template* file. To edit a tag, click the block or bridge icon at the *New Tag* column to select it, then click it again to enter the edit mode. Type the new tag and click *Enter* on the keyboard.

Click *Ok* to close the *Tag Table* dialog box and add the bridge to the configuration.

3.7.3 Changing Bridge Attributes

To change the bridge attributes, select the bridge icon, go to the *Edit* menu and click *Attributes*. Or activate the bridge popup menu, right-clicking its icon and selecting the item *Attributes*.

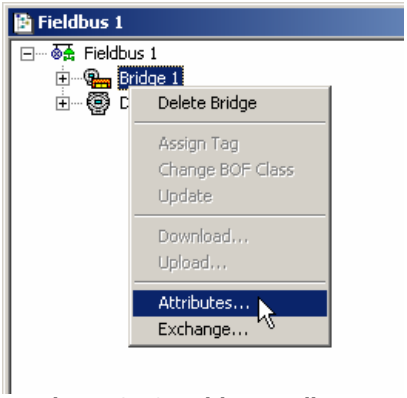


Figure 3.56. Bridge Attributes

The *Bridge* dialog box will open. Change the bridge attributes and click *Ok* to conclude.

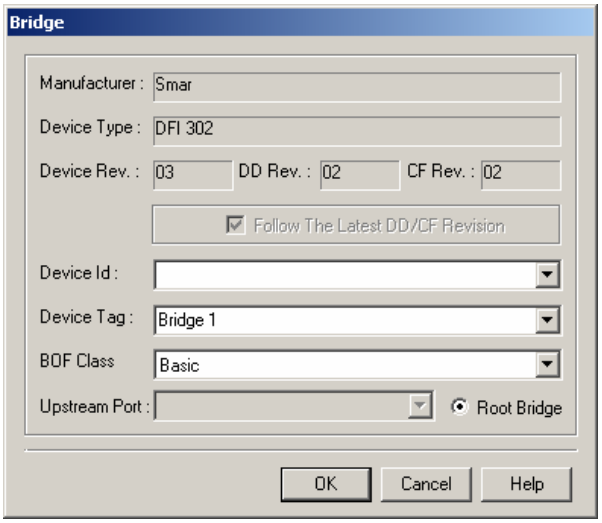


Figure 3.57. Bridge Attributes Dialog Box

NOTE
When SYSCON is operating in On-line mode, the *Device ID* list box will show the bridges that haven't been instantiated in the project yet. If the user selects *Unspecified* in the *Device Tag* list box and applies it to the bridge, SYSCON will automatically generate a new default tag for the bridge, based on the *Preferences*.

Changing the Root Bridge

Observe the following situation:

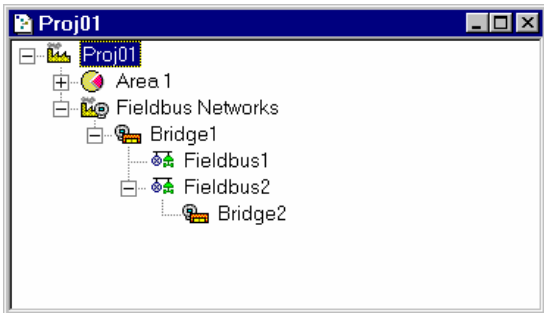


Figure 3.58. Project Window

The *Fieldbus Networks* tree begins from the *Bridge1*. The user can change this configuration to make the *Fieldbus Networks* tree begin from the *Bridge2*.

Select the *Bridge2* icon and activate its popup menu right-clicking its icon. Click the item *Attributes*.

The *Bridge* dialog box will open. Check the *Root* option and click *OK*. See the following figure:

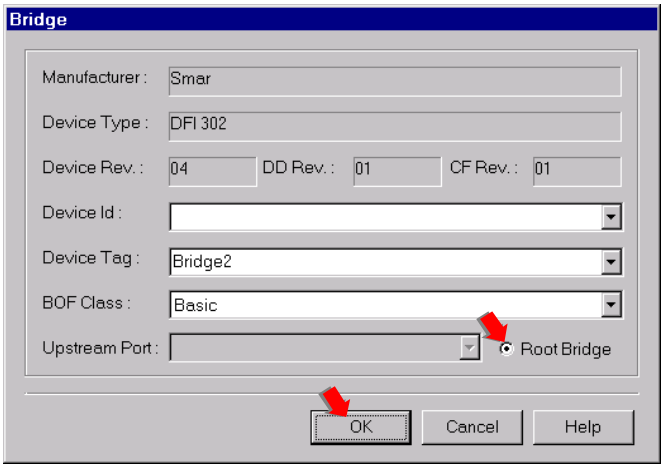


Figure 3.59. Changing the Root Bridge

Now, the *Bridge2* is the root of the *Fieldbus Networks* tree:

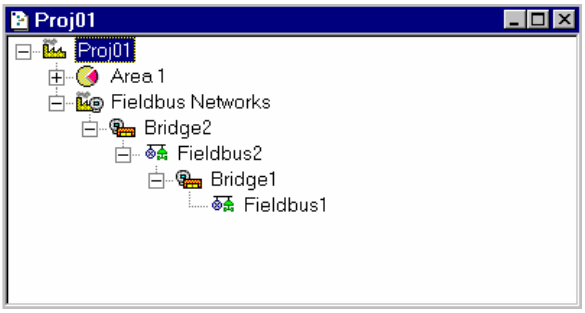


Figure 3.60. Project Window

3.7.4 Deleting Bridges

To remove a bridge, select its icon on the *Fieldbus* window, go to the *Edit* menu and click *Delete Bridge*. Or activate the bridge popup menu, right-clicking its icon and selecting the item *Delete Bridge*.

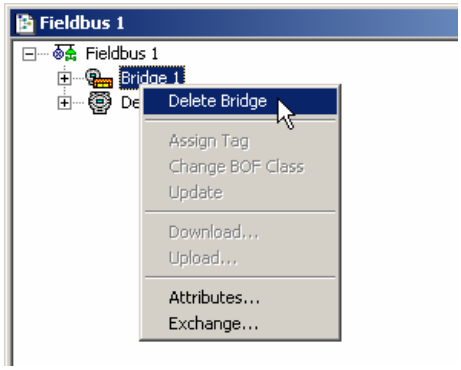


Figure 3.61. Delete Bridge

A quick way of removing a bridge is to select its icon and press the *Delete* key, on the keyboard.

The *Warning* dialog box will open. To confirm the deletion, click *Yes*.

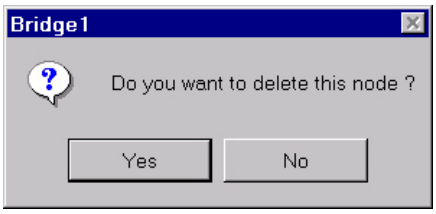


Figure 3.62. Confirm Deletion Dialog Box

NOTE
If the bridge has blocks with *External Links*, it will be necessary to delete the links before deleting the bridge.

3.7.5 Connecting a Bridge to a Fieldbus

Note the following situation:

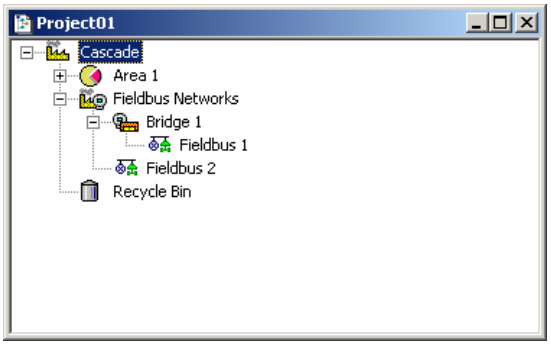


Figure 3.63. Project Window

If there have been at least two fieldbuses added to the project, and a bridge connected to one fieldbus, the user can connect this bridge to the other one.

Select the bridge icon on the *Project* window, go to the *Edit* menu and click *Connect to*. Or activate the bridge popup menu right-clicking its icon and selecting the item *Connect to*.

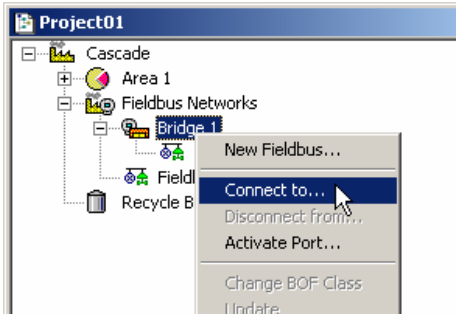


Figure 3.64. Connect to Fieldbus

The *Connect Bridge to* dialog box will open:

1. Select the fieldbus in the *Tag* box.
2. Select the port to connect the fieldbus, in the *Upstream Port*.
3. Click *Ok*.

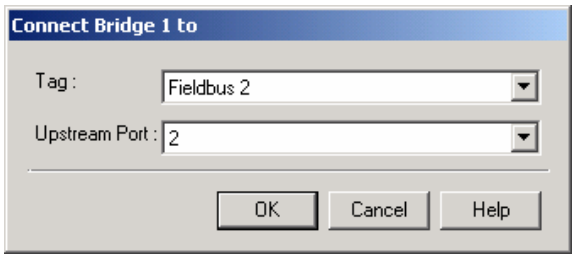


Figure 3.65. Connect Bridge Dialog Box

NOTE
If the user is connecting the bridge to a HSE fieldbus, the *Upstream Port* field will not be active. Only one bridge can be connected to the HSE Fieldbus.

The following figure shows the project tree after the connection:

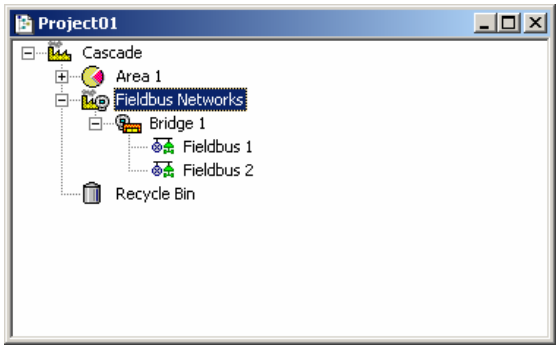


Figure 3.66. Project Window

The *Fieldbus1* and the *Fieldbus2* icon will be attached to the bridge icon.

3.7.6 Disconnecting a Bridge from a Fieldbus

Note the following situation:

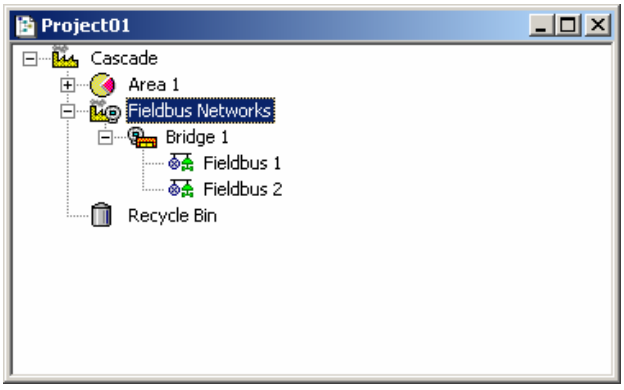


Figure 3.67. Project Window

A bridge can be disconnected from a fieldbus.

Select the bridge icon, go to the *Edit* menu and click *Disconnect from*. Or activate the bridge popup menu, right-clicking its icon and selecting the item *Disconnect from*.

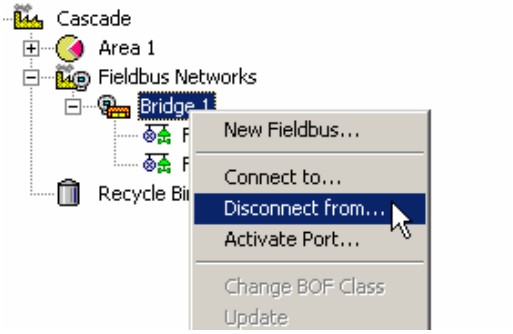


Figure 3.68. Disconnect from Fieldbus

The *Disconnect Bridge from* dialog box will open. Select the fieldbus in the *Fieldbus* box and click *Ok*.

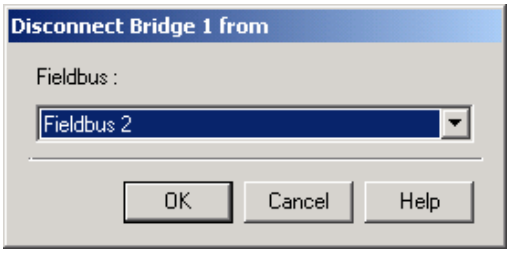


Figure 3.69. Disconnect Bridge Dialog Box

The following figure shows the project tree after disconnection:

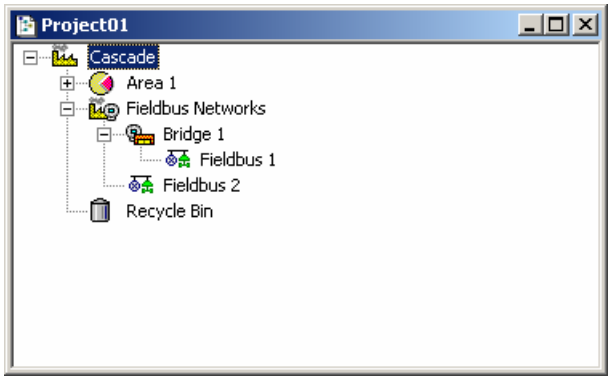


Figure 3.70. Project Window

The *Fieldbus2* icon will no longer be attached to the bridge icon.

3.7.7 Bridge Exchange

The procedure to exchange a bridge is the same as described in section *0*

Device Exchange.

Please refer to this section for further information.

3.8 Function Blocks

3.8.1 Creating Blocks in the Control Module

To create a *Function Block*, select the control module icon on the *Process Cell* window, go to the *Edit* menu and click *New Block*. Or activate the control module popup menu, right-clicking its icon and selecting the item *New Block*:

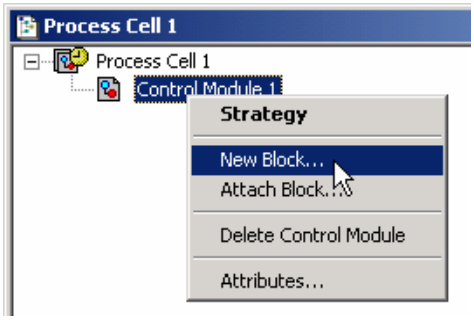


Figure 3.71. New Block

The *New Block* dialog box will open:

1. Select a *Block Manufacturer* from the list.
2. Select a *Device Type* provided by the manufacturer that has been selected.
3. Select the *Device Revision*.
4. Select the *DD Revision*.
5. Select the *CF Revision*.
6. Select a *Block Type*.
7. Type a related tag for the block.
8. Click *OK*.

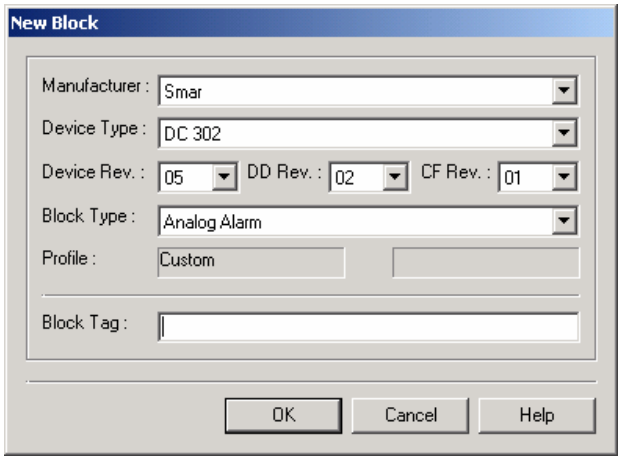


Figure 3.72. Function Block Dialog Box

NOTE
If a new tag is not typed, the tag will be generated according to the *Preferences Settings* of the current configuration.

SYSCON uses the latest revision of the *Device Revision*, the *DD Revision* and the *CF Revision* as the default values for the new block. Change these values according to the device being used in the plant and its revision.

The *Process Cell* window will look like the figure below:

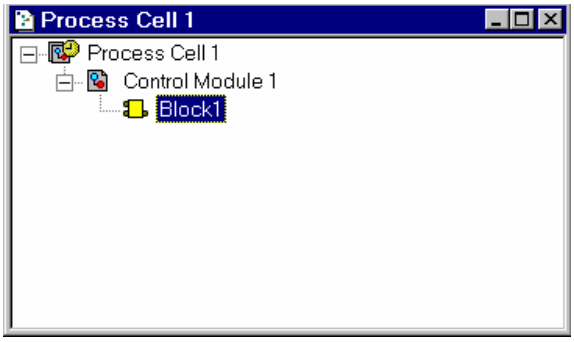


Figure 3.73. Process Cell Window

3.8.2 Creating Blocks in the Device

To create a block when at least one device has already been added to the configuration, click the device expansion sign, ⊞, and select the FB icon. Go to the *Edit* menu and click *New Block*. Or activate the FB popup menu, right-clicking its icon and selecting the item *New Block*.

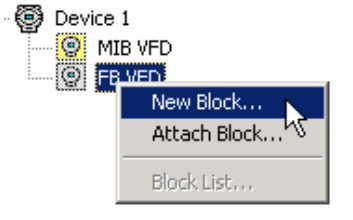


Figure 3.74. New Block

The *New Block* dialog box will open:

1. Select a block type.
2. Type a related tag for the block.
3. Click *OK*.

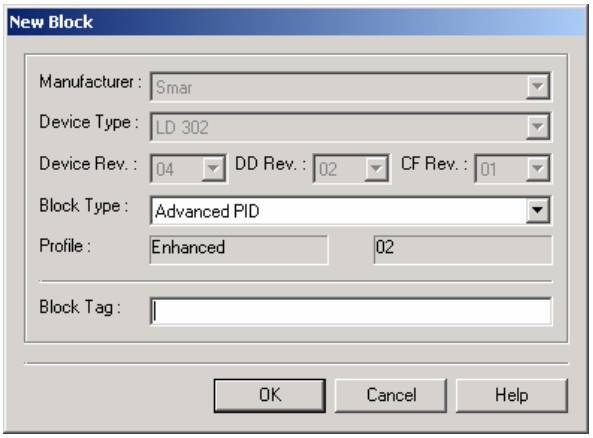


Figure 3.75. Function Block Dialog Box

NOTE
If a new tag is not typed, the tag will be generated according to the *Preferences Settings* of the current configuration.

The *Fieldbus* window should look like the figure below:

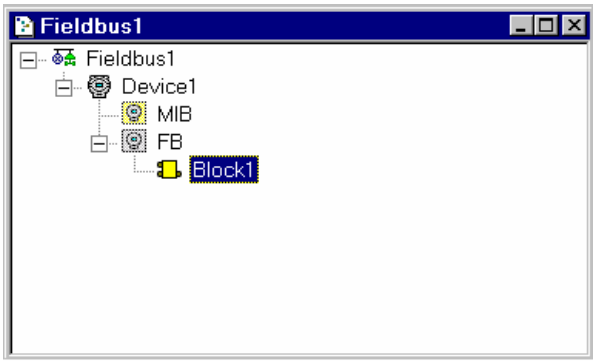


Figure 3.76. Fieldbus Window

NOTE
The *Resource Block* and the *Transducer Blocks* can only be created in the devices or bridges, and they have a different representation from the other blocks. *Resource* and *Transducer Blocks* cannot be moved or attached to the control module or the Strategy window. When converting a configuration file from an older version, the *Resource* and *Transducer Blocks* will be deleted from the control module and the Strategy window.

3.8.3 Changing Block Attributes

The only block attribute that can be changed is the tag.

To change the block tag, select the block icon, go to the *Edit* menu and click *Attributes*. Or activate the block popup menu, right-clicking its icon and selecting the item *Attributes*:

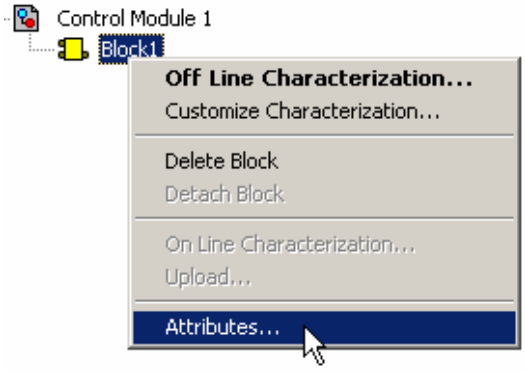


Figure 3.77. Function Block Attributes

The *Block Attributes* dialog box will open.

Type the new block tag and click *OK*.

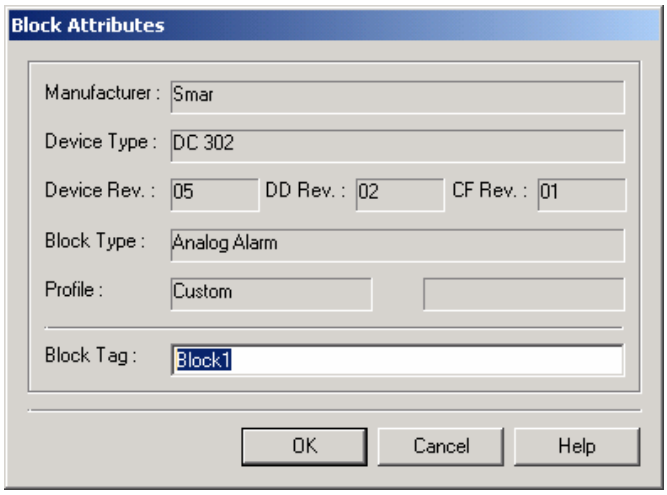


Figure 3.78. Function Block Attributes Dialog Box

3.8.4 Deleting Blocks

To remove a block from the project, select its icon, go to the *Edit* menu and click *Delete Block*. Or activate the block popup menu, right-clicking its icon and selecting the item *Delete Block*.

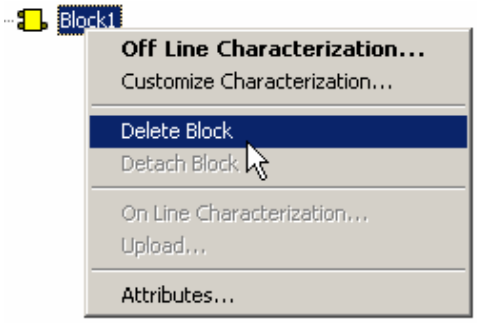


Figure 3.79. Deleting the Function Block

A quick way of removing a block is to select its icon on the *Process Cell* window and press the *Delete* key, on the keyboard.

The *Warning* dialog box will open. To confirm the deletion, click *Yes*.

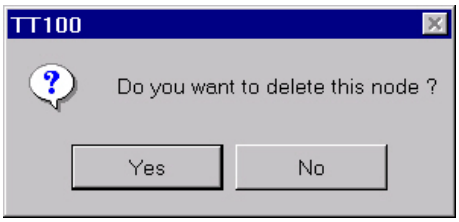


Figure 3.80. Confirm Deletion Dialog Box

NOTE
When deleting a block, it will be deleted from the project, even if it is attached to a fieldbus or drawn at the Strategy window. The block will be sent to the *Recycle Bin*, and can be restored to the project if its original fieldbus or control module are not deleted.

3.8.5 Attaching Blocks to the Control Module

If at least one block has been added to a device, that block can be attached to the control module.

On the *Process Cell* window, select the control module icon and attach the block. Go to the *Edit* menu and click *Attach Block* or activate the control module popup menu, right-clicking its icon and selecting the item *Attach Block*:

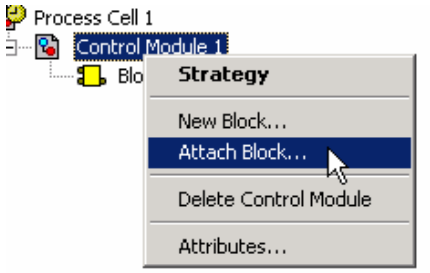


Figure 3.81. Attaching Block

The *Attach Block* dialog box will open. Click the down arrow to select the block that will be attached and click *OK* to add the block to the control module:

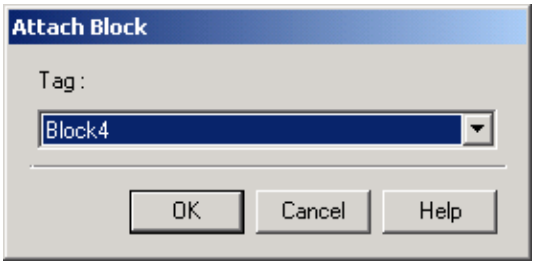


Figure 3.82. Attach Block Dialog Box

3.8.6 Detaching Blocks from the Control Module

A block can be only detached if it exists in the control module and in the device.

When detaching the block, it is removed only from the control module. The block will still be attached to the device.

On the *Process Cell* window, select the block icon to be detached. Go to the *Edit* menu and click *Detach Block* or activate the block popup menu, right-clicking its icon and selecting the item *Detach Block*:

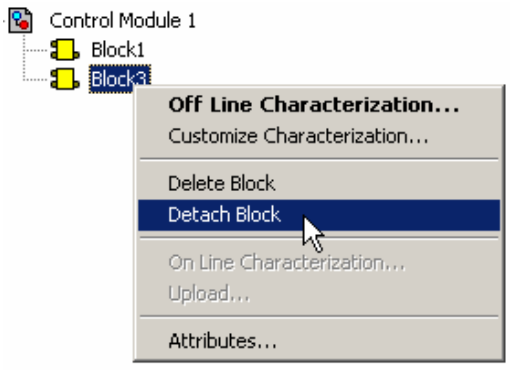


Figure 3.83. Detaching Block

The *Warning* dialog box will open. Click *Yes* to detach the block.

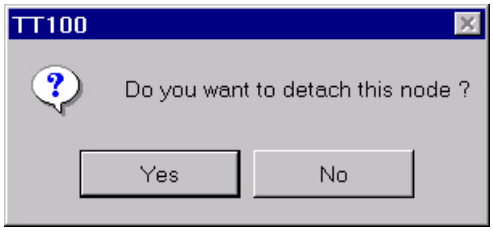


Figure 3.84. Detach Block Dialog Box

The block is removed from the control module but it still exists on the project, attached to the device.

3.8.7 Attaching Blocks to the Device

If at least one block has been added to the control module, that block can be attached to the device.

On the *Fieldbus* window, select the FB icon to be attached to the block. Go to the *Edit* menu and click *Attach Block* or activate the FB popup menu, right-clicking its icon and selecting the item *Attach Block*.

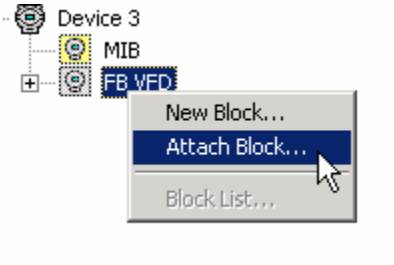


Figure 3.85. Attach Block

The *Attach Block* dialog box will open. Click the down arrow to select the block to be attached. Click *OK* to add the block to the device:

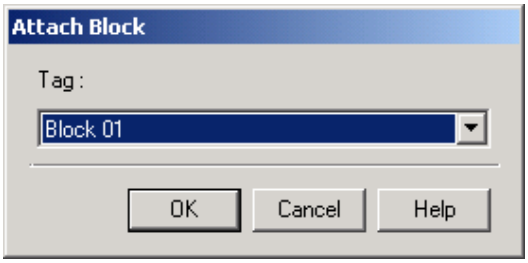


Figure 3.86. Attach Block Dialog Box

A message box will alert the user if the block being attached is not compliant with the target device. The user should search for a compatible block by clicking the button *Yes*. The *Block* dialog box will open:

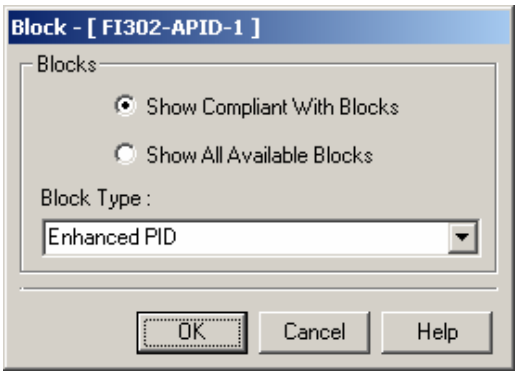


Figure 3.87. Selecting a Compliant Block

1. Click the option **Show Compliant With Blocks** to display the list of compatible blocks types in the target device.
   OR
   Click the option **Show All Available Blocks** to display the list of all blocks types available for the target device.

2. Select the block type.

3. Click *Ok* to accept the changes.
   OR
   Click *Cancel* to abort this operation and the block will not be attached.

4. If the user clicked *Ok*, the *Deviation* dialog box will open so the user can analyze the differences between the original block and the new block. See the example below:

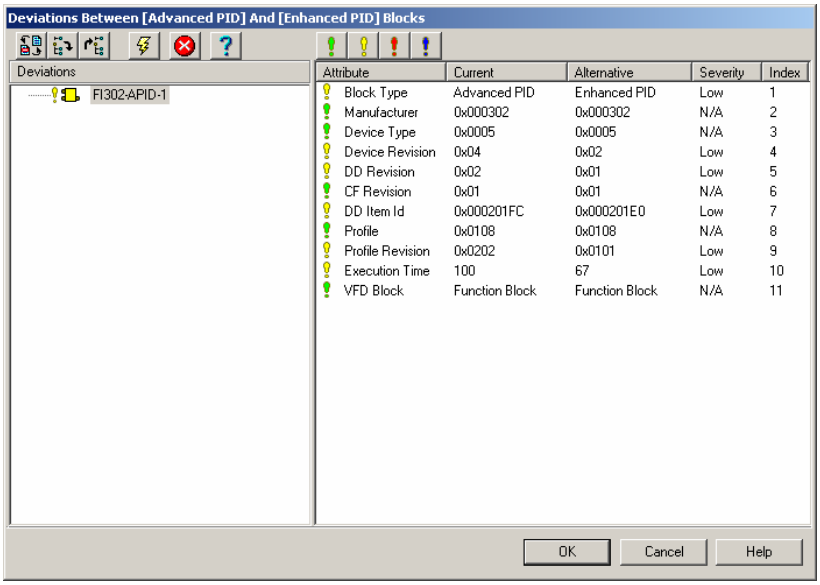


Figure 3.88. Block Deviations Dialog Box

5. To accept the changes, click *Ok*.
   OR
   Click *Cancel* to discard the changes and cancel the *Attach Block* procedure.

3.8.8 Detaching Blocks from the Device

A block can only be detached if it exists in the control module and in the device.

When the block is detached, it is removed from the device. The block will still be attached to the control module.

On the *Fieldbus* window, select the block icon to be detached. Go to the *Edit* menu and click *Detach Block*. Or activate the block popup menu, right-clicking its icon and selecting the item *Detach Block*.

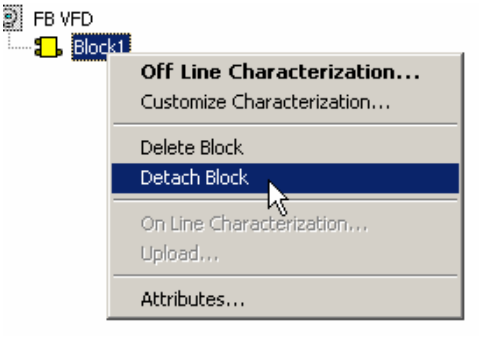


Figure 3.89. Detach Block

The *Warning* dialog box will open. If the block is to be detached, click *Yes*.

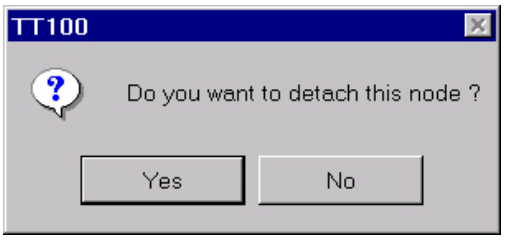


Figure 3.90. Detach Block Dialog Box

The block is removed from the device but it still exists on the project, attached to the control module.

3.8.9 Moving Blocks

The user can drag a block from one control module to another, or from one device to another, in the same *Process Cell* or *Fieldbus* window or between different windows.

Observe the following example:

1. Click and hold the block icon.
2. Drag it to the control module where it will be placed.

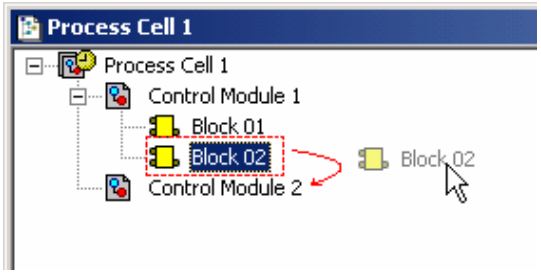


Figure 3.91. Dragging Blocks to the Control Module

3. The block will be attached to the other control module. Observe the following figure:

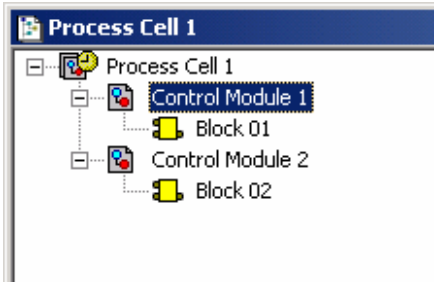


Figure 3.92. Process Cell Window

Before dragging a block from one window to the other, remember to tile the windows to facilitate the process. In the *Window* menu, click *Tile*.

NOTE
When a block is moved between control modules or devices, its tag will be updated according to the *Preferences* set by the user. To prevent undesired changes, select the option *Default* for the automatic block tag generation in the *Preferences* dialog box.

If the block is moved to a device of a different type or with a different *Device Revision*, this block may not be available in the target device. In this case, a message box will open alerting the user to search for a compatible block. Click *Yes* to open the *Block* dialog box:

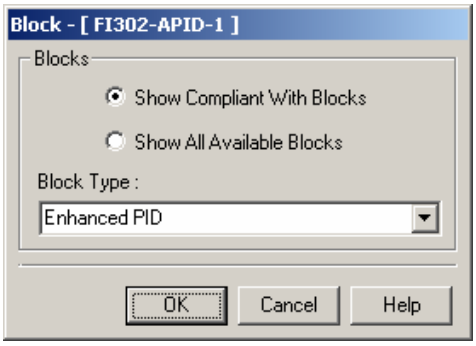


Figure 3.93. Selecting a Compliant Block

1. Click the option **Show Compliant With Blocks** to display the list of compatible blocks types in the target device.
   OR
   Click the option **Show All Available Blocks** to display the list of all blocks types available for the target device.

2. Select the block type.

3. Click *Ok* to accept the changes.
   OR
   Click *Cancel* to abort this operation and the block will not be moved.

4. The *Deviation* dialog box will open so the user can analyze the differences between the original block and the new block.

5. To accept the changes, click *Ok*.
   OR
   Click *Cancel* to discard the changes and cancel the procedure.

3.8.10 Block Off Line Characterization

Select the block to be parameterized by clicking its icon. Go to the *Edit* menu and click *Off Line Characterization*. Or activate the block popup menu, right-clicking its icon and selecting the item *Off Line Characterization*.

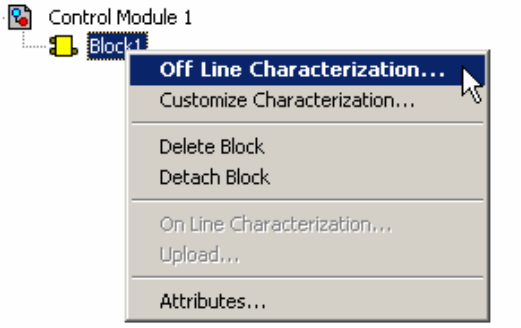


Figure 3.94. Block Off Line Characterization

Double-clicking the block icon also activates the *Block Characterization* dialog box.

