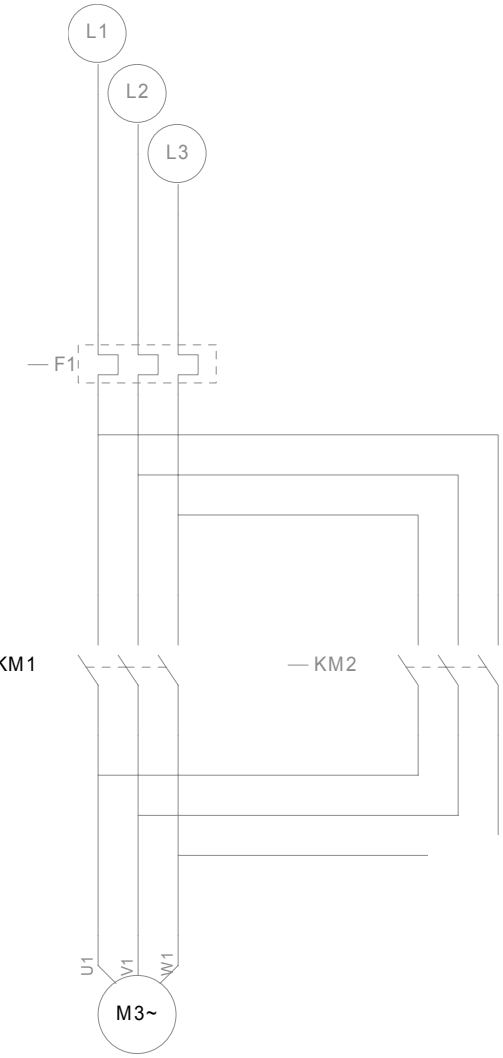
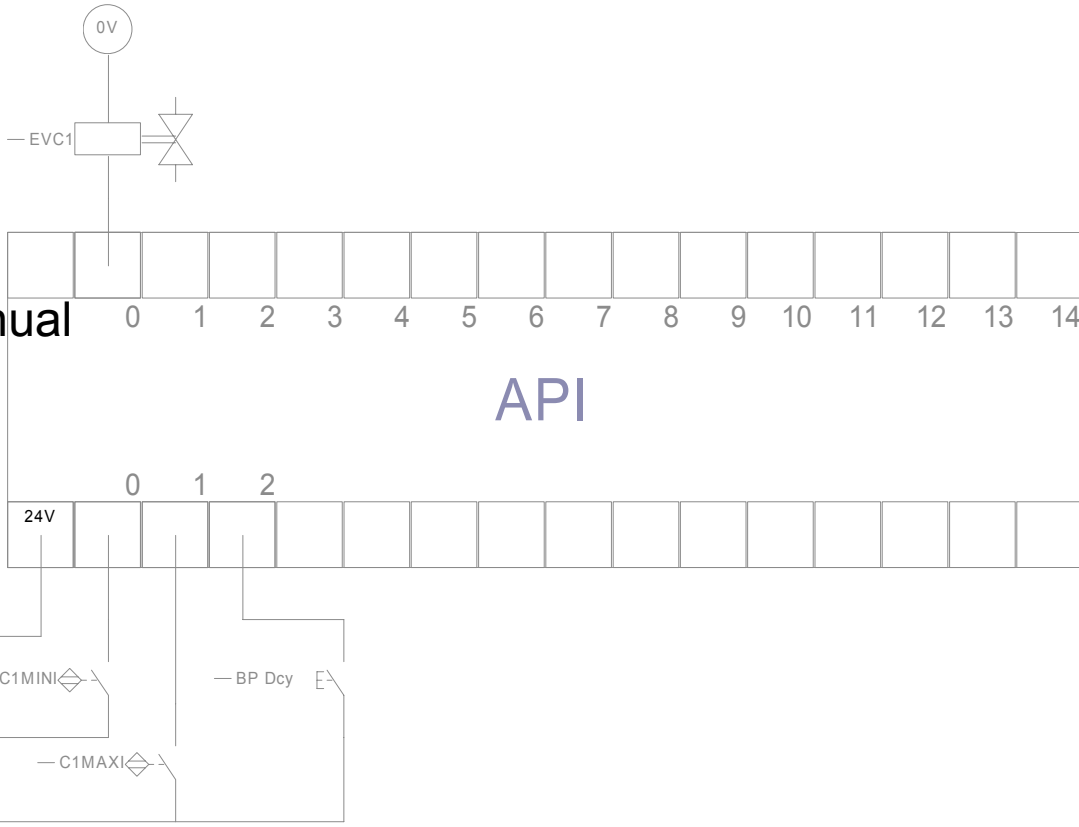
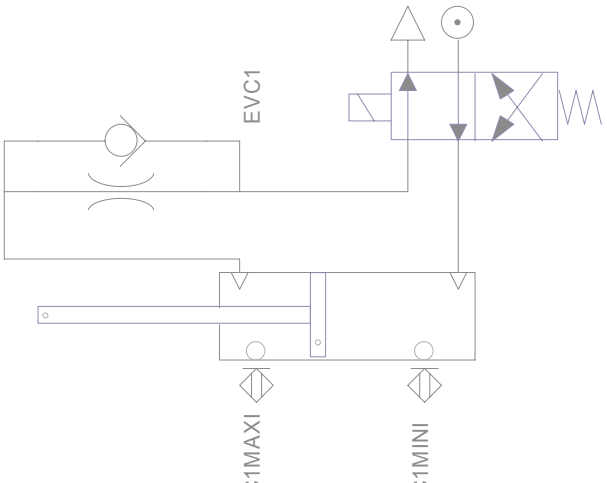


automgen automgen automgen automgen automgen

7



AUTOMSIM manual



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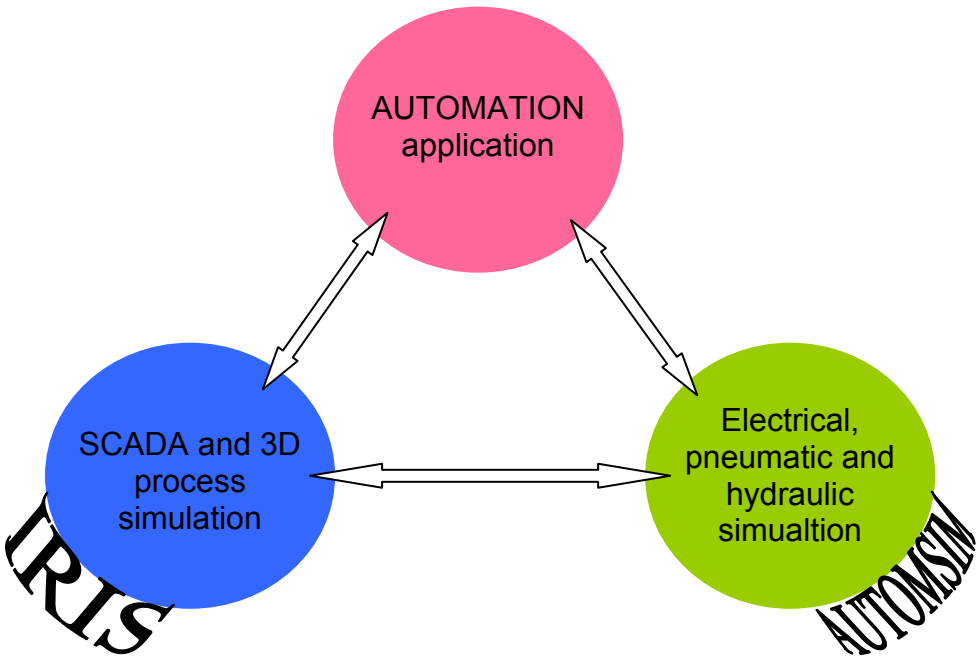
Introduction

AUTOMSIM is a pneumatic / electrical / hydraulic simulation module.