In any case, the following dialog box will open:

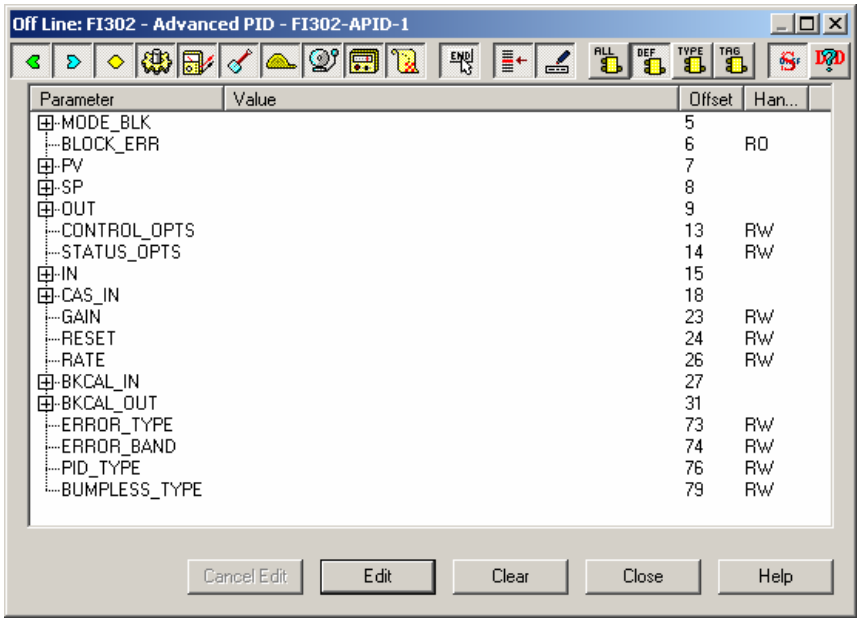


Figure 3.95. Off Line Characterization Dialog Box

The user can sort the parameters list by clicking on a column at the *Block Characterization* dialog box (*Parameter*, *Offset* or *Handling* columns). Clicking the column header will toggle between ascendant or descendent sorting.

Select a parameter by clicking its line on the table. Click *Edit* or click the *Value* column in front of the parameter.

After editing the *Value* column, click *End Edit* to confirm the changes on the parameter. If the values edited into the parameter are incorrect or don't have to be changed, click *Cancel Edit* and they will go back to default.

See the figure below:

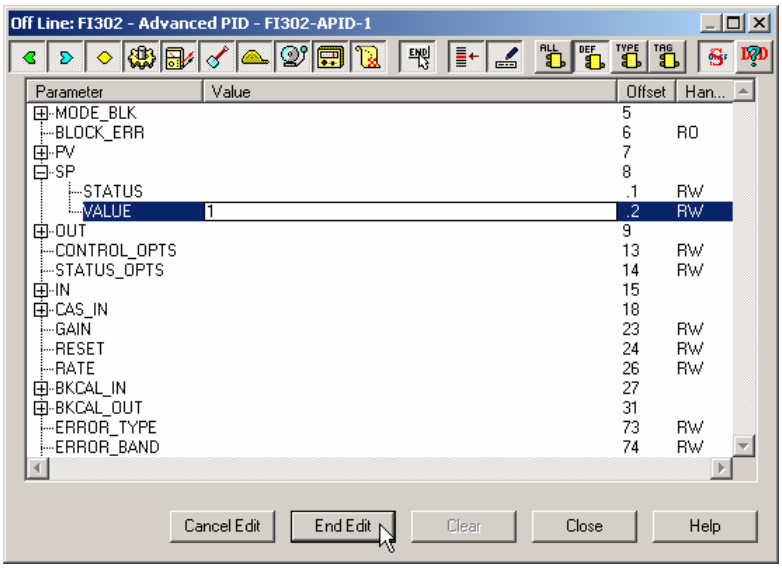


Figure 3.96. Editing Parameter Values

Click *Clear* to clear the value typed for the highlighted parameter. If the parameter is not part of a link in the Strategy window, it will be removed from the configuration.

After finishing the edits, click *Close* to exit the *Block Characterization* dialog box and go back to the *Process Cell* window.

For further information about the parameter from the blocks manufactured by **SMAR**, please refer to the **Function Blocks Instruction Manual**.

3.8.11 Block On Line Characterization

To change the block parameter values directly in the devices, the user will have to proceed with the *Init Communication* command first. (See the section *Communication* for further information).

If SYSCON is already communicating with the Plant, select the block to be parameterized, go to the *Communication* menu and click *On Line Characterization*. Or activate the block popup menu, right-clicking its icon and selecting the item *On Line Characterization*:

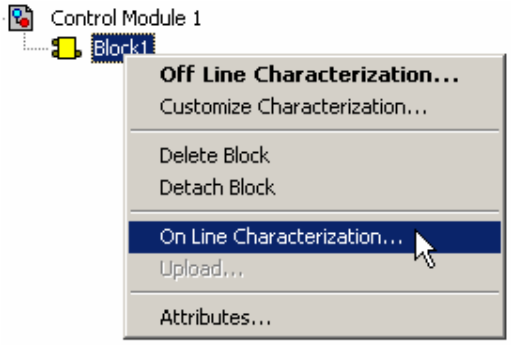


Figure 3.97. Block On Line Characterization

The *Block Characterization* dialog box will open.

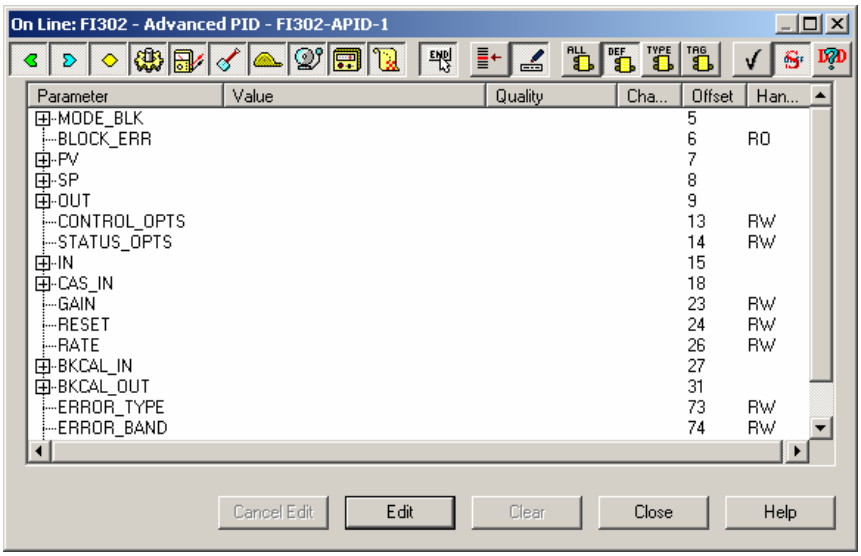


Figure 3.98. On Line Characterization Dialog Box

All of the parameters will be shown in the *On Line Characterization*. Use the same procedure described for the *Off Line Characterization* to edit the parameters values. If any parameter is altered, it also will be altered in the corresponding device.

The user can sort the parameters list by clicking on a column at the *Block Characterization* dialog box (*Parameter*, *Quality*, *Changed*, *Offset* or *Handling* columns). Clicking the column header will toggle between ascendant or descendent sorting.

If the user changes the value for the parameters, these parameters will be marked with a *V* in the *Changed* column.

To save a parameter value that has not been edited, click the *Mark to save* button,  , on the *Characterization* toolbar. The parameter will be marked with a *V* in the *Changed* column. Or use the *Mark to save* button to unmark a parameter whose value has been changed but the changes are not to be saved.

Click *Close* to exit the *Block Characterization* dialog box, and the following dialog box will open:

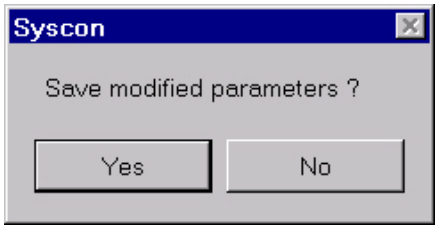


Figure 3.99. Save Parameters Dialog Box

Click *Yes* to save the changes to the configuration file.

3.8.12 Customize Characterization

The user can customize the parameterslist of the *Block Characterization* dialog box.

Select the block icon, at the *Process Cell* or *Fieldbus* window. Got to the *Edit* menu and click *Customize Characterization*. Or activate the popup menu by right-clicking the block icon. Click the item *Customize Characterization*.

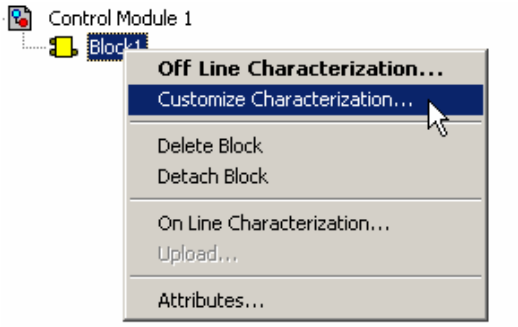


Figure 3.100. Customize the Characterization

The *Customization* dialog box will open.

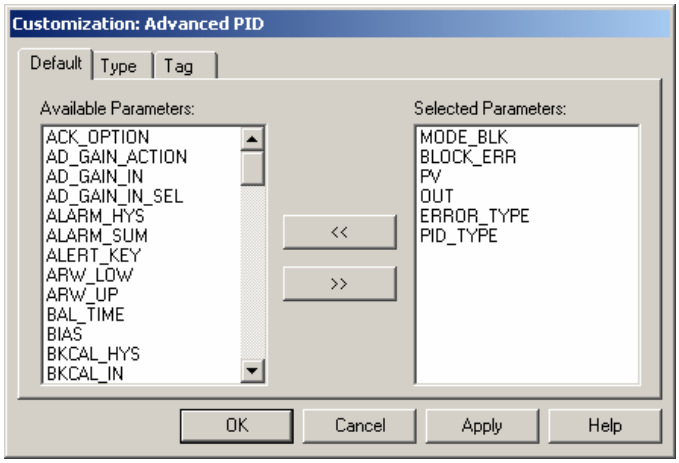


Figure 3.101. Customization Dialog Box

At the *Default* tab, select the parameters that are shown for the block from the same type as the one selected, when the user clicks the *Customization by Type (Default)* button,  , from the *Characterization* toolbar. This customization will affect all project configurations.

At the *Type* tab, select the parameters that are shown for the block from the same type as the one selected, when the user clicks the *Customization by Type* button,  , from the *Characterization* toolbar. This customization will affect just the current configuration.

At the *Tag* tab, select the parameters that are shown just for the block selected, when the user clicks the *Customization by Tag* button,  , from the *Characterization* toolbar. This customization will affect just the current configuration.

The *Customization* dialog box has four buttons: *OK*, *Cancel*, *Apply* and *Help*. The *OK* button accepts all changes made on the list of selected parameter and exits the dialog. The *Cancel* button discards all changes made on the list of selected parameter and exits the dialog box. The *Apply* button accepts all changes made on the list of selected parameter but does not exit the dialog (therefore canceling from the *Customization* dialog box will not undo applied changes since those changes have already been accepted).

3.8.13 Ordering Blocks

NOTE
The user can define the download sequence, by ordering the devices, the blocks, and the parameters at the *Fieldbus* window.

Select a block icon and drag it over the other block icon. The block selected will be placed above the other one on the list.

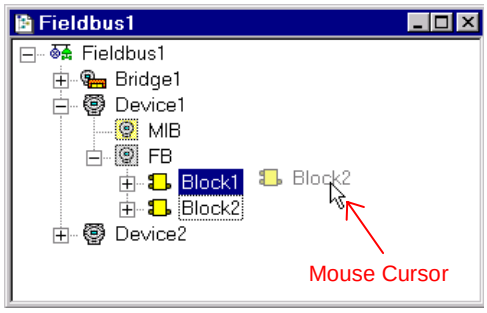


Figure 3.102. Ordering Blocks at the Fieldbus Window

The *Fieldbus* window should look like the following figure:

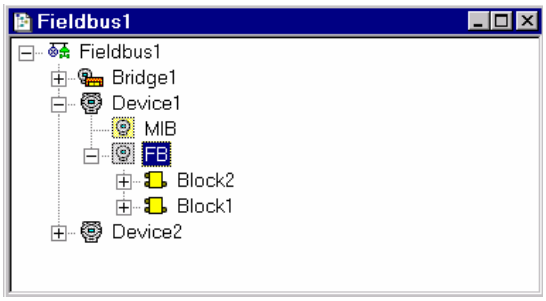


Figure 3.103. Fieldbus Window

3.9 Parameters

3.9.1 Ordering Parameters

Block parameters can be ordered at the *Process Cell* window or at the *Fieldbus* window. The example below describes how to order parameters at the *Process Cell* window.

Select one parameter icon and drag it over the other parameter icon. The parameter selected first will be placed above the second one on the list. See the following figure:

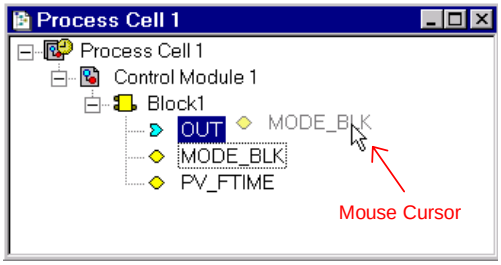


Figure 3.104. Ordering Parameters in the Process Cell Window

The *Process Cell* window will look like the following figure:

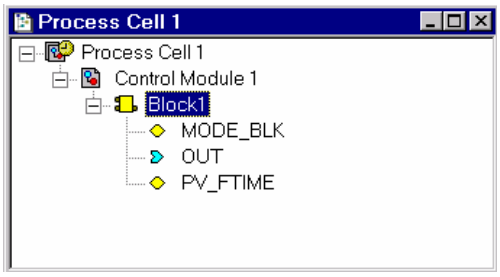


Figure 3.105. Process Cell Window

The changes made to the parameter list at the *Process Cell* window will be reflected in the *Fieldbus* window, and vice-versa.

3.9.2 Deleting Parameters

To remove a block parameter, select the parameter icon, go to the *Edit* menu and click *Delete Parameter*. Or activate the parameter popup menu, right-clicking its icon and selecting the item *Delete Parameter*:

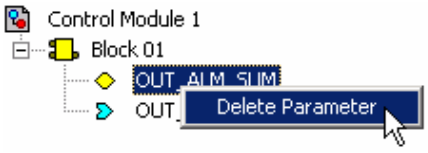


Figure 3.106. Deleting the Parameter

A quick way of removing a parameter is to select its icon on the *Process Cell* window and press the *Delete* key, on the keyboard.

The *Warning* dialog box will open. To confirm the deletion, click *Yes*.

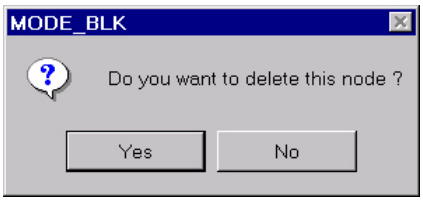


Figure 3.107. Confirm Deletion Dialog Box

3.10 Strategies

3.10.1 Creating Strategies

There will be a *Strategy* window for every control module created for a process cell.

To initialize a *Strategy* window, select the control module icon, go to the *View* menu and click *Strategy*. Or activate the control module popup menu, by right-clicking its icon and selecting the item *Strategy*:

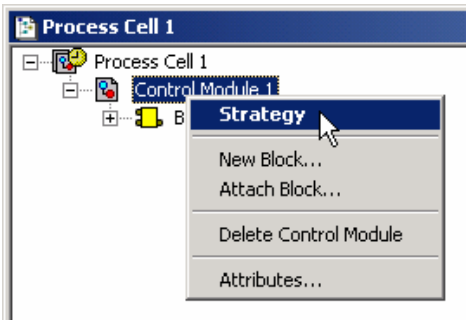


Figure 3.108. View the Strategy Window

Double-clicking the control module icon also opens the *Strategy* window.

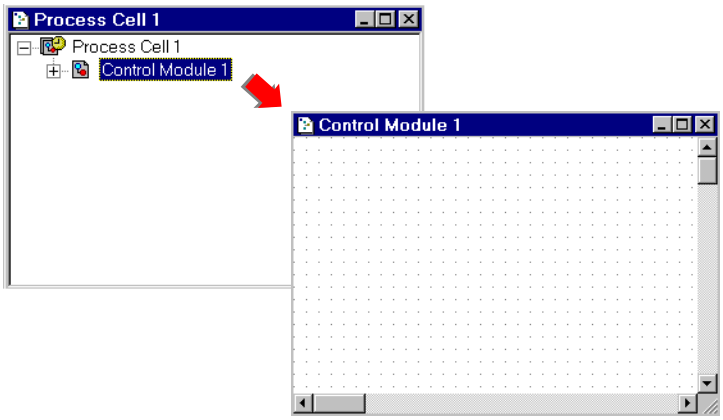


Figure 3.109. Strategy Window

3.10.2 Opening Existing Strategies

If changes have been made on a *Strategy* window and saved, use the steps described in the section above to open the existing Strategy.

Then, the *Strategy* window should look like the example below:

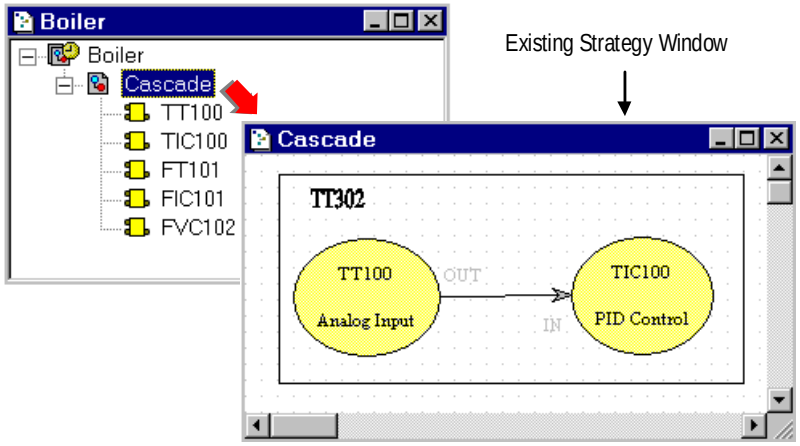


Figure 3.110. Strategy Window

3.10.3 Saving Strategies

A Strategy can be saved after modifying the drawing area, for example, adding a block.

To save a *Strategy* window, go to the *Project File* menu and click *Save*, as the following figure shows:

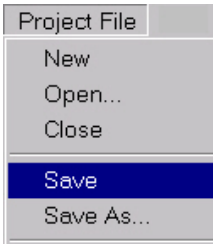


Figure 3.111. Project File Menu: Save Strategy

Or click the *Save* button,  , on the *General Operation* toolbar, under the *Menu* bar.

Anytime the drawing is changed, do not forget to save it.

3.10.4 Closing and Exiting Strategies

As the *Strategy* window is not an independent one, there is no exiting command. To close it, go to the *Project File* menu and click *Close* (since the focus is on this window), as the figure shows:

Figure 3.112. Project File Menu: Close Strategy

Or click the *Close* button,  , on the upper right corner of the *Strategy* window.

3.10.5 Importing Templates into the Strategy Window

Double-click the control module icon to open the *Strategy* window. Click the *Import Strategy Template* button,  , on the *Strategy* toolbar.

If the *Strategy* toolbar is not open, go to the *Tools* menu, item *Strategy*, and click the option *Import Strategy Template*, as indicated in the following figure:

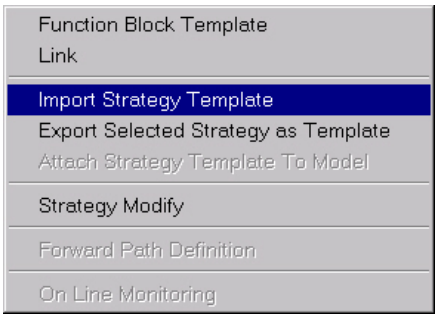


Figure 3.113. Tools Menu: Strategy Options

The *Open* dialog box will open:

1. In the *Look in* box, select the folder that contains the desired *Template* file.
2. Click the template file icon or type its name in the *File name* box.
3. Click *Open* to conclude this task.

See the following figure:

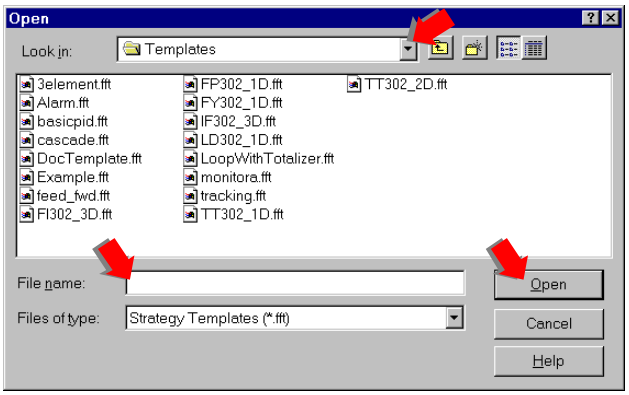


Figure 3.114. Open Strategy Template Dialog Box

The template drawing will be added to the *Strategy* window. The user will be asked to confirm if the template is to be imported to the Strategy. See the example below:

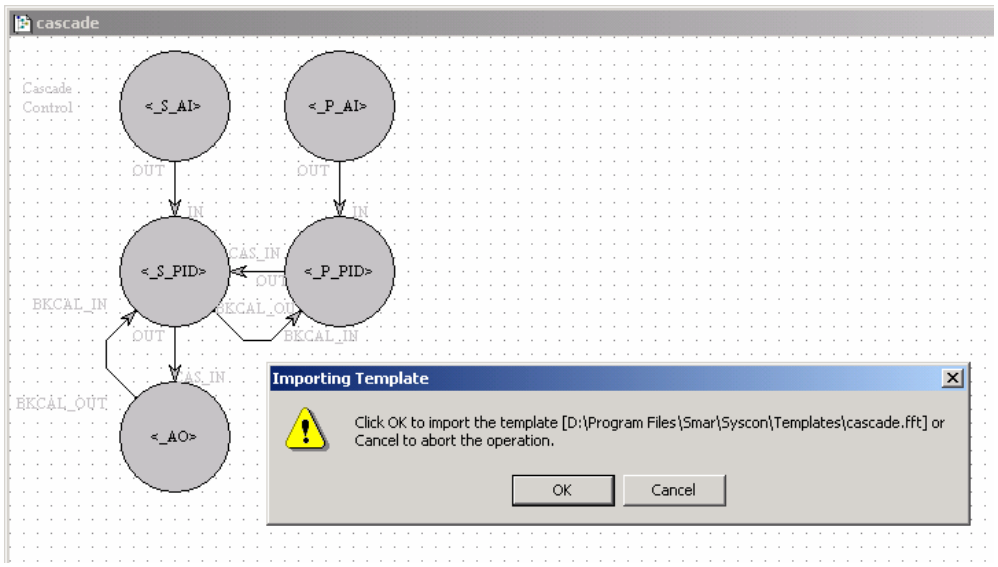


Figure 3.115. Importing a Template File

Click *Ok* to import the template to the *Strategy* window.

The *Tag Table* dialog box will open, showing a list with the new block tags, based on the preferences settings, and the old block tags, used in the template file.

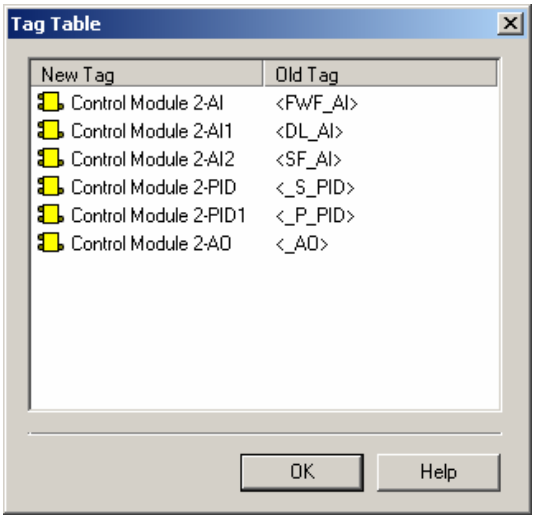


Figure 3.116. Tag Table Dialog Box

To edit a tag, right-click the block icon at the *New Tag* column and click *Rename*. Type the new tag and click *Enter* on the keyboard.

Click *Ok* to close the *Tag Table* dialog box and add the Strategy to the configuration.

The blocks, links and parameters will be attached to the corresponding control module.

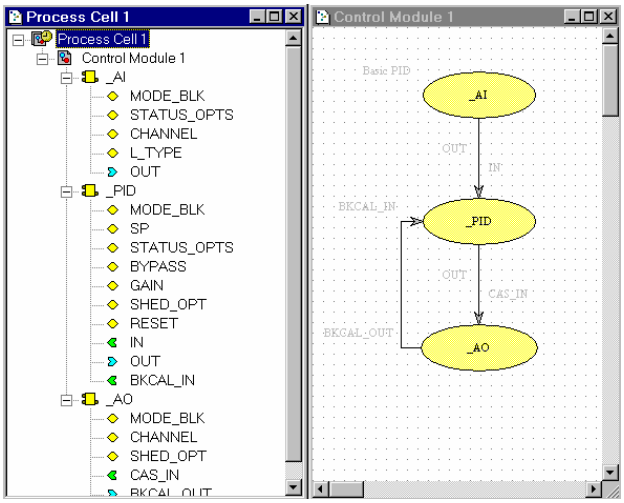


Figure 3.117. Example of a Strategy Attached to the Control Module

NOTE
From SYSCON version 5.20 on, a block created or imported from a template file in the *Strategy* window is automatically attached to the corresponding control module. If the user is opening a configuration file from a previous version of SYSCON and this file contains block templates in the Strategy, these blocks will appear in the *Strategy* window but will not be attached to the control module. Right-click the block in the *Strategy* window and select the option *Attach to Model*.

3.10.6 Exporting Templates from the Strategy Window

Select a ready Strategy, or part of it, and save it as a *Template* file.

In order to do this, select the blocks and the links that will be part of the template. Observe the following diagram:

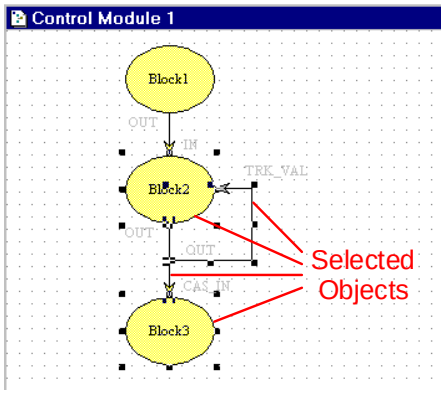


Figure 3.118. Selecting Blocks and Links

Click the *Export Selected Strategy as Template* button,  , on the *Strategy* toolbar. The *Save As* dialog box will open:

1. Choose the folder where the template will be saved. We suggest saving the template file in the folder *Template*.
2. Type the name for the template in the *File Name* box.
3. Click *Save*.

See the following figure:

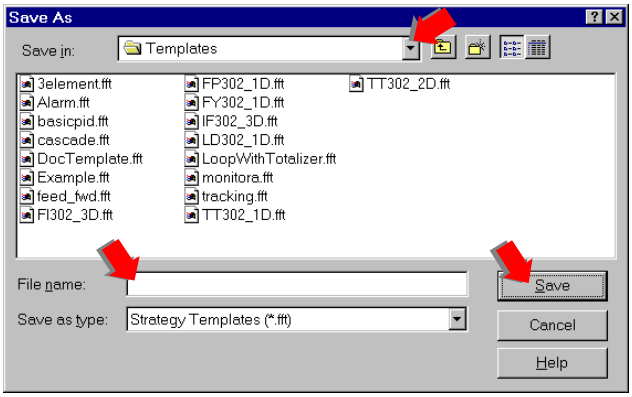


Figure 3.119. Save As Dialog Box

The Strategy selected will be saved in a file and it can be used at another time in another project configuration.

3.10.7 Adding Blocks to the Strategy

There are three ways of adding blocks to the *Strategy* window:

a) Dragging Blocks

Once all blocks have been added to the control module or the device, the user can drag them to the *Strategy* window to start the linking process.

In this case, the user will work with at least two different windows: for example, the *Process Cell* window and the *Strategy* window. To organize the windows and make them easy to be used, the user can display the windows side by side: go to the *Window* menu, click *Tile*, and it will organize the opened windows inside the application.

If more than three windows are opened remember that some can be minimized and the user can tile just the windows being worked with.

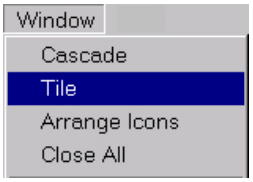


Figure 3.120. Window Menu: Tile

Now, click and select the block icon and drag it to where it will be placed in the *Strategy* window drawing area. Observe the following diagram:

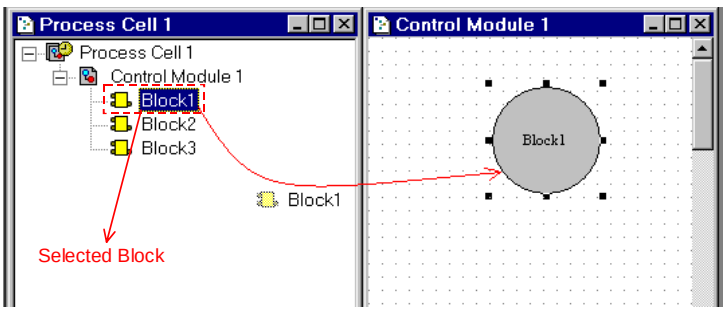


Figure 3.121. Dragging Blocks to the Strategy Window

NOTE
If the block is dropped very close to one already added to the *Strategy* window, the block will not be drawn. It will be necessary to move the blocks in order to organize the project, after they have been dropped in the *Strategy* window. Look for details in the following sections.

The figure below is an example of two dragged blocks inside the *Strategy* window:

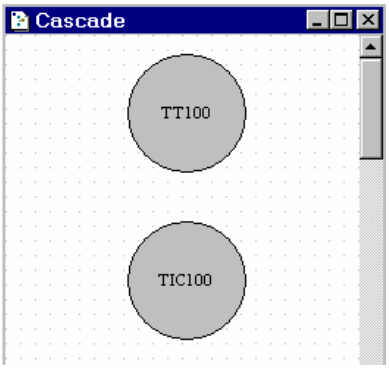


Figure 3.122. Blocks inside the Strategy Window

The user can create more than one graphical representation of the block in the *Strategy* window by dragging the block icon, but only one block is attached to the *Control Module*.

b) Creating Blocks in the Strategy Window

In the previous case, the user already had blocks in the control module or the device. Now, a new block will be created in the *Strategy* window.

First, click on the *Strategy* window and check the *Strategy* toolbar to be sure it is open. If it is not, go to the *Tools* menu and point to the item *ToolBoxes*. The option *Strategy* should be checked (➳).

Click the *Function Block* button,  , on the *Strategy* toolbar.

When the cursor is placed in the *Strategy* window drawing area, it will turn into a cross. Use the cursor to click on the drawing area.

The *New Block* dialog box will open:

1. Select a *Block Manufacturer* from the list.
2. Select a *Device Type* provided by the manufacturer that has been selected.
3. Select the *Device Revision*.
4. Select the *DD Revision*.
5. Select the *CF Revision*.
6. Select a *Block Type*.
7. Type a related tag for the block.
8. Click *OK*.

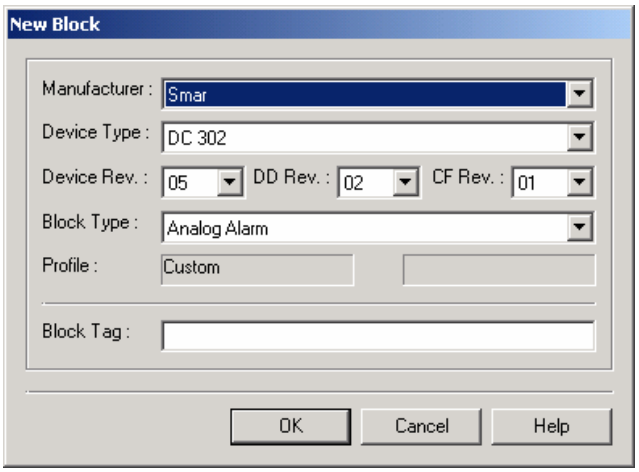


Figure 3.123. New Block Dialog Box

The new block will be drawn in the *Strategy* window and attached to the corresponding control module.

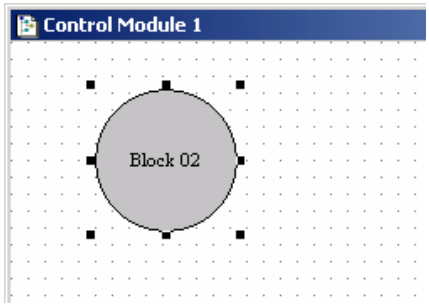


Figure 3.124. New Block in the Strategy Window

If another block is to be added, from the same *Manufacturer* and *Device Type* as the previous one, right-click the drawing area. A list of blocks types will open:

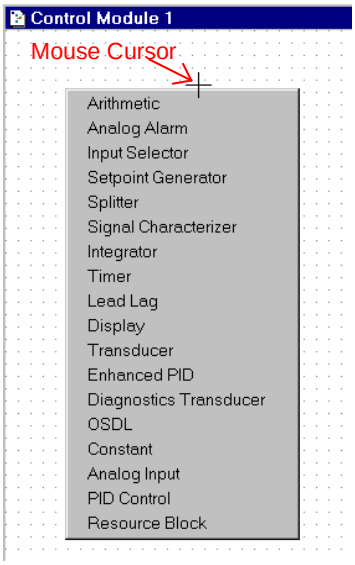


Figure 3.125. List of Block Types

c) Using a Template File

It is possible to use a ready Strategy, to add blocks to the control module. The user will import a template file to the *Strategy* window. See section *3.10.5 Importing Templates into the Strategy Window* for detailed information.

3.10.8 Removing Blocks from the Strategy

Be very careful when removing a block from the *Strategy* window! The user can remove the block only from the *Strategy* window, or the block from the project.

Click the *Select* button,  , on the *Strategy* toolbar, and select the block to be removed, in the *Strategy* window. More than one block can be selected.

Right-click the block and select *Delete* from the menu:

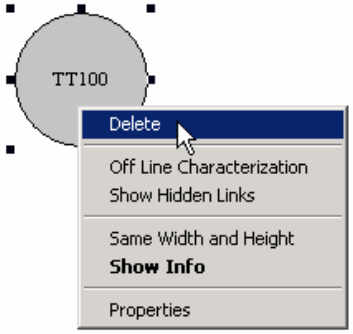


Figure 3.126. Deleting a Block

Or press the *Delete* key, on the keyboard.

The *Function Block Deletion* dialog box will open. If more than one block is selected, a dialog box will open to confirm the deletion of each block. Observe the following figure:

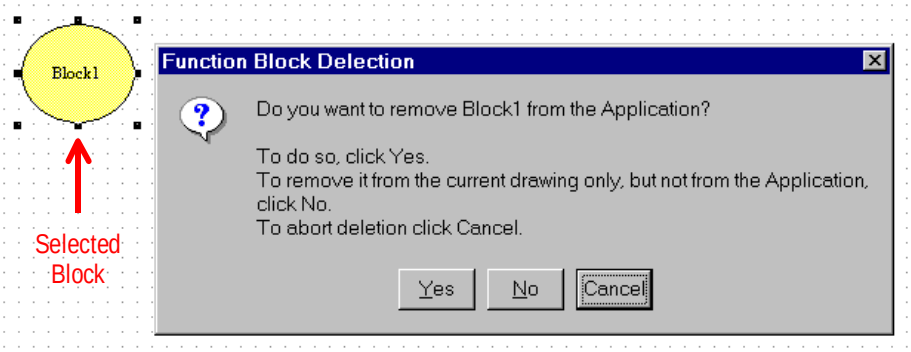


Figure 3.127. Function Block Deletion

Click *Yes* to remove the block from the project. **Attention**: clicking this button will remove the block from the *Strategy* window, from the control module and from the device. Therefore, the user will lose the block parameters and links. The block will no longer exist in the project.

In case the user wants to remove the block only from the *Strategy* window, click *No*. Later, the user can drag the block again and restore links. (See the section *Restoring Links*)

If the block is not to be deleted, click *Cancel*.

3.10.9 Selecting Objects at the Strategy Window

a) Selecting One Object

To select only one object in the *Strategy* window, click the *Select* button,  , on the *Strategy* toolbar, then click on the object.

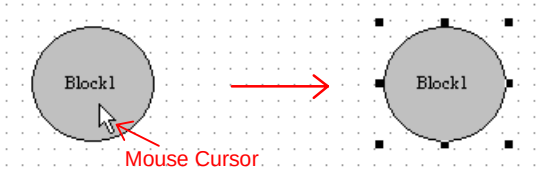


Figure 3.128. Selecting One Object

b) Selecting a Group of Objects

To select two or more objects in the *Strategy* window, there are two options:

- Click the *Select* button,  , on the *Strategy* toolbar and click on one object. Press and hold the *Shift* key, on the keyboard, then click each object to be selected.
- Or click anywhere in the blank area of the *Strategy* window. While dragging the mouse, a rubber band appears around the objects selected.

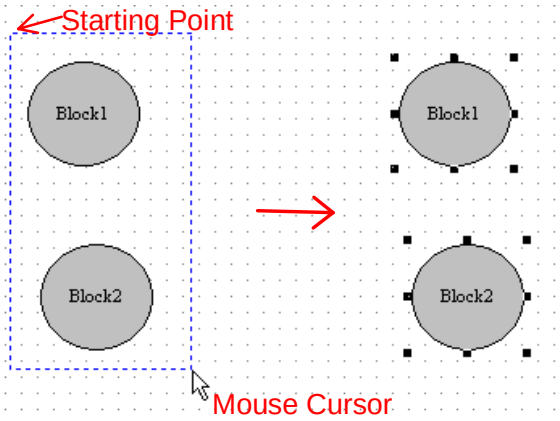


Figure 3.129. Selecting a Group of Objects

c) Selecting All Objects

To select all objects drawn in the *Strategy* window, go to the *Edit* menu and click *Select All*. Or use *Ctrl+A*, on the keyboard, to select the entire drawing area.

3.10.10 Changing Blocks Appearances

Changing the Block Tag

It is possible to change the block tag in the *Strategy* window. The new tag will automatically be changed in the *Process Cell* window.

Follow these steps to change the block tag:

1. Click the *Strategy Modify* button, , on the *Strategy* toolbar.
2. The mouse cursor will turn into a cross. Click on the block label.
3. Type a new tag for the block.
4. Click the drawing area to finish this procedure.

Observe the following diagram:

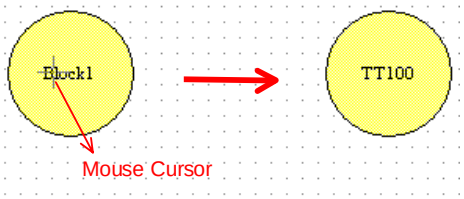


Figure 3.130. Changing Block Tag

Changing Block Dimension Attributes

It is possible to make a block have its height equal to its width:

1. Click the *Select* button, on the *Strategy* toolbar.
2. Select the block.
3. Right-click on it and the popup menu will open.
4. Click the option *Same Width and Height*.

See the following figure:

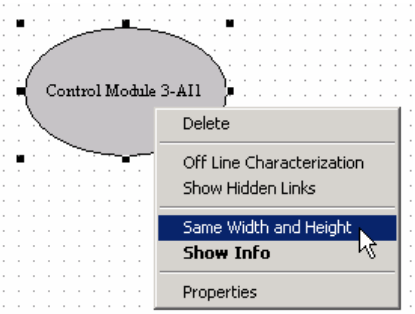


Figure 3.131. Block Popup Menu: Same Width and Height

The block will be changed as this diagram shows:

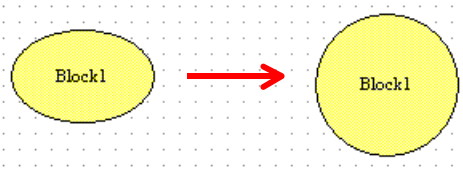


Figure 3.132. Changing Block Dimension

Showing Block Types

When a block is added to the *Strategy* window, the object only shows the block tag.

To show the block type:

1. Select the block in the *Strategy* window.
2. Right-click on it.
3. Click on the option *Show Info*.

See the following diagram:

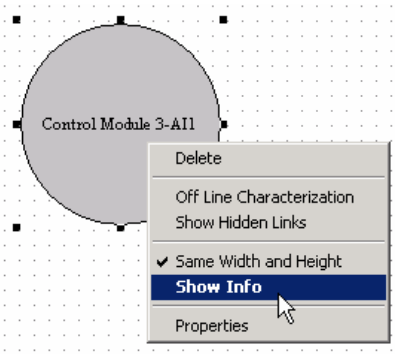


Figure 3.133. Block Popup Menu: Show Info

When completed, the block will appear as the following:

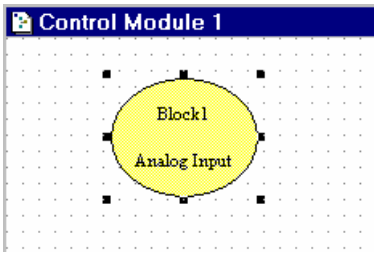


Figure 3.134. Showing Block Type

Changing Block Properties

Right-click any block. The popup menu will open. Click the option *Properties*, as indicated below:

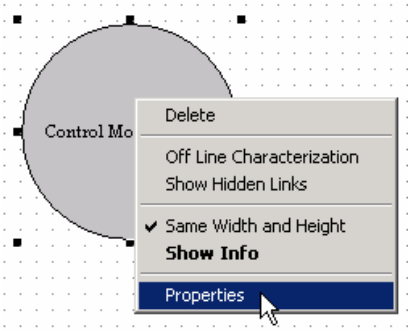


Figure 3.135. Block Popup Menu: Properties

The following dialog box will open:

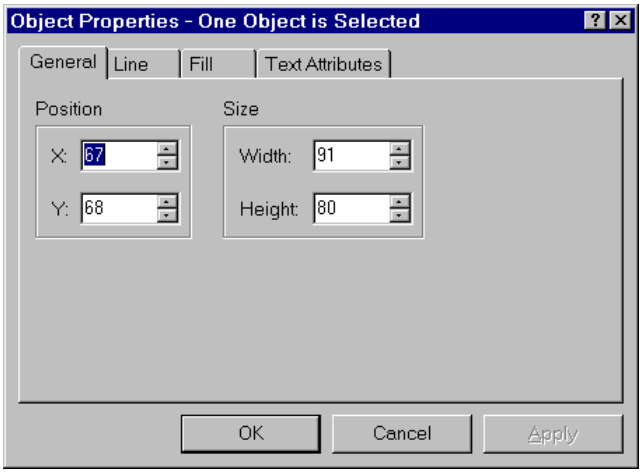


Figure 3.136. Object Properties Dialog Box

In each tab, the user can change different properties. For example, the line color can be changed at the *Line* tab, item *Color*, and the fill color can be changed at the *Fill* tab, item *Color*:

Figure 3.137. Changing Block Properties

Changing the Block Default Format

When a block is added to the *Strategy* window, an ellipse (more exactly a circle) containing the block tag will represent it.

To change this representation, go to the *Option* menu and point to the item *Function Block Icon*. Select a new format, as indicated in the figure below:

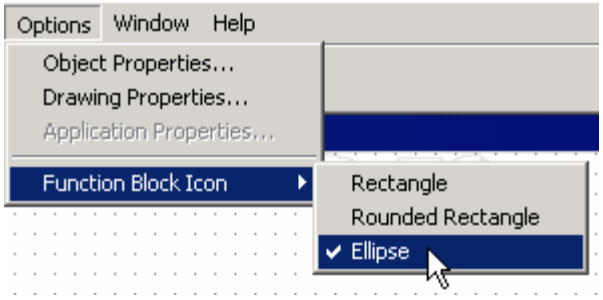


Figure 3.138. Options Menu: Function Block Icon

The next figure shows the different block formats:

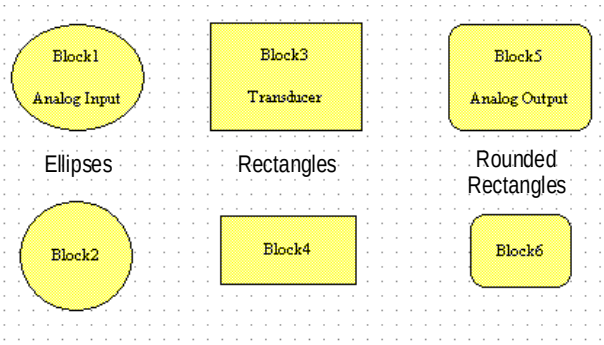


Figure 3.139. Block Formats

3.10.11 Links

Creating Links

Blocks can only be linked inside the *Strategy* window.

To link one block to another, click the *Link* button,  , on the *Strategy* toolbar, and click on the block.

Figure 3.140. Linking Blocks - Output Parameter

The *Output Parameter Selection* dialog box will open:

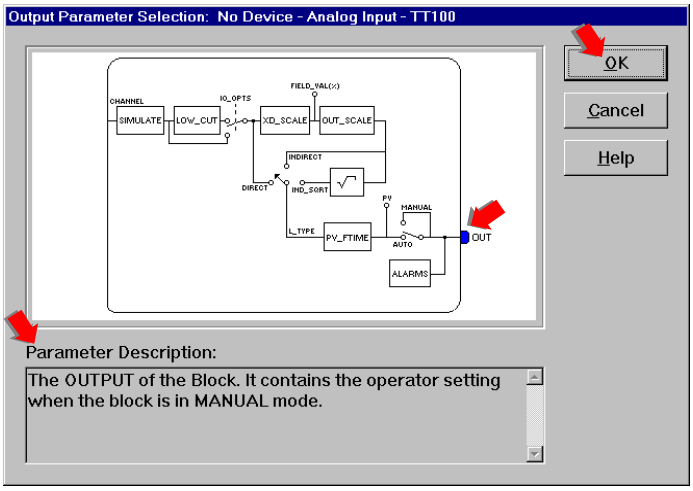


Figure 3.141. Output Parameter Selection Dialog Box

When the cursor is placed over the *OUT Parameter*, a short explanation can be read, at the *Parameter Description* text box. Click on the *OUT Parameter* to select it then click *OK*.

Return to the *Strategy* window, and the cursor will draw a line to represent the link. Place the mouse over the target block and click on it.

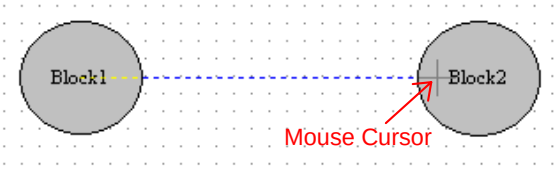


Figure 3.142. Linking Blocks - Input Parameter

The *Input Parameter Selection* dialog box will open:

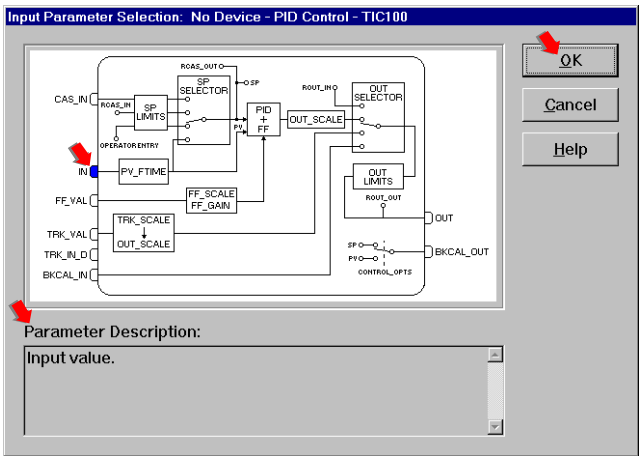


Figure 3.143. Input Parameter Selection Dialog Box

When the cursor is placed on an *Input Parameter*, the user will read a short explanation about it, at the *Parameter Description* text box. Select the *Input Parameter* by clicking on it then click *OK*.

The link will automatically be drawn:

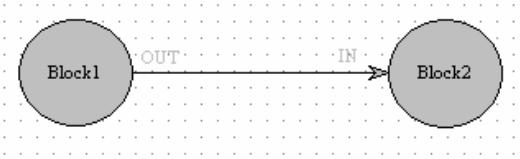


Figure 3.144. Linked Blocks

Fast Link Process

It is possible to make links without opening the *Selection* dialog box.

With the *Link* button selected,  , on the *Strategy* toolbar, right-click the block. The *Parameters List* will open. Click the item *OUT* that represents the *OUT Parameter*:

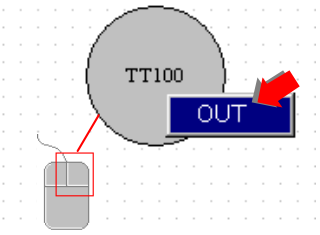


Figure 3.145. Fast Link - Output Parameter

Drag the cursor to the target block and right-click on it. The popup menu will open. Select the *Input Parameter* wanted by clicking the corresponding item. See the following diagram:

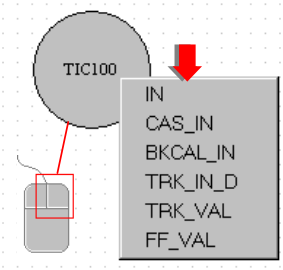


Figure 3.146. Fast Link - Input Parameter

See the following example of linked block into a Cascade Control design:

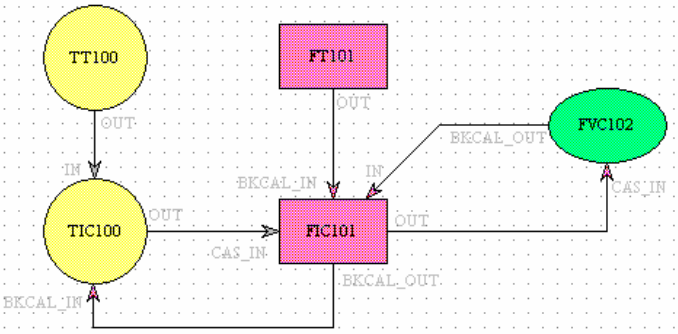


Figure 3.147. Cascade Control Example

Link Attributes

A link has several attributes, and can be changed. Use the *Select* Button,  , on the *Strategy* toolbar, to select a link. Right-click on the link to activate its popup menu.

On the *Labels* submenu, there are three options:

- *Show Link Label*: shows the link label if the option has been checked.
- *Show Output Parameter*: shows the *Link Output Parameter* label if the option has been checked.
- *Show Input Parameter*: shows the *Link Input Parameter* label if the option has been checked.

The following figure indicates the *Labels* submenu options:

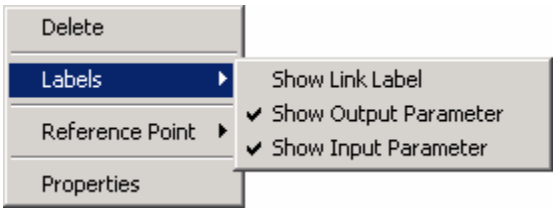


Figure 3.148. Labels Menu

On the *Reference Point* submenu, select the reference point for the *Modifying* tool. There are three options:

- *Ref. On Current Point*: the selected handle is the reference itself.
- *Ref. On Previous Point*: the selected handle will be placed based on the position of the previous handle.
- *Ref. On Next Point*: the selected handle will be placed based on the position of the next handle.

The following figure indicates the *Reference Point* submenu options:

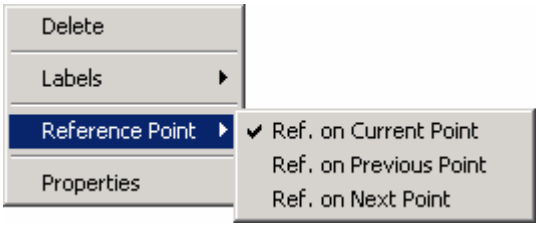


Figure 3.149. Reference Point Menu

When clicking the item *Properties*, the *Object Properties* dialog box will open. The user can change the line and fill colors, for example.

Removing Links

To remove a link from the *Strategy* window, select the link using the *Select* button,  , on the *Strategy* toolbar. Right-click the link and select the option *Delete*.

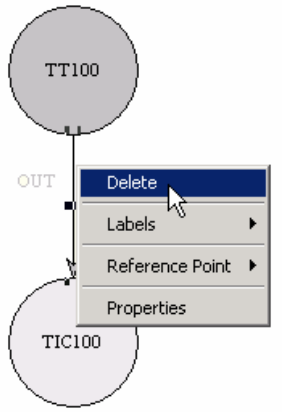


Figure 3.150. Link Menu: Delete

Or press the *Delete* key, on the keyboard. The *Link Deletion* dialog box will open:

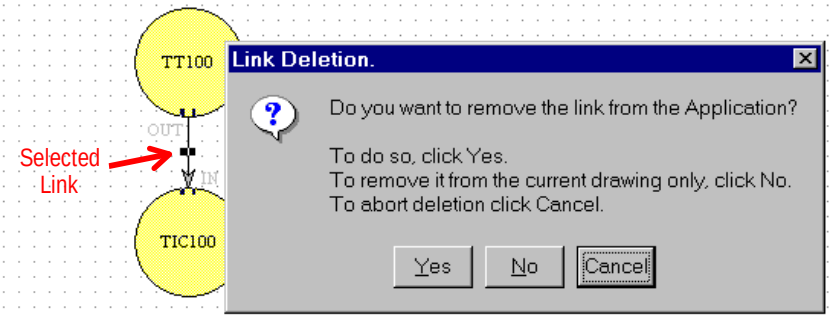


Figure 3.151. Link Deletion Dialog Box

Be careful! Clicking *Yes* will remove the link and parameters from the drawing area and also from the project. The link will no longer exist in the control module or in the device.

Click *No* to remove the link only from the drawing area. In this case, it can be restored later if necessary. (Section *Restoring Links*)

If it is not to be removed, click *Cancel*.

Restoring Links

Consider the following Strategy:

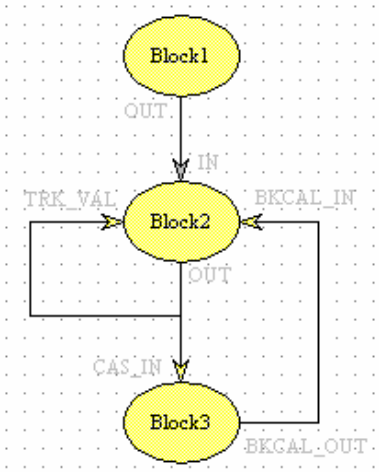


Figure 3.152. Example of Control Strategy

As can be seen, this Strategy has two *Feedback* links: one from the *Block3* to the *Block2* and the second link from the *Block2* to itself.

Suppose they were deleted from the *Strategy* window only.

To restore those links, follow these steps:

1. Select the block that had its link deleted.
2. Activate the block popup menu, by right-clicking on it.
3. Click the item *Show Hidden Links*.

See the following diagram:

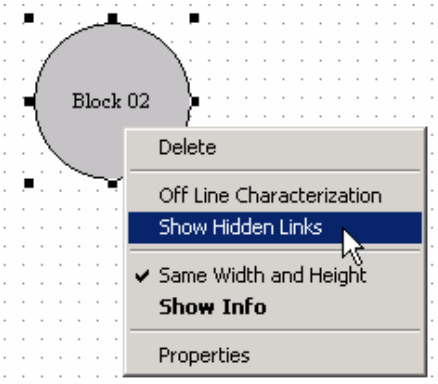


Figure 3.153. Block Popup Menu: Show Hidden Links

After being restored, the links will not be shown in their previous positions.

They will look like the links in the following figure:

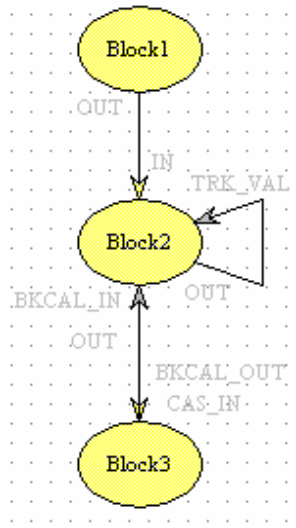


Figure 3.154. Restored Links

See the section *Redrawing Links* to understand how the links can be redrawn as they were before.

Redrawing Links

A link line can be redrawn by dragging the modifying handles in the drawing area, creating a new handle or removing a handle.

To create a new modifying handle, click on the link line. To remove a modifying handle, right-click on the handle.

Consider the following Strategy:

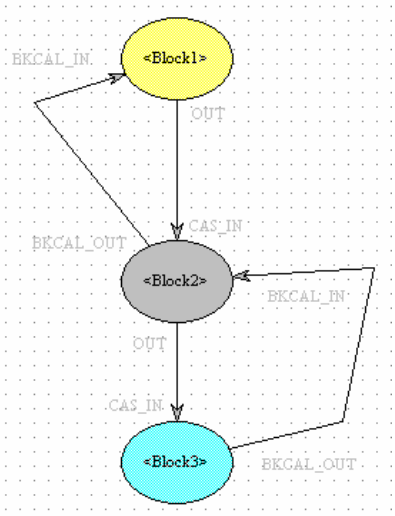


Figure 3.155. Another Example of Control Strategy

To redraw the link from *Block2* to *Block1*, as in the example above, follow these steps:

1. Use the *Select* Button,  , on the *Strategy* toolbar, to select the link line.
2. Click the *Modify* button,  , on the *Strategy* toolbar, and the modifying handles will appear.
3. Click on the link line to create a new modifying handle. See the diagram:

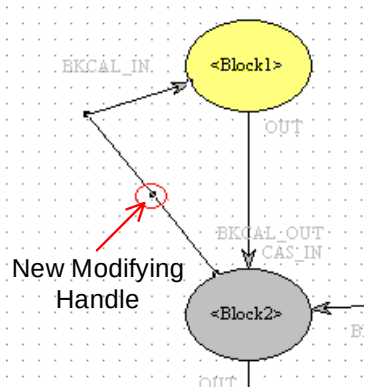


Figure 3.156. Modify Handle Tool

4. Click on a handle and drag it over the drawing area to redraw the link.

According to the reference point, hold the *Ctrl* key down while dragging the handle to draw a horizontal or vertical line from the reference handle. Or hold the *Shift* key down while dragging the handle to draw diagonal line from the reference handle.

See in the following figure the new link:

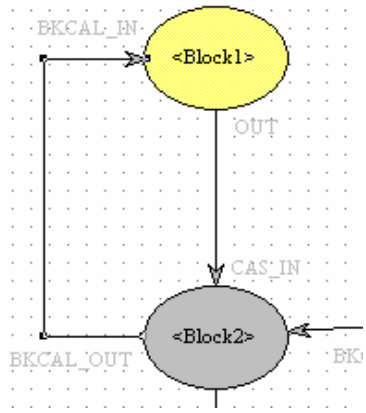


Figure 3.157. Redrawn Links

4 Recycle Bin

The items that were sent to the Recycle Bin can be recovered at any time, even if the configuration is closed and opened again.

To open the *Recycle Bin* window, right-click its icon at the *Project* window and click *Expand*:

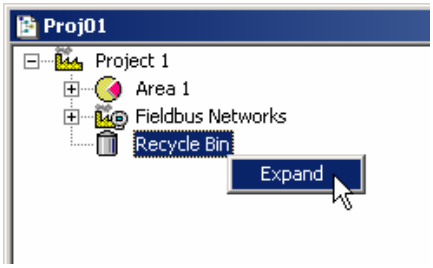


Figure 4.1. Opening the Recycle Bin Window

Devices and blocks are identified by their original configuration attributes, such as tags, IDs or control modules. Click the *Show/Hide Details* button,  , on the *General Operation* toolbar, to display the detailed information about the devices, blocks and parameters.

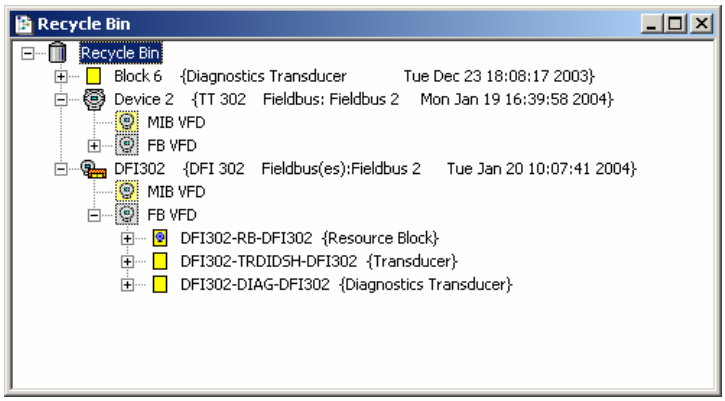


Figure 4.2. Recycle Bin Window

It is also possible to check the attributes of the selected item by right-clicking its icon and selecting *Attributes* from the popup menu.

Figure 4.3. Opening the Attributes Dialog Box

The *Attributes* dialog box will display all the information about the block or device selected.

4.1 Restoring Devices and Blocks

To restore a bridge, device or block to the configuration, right-click the icon at the *Recycle Bin* window and click *Restore*.

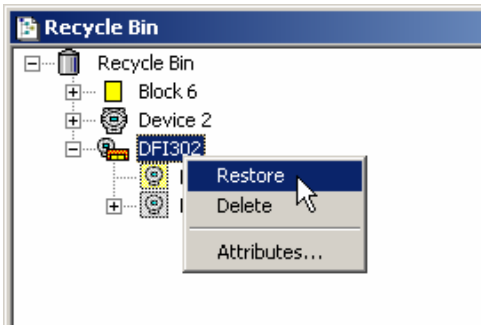


Figure 4.4. Restoring a Bridge

The selected device or block, and all of its contained information, will be restored to the configuration and attached to its original fieldbus or control module.

NOTE
If the fieldbus or the control module where the device or block was attached is removed, it will not be possible to restored the item.

If the restored item has a duplicated tag, the *Tag Table* dialog box will open and the new tag of the item will be generated based on the preference set by the user.

To edit the tag, right-click the icon of the item at the *New Tag* column and then click *Rename*. Type the new tag and click *Enter* on the keyboard.

4.2 Deleting Items from the Recycle Bin

When an item is deleted from the Recycle Bin, it is completely removed from the configuration and cannot be restored later on.

To remove a block or device from the *Recycle Bin* window, right-click its icon and click *Delete*.

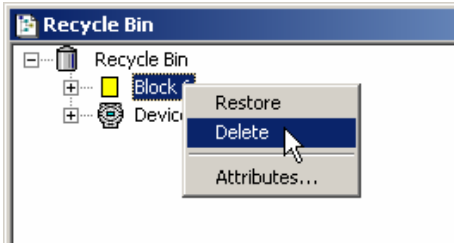


Figure 4.5. Deleting a Block from the Recycle Bin window

To empty the Recycle Bin, go to the *Edit* menu and click *Empty Recycle Bin*. Or right-click the Recycle Bin icon and click the option *Empty Recycle Bin*.

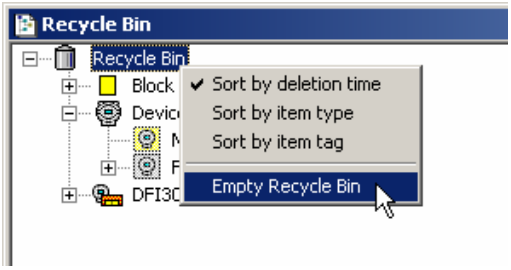


Figure 4.6. Deleting all elements from the Recycle Bin

All of the items in the Recycle Bin will be deleted.

4.3 Ordering Items in the Recycle Bin Window

The items in the *Recycle Bin* window can be ordered by the date and and time they've been deleted, by the tag or by the type of the items.

Right-click the Recycle Bin icon at the *Recycle Bin* window and select one of the options as indicated in the figure below:

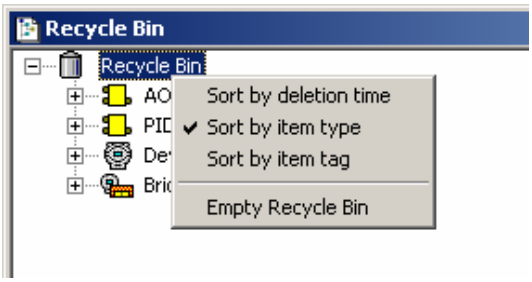


Figure 4.7. Ordering Items in the Recycle Bin Window

Sort by deletion time: elect this option to order the blocks, devices and bridges based on the date and time they have been deleted from the configuration.

Sort by item type: elect this option to order the blocks, devices and bridges alphabetically based on the type of the items.

Sort by item tag: elect this option to order the blocks, devices and bridges alphabetically based on the tag of the items.

5 Templates

It is possible to use a ready Strategy or part of it, in another project file or even in another process cell. It is necessary to create a template file from a *Strategy Configuration*. After which, just import the template into the control module, change the tags and assign the blocks to the devices.

SYSCON 6.0 also creates *Device Templates*. This feature allows the user to create a device or bridge template, attaching blocks and configuring parameters. The user can open the device template file and the project file at the same time, and then attach the devices or blocks to the configuration by dragging them to the desired fieldbus channel.

Using templates can speed up the development work tremendously. This will make it very productive at the same time as the boring repetitive work is eliminated. Engineering time and costs are reduced.

At the same time the configurations become more consistent and neater looking, and therefore easier to troubleshoot. Pre-configured templates also eliminate many chances of mistakes. The tedious process of instantiating block after block, and the agony of that forgotten parameter is a thing of the past.

5.1 Creating Templates

To create a template file, go to the *Project File* menu and click *New*. Or click the *New* button,  , on the *General Operation* toolbar.

The *Document Type* box will open. Select the desired template: *Strategy*, *Device* or *Bridge*.

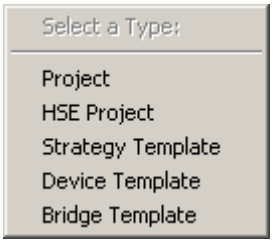


Figure 5.1. Select the Template Type

5.2 Opening Template Files

To open an existing template, go to the *Project File* menu and click *Open*, or click the *Open* button,  , on the *General Operations* toolbar.

The *Open* dialog box will open:

1. In the *Look in* box, select the folder that contains the template file to be opened.
2. In the *Files of type* box, select the template type. The files **.fft* are *Strategy Templates*; the files *.dtp* are *Device Templates* and the files **.btp* are *Bridge Templates*.
3. Click the template file icon or type its name in the *File name* box.
4. Click *Open* to conclude this task.

See the following example:

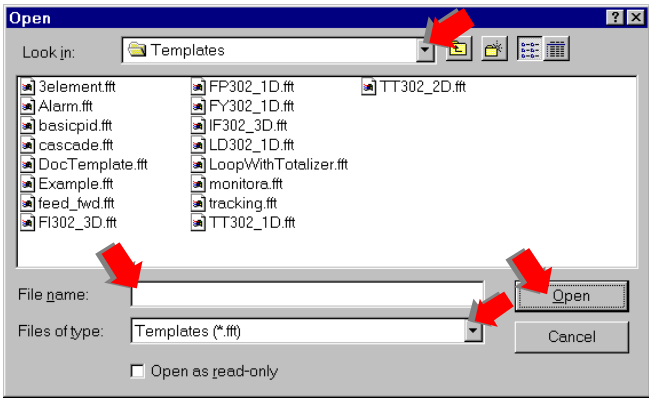


Figure 5.2. Open Template Dialog Box

5.3 Opening the Default Template

To open the device or bridge default template, go to the *Project File* menu and click *Open Default Template*.

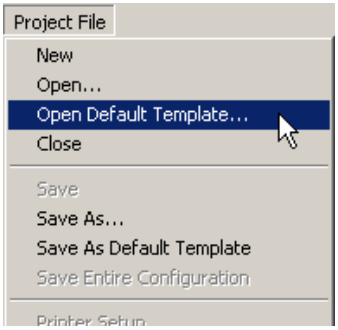


Figure 5.3. Opening the Default Template

The *Open Default Template* dialog box will appear:

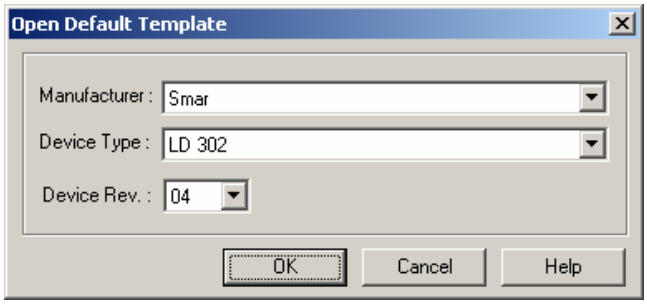


Figure 5.4. Open Default Template Dialog Box

1. Choose the *Manufacturer* from the list.
2. Select the device type.
3. Select the *Device Revision*.
4. Click *Ok*.

The *Template* window will open. See the example below:

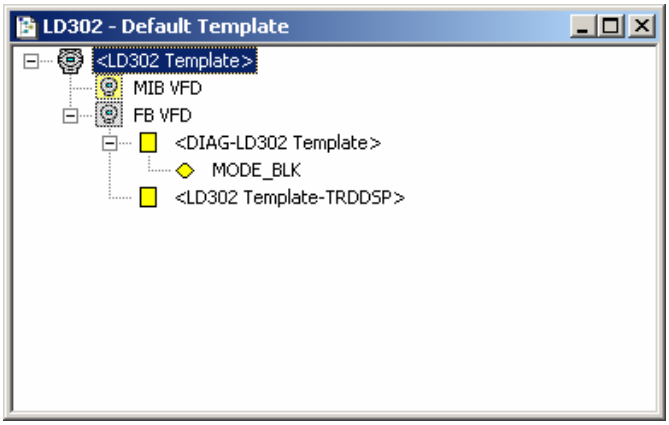


Figure 5.5. Device Template Window

5.4 Saving Templates

To save the template, go to the *Project File* menu and click *Save*, or click the *Save* button,  , on the *General Operations* toolbar.

The *Save As* dialog box will open:

1. Choose the folder where the template will be saved. There is a folder named *Templates*, inside the *Syscon* folder. We suggest that all template files saved should be in this folder. Double-click the *Templates* folder to open it.
2. Type the name for the template in the *File name* box.
3. Click *Save*.

See the following example:

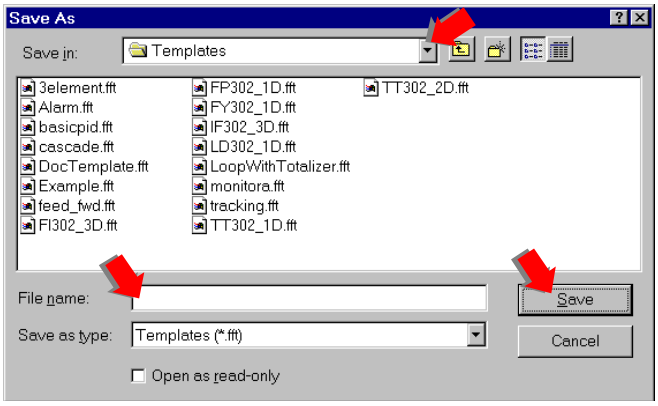


Figure 5.6. Save As Dialog Box

Anytime a change is made to the template drawing, do not forget to save it.

5.5 Saving the Default Template

To save the device or bridge template as the *Default Template*, go to the *Project File* menu and click *Save As Default Template*.