It can be used alone or as an addition to AUTOMGEN[7] functions:



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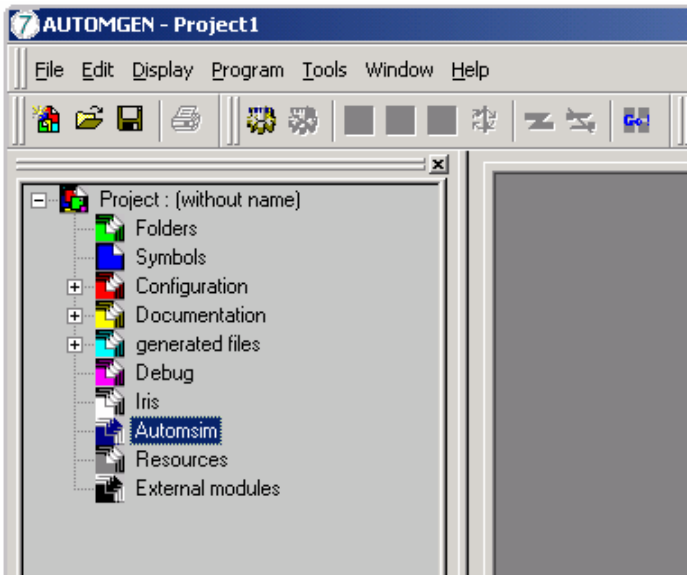
Installation

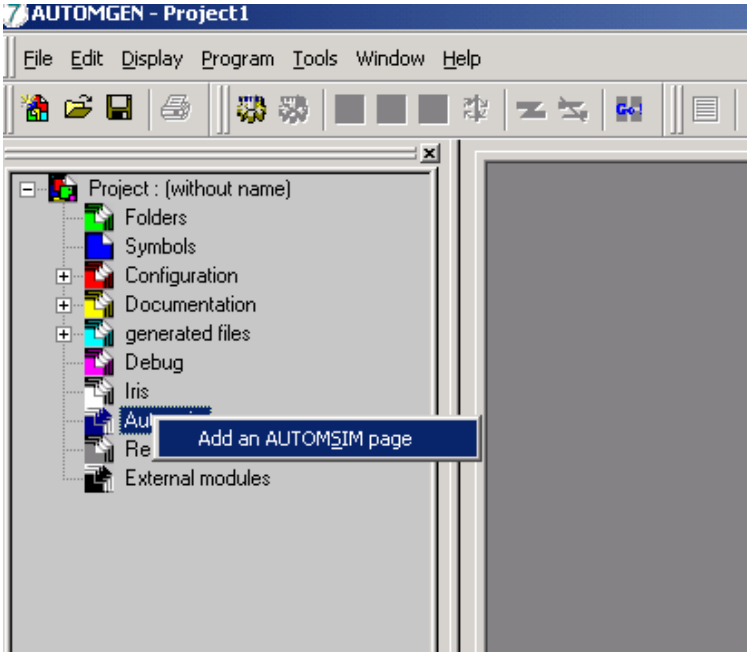
To install AUTOMSIM, install AUTOMGEN[7]. In options, be sure that « AUTOMSIM » is checked.

Practical experience

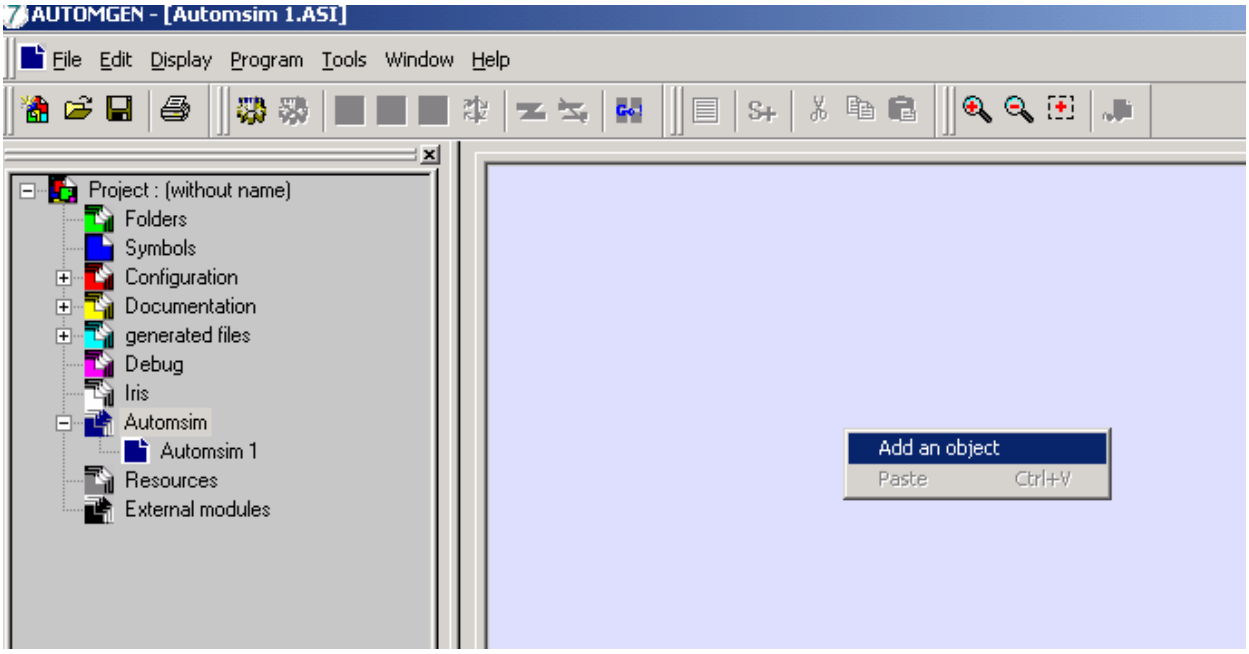
Let us do a simple example: cylinder + distributor