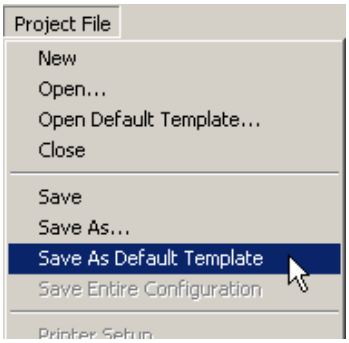


Figure 5.7. Saving the Default Template

The *Default Template* file is located in the *Device Support* folder of the *Device* manufacturer. The name of the template file is composed by the *Device Revision* number (2-digits hexadecimal number) and the extension ***dtp*** for devices and ***btp*** for bridges.

5.6 Closing Templates

To close the template, click on its window, in case the focus is on another application window, go to the *Project File* menu and click *Close*, or click on the *Close* button, , in the upper right corner of the *Template* window.

Do not forget to save the template before closing it.

5.7 Editing Strategy Templates

The *Strategy Template* window has the same properties as in the *Strategy* window. The user can draw blocks and links, and can also configure block attributes. The only difference is that the blocks will not be attached to a control module or a device.

5.7.1 Creating Blocks

To add blocks to the template, click the *Function Block Template* button, , on the *Strategy* toolbar. Click the drawing area and the *New Block* dialog box will open:

1. Select a *Block Manufacturer* from the list.
2. Select a *Device Type* provided by the manufacturer that has been selected.
3. Select the *Device Revision*, the *DD Revision* and the *CF Revision*.
4. Select a block type and type a related tag for the blocks.
5. Click *OK*.

5.7.2 Changing Block Attributes

The user can change block tags, typing names related to the block type or function.

Click the *Strategy Modify* button, , on the *Strategy* toolbar and then click on the block label. Type a new tag for the block and click the drawing area to conclude.

5.7.3 Block Characterization

To configure the block parameters, right-click the block icon in the drawing area and select the option *Off-line Characterization*. The *Characterization* window will open.

See section *3.8.10 Block Off-line Characterization* for details.

5.7.4 Creating Links

To link one block to another, click the *Link* button,  , on the *Strategy* toolbar. Right-click the block and select the *Output Parameter* from the popup menu. Drag the cursor to the target block, right-click it and select the *Input Parameter* from the popup menu.

See section *3.10.11 Links* for details.

5.8 Editing Device and Bridge Templates

A *Device Template* contains one device and the corresponding *Resource* and *Transducer Blocks*. The user can add or remove blocks and configure the block parameters.

The sub-sections below are related to the device template. The bridge is a device with specific characteristics, so the following instructions should be used to create the *Bridge Template*.

The *Device Template* files are those with the extension ***dtp*** and the *Bridge Templates* are those with the extension ***btp***.

5.8.1 Creating Devices

When the user creates a new device template, the *New Device* dialog box automatically open:

1. Select a *Device Manufacturer* from the list.
2. Select the *Device Type*.
3. Select the *Device Revision*.
4. Select the *DD Revision* and the *CF Revision*, or check the option ***Follow the Latest DD/CF Revision*** to apply the latest revision for the selected device.

NOTE
If the option *Follow the Latest DD/CF Revision* is selected, SYSCON will update the device with the latest revision of the *DD* and *CF* everytime the template file is opened or imported to a configuration.

5. Type a related tag for the device.
6. At the *Advanced Options* tab, select the options to automatically create the *Resource* and *ransducers Blocks*.
7. Click *Ok* to conclude.

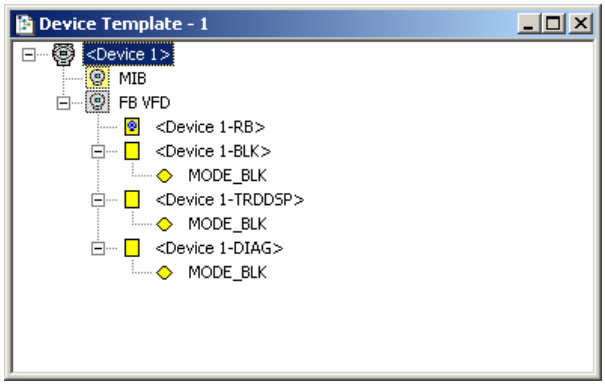


Figure 5.8. Device Template Window

5.8.2 Changing Attributes

The user can change the tag of the device or bridge in the template file.

Right-click the device icon and select the option *Attributes*. Type the new tag and click *Ok*.

5.8.3 Creating Blocks

Only the *Resource* and *Transducers Blocks* can be added to the device template. Right-click the *FB VFD* icon and select the option *New Block*. The *New Block* dialog box will open:

1. Select the block type.
2. Type a related tag for the block.
3. Click *OK*.

If the user doesn't type a tag for the block, SYSCON will combine the device tag with the *Block* mnemonic to generate the new tag.

5.8.4 Changing Block Attributes

The user can change block tags, typing names related to the block type or function.

Right-click the block icon and select the option *Attributes*. The *Block Attributes* dialog box will open. Type a new tag for the block and click *Ok*.

5.8.5 Block Characterization

To configure the block parameters, right-click the block icon and select the option *Off-line Characterization*. The *Characterization* window will open.

See section *3.8.10 Block Off-line Characterization* for details.

6 Communication

6.1 Introduction

Once the configuration is completely ready, the user can make SYSCON communicate with the plant.

First, it is necessary to remember that a *PCI* board or a *DFI* must be included in the project configuration. If the user doesn't have a *Communication Interface* in the project configuration, see the section *Creating Bridges*. Select ***Smar*** as the *Bridge Manufacturer* and select ***PCI*** or ***DFI*** as the *Device Type*.

NOTE
SYSCON can detect errors in the server to avoid a crash in the system when operating offline. After an error occurs in the server, SYSCON doesn't go to *Offline* mode automatically nor abort the download operation. The user must terminate the communication and restart it.

6.2 Configuring the Communication

To configure the communication server, select the fieldbus networks icon, go to the *Communication* menu and click *Settings*. Or activate the popup menu by right-clicking the fieldbus networks icon and selecting *Communication Settings*. See the following figure

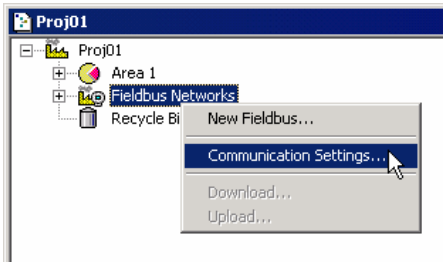


Figure 6.1. Configuring the Communication

The *Communication Settings* dialog box will open:

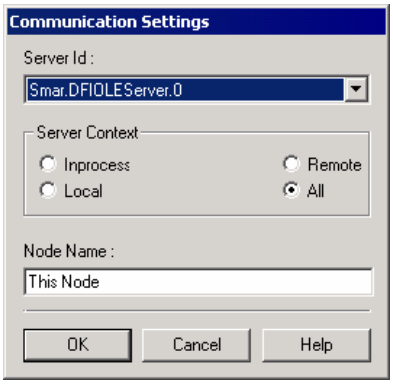


Figure 6.2. Initializing Communication

Select the *Server ID* by clicking on the drop-down menu. If a HSE fieldbus is added to the configuration, the *HSE OLE Server* will be selected when the user clicks the *Operation Mode* button,  .

Select the server context and type the name of the server node. Click *Ok* to conclude.

6.3 Initializing the Communication

To initialize the communication, click the *Operation Mode* button,  , on the *General Operation* toolbar under the *Menu* bar.

The video clip below should appear for a few seconds. During this time, SYSCON will identify and attach any bridge and fieldbus to the real plant.

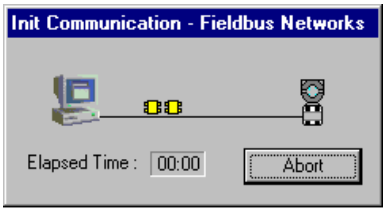


Figure 6.3. Initializing Communication

Next, the user will have to change the bridge attributes. Select the bridge ID from the *Device ID* list and choose the tag related to the bridge. (See the section *Changing Bridge Attributes* for further information.)

NOTE
Once the bridge attributes match the installed bridge attributes, this step will no longer be necessary. SYSCON will automatically do the association.

When the *Fieldbus* window is opened, the following video clip should appear for a few seconds:

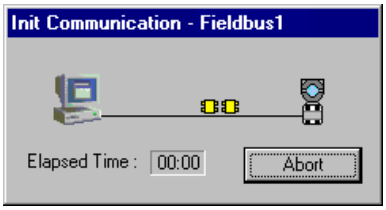


Figure 6.4. Initializing the Communication

The user can check the devices communicating on the channel. Click on the fieldbus icon, go to the *View* menu and click *Live List*. The user can also right-click the fieldbus icon to activate its popup menu and select the item *Live List*.

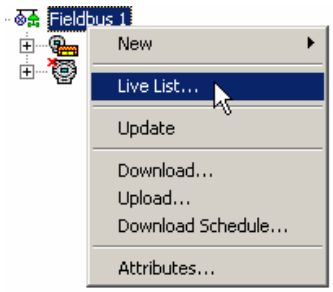


Figure 6.5. Live List Request

Each fieldbus has its own *Live List*. See section *6.9 Live List*.

6.4 Associating Devices' IDs

After initializing the communication with the fieldbuses, it is necessary to associate the devices that are configured in the project to the devices in the *Live List*.

Open the *Device* dialog box to change its attributes and select the *Device ID* from the list. (See the section *Changing Device Attributes* for further information)

Repeat this procedure for each device in every fieldbus, if the device hasn't been associated as yet.

NOTE
Once the device tag or the device ID matches any node in the Live List, SYSCON will automatically do the association.

6.5 Tags Assignment

In the previous section, one address was automatically assigned to each device. Now, it is necessary to assign the tags to each one of these devices and interfaces.

On the *Fieldbus* window, click on each bridge and device, go to the *Communication* menu and click *Assign Tag*. The user can also activate the popup menu by right-clicking on their icons and selecting *Assign Tag*. See the following figure:

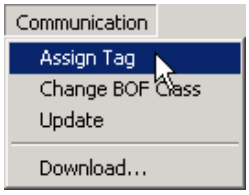


Figure 6.6. Communication Menu: Assign Tag

The tag written in the configuration will be sent to the device, see the following clip:

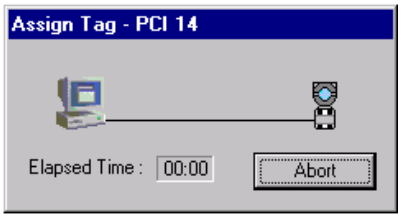


Figure 6.7. Assigning Tags

NOTE
To make sure that the tag assignment was successful, open the *Live List* of the fieldbus (or segment) and see if the tag from the device is the one that was sent.

6.6 Error Log Registry

The *Error Log* window reports the errors that occurred during the communication.

It is important to clear the *Error Log Registry* before downloading the configuration, because any eventual error that might occur during the download process will be easily detected as the *Error Log* window pops up automatically at the occurrence of its first error.

Click the *Error Log* button,  . It will open the *Error Log* window.

Right-click inside this window to activate the popup menu and select the option *Clear Log*. See the following figure:

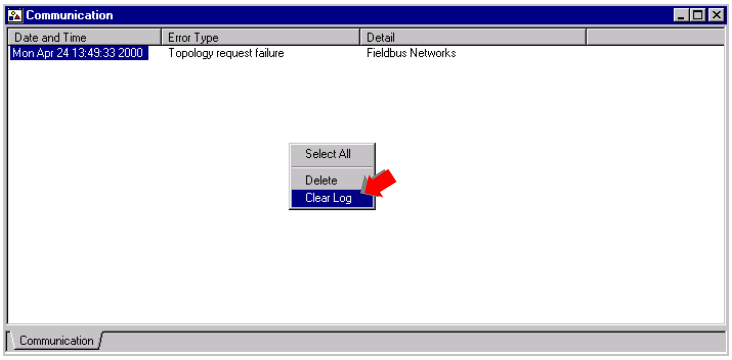


Figure 6.8. Error Log Window

6.7 Downloading the Configuration

6.7.1 Plant Configuration Download

Since the communication at the fieldbus networks has been initialized by clicking the *Operation Mode* button, it is time to download the configuration.

In the *Project* window, click the fieldbus networks icon, go to the *Communication* menu and click the item *Download*. Or right-click the fieldbus networks icon and select the item *Download*.

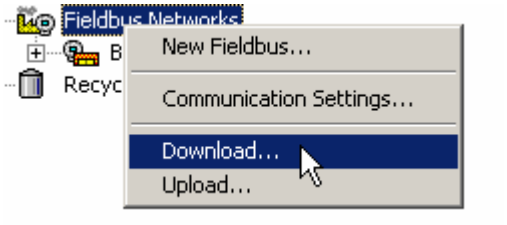


Figure 6.9. Plant Download

The *Download* dialog box will open. To download the entire configuration to the plant, **do not** select the option *Incremental download* and click *Start*.

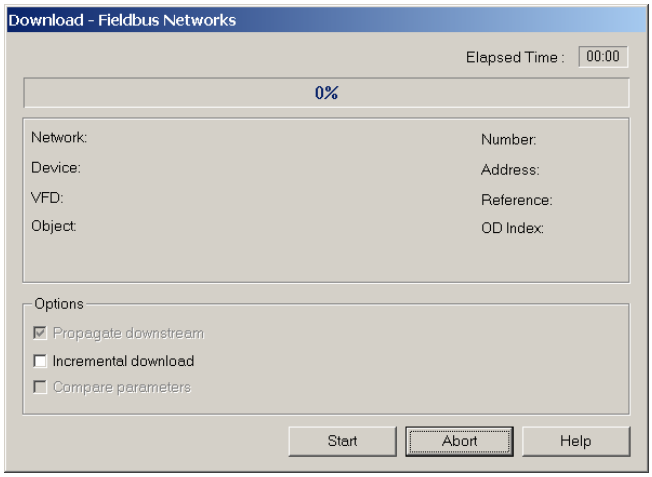


Figure 6.10. Downloading the Plant Configuration

If the option *Incremental download* is selected, SYSCON will compare the project configuration with the plant configuration.

The option *Compare parameters* will force SYSCON to evaluate the parameters in the devices, comparing parameters in the plant configuration to the parameters in the project configuration. If the user do not select this option, the values of the parameters won't be compared and will be downloaded unconditionally. That means the parameters that already exist in the device will be overwritten!

The message box in the figure below will appear if there is any difference in the configuration.

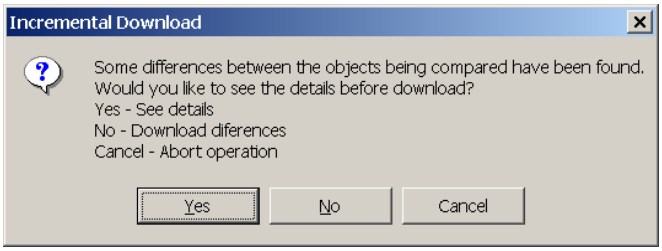


Figure 6.11. Checking the Plant Configuration

Click *Yes* to open the *Incremental Download* dialog box and check the differences.

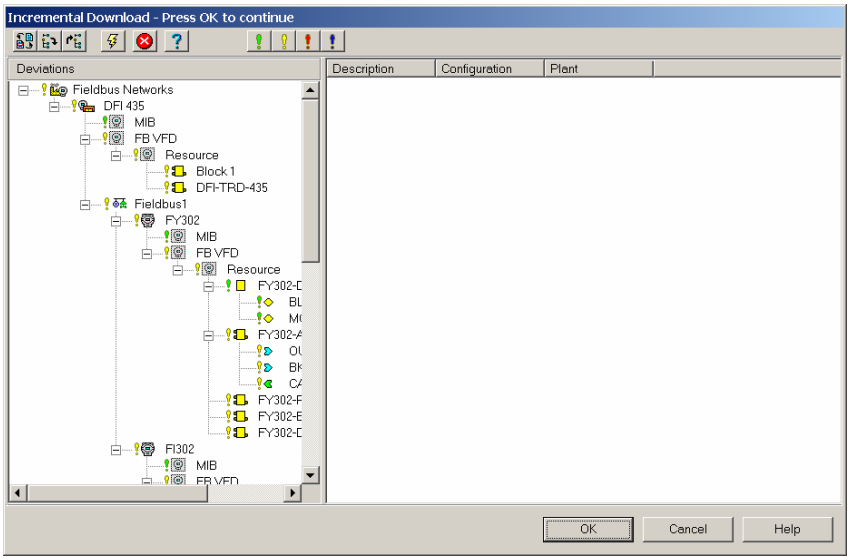


Figure 6.12. Incremental Download Dialog Box

Click *Ok* to download the configuration.

6.7.2 Fieldbus Download

To execute the download for a specific fieldbus segment, click the fieldbus icon, go to the *Communication* menu and click the item *Download*. Or right-click the fieldbus icon and select the item *Download*.

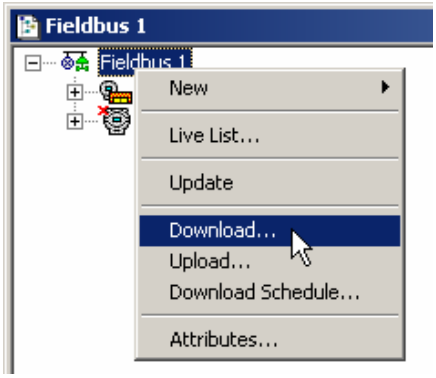


Figure 6.13. Fieldbus Download

The *Download* dialog box will open. Click *Start* to download the fieldbus information.

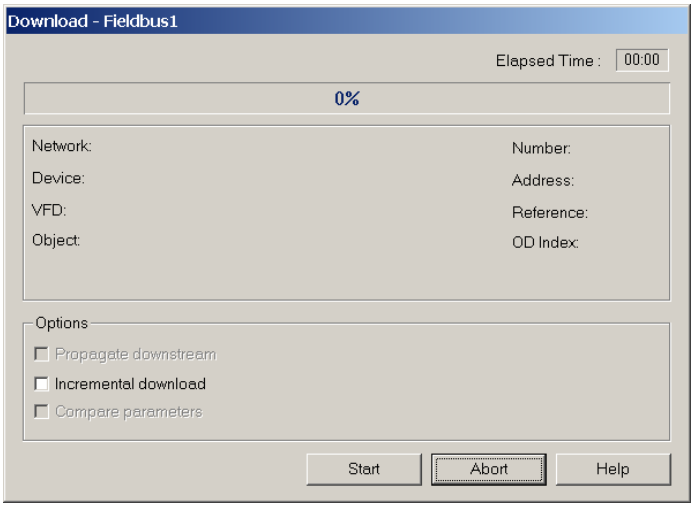


Figure 6.14. Downloading the Fieldbus Segment

To execute the incremental download, select the option *Incremental download*. See section *6.7.5 Incremental Download* for more details.

6.7.3 Device Download

In case a device failed or after replacing a device, the user can run a partial download for this device, provided that it doesn't change the configuration. When the configuration is changed, it's up to the user to run a partial download for all devices affected by the change. Otherwise, the partial download can produce unpredictable results.

Note that changes in one device may affect others. If the user changes an external link for instance, it is affecting at least two devices besides the LAS.

The partial download speeds up the download process. However, in case of doubts, it is strongly recommended using the complete download.

In the *Fieldbus* window, click the device icon, go to the *Communication* menu and click the item *Update*. Or right-click the device icon to activate its popup menu and select the item *Update*.

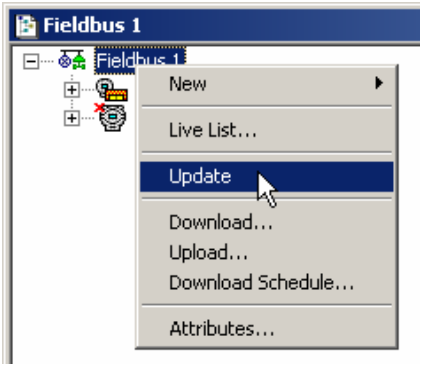


Figure 6.15. Updating the Bridge Information

The replaced device tag will get out of the *Live List* and the new device tag will appear. Now the user can run the download.

In the *Fieldbus* window, click the device icon, go to the *Communication* menu and click the item *Download*. Or right-click the device icon to activate its popup menu and select the item *Download*.

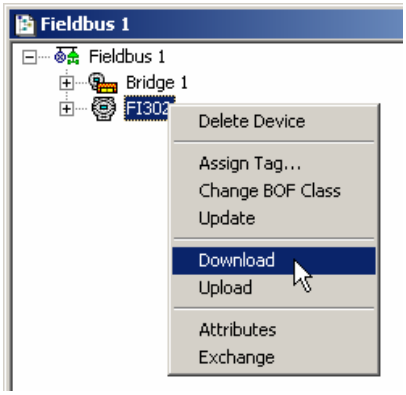


Figure 6.16. Device Download

The *Download* dialog box will open. Click *Start* to download the device information.

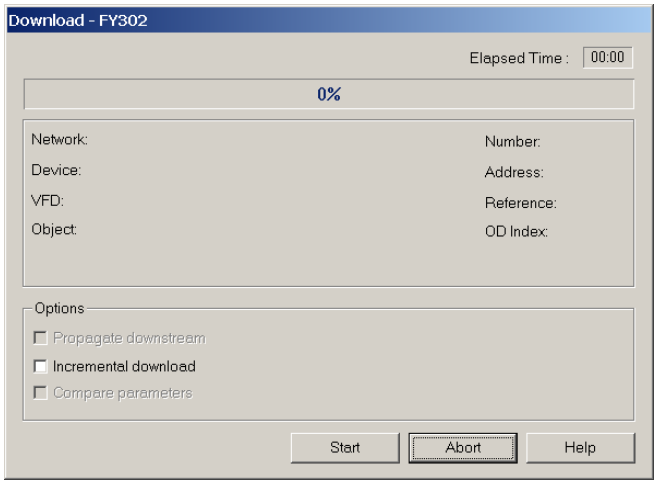


Figure 6.17. Downloading the Device

To execute the incremental download, select the option *Incremental download*. See section *6.7.5 Incremental Download* for details.

6.7.4 Bridge Download

Click the bridge icon, go to the *Communication* menu and click the item *Download*. Or right-click the bridge icon to activate the menu and select the item *Download*.

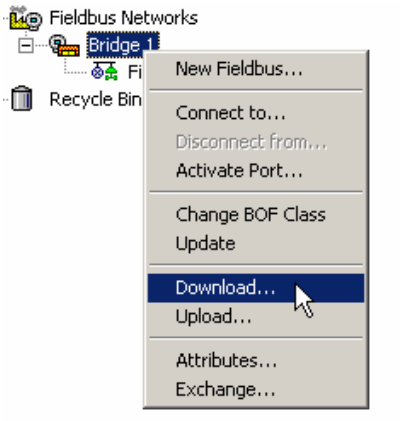


Figure 6.18. Bridge Download

The *Download* dialog box will open.

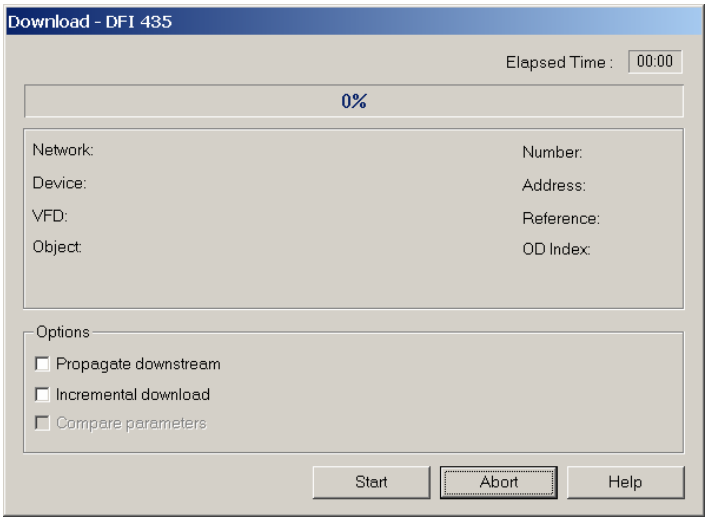


Figure 6.19. Downloading the Bridge

If the user selects the option *Propagate downstream*, SYSCON will run the download for the bridge and then propagate the download procedure to the fieldbus segments located below the bridge in the topology tree, at the *Project* window.

To execute the incremental download, select the option *Incremental download*. See section *6.7.5 Incremental Download* for details.

Click *Start* to conclude and execute the download.

6.7.5 Incremental Download

SYSCON can compare the project configuration with the plant configuration and then execute the download only for the discrepant information, without sending unnecessary information to the device.

The *Incremental Download Algorithm* executes the download twice: the first download will verify the configuration and report the differences. The second download will be executed if the user decides to update the information in the plant configuration.
Blocks and links that exist in the plant configuration but not in the project configuration will be deleted in order to preserve the project configuration consistency.

In the *Download* dialog box, select the option *Incremental download* to compare the project configuration with the plant configuration.

The option *Compare parameters* will force SYSCON to evaluate the parameters in the devices, comparing the parameters in the plant configuration to the parameters in the project configuration. If the user do not select this option, the values of the parameters won't be compared and will be downloaded unconditionally. That means the parameters that already exist in the device will be overwritten!

The message box in the figure below will appear if SYSCON finds any difference in the configuration.

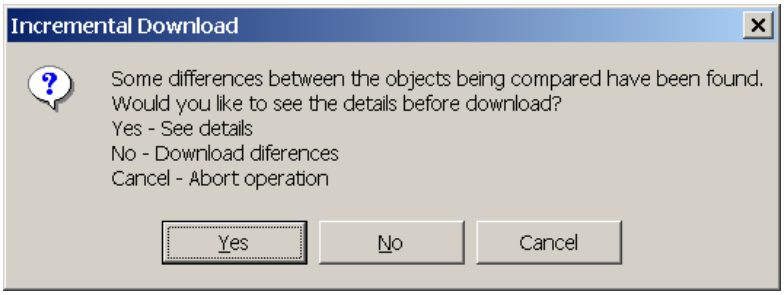


Figure 6.20. Checking the Differences

- Click *Yes* to open the *Incremental Download* dialog box and check the differences.
- Click *No* to execute the download without checking the discrepancy between the configurations.
- Click *Cancel* to abort the download and return to the project configuration.

The figure below shows the *Incremental Download* dialog box:

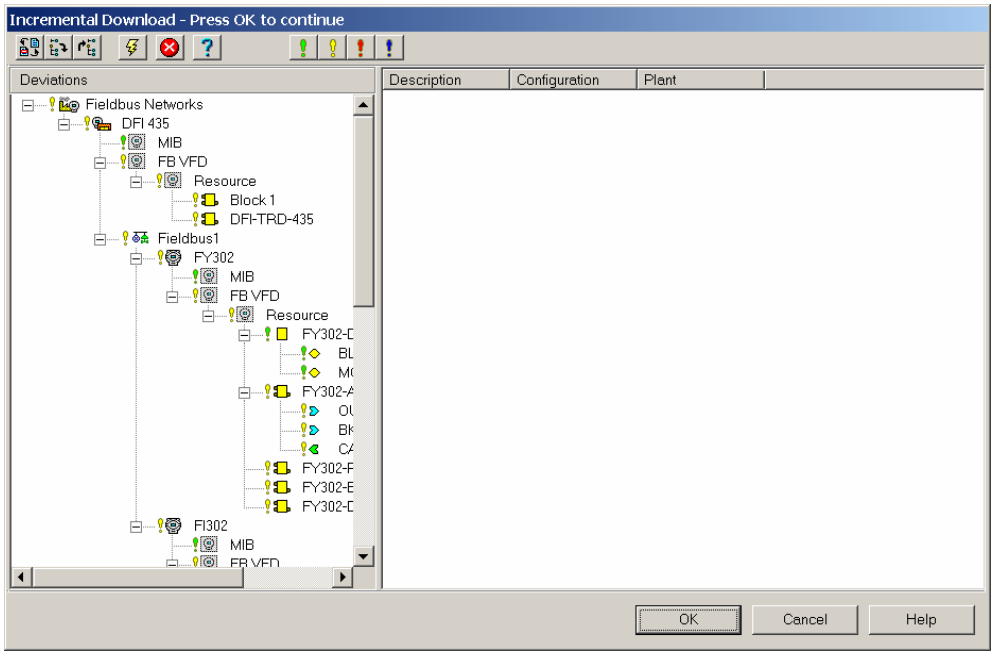


Figure 6.21. Incremental Download Dialog Box

The panel on the left shows the topology tree. The panel on the right will describe the discrepancies for the item selected on the left panel.

The *Incremental Download* dialog box has its own toolbar. The following table describes the functionalities of the buttons:

	Click this button to refresh the information on the dialog box.
	Click this button to expand all nodes.
	Click this button to collapse all nodes.
	Click this button to execute the download and close the *Incremental Download* dialog box.
	Click this button to cancel the download and close the *Incremental Download* dialog box.
	Click this button to open the SYSCON Help.

The *Incremental Download* dialog box has four filter levels that classifies all of the blocks and parameters attributes for the device:

	This filter indicates that there are no discrepancies in the configuration and the download won't be necessary for the selected device.
	The *Low Severity* filter indicates that there are discrepancies in the configuration and the device information will be overwritten.
	The *High Severity* filter indicates that the download cannot be executed.
	This filter will display all of the attributes.

Click the column headers (*Description*, *Configuration* or *Plant* column) on the right panel to sort the list of information. Clicking the column header will toggle between ascendant or descendent sorting.

6.7.6 Download Schedule

To download the schedule, click the fieldbus icon, go to the *Communication* menu and click the item *Download Schedule*. Or right-click the fieldbus icon and select the item *Download Schedule*.

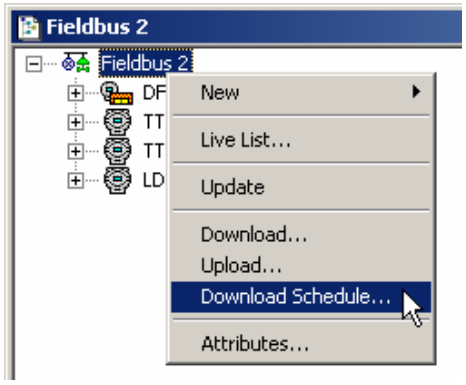


Figure 6.22. Download Schedule

The message box will open. Click *Yes* to download the schedule.

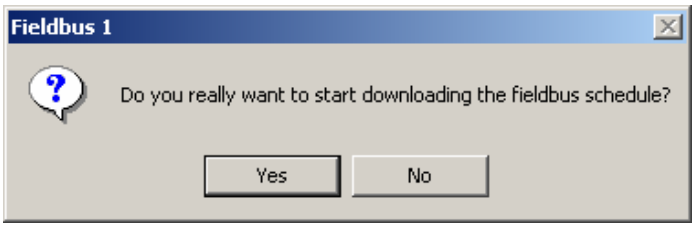


Figure 6.23. Confirming the Schedule Download

The schedule can be defined in the *Fieldbus Attributes* dialog box. See section *3.5.2 Changing Fieldbus Attributes* for more details.

6.8 Uploading the Configuration

6.8.1 Configuration Upload

This section describes the steps to upload the configuration from the field devices to the project file. It is necessary to initialize the communication, before executing the upload.

In the *Project* window, click on the fieldbus networks icon, go to the *Communication* menu and click the item *Upload*. Or right-click on the fieldbus networks icon to activate its popup menu and select the item *Upload*.

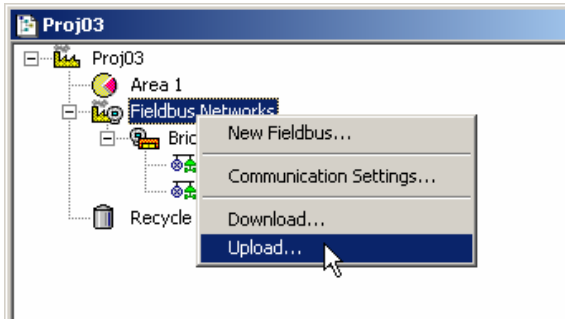


Figure 6.24. Upload

The *Upload* dialog box will open:

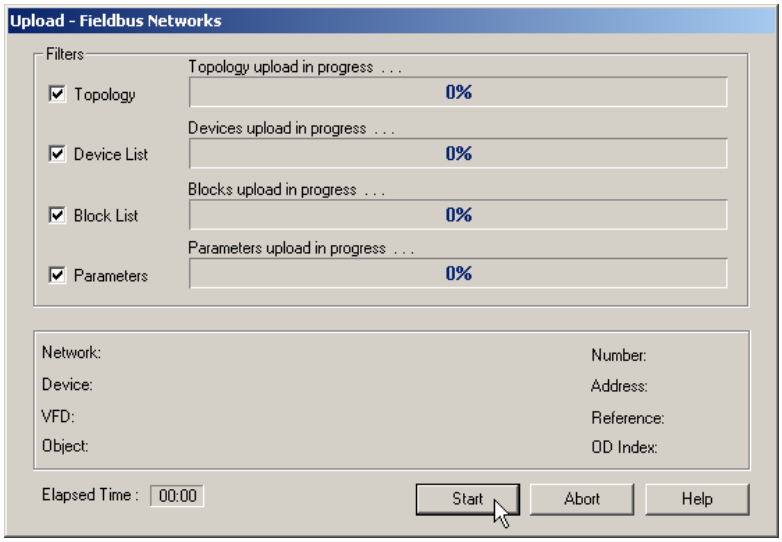


Figure 6.25. Upload Dialog Box

Set the *Upload Filters* by checking the *Topology* box, *Device List* box, *Block List* box and *Parameters* box. Click the button *Start*.

The progress bars indicate that SYSCON is reading the information from the fieldbuses and adding the devices, blocks and parameters to the configuration file.

NOTE
At any time during the upload the user can stop this process by clicking *Abort* in the *Upload* dialog box.

6.8.2 Partial Upload

The user can run a partial upload for fieldbuses, devices or blocks by setting the filters properly.

Topology Upload

Click the fieldbus networks icon, on the *Project* window, and select *Upload* from the popup menu. On the *Upload* dialog box, select only the *Topology* box and click *Start*.

SYSCON will upload the Topology.

Device Upload

On the *Fieldbus* window, click the fieldbus icon and select *Upload* from the popup menu. On the *Upload* dialog box, select only the *Device List* box and click *Start*.

SYSCON will upload the devices for the selected fieldbus.

Block Upload

On the *Fieldbus* window, click the device icon and select *Upload* from the popup menu. On the *Upload* dialog box, select only the *Block List* box and click *Start*.

SYSCON will upload the blocks for the selected device.

Parameter Upload

On the *Fieldbus* window, click the block icon and select *Upload* from the popup menu. On the *Upload* dialog box, select only the *Parameters* box and click *Start*.

SYSCON will upload the parameters for the selected block.

6.9 Live List

The user can view the list of devices instantiated in a fieldbus through the *Live List*, after the communication is initialized.

In the *Fieldbus* window, click on the fieldbus icon, go to the *View* menu and click the item *Live List*. Or right-click on the fieldbus icon to activate its popup menu and select the item *Live List*.

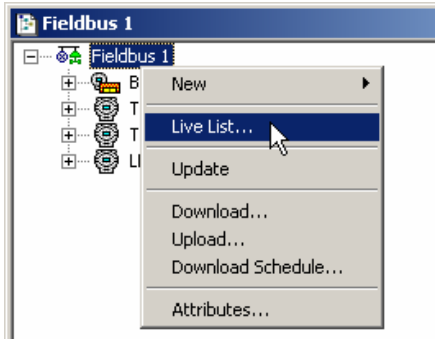


Figure 6.26. Opening the Live List window

The *Live List* window will open:

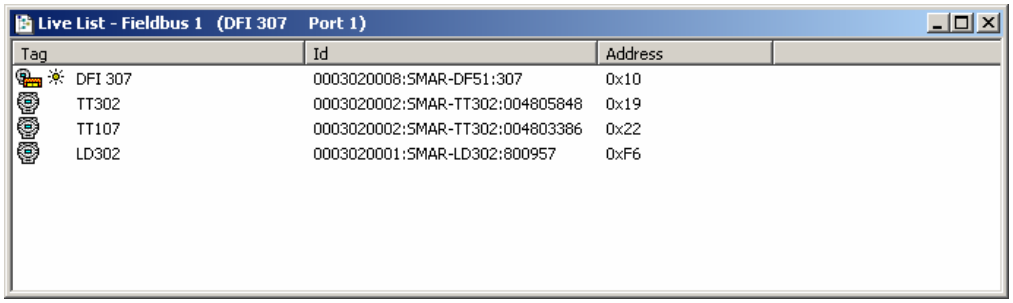


Figure 6.27. Live List Window

The *Live List* indicates the devices and bridges, identified by the *Device Tag*, *Device ID* and *Device Address*, as well as the device configured as the *Active LAS*. The *Active LAS* will be indicated with a different icon in the *Live List*.

6.9.1 Live List Menu Options

Assign Tag

Right-click on the device icon to activate its popup menu and select the item *Assign Tag*.

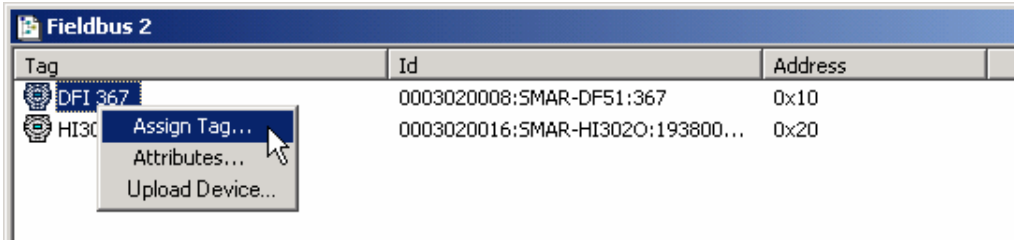


Figure 6.28. Live List Menu: Assign Tag

The *Assign Tag* dialog box will open. Type the new tag and click *Ok*:

Figure 6.29. Assign Tag Dialog Box

Attributes

Right-click on the device icon to activate its popup menu and select the item *Attributes*.

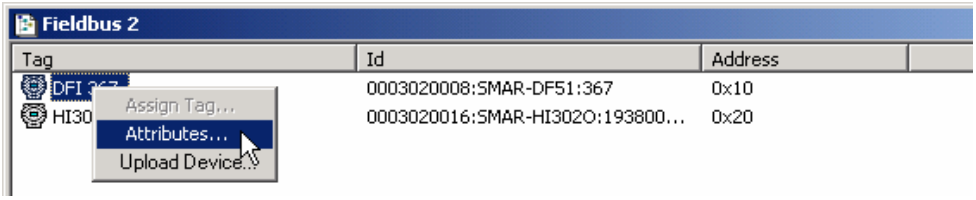


Figure 6.30. Live List Menu: Attributes

The *Device Attributes* dialog box will open.

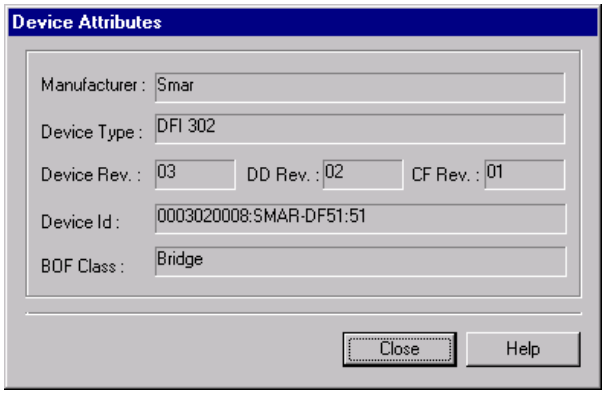


Figure 6.31. Device Attributes Dialog Box

Upload Device

Right-click on the device icon to activate its popup menu and select the item *Upload Device*.

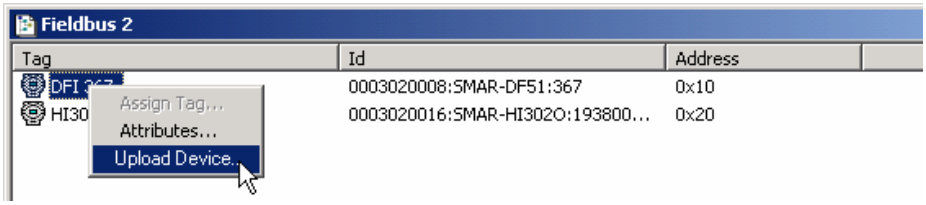


Figure 6.32. Live List Menu: Upload Device

The following dialog box will open while the device is being uploaded.

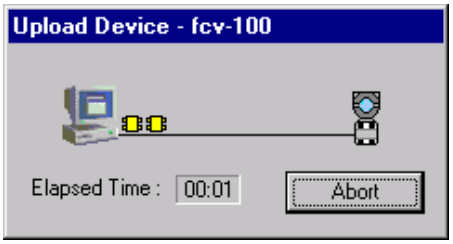


Figure 6.33. Uploading Device

6.10 Block List

The user can view the list of blocks instantiated in a device through the *Block List*, after the communication is initialized.

In the *Fieldbus* window, click on the FB icon, go to the *View* menu and click the item *Block List*. Or right-click on the FB icon to activate its popup menu and select the item *Block List*.

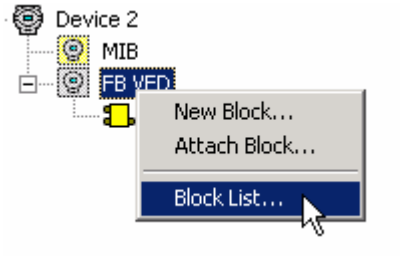


Figure 6.34. Opening the Block List window

The *Block List* window will open:

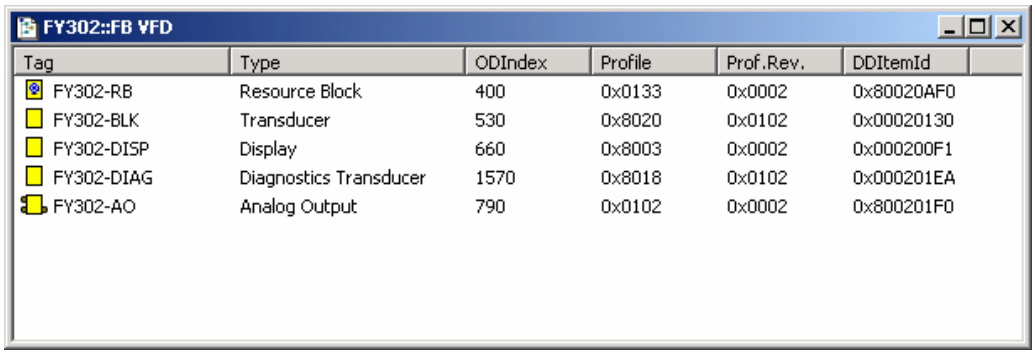


Figure 6.35. Block List Window

6.10.1 Block List Menu Options

Assign Tag

Right-click on the block icon to activate its popup menu and select the item *Assign Tag*.

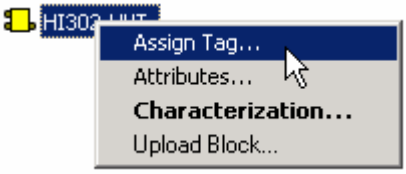


Figure 6.36. Block List Menu: Assign Tag

The *Assign Tag* dialog box will open. Type the new tag and click *Ok*:

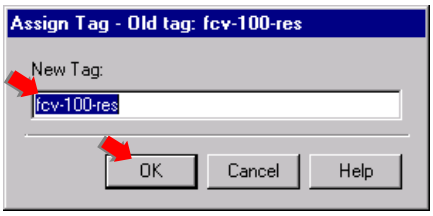


Figure 6.37. Assign Tag Dialog Box

Attributes

Right-click on the block icon to activate its popup menu and select the item *Attributes*.

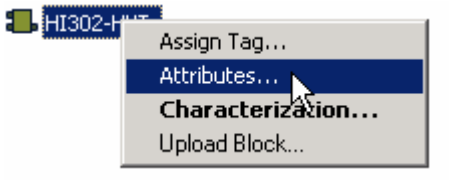


Figure 6.38. Block List Menu: Attributes

The *Block Info* dialog box will open.

Characterization

Right-click on the block icon to activate its popup menu and select the item *Characterization*.

Figure 6.39. Block List Menu: Characterization

The *Block Characterization* dialog box will open:

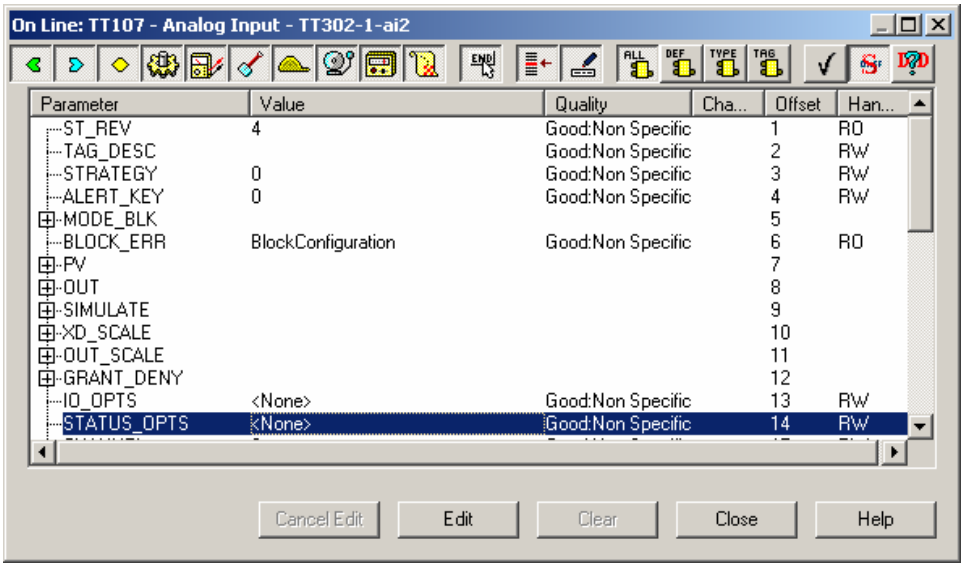


Figure 6.40. Characterization Window

See the section *Block On Line Characterization* for further information.

Upload Block

Right-click on the block icon to activate its popup menu and select the item *Upload Block*.

Figure 6.41. Block List Menu: Upload Block

The block will be created in the corresponding device.

6.11 Exporting Tags

To enable the on-line communication with the parameters of the function blocks, the user will have to generate a file containing all tags (devices and function blocks) present in the configuration.

On the *Project* window, click on the project icon, go to the *Export* menu and click *Tags*. Or activate the popup menu by right-clicking on the project icon. Click the item *Export Tags*.

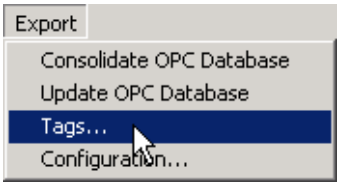


Figure 6.42. Export Menu: Export Tags

The *Save Tag Info* dialog box will open. Select the **Taginfo.ini** file and click *Save*.

Figure 6.43. Save Tag Info Dialog Box

NOTE
Every time any tag is changed in the configuration, it is necessary to repeat the *Export Tag* procedure. Otherwise, the supervision of the new tag will not be allowed.

In the *Preferences* dialog box, the user can set the option to automatically export the tags, everytime a relevant online procedure requires a tag to be exported. In this case, a message box will open for the user to confirm the *Export Tag* procedure. See section *2.2 Preferences*.

To manually update the **Taginfo.ini** file, click on the project icon, go to the *Export* menu and click *Update OPC Database*. Or activate the popup menu, right-clicking on the project icon. Click the item *Update OPC Database*.

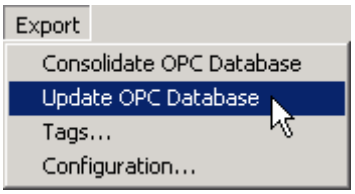


Figure 6.44. Export Menu: Update OPC Database

The file promptly will be updated.

NOTE
If there are two or more configuration files, the tag lists from these sources must be consolidated in a single list, so the OPC Server can use the entire list of tags to provide the information requested by any OPC client application.

The user must assure that the tags used in all of the configuration files are unique. If there are duplicated tags, only one tag will be exported to the **Taginfo.ini** file.

When the user exports the tags or updates the OPC database of a configuration that has a consolidated tag list, the consolidated list will be updated with the tag list corresponding to the configuration current open.

6.12 Exporting the Configuration

The user can export the project configuration to an existing database.

On the *Project* window, click the project icon. Go to the *Export* menu and click *Configuration*. Or activate the popup menu, by right-clicking the project icon. Click the item *Export Configuration*.

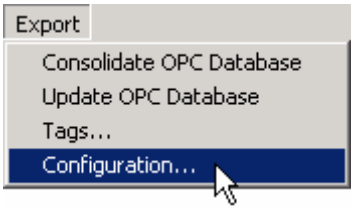


Figure 6.45. Export Menu: Export Configuration

The *Select Data Source* dialog box will open.

On the *File Data Source* tab, select the source that describes the driver that is to be connected. The user can use any file data source that refers to an ODBC driver, which is installed on the machine.

Double-click the data source icon to select the driver. See the following figure:

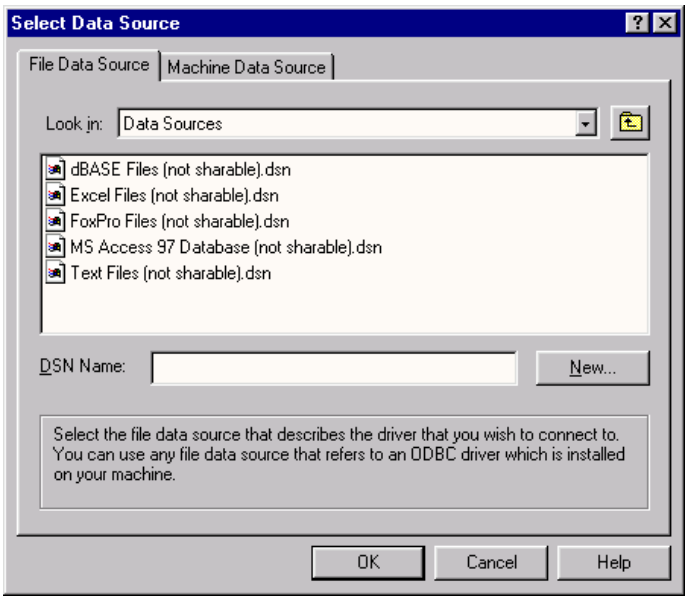


Figure 6.46. Select Data Source Dialog Box

Or the user can also use the *Machine Data Source* tab.

The *Machine Data Source* is specific to the machine, and cannot be shared. According to the *Type* column: "User" data sources are specific to a user on the machine; "System" data sources can be used by all users on the machine, or by a system-wide service.

Double-click the data source name to select the machine. See the following figure:

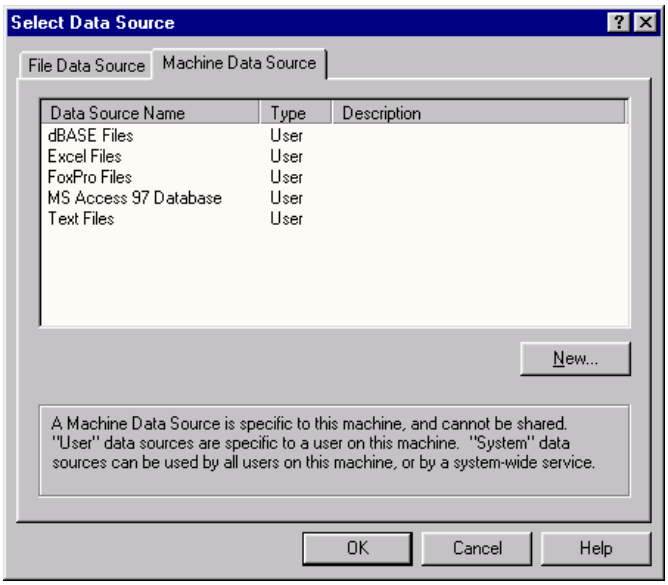


Figure 6.47. Select Data Source Dialog Box

The *Select Workbook* dialog box will appear:

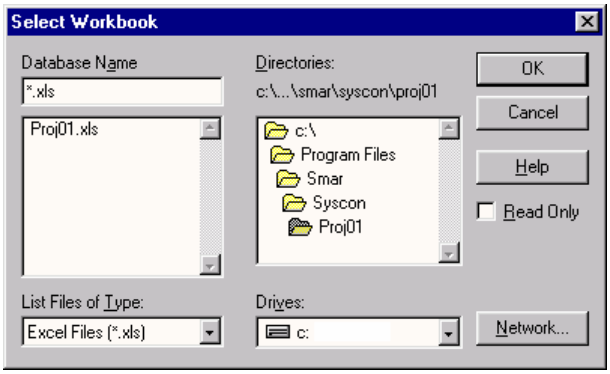


Figure 6.48. Select Workbook Dialog Box

Select the folder where the data file is and double-click the workbook icon.

The project configuration will be saved to the workbook file.

6.13 Consolidating the OPC Database

If the user is working with two or more configuration files, the tag lists from these source files must be consolidated in a single list.

On the *Project* window, click on the project icon, go to the *Export* menu and click *Consolidate OPC Database*. Or activate the popup menu right-clicking on the project icon. Click the item *Consolidate OPC Database*.

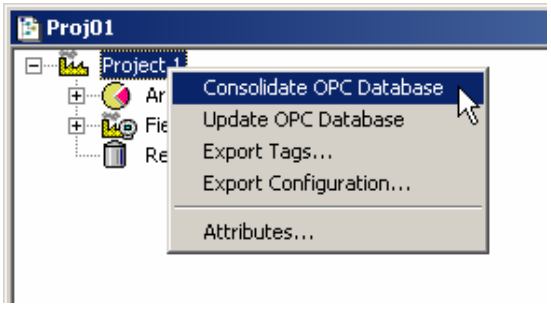


Figure 6.49. Consolidate OPC Database

The *Consolidate OPC Database* dialog box will open.

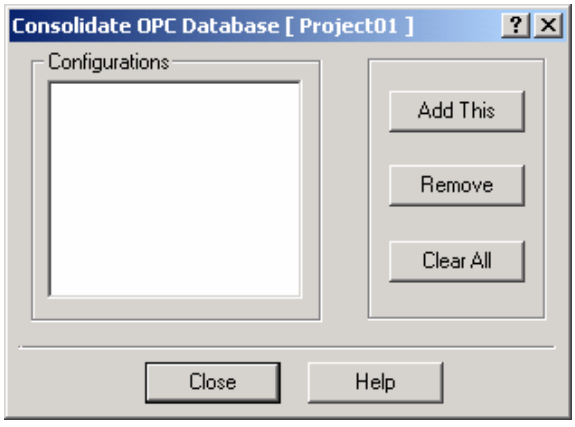


Figure 6.50. Consolidate OPC Database dialog box

6.13.1 Adding a Configuration

To add the current configuration to the consolidate list, click *Add This*. A dialog box will open to confirm the operation. Click *Yes* to include the tag list of the current configuration to the tag list of the OPC Server. The name of the configuration will be added to the list of configurations.

To add another configuration to the list, it is necessary to open the configuration in the SYSCON application and repeat this procedure.

6.13.2 Removing a Configuration

To remove a configuration from the consolidate list, select the name of the configuration in the *Configurations* list and click *Remove*. A dialog box will open to confirm the operation. Click *Yes* to remove the selected configuration from the tag list of the OPC Server. The name of the configuration will be removed from the list of configurations.

6.13.3 Updating a Configuration

If the tag list of a configuration that has been consolidated changes, it will be necessary to update the tag list of the OPC Server.

Open the configuration file that had the tag list updated. Right-click the project icon and select the item *Consolidate OPC Database* to open the dialog box.

Click the button *Update This*. A dialog box will open to confirm the operation. Click *Yes* to update the tag list in the OPC Server.

NOTE
This procedure has the same functionality of the *Export Tags* and *Update OPC Database* options, in the *Export* menu.

6.13.4 Clearing the Consolidated List

To reset the list of consolidated configurations and remove all of the tag lists from the OPC Server, open any configuration file in the SYSCON application. Right-click the project icon and select the item *Consolidate OPC Database* to open the dialog box.

The list of configurations that have been consolidated will be displayed.

Click the button *Clear All*. A dialog box will open to confirm the operation. Click *Yes* to reset the consolidated tag list of the OPC Server.

7 Search Menu

The user can search for devices and blocks on the project configuration.

Go to the *Search* menu and click *Find*. See the following figure:

Figure 7.1. Search Menu: Find

The *Find Tags* dialog box will open:

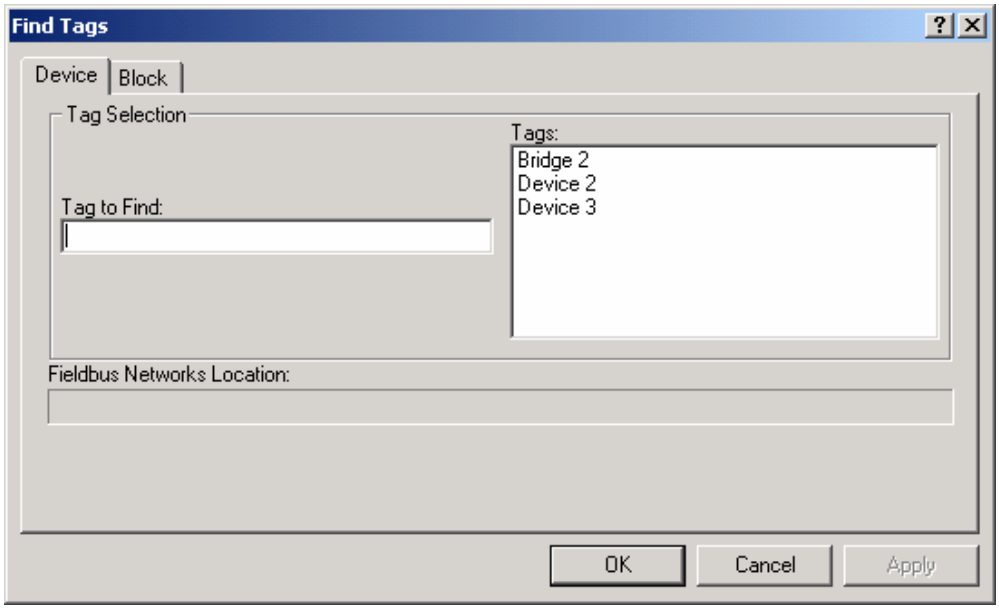


Figure 7.2. Find Tags Dialog Box

To search for a device, click the *Device* tab, and type its tag on the *Tag to Find* text box, or select the tag on the *Tags* box. The device location will be shown on the *Fieldbus Networks Location* box.

See the following example:

1. Type the tag of the device.
2. The *Fieldbus Networks* location will be indicated.

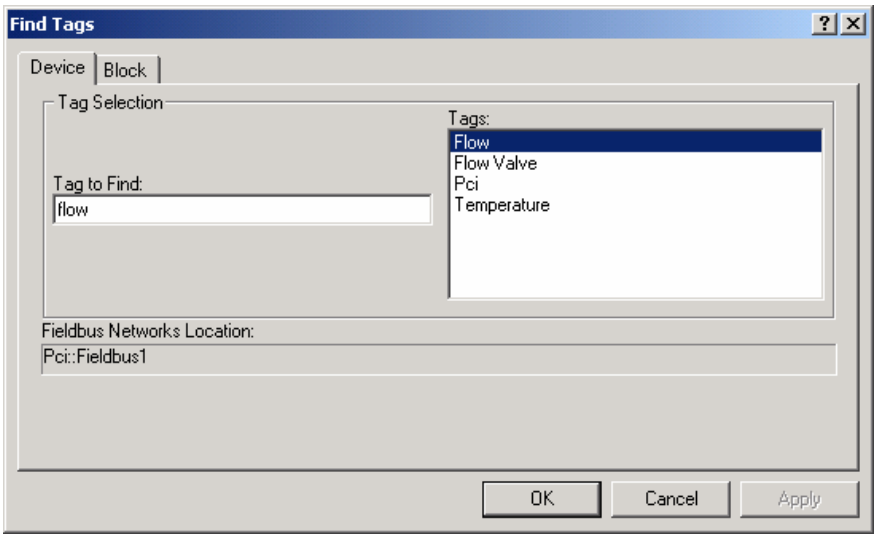


Figure 7.3. Searching for Devices

3. Click *Ok* to open the *Fieldbus* window and locate the device.

To search for a block, click the *Block* tab, and type its tag on the *Tag to Find* text box, or select the tag on the *Tags* box. The block location will be shown on the *Fieldbus Networks Location* box. The *Physical Location* box shows to which process cell and control module the block is attached. See the following example:

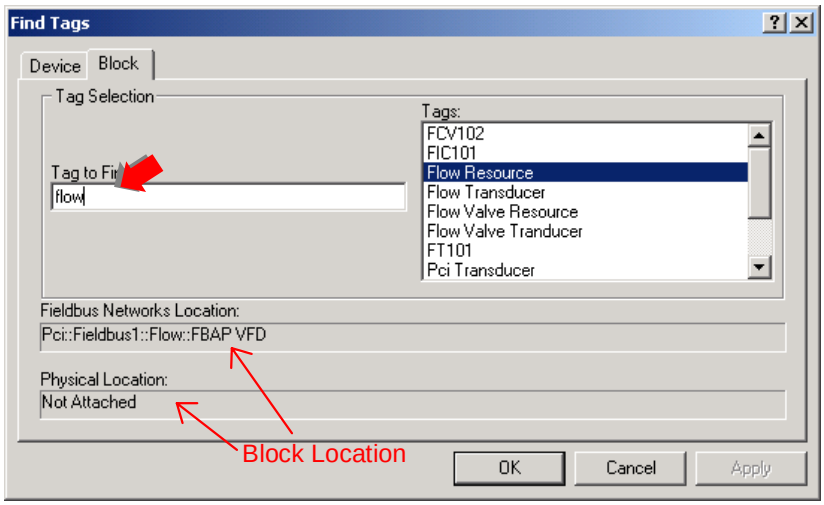


Figure 7.4. Searching for Blocks

Click *Ok* to open the *Fieldbus* window and localize the block.

8 Properties

8.1 Drawing Properties

This section presents a brief explanation about the drawing properties. For example, the user can change the number of pixels that represents a logical measure unit, the background and the grid colors, or can choose a background image to be placed at the drawing area at the Strategy window.

To change the drawing properties go to the *Options* menu and click *Drawing Properties*. Or activate the popup menu, right-clicking on the drawing area on the Strategy window. Click the item *Drawing Properties*.

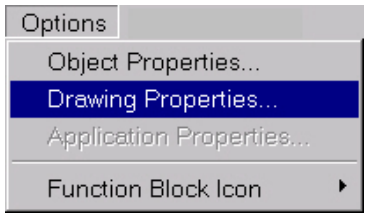


Figure 8.1. Options Menu: Drawing Properties

The *Drawing Properties* dialog box will open:

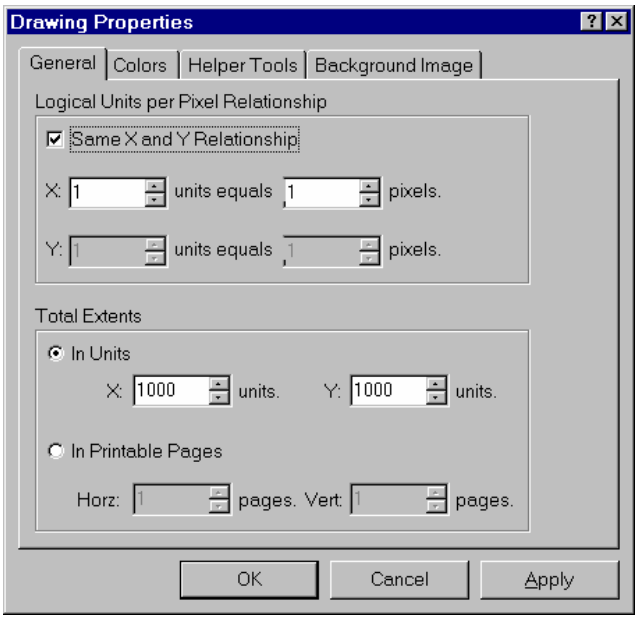


Figure 8.2. Drawing Properties Dialog Box

The *Apply* button is used to apply the changes to the object, so the user can have a preview of how the changes affected it.

Click *Ok*, the changes will be made and the dialog box will be closed.

If the user clicks *Cancel* before clicking the *Apply* button, the changes will be lost.

In each tab, different properties can be changed. They are explained in the following sections.

8.1.1 General Tab

At the *General* tab, the user can change the drawing visualization and the total extents of the drawing.

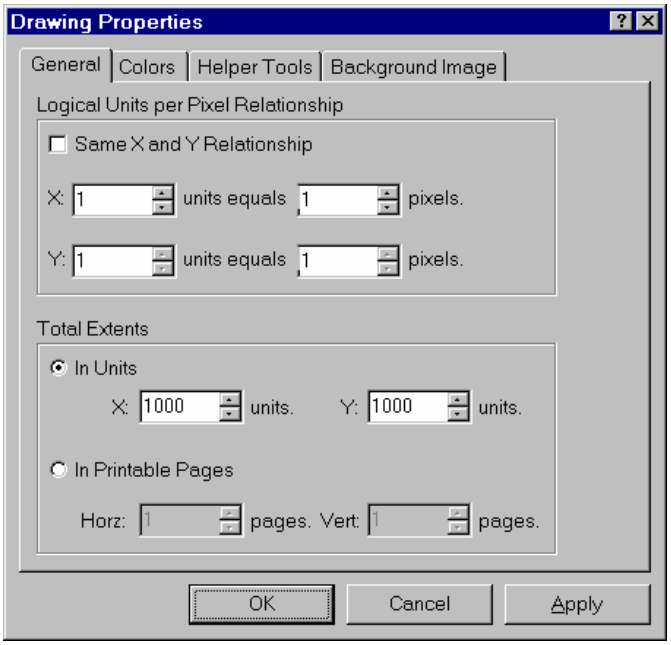


Figure 8.3. Drawing Properties Dialog Box: General Tab

The *Logical Units per Pixel Relationship* rectangle defines:

- How many X units will correspond to a determined number of pixels, increasing or decreasing the numbers at the *X* boxes. This will increase the width view.
- How many Y units will correspond to a determined number of pixels, increasing or decreasing the numbers at the *Y* boxes. This will increase the height view.

Selecting the *Same X and Y Relationship* box, any change done to the X variable, concerning the number of pixels that will represent a logical measure unit, will also be done automatically to the Y variable. This will maintain the correct proportion.

At the *Total Extents* rectangle choose to represent the drawing:

- In Units: the user will be working in a determined area independently from the paper size, except when printing the drawing. In this case, the software will make a correspondence, independent of the number of pages it will take. Increase or decrease the number of horizontal and vertical units, typing or selecting a number at the *X* and *Y* boxes.
- In Printable Pages: the drawing will be presented in a page format, according to the Print Setup definitions and pre-defined Units size. Define how many side-by-side pages there will be at the *Horz* box, and how many pages, one after the other vertically, there will be at the *Vert* box.

8.1.2 Colors Tab

At the *Colors* tab, the user can change the background and the grid colors of the drawing area.

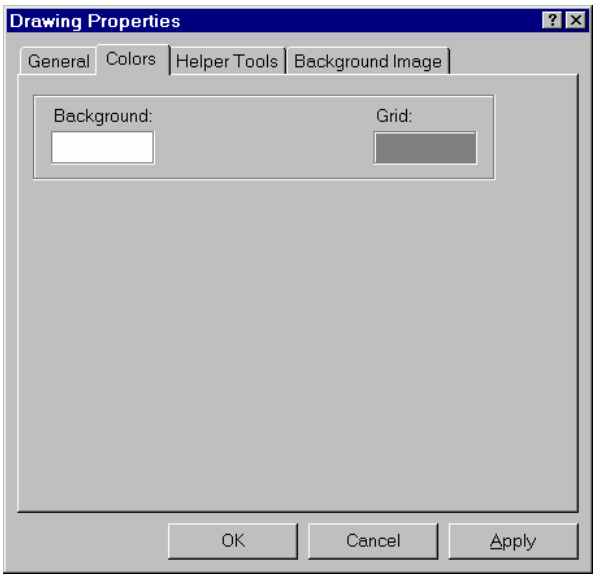


Figure 8.4. Drawing Properties Dialog Box: Colors Tab

At the *Background* rectangle, click the filled rectangle to select the background color. The *Color* box will open. Click the color at the palette and click *OK*.

At the *Grid* rectangle, click the filled rectangle to select the grid color. The *Color* box will open. Click the color at the palette and click *OK*.

8.1.3 Helper Tools Tab

At the *Helper Tools* tab, the user can enable or disable gridlines, change the spacing between gridlines and type the zoom factor for the drawing view.

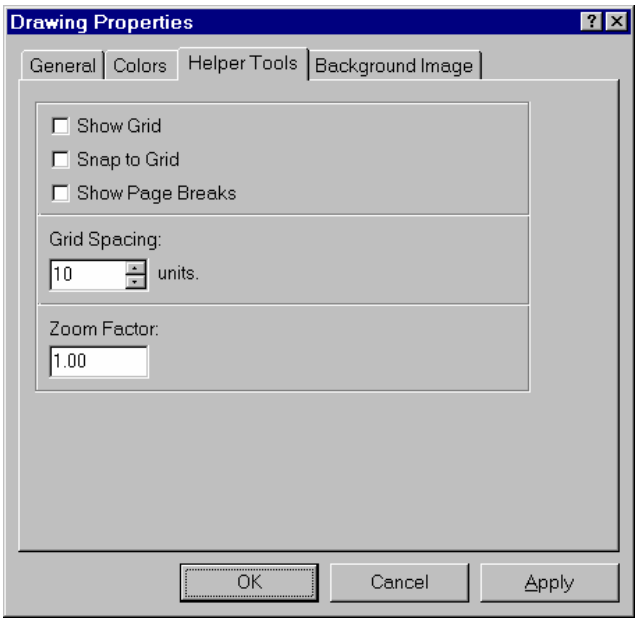


Figure 8.5. Drawing Properties Dialog Box: Helper Tools Tab

At the first rectangle, select any of the three boxes:

- *Show Grid*: select this box to show the grid points at the Strategy window drawing area.
- *Snap to Grid*: select this box to make the objects snap to the grid.
- *Show Page Breaks*: select this box to view horizontal and vertical page breaks according to the number of horizontal and vertical pages determined when using the option *In Printable Pages* at the *General* Tab.

At the *Grid Spacing* rectangle define the space between gridlines, increasing or decreasing the number of units at the *Units* box.

At the *Zoom Factor* rectangle define the zoom factor, typing the number that will determine how many times the drawing view will be increased or decreased.

8.1.4 Background Image Tab

At the *Background Image* tab, the user can choose any bitmap to be placed on the drawing background, defining its position or stretching it to the window size.