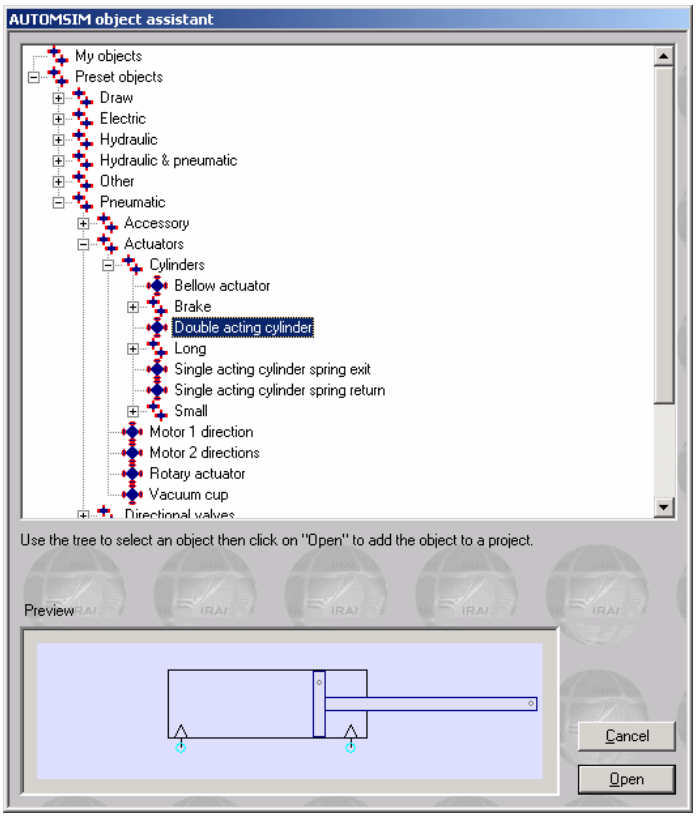
Click with the right side of the mouse on « AUTOMSIM »



Select “Add an AUTOMSIM page”



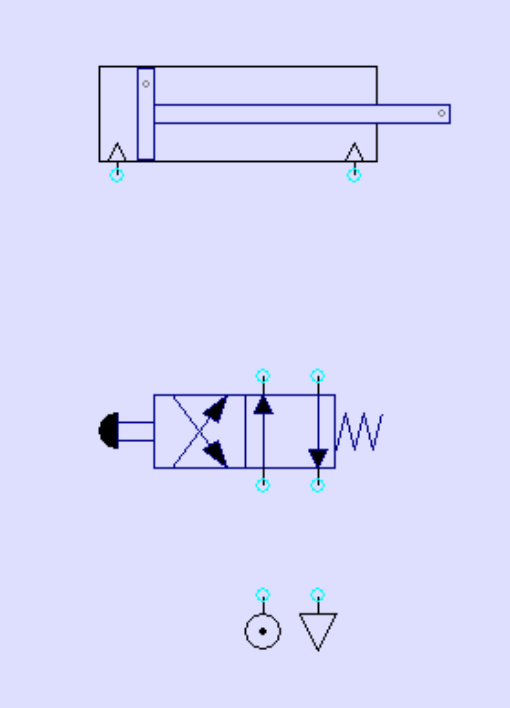
Click with the right side of the mouse on the AUTOMSIM sheet (right part) then select “Add an object”



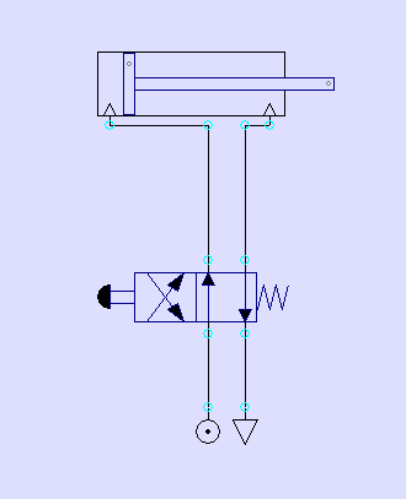
Select “double acting cylinder”, and then click on “Open the object”.

Repeat the steps above then add a 4/2 directional valve with monostable hand control, a pressure source and a pneumatic exhaust.

You should obtain the following:



Create connections between the different components: Move the cursor over the connections (light blue circles), press the left button of the mouse then release it, move the cursor of the mouse to the connection where the link must be connected, press the left button of the mouse then release it.
Repeat the above step for each connection until the following result is achieved:



Click on the “GO” button on the toolbar.

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The cylinder shaft will come out. To make it go back in, click on the manual control of the distributor.

While it is running, you can make changes, add objects, move them, etc…

With AUTOMSIM, it is not necessary to stop simulation!

To end the simulation, click again on “GO”.

Using AUTOMSIM

Organizing applications

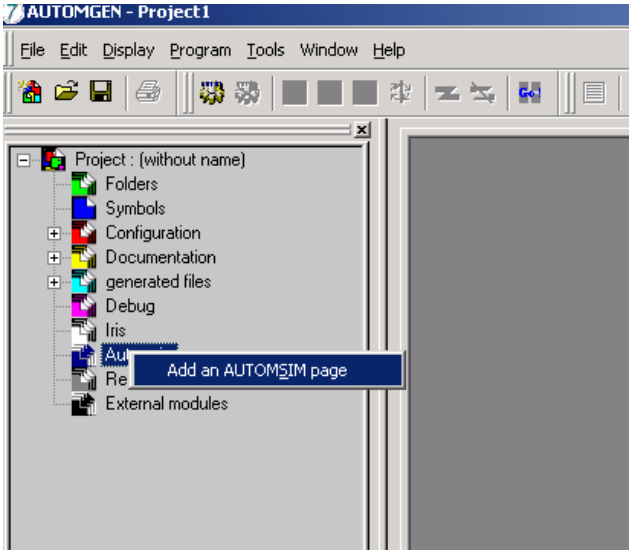
AUTOMSIM applications are written on one or more sheets that appear in the tree structure of AUTOMGEN[7]. The objects are then placed on the sheet(s): an object = a component such as a cylinder or an electrical contact.

Opening an existing application

The subdirectory « Examples / automsim » of the installation directory of AUTOMGEN[7] contains examples done with AUTOMSIM.

Creating an AUTOMSIM sheet

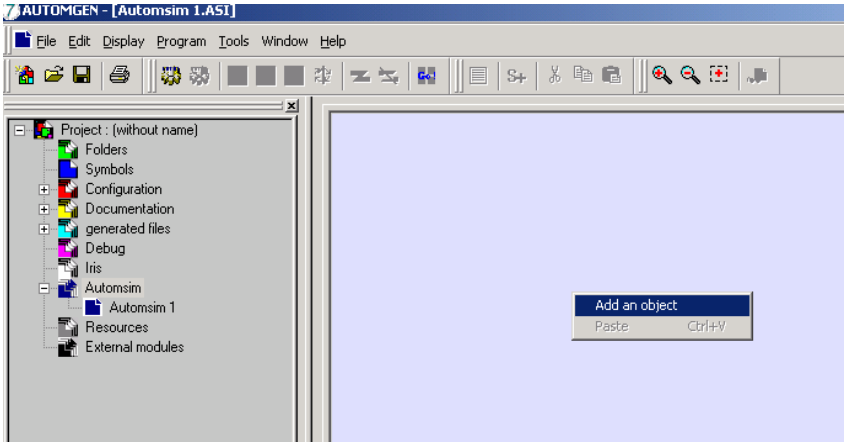
To add an AUTOSIM sheet in the tree structure of a project, click with the right button of the mouse on the “AUTOMSIM” component in the tree structure, then select “Add an AUTOMSIM page”.



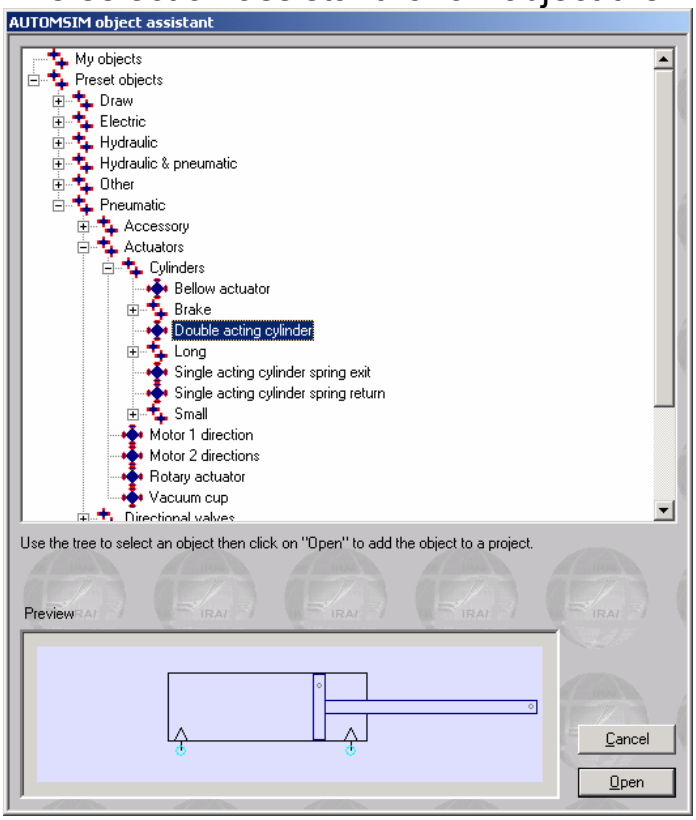
An AUTOMSIM sheet is then created.

Adding an object onto an AUTOMSIM sheet

Click with the right button of the mouse on the AUTOMSIM sheet (shown below on the right) and select “Add an object”.



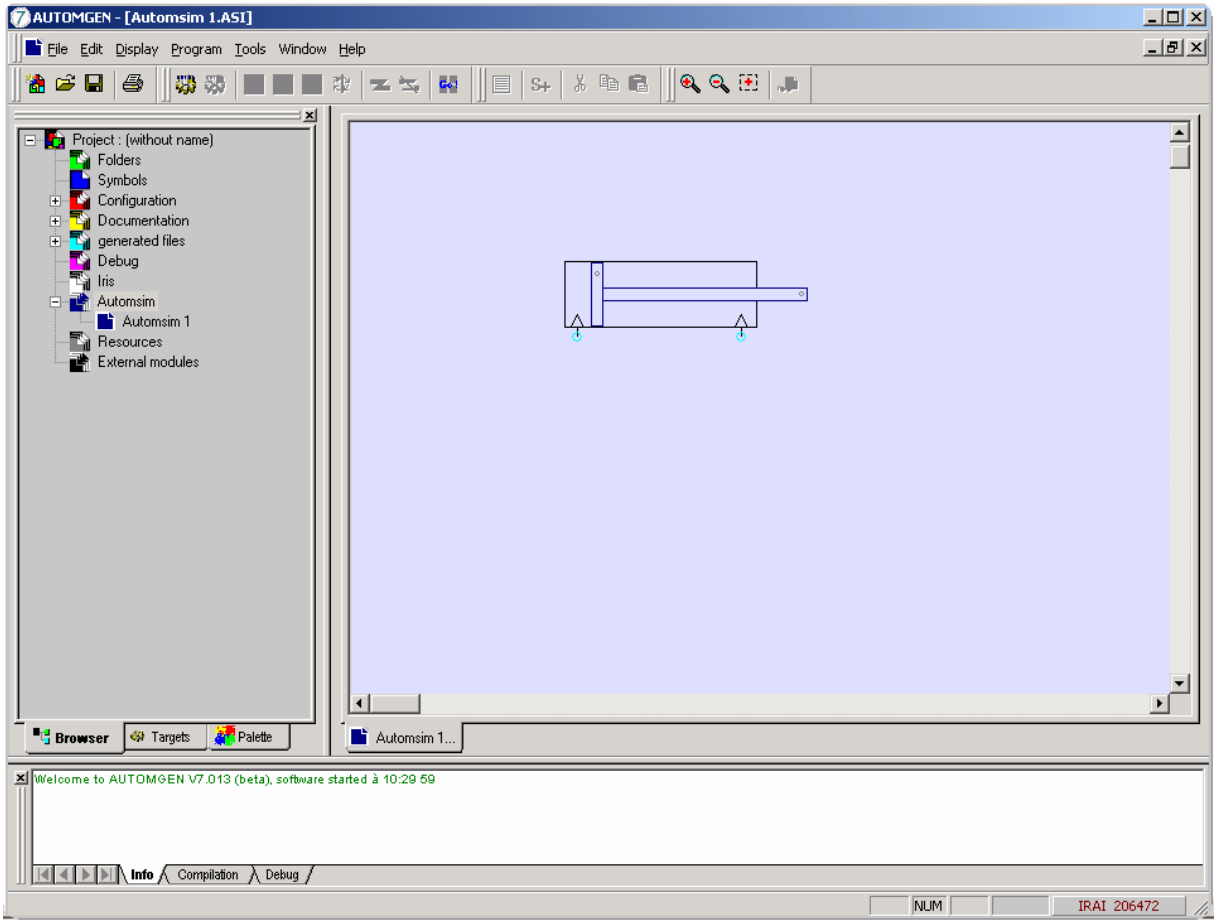
The selection assistant for an object then appears:



The assistant shows a preview of the object in the bottom of the window. To add the object onto the AUTOMSIM sheet, click on “Open the object”.