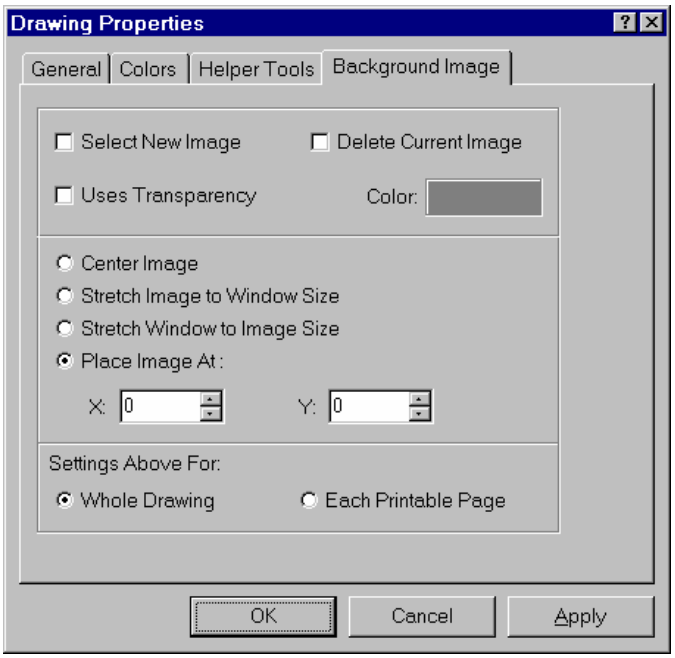


Figure 8.6. Drawing Properties Dialog Box: Background Image Tab

At the first rectangle, check the *Select New Image* box to choose a bitmap.

The *Open* dialog box will open:

1. In the *Look in* box, select the folder that contains the bitmap file to be added.
2. Click on the bitmap file icon or type its name in the *File name* box.
3. Click *Open* to conclude this task.

See the following figure:

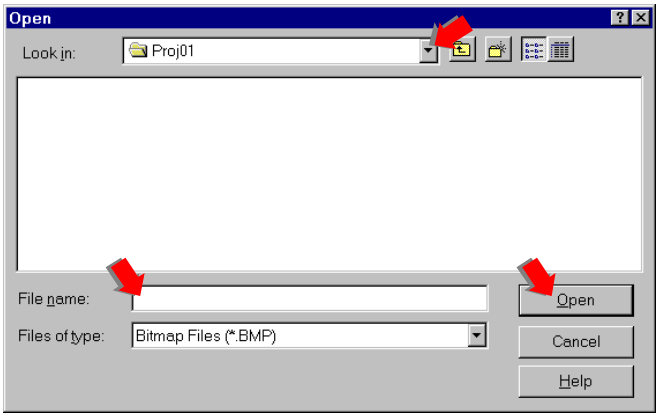


Figure 8.7. Open Image Dialog Box

Check the *Delete Current Image* box to delete the bitmap currently used on the drawing.

Check the *Uses Transparency* box to make one color of the bitmap transparent. Click the *Color* rectangle to open the palette and select a color.

At the second rectangle, the user defines the view properties, such as placing image at a determined position, or stretching it to the window size.

Select one of the options:

- *Center Image*: places the bitmap at the center of the drawing area.
- *Stretch Image to Window Size*: stretches the bitmap until it fits to the window size.
- *Stretch Window to Image Size*: stretches the document window until it fits the bitmap.
- *Place Image At*: defines a position for the bitmap inside the drawing area. To define the horizontal position, type or select a value at the *X:* box. To define the vertical position, type or select a value at the *Y:* box.

At the *Settings Above For:* rectangle, the user can apply the bitmap position to the whole drawing area, checking the *Whole Drawing* box, or to each printable page, checking the *Each Printable Page* box.

8.2 Object Properties

This section presents a brief explanation about the object properties. For example, the user can change the position, the size, the line color, the fill color and the text attributes of a block drawn at the Strategy window.

To change the properties of an object, select the object at the Strategy window, go to the *Options* menu and click *Object Properties*. Or activate the object menu, by right-clicking on it. Click the item *Properties*.

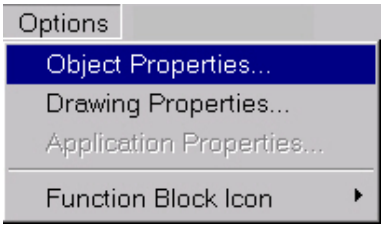


Figure 8.8. Options Menu & Popup Menu: Object Properties

The *Object Properties* dialog box will open:

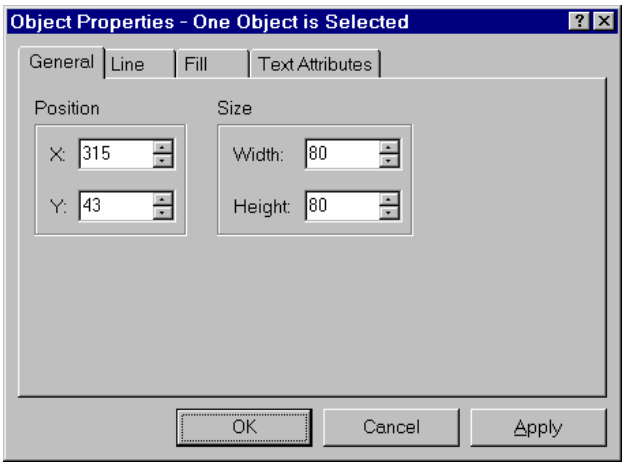


Figure 8.9. Object Properties Dialog Box

The *Apply* button will be used to apply the changes to the object, so the user can have a preview of how the changes affected it.

Click *Ok*, the changes will be made and the dialog box will be closed.

If the user clicks *Cancel* before clicking the *Apply* button, the changes will be lost.

The *Line*, *Fill* and *Text Attributes* tabs have three additional buttons:

- *Inherit*: this button turns back the default configuration.
- *Revert*: this button turns back the anterior configuration.
- *Set As Default*: this button makes the current configuration the default.

Those buttons will be available when changing at least one object attribute.

In each tab, different properties can be changed. They are explained in the following sections.

8.2.1 General Tab

At the *General* tab, the user can precisely change the position and the size of the selected object. The *Status* bar, at the bottom of the SYSCON window, displays information about the location of the cursor, while moving the cursor on the Strategy window.

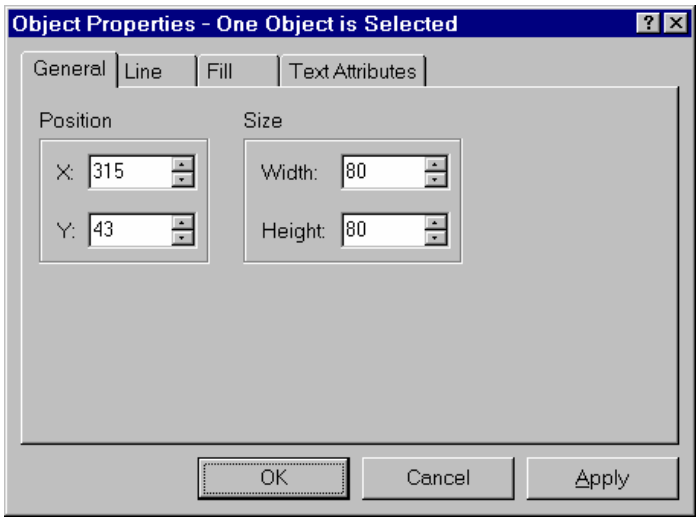


Figure 8.10. Object Properties Dialog Box: General Tab

At the *Position* rectangle define:

- The horizontal position of the object, typing or selecting a number at the *X* box.
- The vertical position of the object, typing or selecting a number at the *Y* box.

At the *Size* rectangle define:

- The width of the object, typing or selecting a number of horizontal units at the *Width* box. (The minimum width is 75 units)
- The height of the object, typing or selecting a number of vertical units at the *Height* box. (The minimum height is 44 units)

8.2.2 Line Tab

At the *Line* tab, the user can change all line attributes of the selected object.

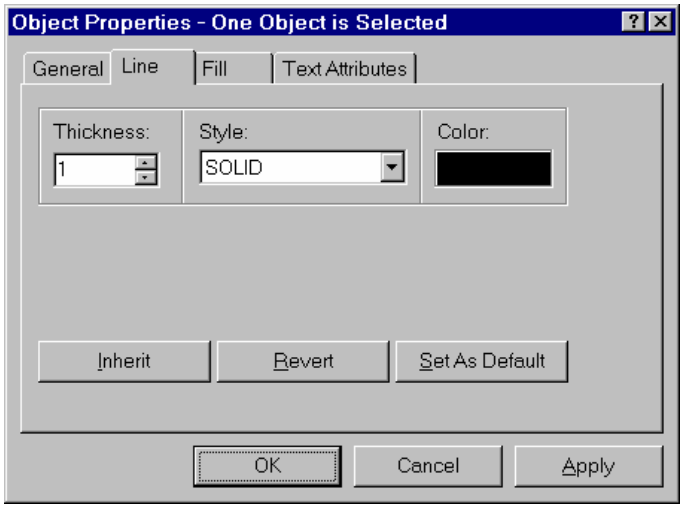


Figure 8.11. Object Properties Dialog Box: Line Tab

At the *Thickness* rectangle, the user can define the line thickness, typing or selecting a number. See the following examples of line thickness:

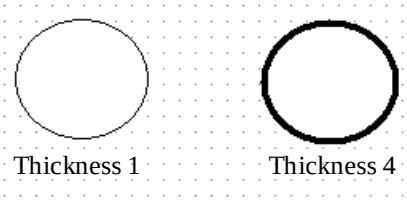


Figure 8.12. Line Thickness Examples

At the *Style* rectangle, click the down arrow to select the line style. Choose a dashed line, a doted line, a dashed-dot line, a dashed-dot-dot line, or a solid line, which is the SYSCON default. See the following examples of line styles:

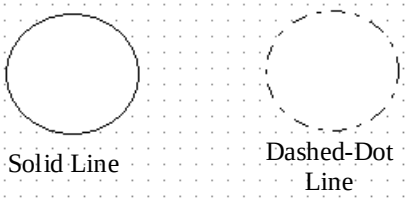


Figure 8.13. Line Style Examples

At the *Color* rectangle, click the filled rectangle to select the line color. The *Color* box will open. Click the color at the palette then click *OK*. See the following examples of line colors:

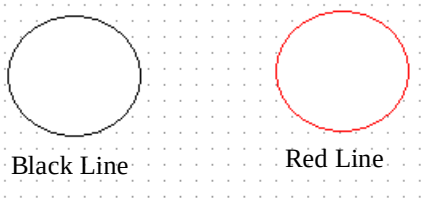


Figure 8.14. Line Color Examples

8.2.3 Fill Tab

At the *Fill* tab, the user can change all fill attributes of the selected object.

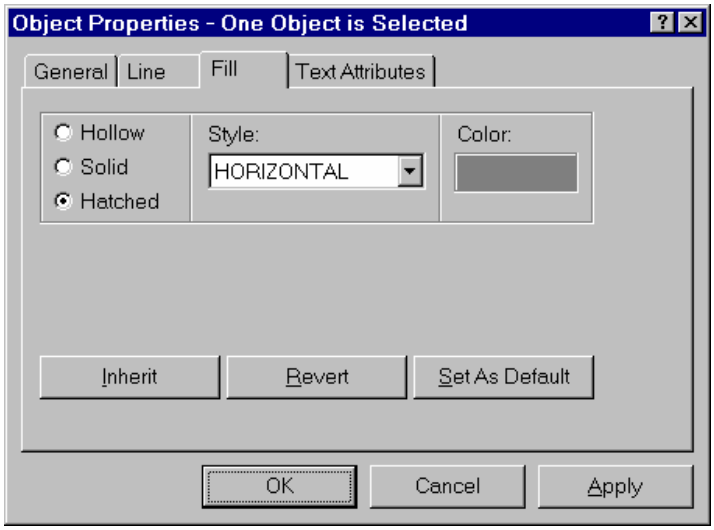


Figure 8.15. Object Properties Dialog Box: Fill Tab

Select one of the fill effects: *Hollow*, *Solid* or *Hatched*.

The *Style* rectangle will be available when selecting the *Hatched* fill style. Choose a horizontal, a vertical, a f diagonal, a d diagonal, a cross, or a diagonal cross hatch. See the following examples of line styles:

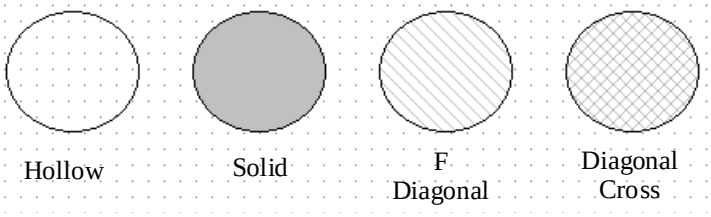


Figure 8.16. Fill Effects Examples

The *Color* rectangle will be available for the *Solid* and *Hatched* fill style. Click the filled rectangle. The *Color* box will open. Click the color at the palette then click *OK*. See the following examples of fill colors:

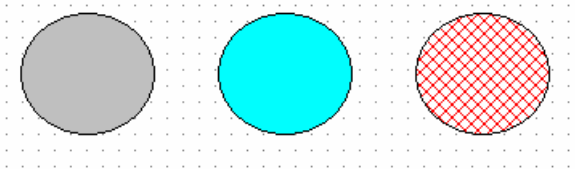


Figure 8.17. Fill Color Examples

8.2.4 Text Attributes Tab

At the *Text Attributes* tab, the user can change the text attributes of the selected object.

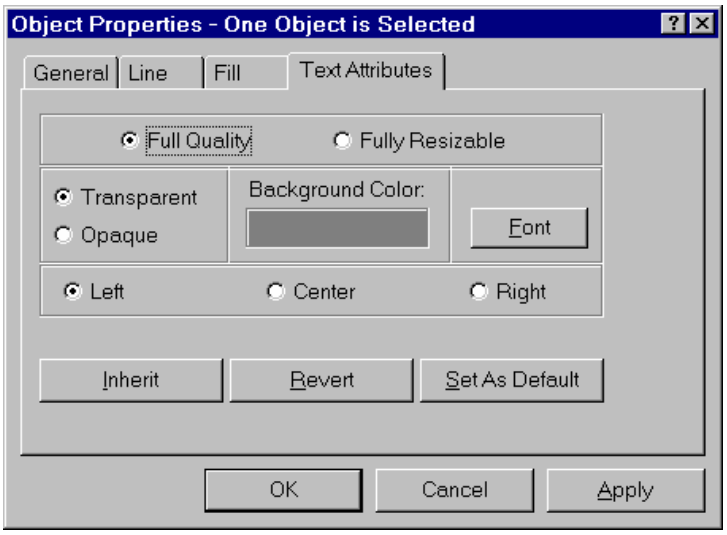


Figure 8.18. Object Properties Dialog Box: Text Attributes Tab

Select one of these options:

- *Full Quality*: this option limits the text to work with Windows restricted attributes. The user won't be able to treat the text as if it were an object, resizing it any way or even changing its line or fill attributes.
- *Fully Resizable*: this option allows the user to modify any text attribute as if it were an object.

Choose the background style for the text:

- *Transparent*: set a transparent background for the text.
- *Opaque*: set a filled background for the text.

The *Background Color* rectangle is available for the *Opaque* option. Click the color rectangle and the *Color* box will open. Choose the color and click *Ok*. See the following example:

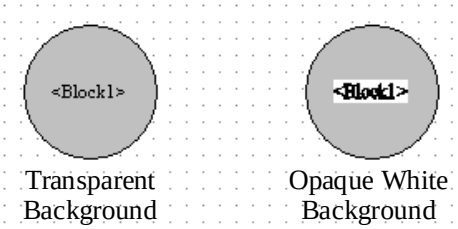


Figure 8.19. Background Style Examples

The *Font* button opens the *Font* dialog box. The user can change the type, style, and size of the text.

Choose the alignment of the text: click *Left* to align the text left; or click *Center* to align the text at the center; or click *Right* to align the text right.

9 Toolbars

To activate a toolbar, go to the *Tool* menu and point to the item *Tool Boxes*. Click one of the toolbars shown on the list. A check mark appears next to the toolbar when it has been opened.

The toolbars are placed at the left side of the SYSCON window. The user can drag the toolbar to any location in the window.

The user can select the tools through the *Tools* menu and its submenus. When pointing the cursor on a submenu, a list of items will open, and the items have the same functionality as the toolbar buttons. The check will show the selected tool.

9.1 Strategy Toolbar

The *Strategy* toolbar will activate with the Strategy window. In case it's not activated, go to the *Tools* menu, item *Tool Boxes*, and the option *Strategy* should be checked.

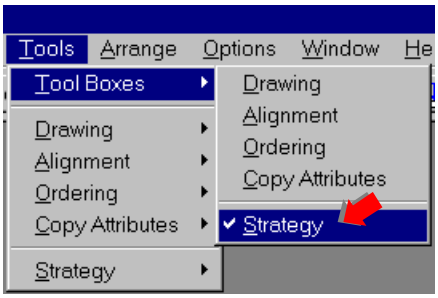


Figure 9.1. Tools Menu: Strategy Toolbar

The *Strategy* toolbar will open:

Figure 9.2. Strategy Toolbar

This toolbar has tools to create and manipulate new blocks, links and templates.

- *Select* Button

Click this button to activate the *Select* tool. With this button clicked, it is possible to select any object(s) at the Strategy window for further operations, like moving, resizing etc.

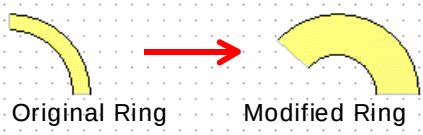
To select only one object at the Strategy window, click the *Select* button, , then click the object.

With the *Select* button activated, the user has two options to select more than one object at the Strategy window. The first one is to press and hold down the *Shift* key, on the keyboard, while clicking each object to be selected.

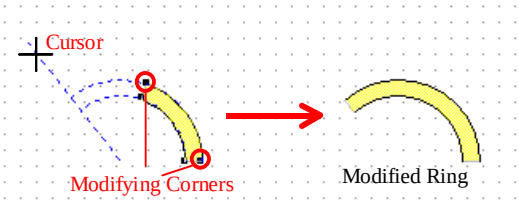
The second one is to click anywhere in the blank area of the Strategy window. While dragging the cursor, a box appears around the objects to be selected.

- *Strategy Modify* Button

Click this button to activate the *Modify* tool. This tool is used to change an object's shape, as seen below:

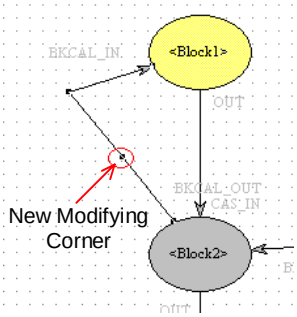


To use this tool, first select the object. After clicking the *Modify* button, click any *Modify* corner then, drag the cursor to obtain the new figure. See the following illustration:



Use this tool to redraw a link. Use the *Select* Button,  , on the *Strategy* toolbar, to select a link. The *Modifying* corners will appear.

Click the link line to create a *Modifying* corner. Or right-click a *Modifying* corner to remove it from the link line.



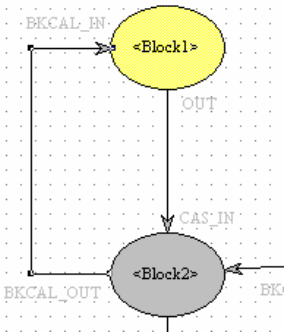
Click one corner and drag it onto the drawing area to redraw the link.

If the current corner is set as the reference point, hold down the *Ctrl* key while dragging the corner to draw it at the same horizontal direction or at the same vertical direction. Or hold down the *Shift* key while dragging the corner to draw it at a diagonal direction.

If the previous corner is set as the reference point, hold down the *Ctrl* key while dragging the corner to draw a horizontal or vertical line from the previous corner. Or hold down the *Shift* key while dragging the corner to draw a diagonal line from the previous corner.

If the first corner is set as the reference point, hold down the *Ctrl* key while dragging the corner to draw a horizontal or vertical line from the next corner. Hold down the *Shift* key while dragging the first corner to draw a diagonal line from the next corner.

See in the following figure the new link:



Also, use this button to modify a parameter label, a link label or a block label.

Click the *Modify* button then click on the label to be changed. Type the new label then click the drawing area, or click another label to be changed.

When a block label changes, the block tag will automatically be updated in the process cell window and in the *Fieldbus* window. The parameter label does not change in these windows.

- *Function Block* Button

Click this button to create new function blocks. Just click the drawing area with this button selected and the *New Block* dialog box will open. Choose the block attributes and it will automatically draw after clicking the *Ok* button.

See the section *Creating New Blocks at the Strategy Window* for further information.

- *Link* Button

Click this button to create links between blocks. Click one of the blocks, choose the *Output Parameter* then, click another block, choosing the *Input Parameter*.

See the section *Creating a Link* for further information.

- *Import Strategy Template* Button

Click this button to add a template to the Strategy window. When clicking this button, the *Open* dialog box will appear. Select the file that contains the template and click *Open*. The template will automatically be added to the Strategy window.

See the section *Using Templates* for further information.

- *Export Selected Strategy as Template* Button

Click this button to create a template file. Select the blocks and links that will be part of the template, and select this button. The *Save* dialog box will open. Type a name for the template file and click *Save*.

See the section *Using Templates* for further information.

- *Forward Path Definition* Button

Allows defining the forward path definition of a given control strategy. Toggles the state of a given link.

- *On Line Monitoring* Button

Click this button to put control strategy into the online mode.

9.2 Drawing Toolbar

To activate the *Drawing* toolbar, go to the *Tools* menu, item *Tool Boxes*, and check the option *Drawing*.

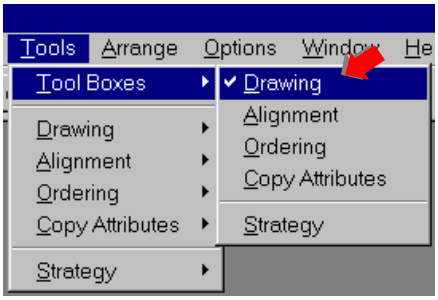


Figure 9.3. Tools Menu: Drawing Toolbar

The *Drawing* toolbar will open:

Figure 9.4. Drawing Toolbar

This toolbar has tools to draw, manipulate, and format drawing objects.

- *Select* Button

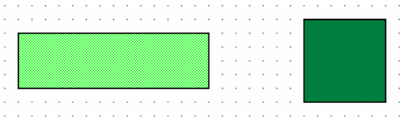
See the item *Select Button* at the *Strategy* toolbar section.

- *Drawing Modify* Button

See the item *Strategy Modify Button* at the *Strategy* toolbar section.

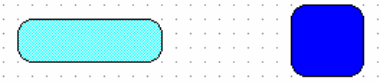
- *Rectangle* Button

Click this button to activate the *Rectangle* tool. To draw a rectangle, click the drawing area and drag the cursor diagonally in the direction desired, to obtain the desired figure. To draw a square, press and hold down the *Shift* key while dragging the cursor. See the figure:



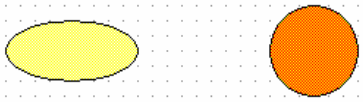
- *Rounded Rectangle* Button

Click this button to activate the *Rounded Rectangle* tool. To draw a rounded-corned rectangle, click the drawing area and drag the cursor diagonally in the desired direction, to obtain the desired figure. To draw a rounded-corned square, press and hold down the *Shift* key while dragging the cursor. See the figure:



- *Ellipse* Button

Click this button to activate the *Ellipse* tool. To draw an ellipse, click the drawing area and drag the cursor diagonally, to obtain the desired figure. To draw a perfect circle, press and hold down the *Shift* key while dragging the cursor. See the figure:



- *Arc* Button

Click this button to activate the *Arc* tool. To draw an arc, click the drawing area and drag the cursor to obtain the desired figure. To draw an arc that has its height equal to its width, press and hold down the *Shift* key while dragging the cursor. See the figure:

- *Pie* Button

Click this button to activate the *Pie* tool. To draw a pie, click the drawing area and drag the cursor to obtain the desired figure. To draw a pie that has its height equal to its width, press and hold down the *Shift* key while dragging the cursor. See the figure:

- *Chord* Button

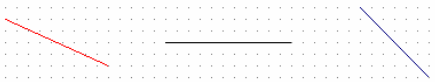
Click this button to activate the *Chord* tool. To draw a chord, click the drawing area and drag the cursor to obtain the desired figure. To draw a chord that has its height equal to its width, press and hold down the *Shift* key while dragging the cursor. See the figure:

- *Ring* Button

Click this button to activate the *Ring* tool. To draw a ring, click the drawing area and drag the cursor to obtain the desired figure. To draw a ring that has its height equal to its width, press and hold down the *Shift* key while dragging the cursor. See the figure:

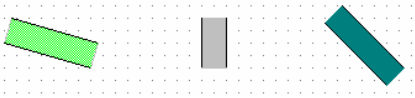
- *Line* Button

Click this button to activate the *Line* tool. To draw a line, click the drawing area and drag the cursor to obtain the desired figure. To draw a perfectly horizontal or vertical line, press and hold down the *Ctrl* key while dragging the cursor. To draw a perfectly 45-degree diagonal line, press and hold down the *Shift* key while dragging the cursor. See the figure:



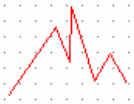
- *Pipe* Button

Click this button to activate the *Pipe* tool. To draw a pipe, click the drawing area and drag the cursor to obtain the desired figure. To draw a perfectly horizontal or vertical pipe, press and hold down the *Ctrl* key while dragging the cursor. To draw a perfectly 45-degree diagonal pipe, press and hold down the *Shift* key while dragging the cursor. See the figure:



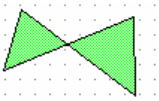
- *Polyline* Button

Click this button to activate the *Polyline* tool. To draw a polyline, drag the cursor and click at each corner to draw the lines. To draw a perfectly horizontal or vertical line, press and hold down the *Ctrl* key while dragging the cursor. To draw a perfectly 45-degree diagonal line, press and hold down the *Shift* key while dragging the cursor. To end a shape, right-click at any point. See the figure:



- *Polygon* Button

Click this button to activate the *Polygon* tool. To draw a polygon, drag the cursor and click at each corner of the polygon. To draw a perfectly horizontal or vertical line, press and hold the *Ctrl* key down while dragging the cursor. To draw a perfectly 45-degree diagonal line, press and hold down the *Shift* key while dragging the cursor. To end a shape, right-click at any point. See the figure:



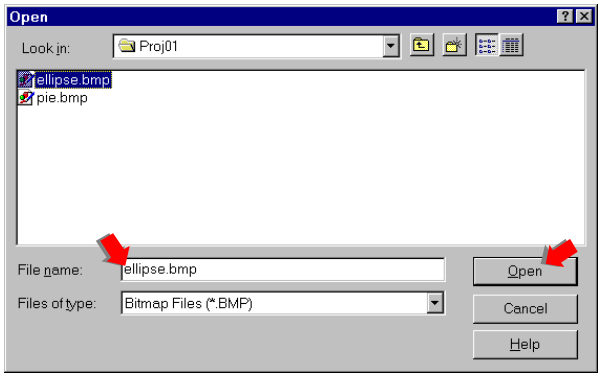
- *Text* Button

Click this button to activate the *Text* tool. To type any text at the Strategy window, click at the drawing area and the cursor will change to a prompt. Type the text and click at the drawing area.

- *Bitmap* Button

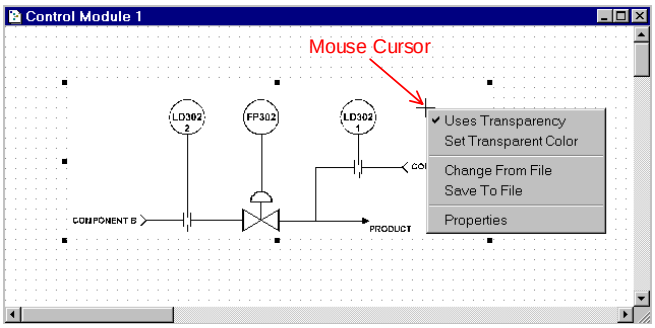
Click this button to import a bitmap file to the Strategy window. When clicking the drawing area with this button selected, the *Open* dialog box will appear. Select the bitmap file, clicking its icon or typing its name in the *File name* box, and click *Open*.

Observe the following figure:



The bitmap will be added to the Strategy window and it has its own properties: right-click to activate its popup menu.

See the following figure:



Check the item *Uses Transparency* to turn one color at the bitmap transparent.

Click the item *Set Transparent Color* to choose one color that will be transparent in the bitmap.

The item *Change From File* allows the user to select another bitmap to replace the current one. When clicking this item, the *Open* dialog box will appear. Select the folder that contains the new bitmap file, in the *Look in* box; click the file icon or type its name in the *File name* box and click *Open*. If the bitmap is not to be replaced, click *Cancel*.

The item *Save To File* allows the user to save the bitmap as a *.bmp* file. When clicking this item, the *Save As* dialog box will appear. Choose the folder where the bitmap file will be saved, in the *Look in* box; type the file name in the *File name* box and click *Save*. If the bitmap is not to be saved, click *Cancel*.

The item *Properties* will open the *Object Properties* dialog box. See the section *Object Properties* for further information.

9.3 Alignment Toolbar

To activate the *Alignment* toolbar, go to the *Tools* menu, item *Tool Boxes*, and check the option *Alignment*.

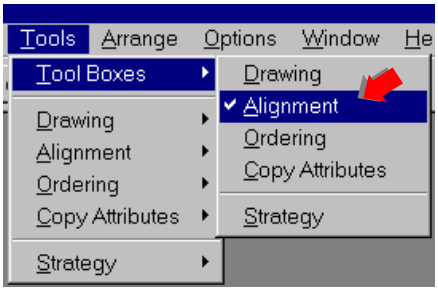


Figure 9.5. Tools Menu: Alignment Toolbar

The *Alignment* toolbar will open:

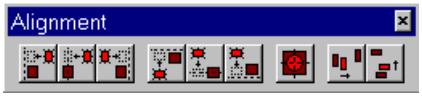


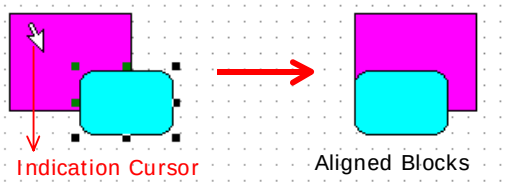
Figure 9.6. Alignment Toolbar

This toolbar has tools to arrange (or distribute) drawing objects so they are equal distances from each other (vertically or horizontally), or they are aligned by their edges or centers (vertically or horizontally).

 - *Left* Button

Click this button to align the left side of the selected object(s) with the left side of the anchor.

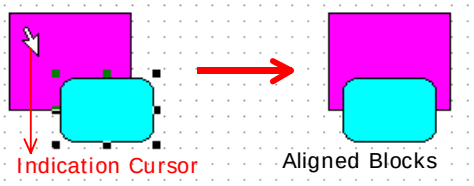
First, select the object (or objects) to be aligned. Then click the button and when the cursor is placed on the drawing area, it will change to an *Indication* cursor. Click the object that will be the anchor. See the figure:



 - *Center* Button

Click this button to align the horizontal center of the selected object(s) with the horizontal center of the anchor.

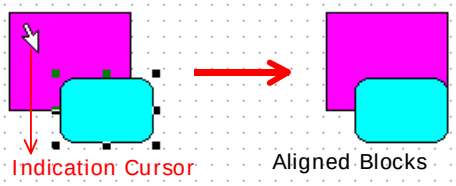
First, select the object (or objects) to be aligned. Then click the button and when the cursor is placed on the drawing area, it will change to an *Indication* cursor. Click the object that will be the anchor. See the figure:



- *Right* Button

Click this button to align the right side of the selected object(s) with the right side of the anchor.

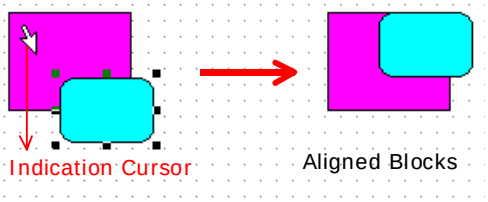
First, select the object (or objects) to be aligned. Then click the button and when the cursor is placed on the drawing area, it will change to an *Indication* cursor. Click the object that will be the anchor. See the figure:



- *Top* Button

Click this button to align the top of the selected object(s) with the top of the anchor.

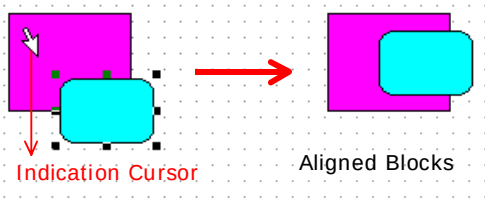
First, select the object (or objects) to be aligned. Then click the button and when the cursor is placed on the drawing area, it will change to an *Indication* cursor. Click the object that will be the anchor. See the figure:



- *Middle* Button

Click this button to align the vertical center of the selected object(s) with the vertical center of the anchor.

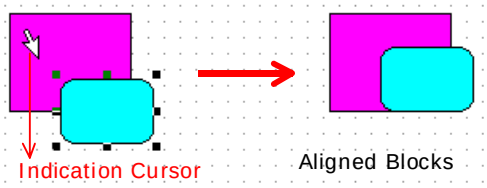
First, select the object (or objects) to be aligned. Then click the button and when the cursor is placed on the drawing area, it will change to an *Indication* cursor. Click the object that will be the anchor. See the figure:



- *Bottom* Button

Click this button to align the bottom of the selected object(s) with the bottom of the anchor.

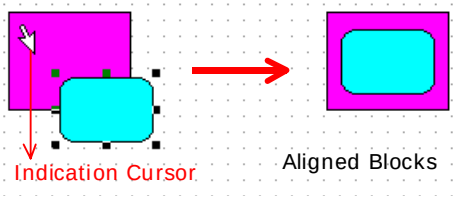
First, select the object (or objects) to be aligned. Then click the button and when the cursor is placed on the drawing area, it will change to an *Indication* cursor. Click the object that will be the anchor. See the figure:



- *Center Points* Button

Click this button to align the center of the selected object(s) with the center of the anchor.

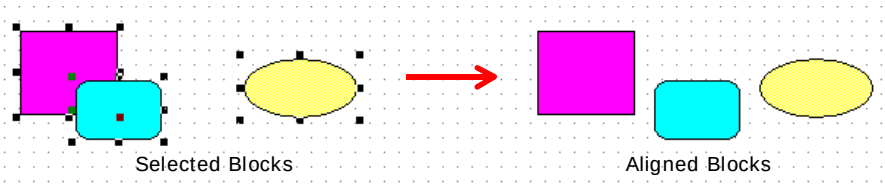
First, select the object (or objects) to be aligned. Then click the button and when the cursor is placed on the drawing area, it will change to an *Indication* cursor. Click the object that will be the anchor. See the figure:



- *Evenly Spaced - Horizontal* Button

Click this button to distribute the selected objects horizontally, so there is equal horizontal distance between the edges of all the objects. This button works only for three or more objects.

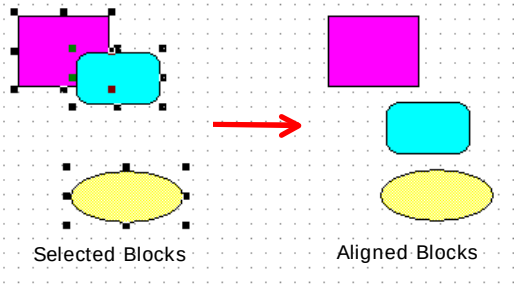
First, select all of the objects to be aligned, and then click the button. The objects will be promptly aligned. See the figure:



- *Evenly Spaced - Vertical* Button

Click this button to distribute the selected objects vertically, so there is equal vertical distance between the edges of all the objects. This button works only for three or more objects.

First, select all of the objects to be aligned, and then click the button. The objects will be promptly aligned. See the figure:



9.4 Ordering Toolbar

To activate the *Ordering* toolbar, go to the *Tools* menu, item *Tool Boxes*, and check the option *Ordering*.