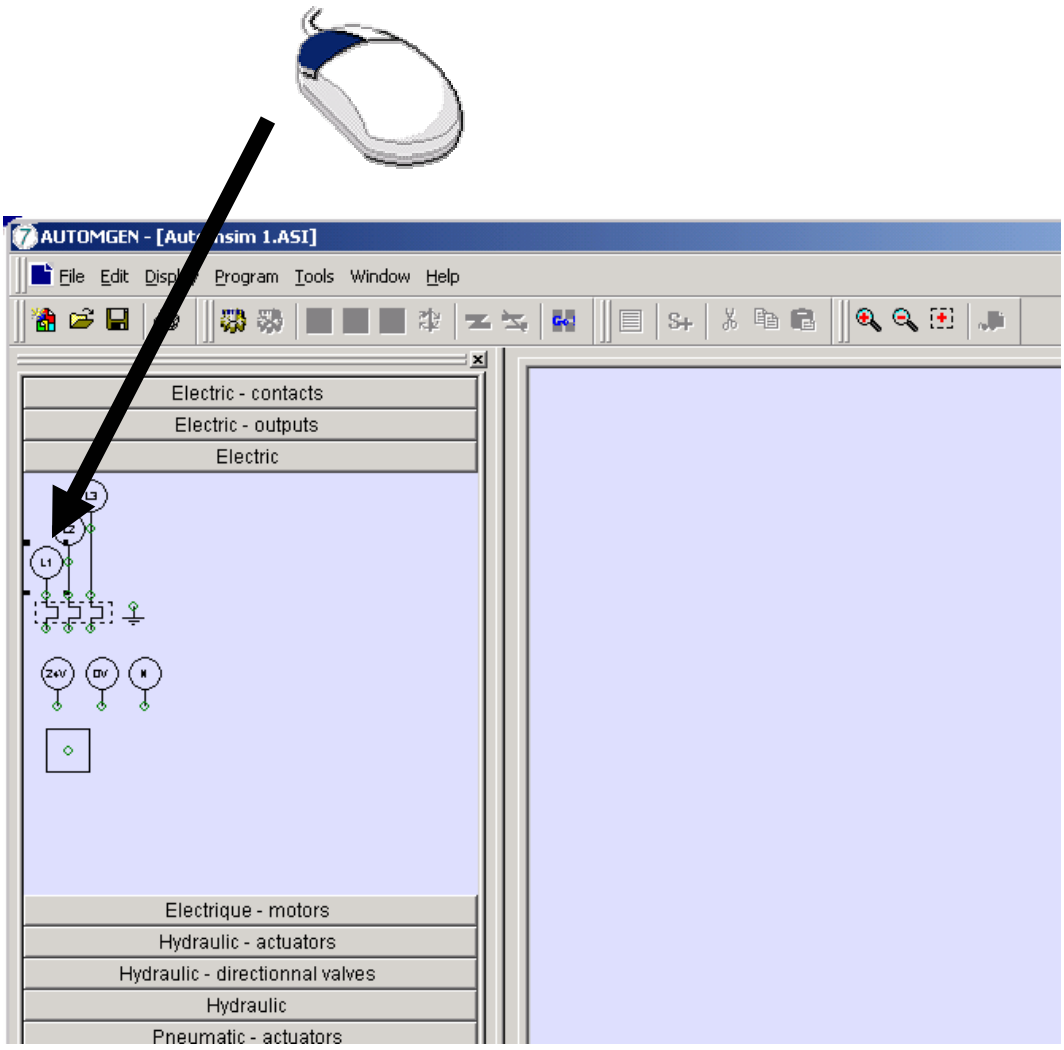
Then move the mouse to place the object on the AUTOMSIM sheet, press the left button of the mouse and release it to leave the object.

You will obtain the following result:



Using the palette

1- Click on the object(s) in the palette (they appear as selected): framed by black squares).



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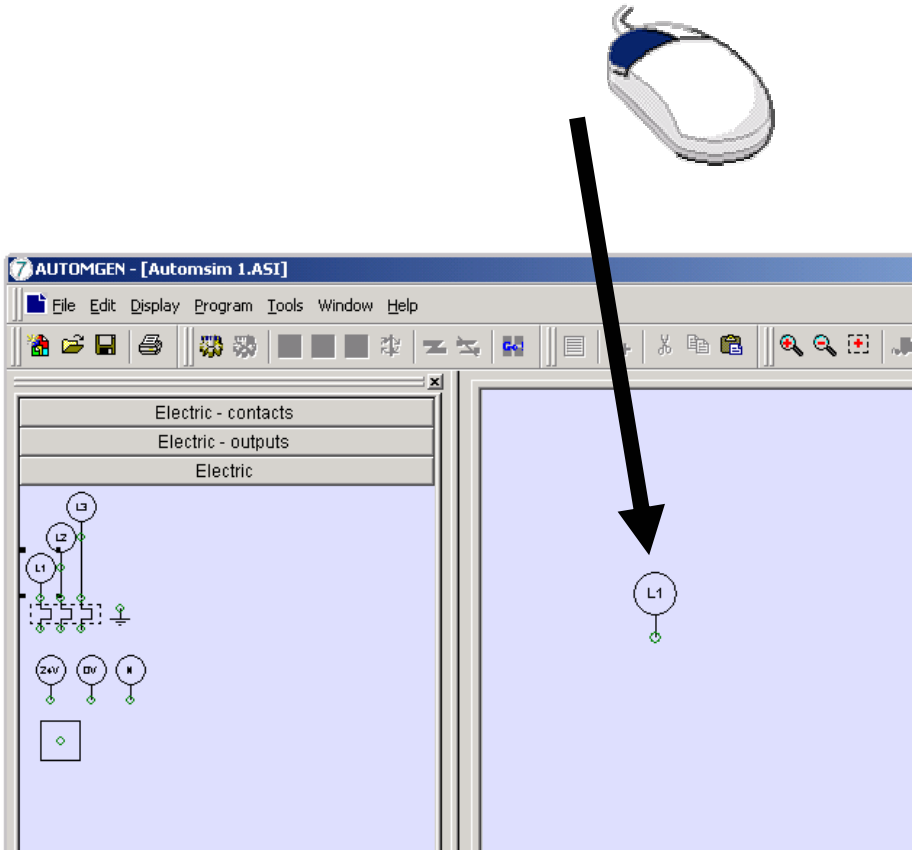
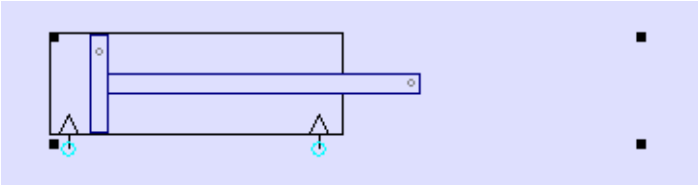
2- Click on the selected object(s), keep the button pressed and drag the object onto the sheet.



Selecting one or more objects.

To select an object, move the cursor of the mouse over the object, press the left button of the mouse and release it. Black squares appear around the objects when they are selected:



To deselect an object, repeat the same step.

To select several objects: keep the SHIFT key of the keyboard pressed and select several objects following the method described above.

To select several objects that are in the same area: press the left button of the mouse, move the cursor of the mouse – a selection rectangle

emerges – release the left button of the mouse when the selection rectangle is of the desired size.

To select an object that is under another object (several objects can be superimposed), click several times with the left button of the mouse on the objects covering each other: at each click, the selection moves from one object to the other.

Selecting one or more objects.

Move the cursor over one or more selected objects – the cursor of the mouse takes on the appearance of four direction arrows – press the left button of the mouse, move the objects by moving the mouse, release the left button of the mouse when the desired position for the objects is reached.

Deleting one or more objects.

Move the cursor over one or several selected objects, press then release the right button of the mouse and select “Delete”.

Changing the orientation of one or more objects

Move the cursor over one or more selected objects, press then release the right button of the mouse and select the desired setting in the “Rotation” menu.

Copying/cutting one or more objects to the clipboard

Move the cursor over one or more selected objects, press then release the right button of the mouse and select “Copy” or “Paste”.

Pasting one or more objects from the clipboard

Press then release the right button of the mouse over an empty area of the AUTOMSIM sheet and select “Paste” in the menu.

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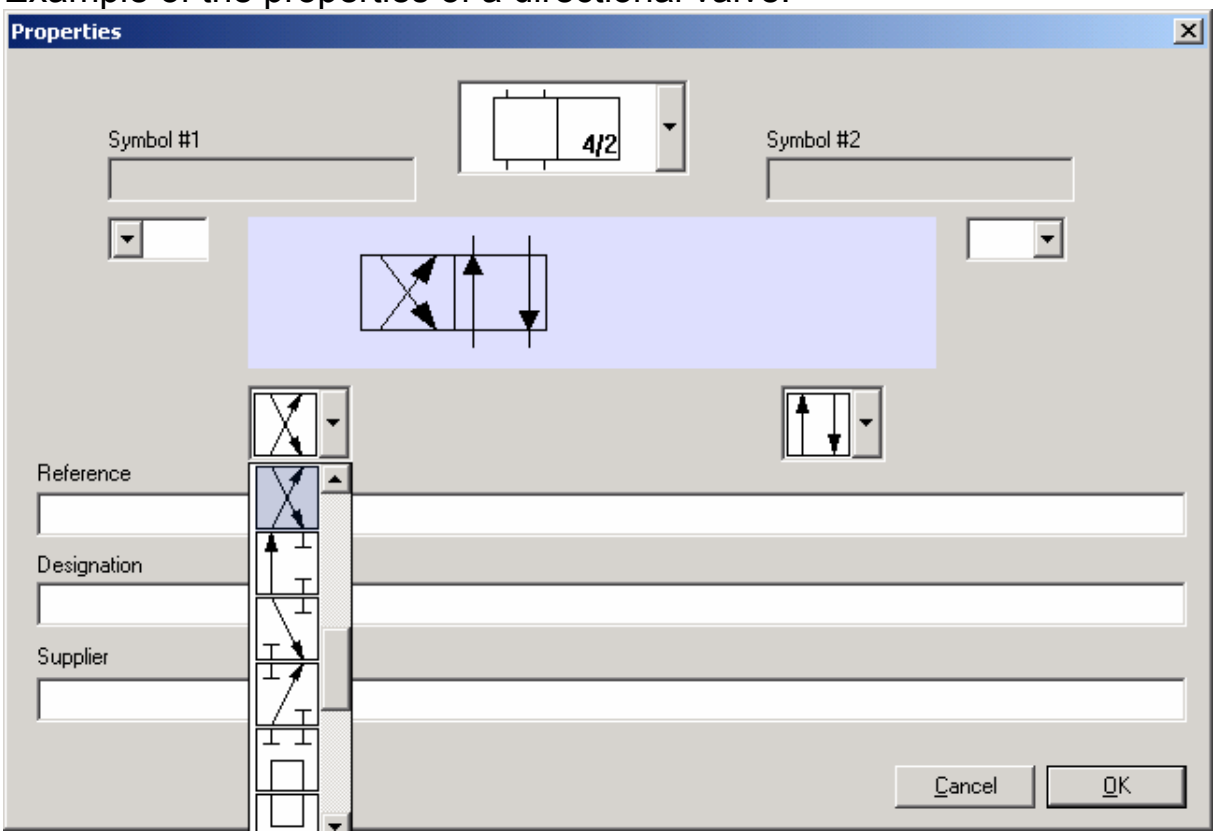
Modifying object properties.

Move the cursor over one or more selected objects, press then release the right button of the mouse and select “Properties”.

Example of the properties of a directional valve:



Exporting one or more objects

Move the cursor over one or more selected objects, press then release the right button of the mouse and select “Export”.

The objects are exported to files with the extension .ASO.

By exporting to the subdirectory “automsim/lib” of the installation directory of AUTOMGEN7, the new objects created appear in the AUTOMSIM assistant. The name of the file is the name shown in the assistant. If the name must contain the character ‘/’, substitute this character with ‘@’ in the file name.

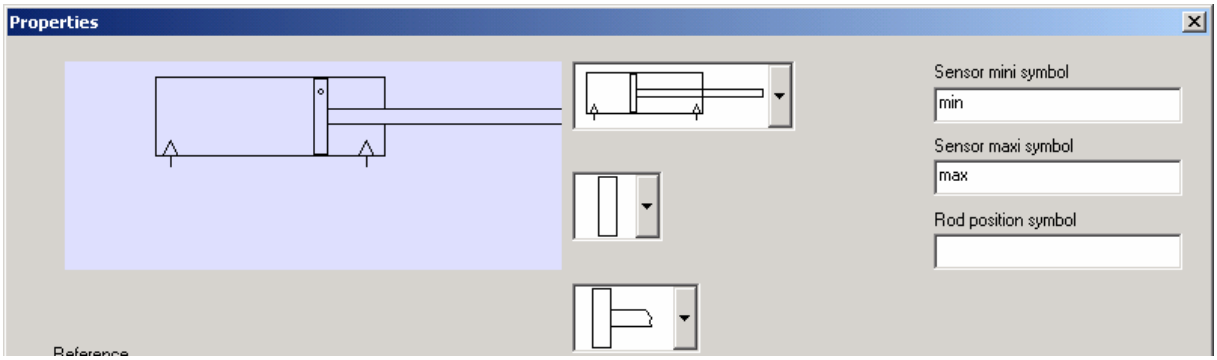
Functions

Interchanging objects

Interchanging AUTOMSIM objects is done either by visual links defined in the sheets (a pneumatic or electrical pipe connecting two objects for example) or by a symbol. A symbol is a generic name “mini sensor” for example. A symbol can be any name except for the key words reserved for the AUTOMGEN variable names (see the AUTOMGEN language reference manual) and the symbols used in the AUTOMGEN table of symbols.

Creating sensors associated with a cylinder

The mini and maxi end stops of a cylinder can be configured in the properties of the cylinder. Example:



References for the symbols used can be found in the electrical contacts

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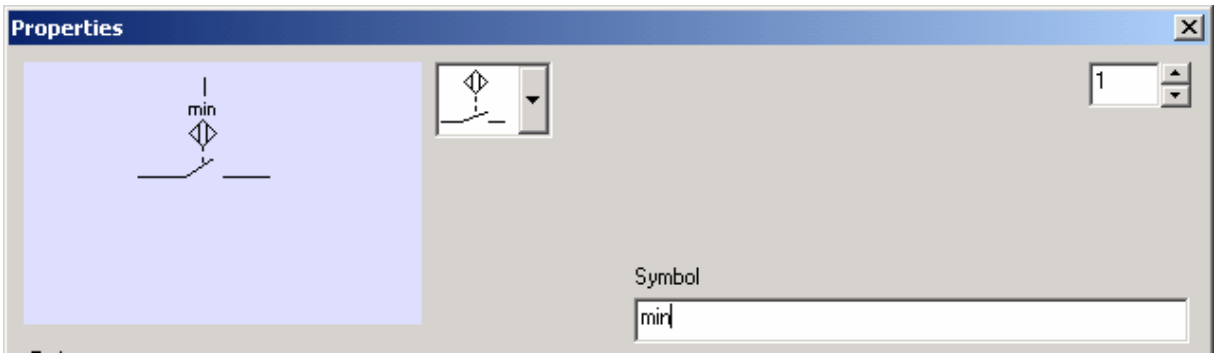
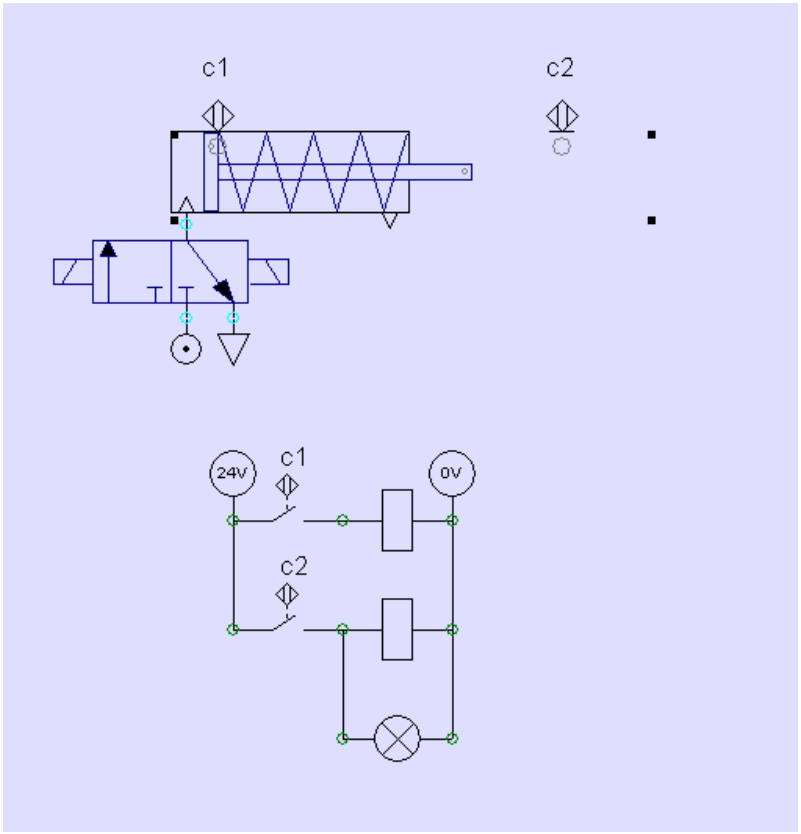
For example:



The sensors can also be positioned directly on the AUTOMSIM sheet. For example:



The gray circle associated with the sensor objects must coincide with the gray dot located on the piston or the cylinder shaft so that the sensor is activated.

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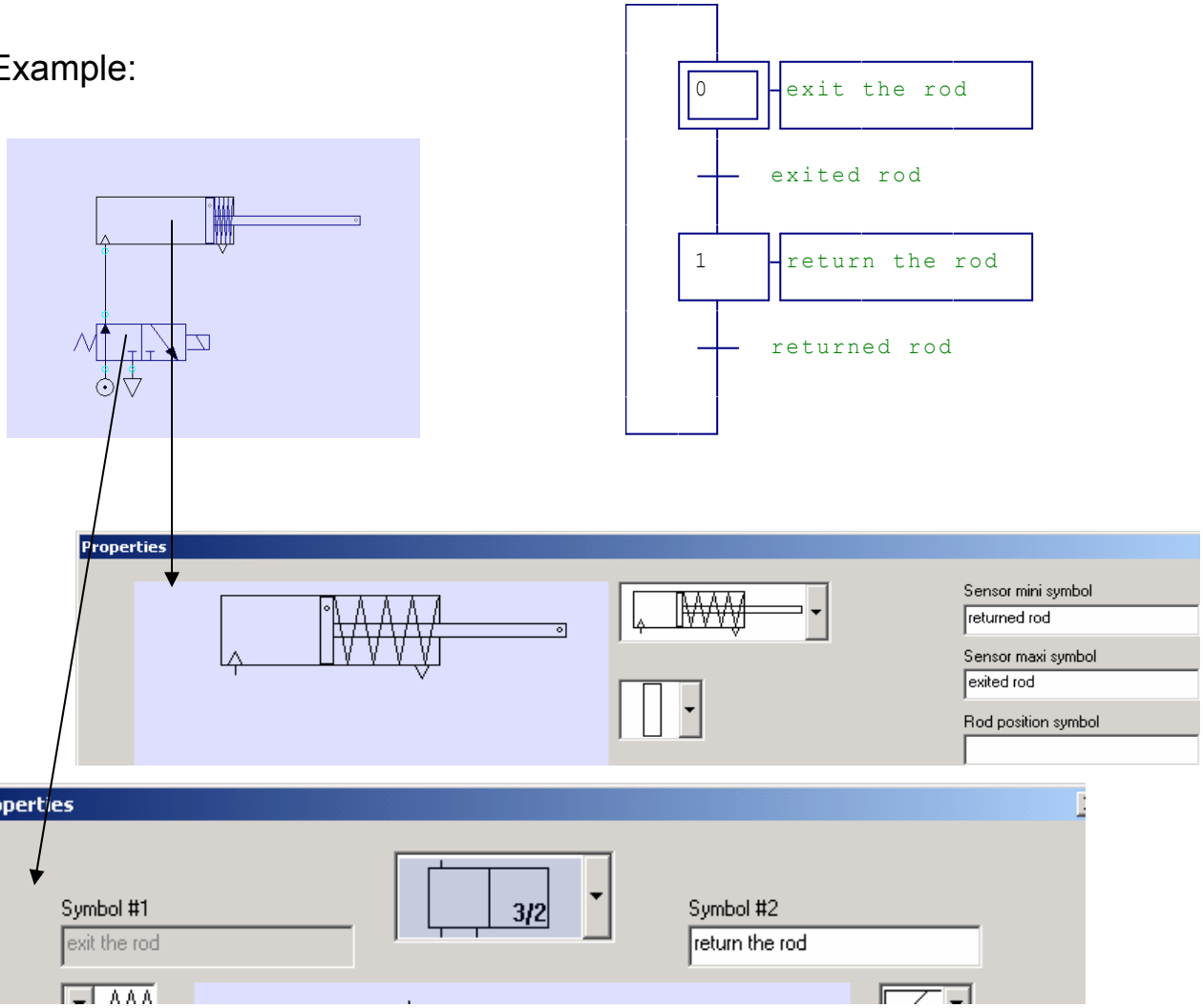
Interchanging AUTOMSIM objects with the automatism program