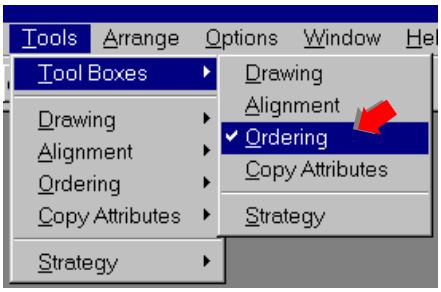


Figure 9.7. Tools Menu: Ordering Toolbar

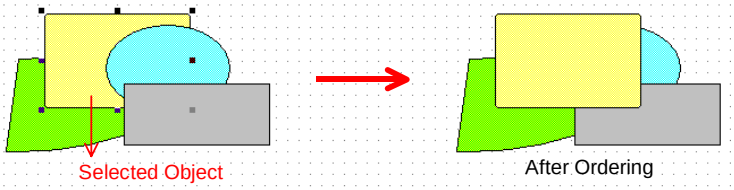
The *Ordering* toolbar will open:

Figure 9.8. Ordering Toolbar

This toolbar has tools to overlap as many drawing objects as desired and rearrange them in the stack.

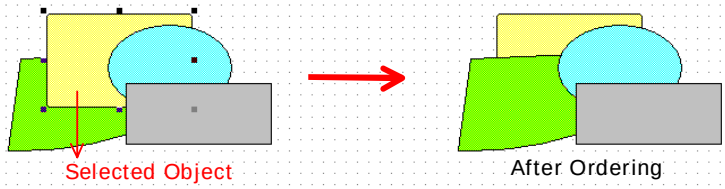
 **- *To Front* Button**

Click this button to place the selected object in front of other overlapping objects. Select the object to be moved and click the button. See the figure:



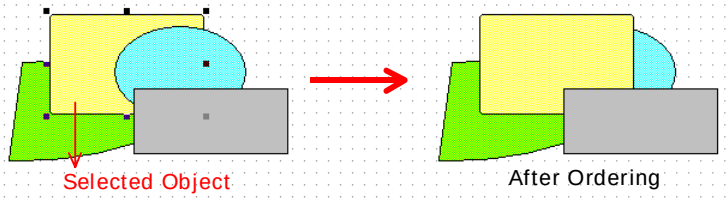
 **- *To Back* Button**

Click this button to place the selected object behind other overlapping objects. Select the object to be moved and click the button. See the figure:



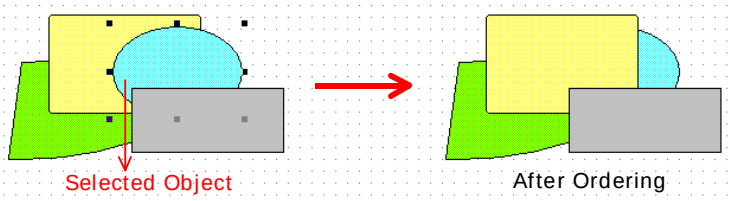
 **- *Forward One* Button**

Click this button to move the selected object one position forward in the stacking order. Select the object to be moved and click the button. See the figure:



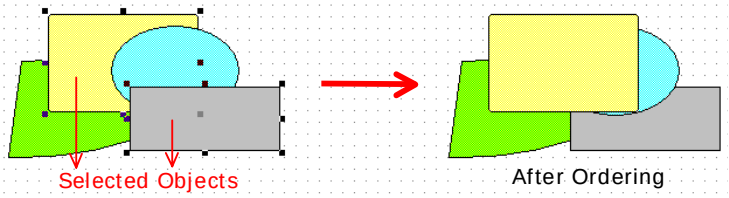
- *Backward One* Button

Click this button to move the selected object one position backward in the stacking order. Select the object to be moved and click the button. See the figure:



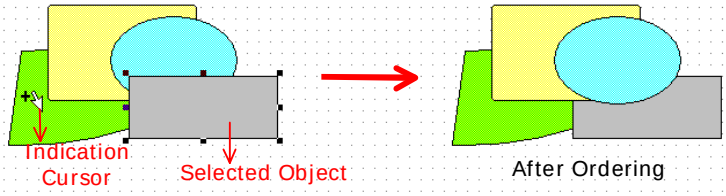
- *Reverse Order* Button

Click this button to reverse the stacking order of two selected objects. To select two objects, click the first object. Hold the key *Shift* pressed and click the second object. Click the button and the stacking order will be reversed. See the figure:



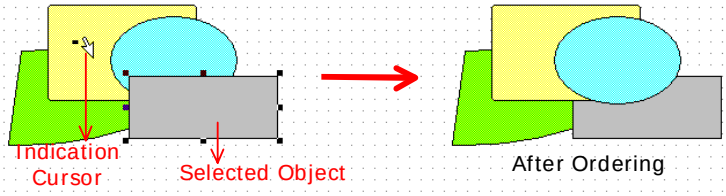
- *In Front Of* Button

Click this button to place the selected object in front of another object that will be the anchor. Select the object to be moved and click the button. When the cursor is placed in the drawing area, it will change to an *Indication* cursor with a plus sign, **+**. Click on the anchor object to conclude this task. See the figure:



- *Behind* Button

Click this button to place the selected object behind another object that will be the anchor. Select the object to be moved and click the button. When the cursor is placed in the drawing area, it will change to an *Indication* cursor with a minus sign, **-**. Click on the anchor object to conclude this task. See the figure:



9.5 Copy Attributes Toolbar

To activate the *Copy Attributes* toolbar, go to the *Tools* menu, item *Tool Boxes*, and check the option *Copy Attributes*.

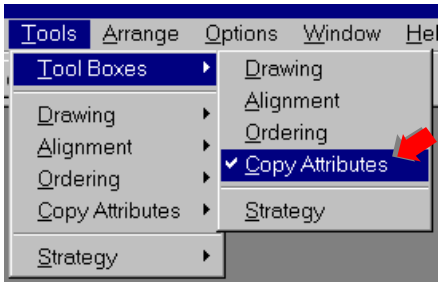


Figure 9.9. Tools Menu: Copy Attributes Toolbar

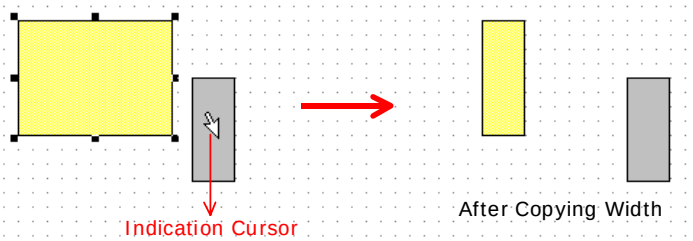
The *Copy Attributes* toolbar will open:

Figure 9.10. Copy Attributes Toolbar

This toolbar has tools that make an object(s) appearance equal to another object.

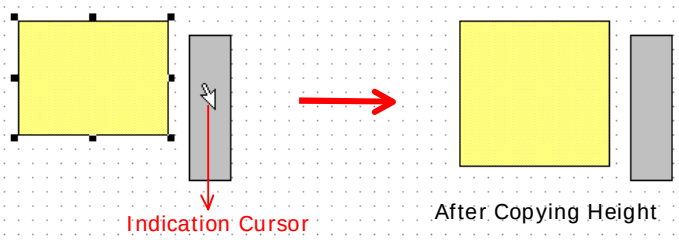
- *Same Width* Button

Click this button to copy the width from one object to another. Select the object that will have its width changed, and click the button. The cursor will change to an *Indication* cursor. Click the anchor object to copy its width and conclude this task. See the figure:



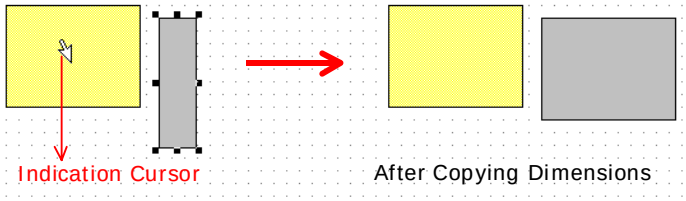
- *Same Height* Button

Click this button to copy the height from one object to another. Select the object that will have its height changed, and click the button. The cursor will change to an *Indication* cursor. Click the anchor object to copy its height and conclude this task. See the figure:



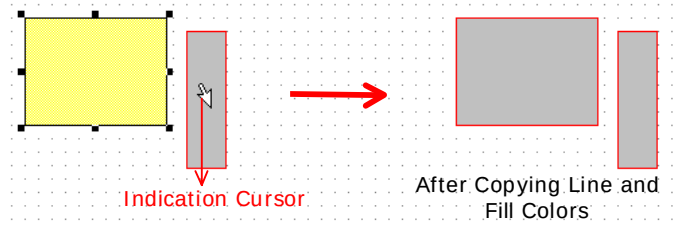
- *Same Dimensions* Button

Click this button to copy the width and the height from one object to another. Select the object that will have its dimensions changed, and click the button. The cursor will change to an *Indication* cursor. Click the anchor object to copy its dimensions and conclude this task. See the figure:



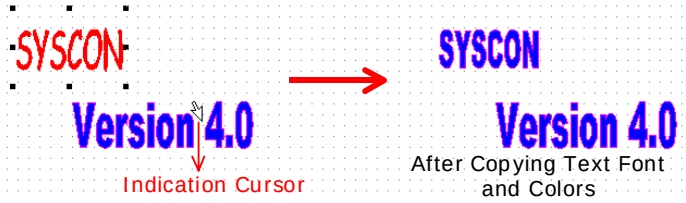
- *Same Pen & Brush* Button

Click this button to copy the line and the fill color from one object to another. Select the object that will have its colors changed, and click the button. The cursor will change to an *Indication* cursor. Click the anchor object to copy its colors and conclude this task. See the figure:



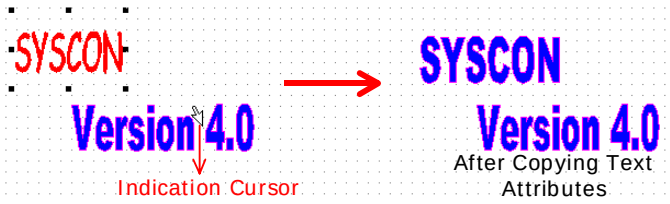
- *Same Font & Colors* Button

Click this button to copy the text font and colors from one object to another. Select the object that will have its font and color changed, and click the button. The cursor will change to an *Indication* cursor. Click the anchor object to copy its colors and conclude this task. See the figure:



- *Same Text Attributes* Button

Click this button to copy the text font, size and colors, from one object to another. Select the object that will have its text attributes changed, and click the button. The cursor will change to an *Indication* cursor. Click the anchor object to copy its colors and conclude this task. See the figure:



 **- *Set Attributes As Default Ones* Button**

Click this button to set the objects attributes as default. Select the object that will have its attributes set as default and click the button. The objects will be drawn with the same line color, fill color, text font and text size as the object selected.

9.6 Characterization Toolbar

The *Characterization* toolbar is displayed in the *Block Characterization* dialog box.

Figure 9.11. Characterization Toolbar

 **- *Input* Button**

Click this button to display the input parameters of the block. An input parameter obtains its value from a source external to the block.

 **- *Output* Button**

Click this button to display the output parameters of the block. An output parameter is a parameter that may be linked to an input parameter of another block.

 **- *Contained* Button**

Click this button to display the contained parameters of the block. A contained parameter is a parameter whose value is configured, set by an operator, higher-level device or calculated.

 **- *Dynamic* Button**

Click this button to display the dynamic parameters of the block. Dynamic parameter values are calculated by the block algorithm and therefore do not need to be restored after a power failure.

 **- *Diagnostic* Button**

Click this button to display the diagnostic parameters of the block.

 **- *Service* Button**

Click this button to display the service parameters of the block.

 **- *Operate* Button**

Click this button to display the operate parameters of the block.

 **- *Alarm* Button**

Click this button to display the alarm parameters of the block. Alarms and events, known as alerts, represent state changes within function block applications.

 **- *Tune* Button**

Click this button to display the tune parameters of the block.

 **- *Local* Button**

Click this button to display the local parameters of the block.

 **- *Confirmed Edition* Button**

If this button is highlighted, the user will change the parameter value then click the *End Edit* button at the bottom of the *Characterization* window, or press the *Enter* key on the keyboard, to confirm the edition and accept the changes.

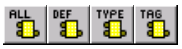
If this button is not highlighted, the user will change the parameter value then click the *End Edit* button at the bottom of the *Characterization* window, press the *Enter* key on the keyboard, or click on another parameter line, to confirm the edition and accept the changes.

 **- *Column Relative Index* Button**

Click this button to display the *Relative Index* column.

 **- *Column Handling* Button**

Click this button to display the *Handling* column.

 **- *Customization* Buttons**

Click one of these buttons to display the parameter for the block according to the user customization – by *Block Type* or *Block Tag*. See the section *Customize Characterization* for further details.

 **- *Mark to Save* Button**

This button is only available in the *On Line Characterization* Toolbar. Click this button to mark a parameter value and save it even if it wasn't edited, or to unmark a parameter that changed the value but the changes are not to be saved. See the section *Block On Line Characterization* for further details.

 **- *Show Value as Symbol* Button**

Click this button to display the parameter value as a symbol or as a numeric value.

 **- *DD Help* Button**

Click this button to display the DD's help information about the parameter at the bottom of the *Characterization* window.

9.7 General Operation Toolbar

The *General Operation* toolbar is automatically activated with SYSCON. It is placed under the *Main* menu.

Figure 9.12. General Operation Toolbar

- *New* Button

Click this button to create a project file. See the section *New Project*.

- *Open* Button

Click this button to open a project file. See the section *Open*.

- *Save* Button

Click this button to save the project or any of its parts, such as the process cell window or the Strategy window. See the section *Save*.

- *Save All* Button

Click this button to save the entire plant project configuration. See the section *Save Entire Configuration*.

- *Cut* Button

Click this button to remove the selection from the project and place it on the clipboard.

- *Copy* Button

Click this button to copy the selection to the clipboard.

- *Paste* Button

Click this button to insert the contents of the clipboard at the insertion point. This command is available only if the user has cut or copied an object.

- *Print* Button

Click this button to print the project configuration or the drawing objects at the Strategy window. See the section *Printing the Project Configuration*.

- *Print Preview* Button

Click this button to see how the project will be printed. The user can change the printer configuration and select the objects to be printed. See the section *Print Preview*.

 - *Operation Mode* Button

Click this button to toggle between operation modes. If the button is clicked, SYSCON is operating in the *On Line* mode. Otherwise, it's in the *Off Line* mode.

 - *Error Log* Button

Click this button to open the *Error Log* window. The *Error Log* window reports the errors that occurred during the communication.

 - *Show/Hide* Button

Click this button to show or hide detailed information about blocks types, blocks parameters, devices types and fieldbus macrocycle.

 - *Contents* Button

Click this button to open the SYSCON Help Contents.

10 Device Support

10.1 Including New DD and Capabilities File

The *Device Description* for a particular device is provided by the device's manufacturer and distributed by *Fieldbus Foundation*. If it is not currently available from the *Fieldbus Foundation*, the user may need to contact the manufacturer and get a copy of the *DD*.

There is a *DD* for each device type, and it consists of the files whose extensions are "***.ffo***" and "***.sym***".

The *Capabilities File* is used to define the device capabilities – e.g., dynamic block instantiation capability - and the resources available for creating *Function Block Applications*, *Resource Blocks*, *Transducer Blocks*, and *Function Blocks*.

The *Capabilities File* consists of the files whit the extension "***.cff***", and they are placed together with the *DD* files.

The files are organized in the manufacturers' folder as the following figure shows:

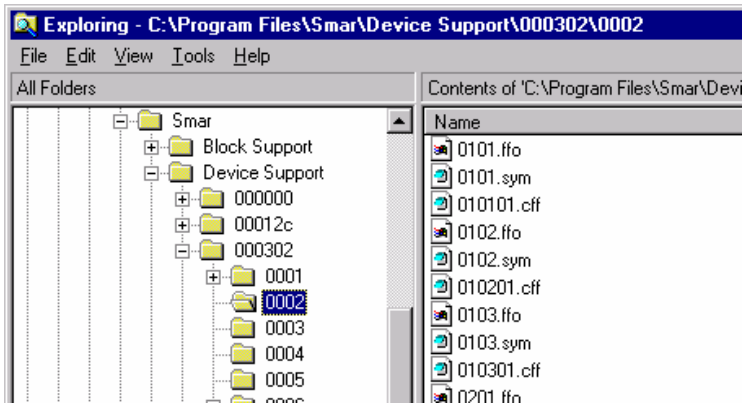


Figure 10.1. Device Support Folders

SYSCON needs *DD* and *Capabilities Files* in order to configure a device.

Follow the steps below to add a new *DD* and *Capabilities File* to SYSCON:

1. Go to the *Device Support* installation folder.
2. Inside the *Device Support* folder, create a new folder for the manufacturer, if it is not yet there.
3. The folder name should be a 6 hexadecimal digits manufacturer's code, e.g., 000302 for **SMAR**.
4. Inside the manufacturer's folder, create the *Device Type* folder.
5. The name for this folder should be the 4 hexadecimal digits of the *Device Type* code, e.g., 0001 for the **LD302**.
6. Copy the *DD* and the *Capabilities Files* for the new device from the corresponding folder to the newly created manufacturer and Device Type folders, inside the Device Support folder.

After that, SYSCON will be able to reference the new *DDs* in the dialog boxes for creation of device and blocks, showing the *Manufacturer ID* and the *Device Type* code.

However, SYSCON will not be able to show the manufacturer name or the device name. To show those names on SYSCON, the user must define them in the "**Device Support.ini**" file. See the section Defining Manufacturers and Device names.

If the device supports dynamic instantiation of function blocks, the user must define the *Function Block Mnemonics*. See the section Defining a Block Mnemonic.

If the *Capabilities File* is not provided, the user can define it since the necessary information is available. See the section Creating a new Capabilities File.

10.2 Defining Manufacturers and Device Names

The file "**Device Support.ini**" in the folder *Device Support* maintains all definitions for the manufacturers' and device's names. The user may need to add definitions.

SYSCON gives the user the opportunity to define manufacturers' and devices' names in order to show them in the dialog boxes when adding new device or new blocks to the *Fieldbus Configuration*.

Follow the steps below to add new definitions:

1. Open the "**Device Support.ini**" file.
2. Create the new manufacturer in the **[Manufacturers By Id]** section.

   The definition of the name for a particular manufacturer has the following format:

   <manufacturer_id> = <manufacturer_name>

   where

   "manufacturer_id" is the 6 hexadecimal digits manufacturer's code;
   "manufacturer_name" is the manufacturer's name that will appear in the dialog boxes.

   Example:

   [Manufacturers By Id]
   000302=Smar

3. Create a section to maintain the new manufacturer's devices.

   The definition of the section for a particular manufacturer has the following format:

   [<manufacturer_id> Devices By Code]

   where

   "manufacturer_id" is the 6 hexadecimal digits manufacturer's code.

   Example:

   [000302 Devices By Code]

4. Define the devices' names in this new section.

   The definition of the name for a particular device has the following format:

   <device_type_code>=<device_name>

   where

   "device_type_code" is the 4 hexadecimal digits of the *Device Type* code;
   "device_name" is the device's name that will appear in the dialog boxes.

   Example:

   0001=LD 302

10.3 Creating a new *Capabilities File*

If the *Capabilities File* is not provided, it can still be defined since the user already has the necessary information.

The source of information may be the *Device Manufacturer*, the device itself or the old "***.ini*** " or "***.drf*** " *Resource Files*.

Follow these steps to define a *Capabilities File*:

1. Copy the template file "**Capabilities.cff**" at the SYSCON folder.
2. Go to the *Device Support* installation folder and paste it in the device folder corresponding to the device being created in the *Capabilities File*.
3. Rename the file to match the corresponding *DD* files.
4. Edit the template file and provide all of the necessary information.
5. If the device supports dynamic instantiation of *Function Blocks*, the *Function Block Mnemonics* will still have to be defined in the file "**Device Support.ini**".

If there is any *Block Mnemonic* missing, then add its definition to the "**Device Support.ini**" file. See the section Defining a Block Mnemonic.

10.4 Defining a Block Mnemonic

When defining a *Capabilities File* for a device that can dynamically create instances of function blocks, the user must create a section for each one of these blocks in the "***.cff*** " file.

The *Function Block Mnemonic* names those sections. Therefore, the user should define each of the *Function Blocks Mnemonics*, so that SYSCON can identify the blocks.

Blocks Mnemonics are defined in the file "**Device Support.ini**", located in the *Device Support* folder, in a section named "**[Block Type Mnemonics]**".

Inside this section, the definition of the mnemonic for a particular function block has the following format:

```
[Block Type Mnemonics]
<m_id> <d_type> <d_revision> <dd_revision> <block_dditemid>=<block_mnemonic>
```

where:
`<m_id>` is the 6 hexadecimal digits manufacturer's code;
`<d_type>` is the 4 hexadecimal digits of the *Device Type*;
`<d_revision>` is the *Device Revision*;
`<dd_revision>` is the *DD Revision*;
`<block_dditemid>` is the *DDItemId*;
`<block_mnemonic>` is the mnemonic for the block.

Example:

```
[Block Type Mnemonics]
000302 0001 01 02 800202B0=PID
```

where:
`000302` is the **SMAR** manufacturer code;
`0001` is **LD302** *Device Type* code;
`01` is the *Device Revision*;
`02` is the *DD Revision*;
`800202B0` is the *DDItemId* for the *Block PID*.

Just follow this pattern to add new definitions.

10.5 Importing Device Support Files

SYSCON can automatically import the *DD* and *CF* files of a device.

IMPORTANT
The user must be logged on as an Administrator or a member of the Administrators group to import the *DD* and *CF* files.

On the *Project File* menu, click *Import Device Support*:

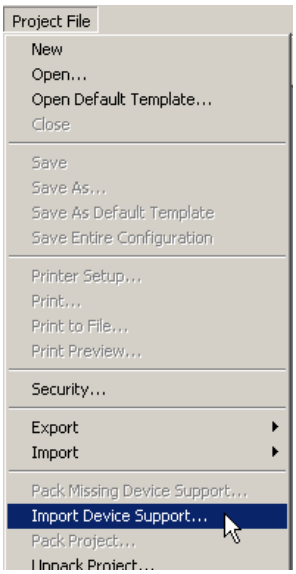


Figure 10.2. Importing the Device Support Files

The *Browse* dialog box will open. Select the directory where the *DDs* and *CFs* of the device being imported are located and click *Ok*.

The *Import Device Support* dialog box will open showing the list of files that will be imported in the *Device Support* folder of the correspondent manufacturer:

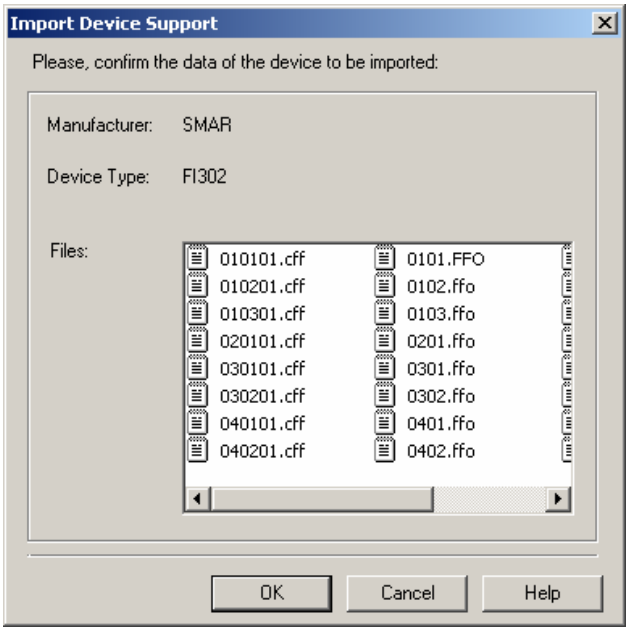


Figure 10.3. Confirming the Files to be Imported

Click *Ok* and a message box will appear informing the user that the operation was successful.

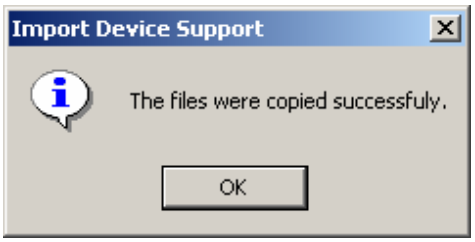


Figure 10.4. Importing Device Support Files

Click *Ok* to conclude.

10.6 Checking Missing Device Support Files

Everytime the user opens a configuration, SYSCON will verify if the *DDs* and *Capabilities Files* used in the configuration are installed with the application.

A message box will open informing the user if one or more files are missing:

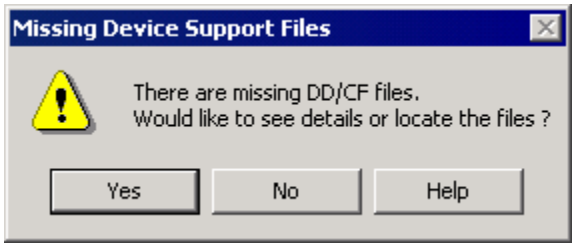


Figure 10.5. Checking Missing Device Support Files

In this dialog box, click *Yes* to open the *Locate Missing Device Support Files* dialog box:

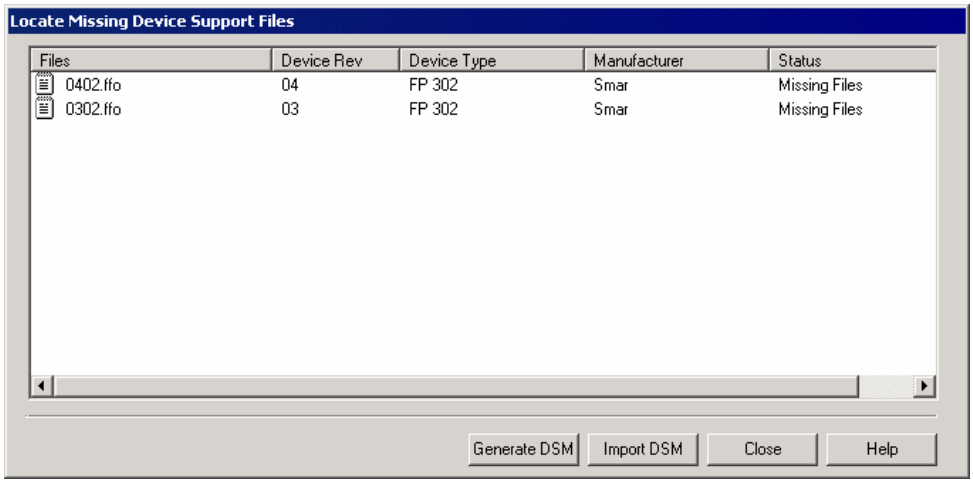


Figure 10.6. Locate Missing Device Support Files Dialog Box

NOTE
If the user clicks *No*, SYSCON will load the configuration but some blocks and parameters will not be available.

The following sections will describe the steps to locate the missing files.

10.6.1 Locating the Files Manually

IMPORTANT
The user must be logged on as an Administrator or a member of the Administrators group to copy the *DD* and *CF* files to the *Device Support*.

In the *Locate Missing Device Support Files* dialog box, right-click the icon of the missing file and select the option *Locate* in the menu:

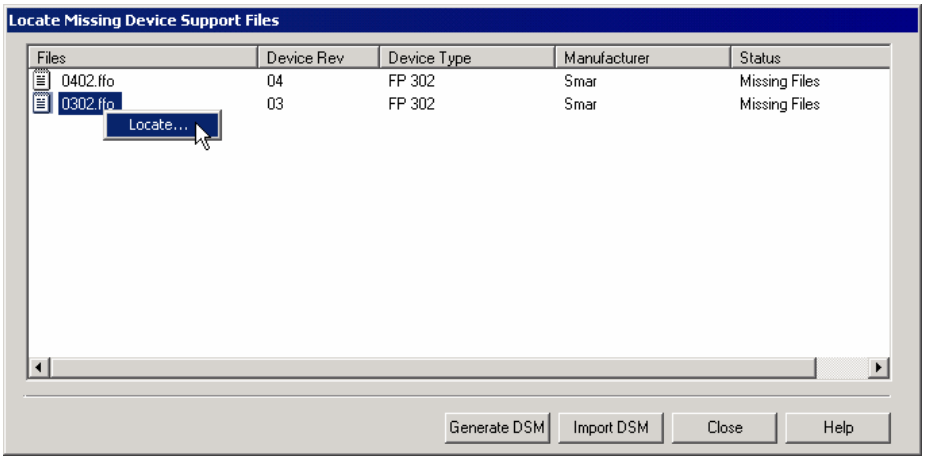


Figure 10.7. Locating the Files Manually

The *Browse* dialog box will open. Browse the directories to select the folder that contains the *DD* and *CF* files:

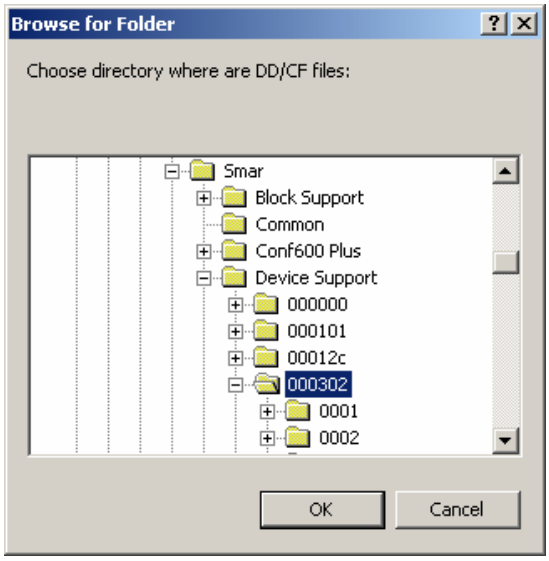


Figure 10.8. Searching the Files

Click *Ok*. SYSCON will automatically create the device's folder copying the *DDs* and *CFs*.

Repeat these steps for each file listed in the *Locate Missing Device Support Files* dialog box.

After locating the files, click *Close* to return to the application and open the configuration file.

10.6.2 Generating the DSM File

IMPORTANT
The user must be logged on as an Administrator or a member of the Administrators group to create the DSM file and then import the *DD* and *CF* files to the *Device Support*.

In the *Locate Missing Device Support Files* dialog box, click the button *Generate DSM* to create the DSM file. The *Device Support Maintenance* file has the list with of the files that are missing in the configuration.

Clicking the button *Generate DSM* will open the *Browse* dialog box. Browse the directories to select the folder where the DSM file will be saved:

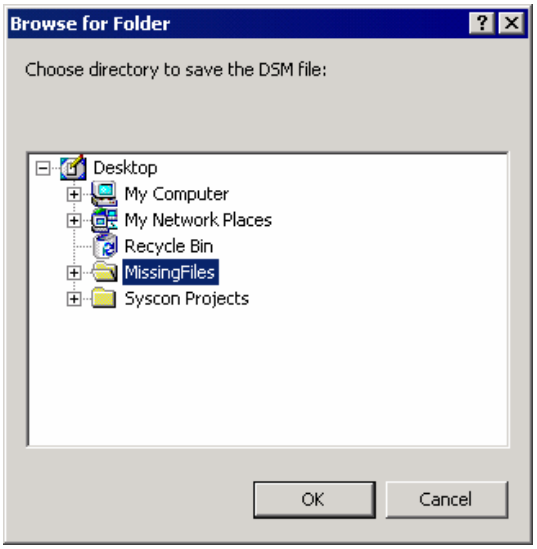


Figure 10.9. Creating the DSM file

Click *Ok*. A message box will appear informing the user that the operation was successful.

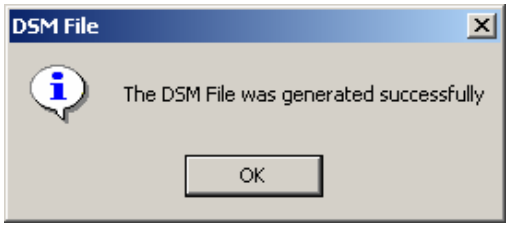


Figure 10.10. Operation Completed

Click *Ok* to return to the *Locate Missing Device Support Files* dialog box.

The DSM file should be sent to a machine that has the missing *DDs* and *CFs*, usually the machine where the configuration was originally created. See section *10.6.3*

Packing the Missing Device Support Files.

The user will receive the package with the *DD* and *CF* files in the folder *Missing Files*, and then will import these files.

In the *Locate Missing Device Support Files* dialog box, click the button *Import* DSM:

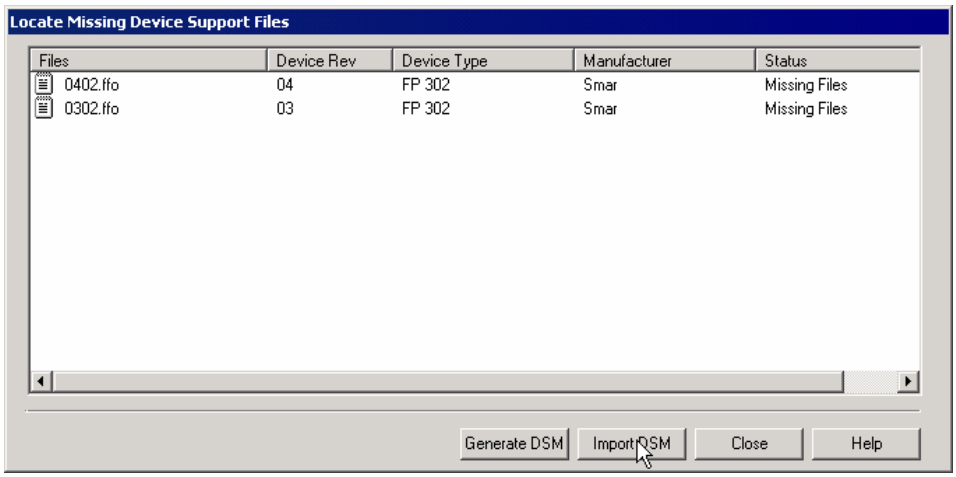


Figure 10.11. Copying Missing Device Support Files

The *Open* dialog box will appear. Browse the directories to locate the folder *Missing Files*, and then select the DSM file:

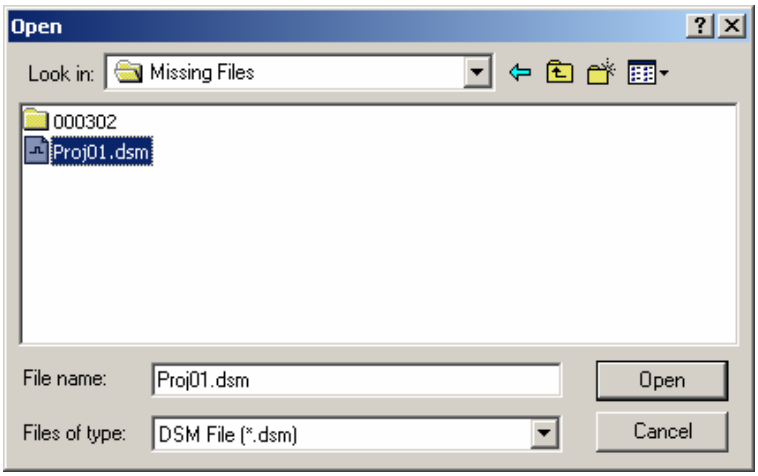


Figure 10.12. Selecting the DSM File

Click *Open* and a message box will appear informing the user that the operation was successful. Click *Ok*:

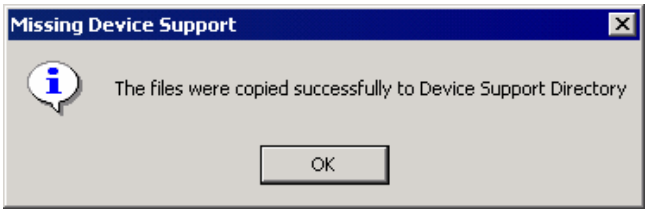


Figure 10.13. Operation Completed

Click *Close* in the *Locate Missing Device Support Files* dialog box to return to the application and open the configuration file.

10.6.3 Packing the Missing Device Support Files

IMPORTANT
The user must be logged on as an Administrator or a member of the Administrators group to create the package with the *DD* and *CF* files.

To create a package with the missing files, it is necessary to send the DSM file generated in the machine where the *DD* and *CF* files are missing, to the machine that has the proper *Device Support* directory.

Using SYSCON, go to the *Project File* menu and click *Pack Missing Device Support*:

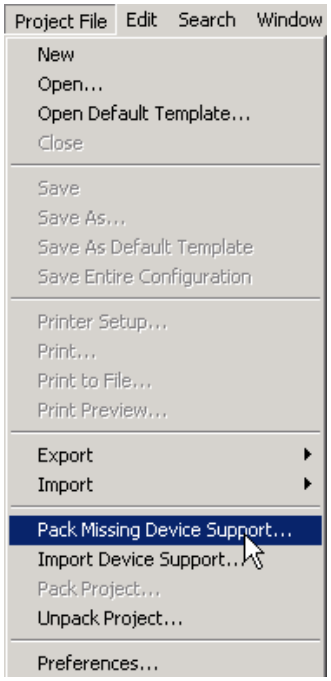


Figure 10.14. Packing Missing Device Support Files

The *Open* dialog box will appear. Browse the directories to locate the DSM file. Select the file icon and then click *Open*:

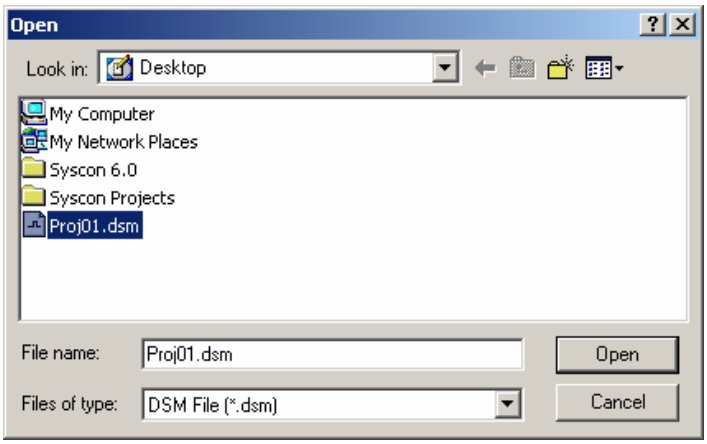


Figure 10.15. Selecting the DSM File

The *Browse* dialog box will open. Select the folder where the package with the missing files will be created and click *Ok*.

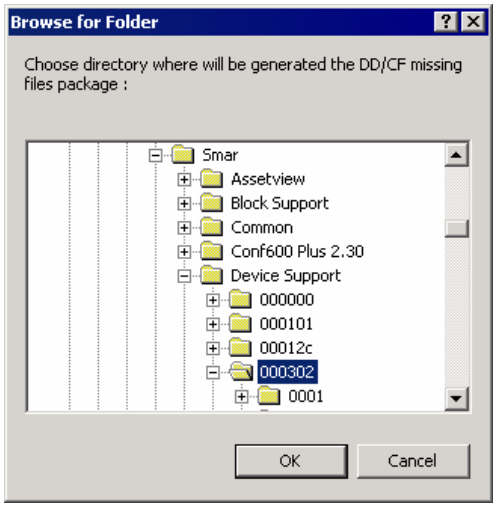


Figure 10.16. Creating the package with the missing files

A message box will appear informing the user that the operation was successful and the folder *Missing Files* was created.

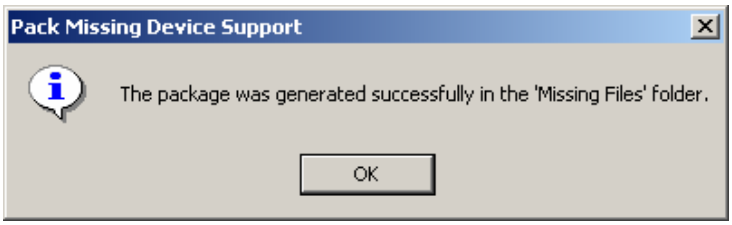


Figure 10.17. Operation Completed

Click *Ok* to conclude.

The folder *Missing Files* should be sent to the machine where the *DDs* and *CFs* are missing.

11 Troubleshoot

1. Version Mismatch
Converting from an older configuration version.
For discarding, close without saving.

This is a message, not an exception. It means that the user is trying to open a configuration file, which was generated in an older version of the tool that had an old-fashioned file format. If the user accepts to upgrade, the configuration is going to be converted to the new file format and the user won't be able to open the configuration in a version of the tool, which supports the old file format again. This message is only issued by SYSCON from version 5.10 on.

2. ***Version Mismatch***
Unable to open a newer configuration version.

This is a message, not an exception. It means that the user is trying to open a configuration file, which was generated in an earlier version of the tool that has a new file format. SYSCON cannot perform configuration downgrade. This message is only issued by SYSCON from version 5.10 on.

3. DD Exception
Standard Dictionary Not Found!

This means that the **Standard.dct** file is missing in the *Device Support* and can generally happen because of problems during the system installation.

4. FF Exception
Block with Profile 0x#### and Profile Revision 0x#### could not be found.
DD and CF: ######\####\####(##).
DDItem = 0x########

This happens because some block type could not be recognized. It means there were problems with DDs or CFs installation. During the opening of a configuration file it has a special meaning, and it can easily be identified by the null Profile and Profile Revision numbers. In this case SYSCON is trying to upgrade a configuration generated with an old version of SYSCON (4.x or earlier) that didn't work - therefore did not retain the numbers. During the configuration file upgrade, SYSCON tries to get the Profile and Profile Revision for the blocks in the configuration by searching the CF given the DDItemID for the block. This FF exception occurs because the CF is not present or, in case the CF exists, the exception occurs because the CF might be inconsistent. It is very common when a configuration is generated in one machine and moved to another one that maintains a different set of DDs and CFs from the original machine. The DD and CF information in the message identifies which CF file has been searched.

5. Maximum number of Blocks has been exceeded.
License Violation

It means that the user is trying to open a configuration that has more blocks than the SYSCON license allows. This usually happens when the project file has been generated with a SYSCON version that supports the number of blocks configured in the project, but the user is trying to open the project with another SYSCON version with a license that allows less blocks than has been configured in the project file.

6. DD Not Found

If SYSCON tries to use a DD file that is missing or corrupted, the *Device Description Error* message will be sent to the user through the *Error Log* window. This message indicates the DD file that is missing or corrupted and reports the details about the error.

There is one situation that a missing DD will stop the application. When a configuration file is generated with SYSCON version 4.x, or previous versions, and the user attempts to open the file with SYSCON version 5.20, the application will generate an exception indicating the information that is missing and will abort after the user acknowledgement.

7. The HSE port of the DFI has address 0

This problem may occur when:

- The address wasn't read because the bridge was not found in the *Live List*.
- The bridge was not in the *Live List* during the *Init Communication*.

These conditions mean that the problem occurs rarely. If it occurs, it will be necessary to terminate the communication and restart it.

8. Multilink Topology Request

This dialog box will open when SYSCON tries to re-initialize the communication after an event occurs, for example, when the bridge stop communicating for a moment and then return to normal operation.

9. Converting the HSE configuration from SYSCON version 5.2x to version 6.x

Follow the steps below to convert an HSE project configured in SYSCON version 5.2x to SYSCON version 6.x:

a) Open the HSE configuration in SYSCON version 6.x;

b) Disconnect all bridges from the HSE fieldbus, right-clicking each bridge and selecting *Disconnect from*;

c) Remove the HSE fieldbus, right-clicking the fieldbus icon and selecting *Delete*;

d) Add a new HSE fieldbus, right-clicking the fieldbus networks icon and selecting *New Fieldbus*. The *New Fieldbus* dialog box will open. Select the HSE type, edit the fieldbus tag and click *Ok;*

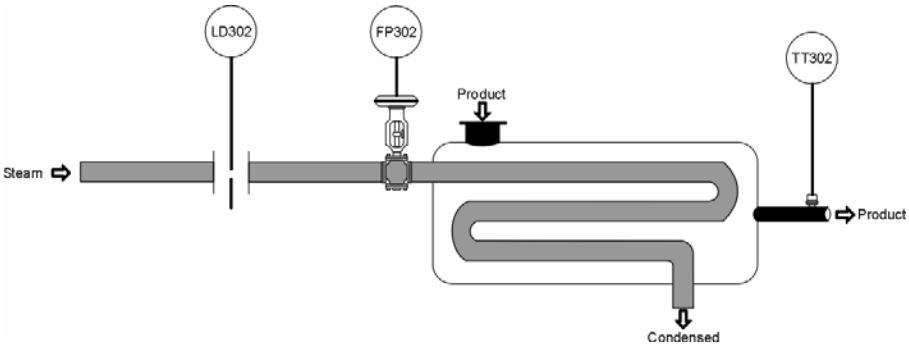
e) Connect all bridges to the HSE fieldbus, right-clicking each bridge and selecting *Connect to*. The *Connect to* dialog box will open. Select the HSE network and click *Ok*.

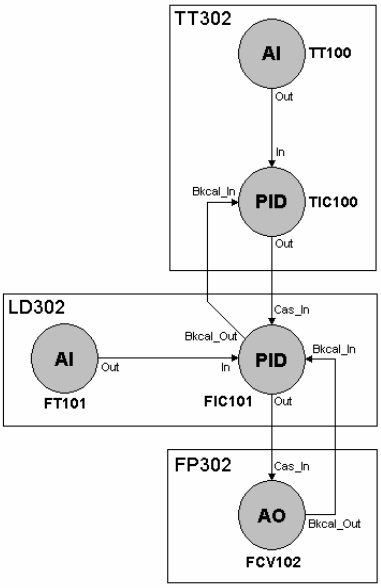
Step-by-Step Configuration

SYSCON let the user starts the project configuration from the *Process Control* or from the *Fieldbus*.

The user can start the configuration with the *Process Control* and import templates files to the *Strategy* window, easily adding blocks to the project.

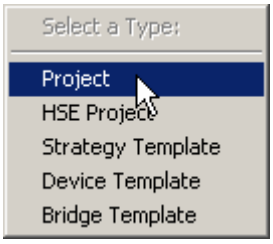
This example will start the configuration from the *Fieldbus*, using the *Analog Input*, the *PID Control* and the *Analog Output* blocks to build the following *Cascade Control* configuration:



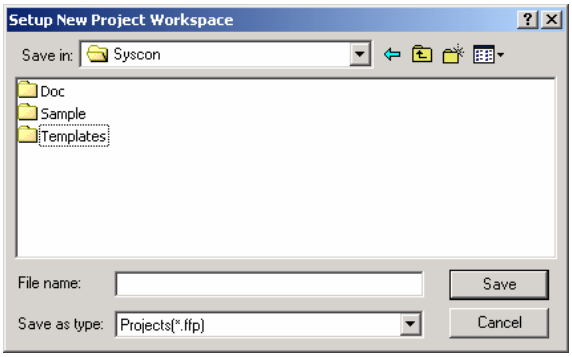


Creating the Project File

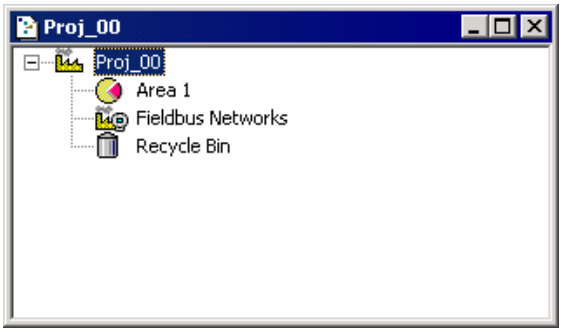
To create a new *Fieldbus* project, click the *New* button,  , on the *General Operation* toolbar. The *Document Type* box will open. Click the option *Projects*, as indicated below:



The *New Project* dialog box will open:

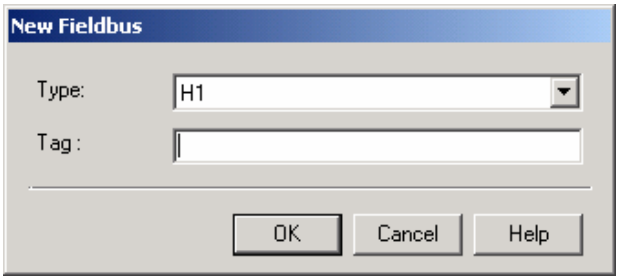


Type the name for the new project at the *File Name* box, and then click *Save*. The *Project* window will open.



Starting with the Fieldbus Configuration

In the *Project* window, right-click the *Fieldbus Networks* icon and click the item *New Fieldbus*. The *New Fieldbus* dialog box will open. Select the communication port for the fieldbus, type the tag *Fieldbus* 1 and click *Ok*.



Double-click the *Fieldbus 1* icon to open its window. To organize the screen view, go to the *Window* menu and click *Tile*.

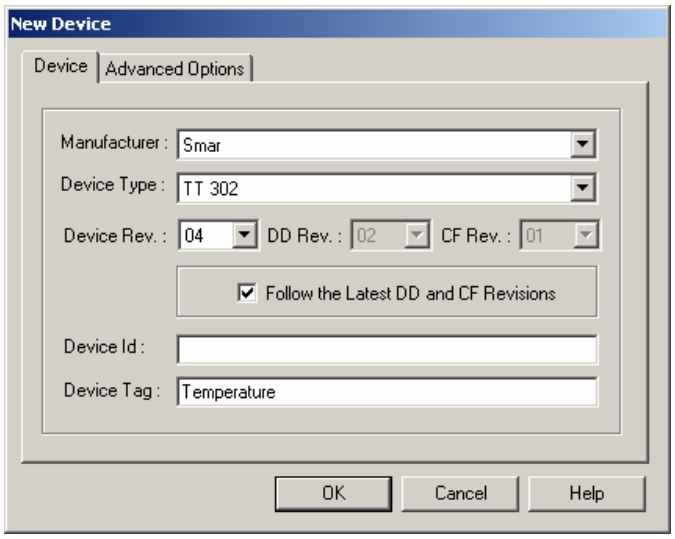
Adding the Devices

Now add the devices that will be used in this project.

First, add the Smar *Temperature Transmitter – TT302*.

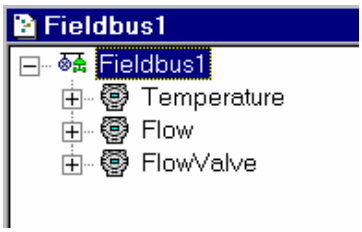
In the *Fieldbus 1* window, right-click the *Fieldbus1* icon. Click the item *New* > *Device*. The *Device* dialog box will open:

1. Select *Smar* in the *Device Manufacture* box.
2. Select the *TT302 Device* in the *Device Type* box.
3. Type the tag *Temperature* in the *Device Tag* box.
4. Click *OK*.



Follow the same procedure to add the Smar *Flow Transmitter – LD302* with the tag *Flow*, and the Smar *Flow Valve Controller – FP302* with the tag *FlowValve*.

After finishing this process, the *Fieldbus 1* window should look like the following figure:



Adding Blocks

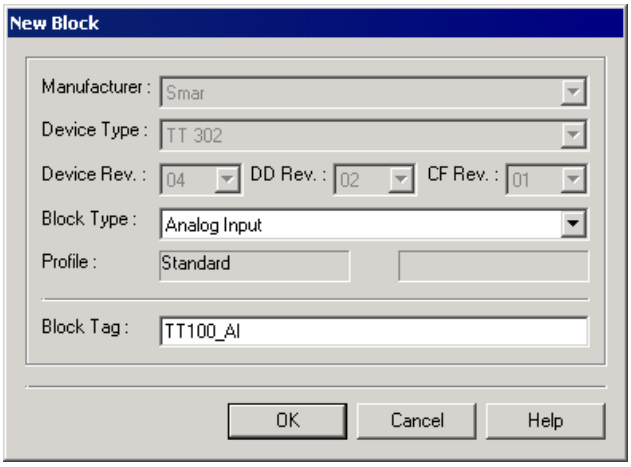
When a new device is added to the filedbus channel, the *Transducer*, *Resource* and *Display* blocks are automatically created for the device.

It will be necessary to add the blocks that will be used in the process control.

To add a new block, click the device expansion sign, ⊞, select the FB icon and right-click it. Click the item *New Block*.

The *New Block* dialog box will open. Add the first block:

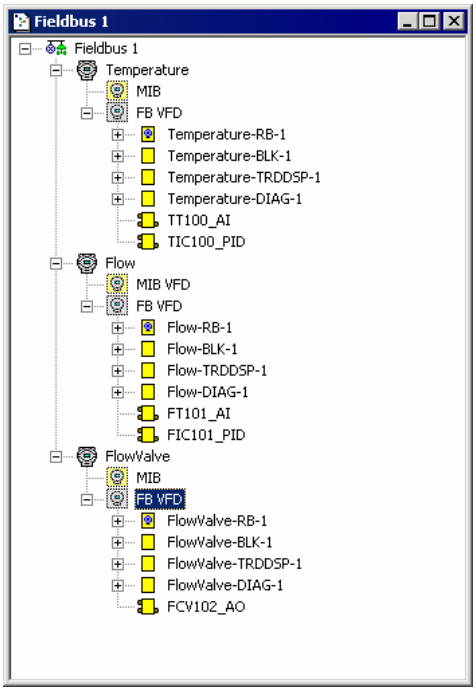
1. Select *Analog Input* in the *Block Type* box.
2. Type the tag *TT100_AI* in the *Block Tag* box.
3. Click *OK*.



Repeat the procedure from above to add the following blocks:

Device	Block Type	Block Tag
Temperature	PID Control	TIC100_PID
Flow	Analog Input	FT101_AI
	PID Control	FIC101_PID
Flow Valve	Analog Output	FCV102_AO

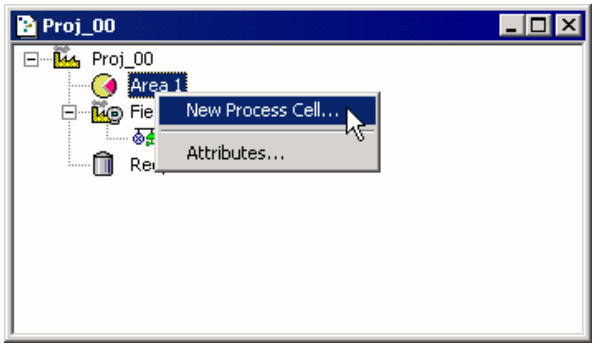
The *Fieldbus* window should look like the following figure:



Remember to save the project.

Continuing with the Process Control Configuration

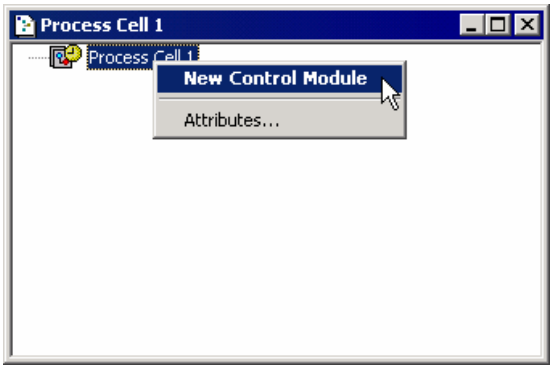
Create the process cell. Right-click the area icon and select the item *New Process Cell*.



Type the tag *Process Cell 1* and click *OK*.

Double-click the *Process Cell 1* icon to open its window.

To create a control module, select the process cell icon, on the *Process Cell* window, and right-click it. Click the item *New Control Module*.



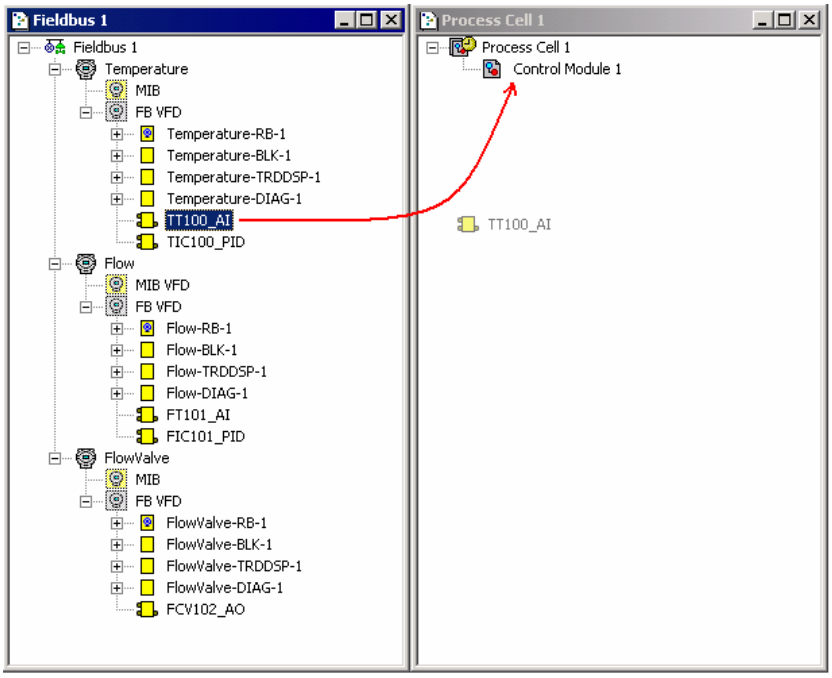
Type the tag *Control Module 1* and click *OK*.

Attaching blocks to the control module

The next step will be to attach the blocks, from the devices to the control module.

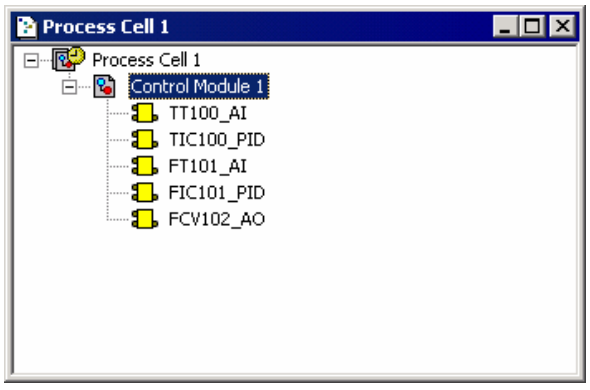
Open the *Fieldbus* window and the *Process Cell* window. Arrange these windows side by side by clicking the item *Tile* at the *Window* menu.

In the *Fieldbus* window, click the block that will be attached and drag it to the *Process Cell* window, on the control module icon.



The block will be attached to the control module.

Repeat this operation to attach the blocks TIC100_PID, FT101_AI, FIC101_PID and FCV102_AO to the control module. See the figure below:



When all of the blocks are attached, the user will have to drag the blocks to the *Strategy* window to start the design configuration.

Creating the Strategy

Now make the strategy configuration. Double-click the control module icon to open the *Strategy* window.

Organize the *Strategy* and the *Process Cell* windows clicking the item *Tile* at the *Window* menu.

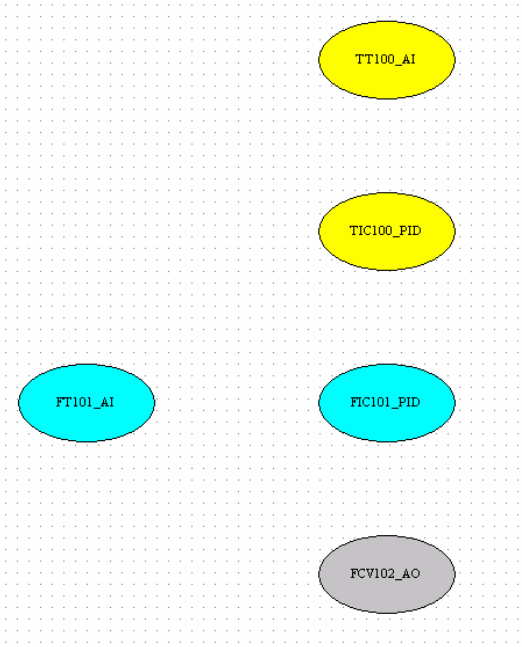
Drag the blocks from the control module to the *Strategy* window:

1. Click and hold the *TT100_AI* block icon, 

.
2. Drag it into the *Strategy* window.

The block will automatically be drawn.

Repeat the procedure and drag the other blocks to the *Strategy* window, trying to position them according to the project design in the beginning of this appendix. See the following figure:



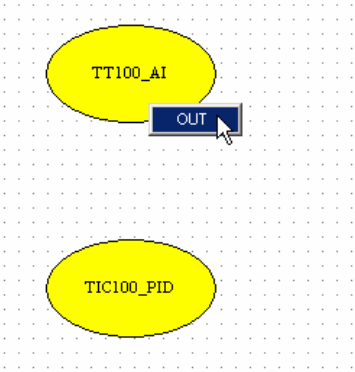
NOTE
If the block is dropped too close to one already added to the *Strategy* window, the block will not be drawn. It will be necessary to move the blocks in order to organize the project, after they have been dropped in the *Strategy* window.

Remember that it is possible to change the blocks attributes and select different colors for each block. Right-click the block in the *Strategy* window and select the option *Properties*.

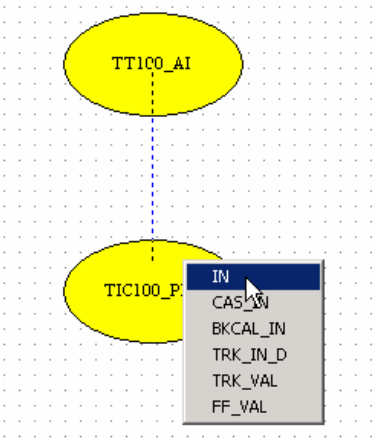
Linking Blocks

First, link the *OUT Parameter* of the *TT100_AI* block to the *IN Parameter* of the *TIC100_PID* block:

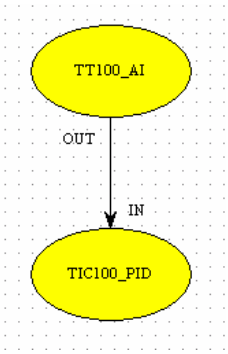
1. Click the *Link* button,  , on the *Strategy* toolbar.
2. Right-click the block *TT100_AI*.
3. Click *OUT* in the popup menu.



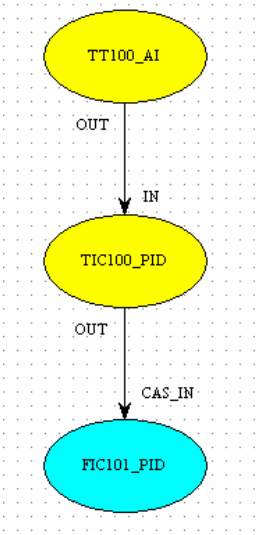
4. Drag the cursor to the block *TIC100_PID*.
5. Right-click the block.
6. Select *IN* from the *Parameters* List.



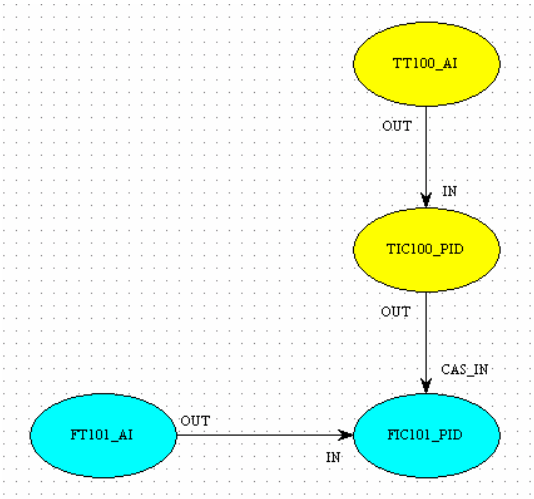
The linking process is complete.



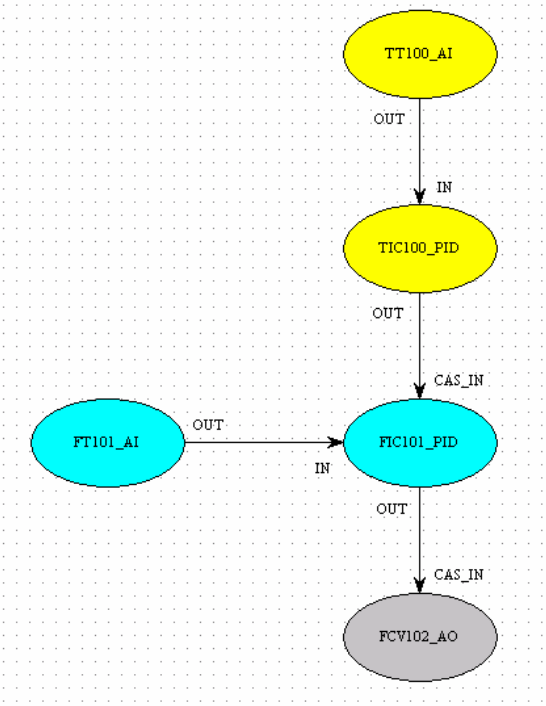
Follow the steps above to link the *OUT Parameter* of the *TIC100_PID* block to the *CAS_IN Parameter* of the *FIC101_PID* block.



Repeat the process and link the *OUT Parameter* of the *FT101_AI* block to the *IN Parameter* of the *FIC101_PID* block.



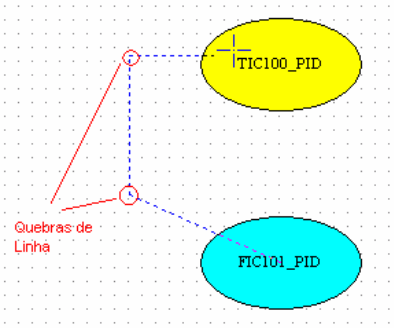
Then, link the *OUT Parameter* of the *FIC101_PID* block to the *CAS_IN Parameter* of the *FCV102_AO* block. The *Strategy* window should look like the following figure:



Creating the feedback link

To create the *Feedback Link* between *FIC101_PID* and *TIC100_PID*, follow these steps:

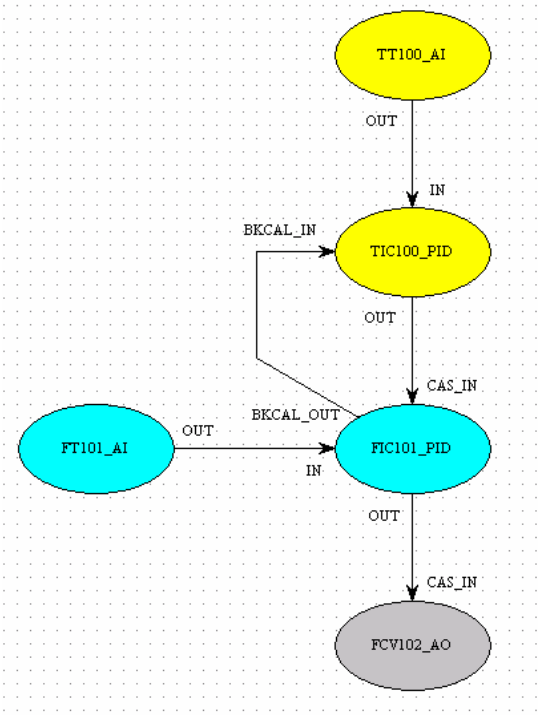
1. Right-click on the *FIC101_PID* block.
2. Select *BKCAL_OUT* from the *Parameters* List.
3. Drag the cursor diagonally to the left side of the middle.
4. Click on the drawing area.
5. Continue dragging the cursor vertically until the *Link* line is near the *TIC100_PID* block.
6. Click on the drawing area.
7. Drag the *Link* line horizontally until it reaches the *TIC100_PID* block.



To conclude the *Link*:

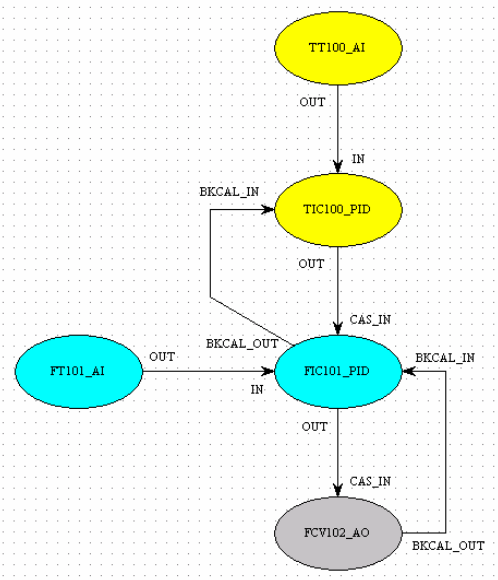
8. Right-click on the *TIC100_PID* block.
9. Select *BKCAL_IN* from the *Parameters* List.

The design configuration should look like the following figure:



Follow these steps above to link the *BKCAL_OUT Parameter* of the *FCV102_AO* block to the *BKCAL_IN Parameter* of the *FIC101_PID* block.

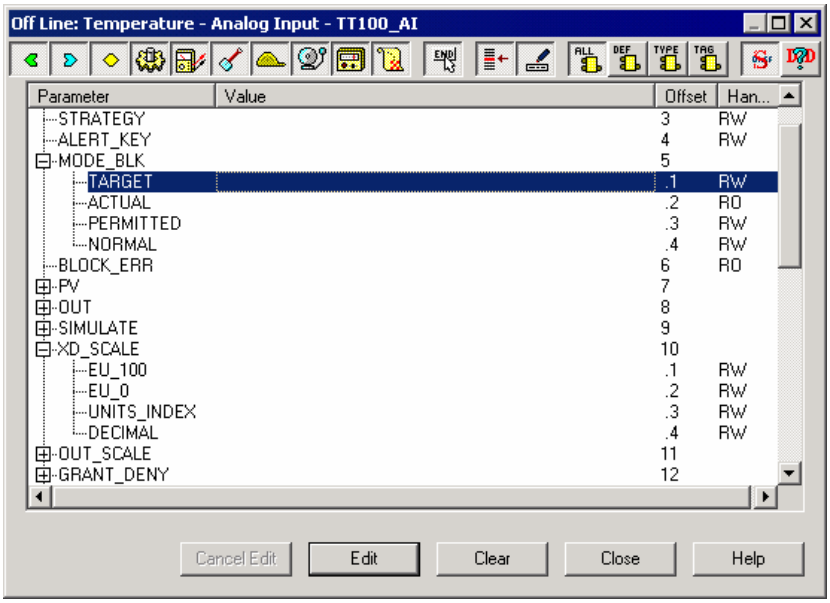
At the end of the linking process, the *Strategy* window should look like the following figure:



Click the button *Save Entire Configuration*,  , to save the project.

Block Off Line Characterization

Parameterize the *TT100_AI* block. Double-click the block in the *Process Cell* window or *Fieldbus* window. The *Block Characterization* dialog box will open:



Click the expansion sign, ⊞, in front of the *MODE_BLK* parameter. Select the element *TARGET* and click *Edit*.

Select the mode *Auto* from the list by checking its box. Click *End Edit*.

To exit the *Block Characterization* dialog box click the *Close* button.

Repeat this procedure to characterize the other blocks. The following table specifies the parameters and its elements:

Block	Parameter	Element	Mode
TIC100_PID	MODE_BLK	TARGET	Auto
	PV_SCALE	EU_100	600
		EU_0	0
		UNITS_INDEX	°C
	OUT_SCALE	EU_100	200
		EU_0	0
		UNITS_INDEX	kg/h
FT101_AI	MODE_BLK	TARGET	Auto
	XD_SCALE	EU_100	200
		EU_0	0
		UNITS_INDEX	inH2O (4^{o} C)
	OUT_SCALE	EU_100	200
		EU_0	0
		UNITS_INDEX	kg/h
	L_TYPE		Indirect Sq Root
FIC101_PID	MODE_BLK	TARGET	Cas
	PV_SCALE	EU_100	200
		EU_0	0
		UNITS_INDEX	kg/h
	OUT_SCALE	EU_100	100
		EU_0	0
		UNITS_INDEX	%
FCV102_AO	MODE_BLK	TARGET	Cas
	PV_SCALE	EU_100	100
		EU_0	0
		UNITS_INDEX	%
	XD_SCALE	EU_100	15
		EU_0	3
		UNITS_INDEX	psi

Remember to save the project file.