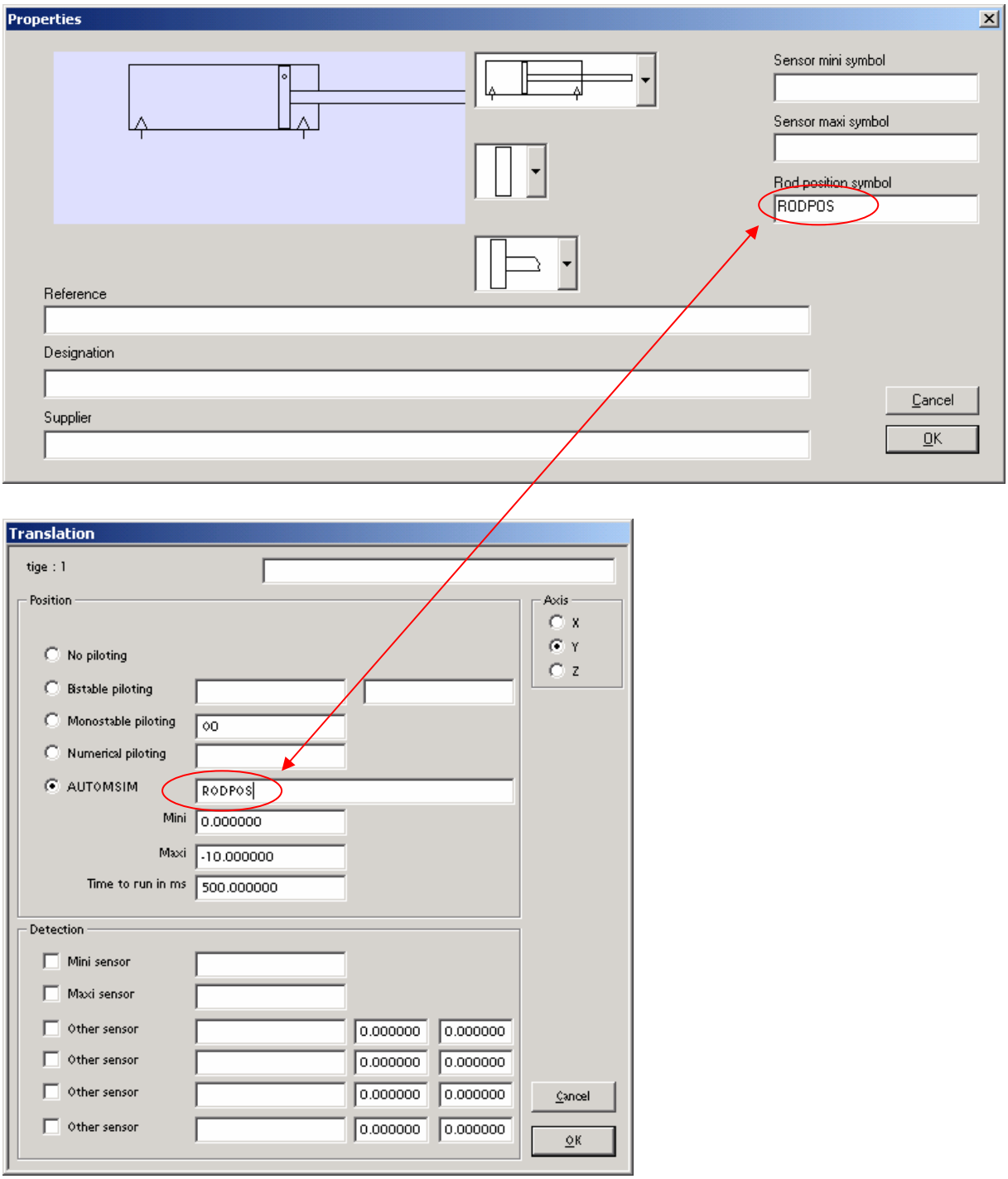
As seen above, the symbols used in the AUTOMSIM objects permit the exchange of information between objects. These symbols must not be either names of AUTOMGEN variables or names of AUTOMGEN symbols, as we only want to interact between AUTOMSIM objects. If we use an AUTOMGEN variable name or an AUTOMGEN symbol, then AUTOMSIM objects refer to AUTOMGEN variables and can therefore, depending on the situation, read or write automatism application variables.

Example:



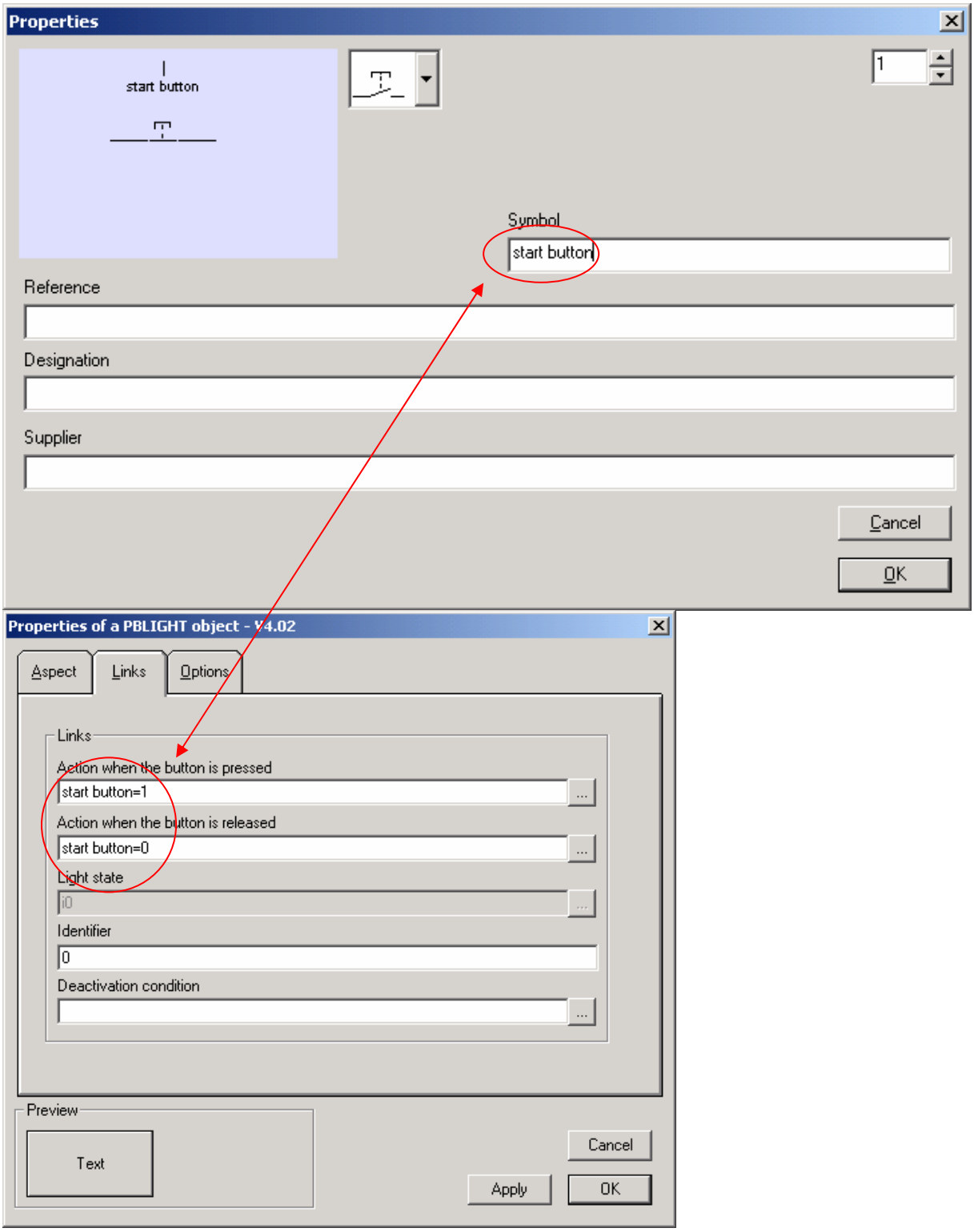
Interchanging AUTOMSIM objects with the IRIS 3D operating simulator

In the “Translations” and “Rotations” IRIS 3D performances, the AUTOMSIM type permits reference to be made to the position of an AUTOMSIM cylinder object (see the example complet2.agn).



Interchanging AUTOMSIM objects with the IRIS2D supervision objects

How can a link be made between an IRIS2D pushbutton or switch and an AUTOMSIM pushbutton or switch?



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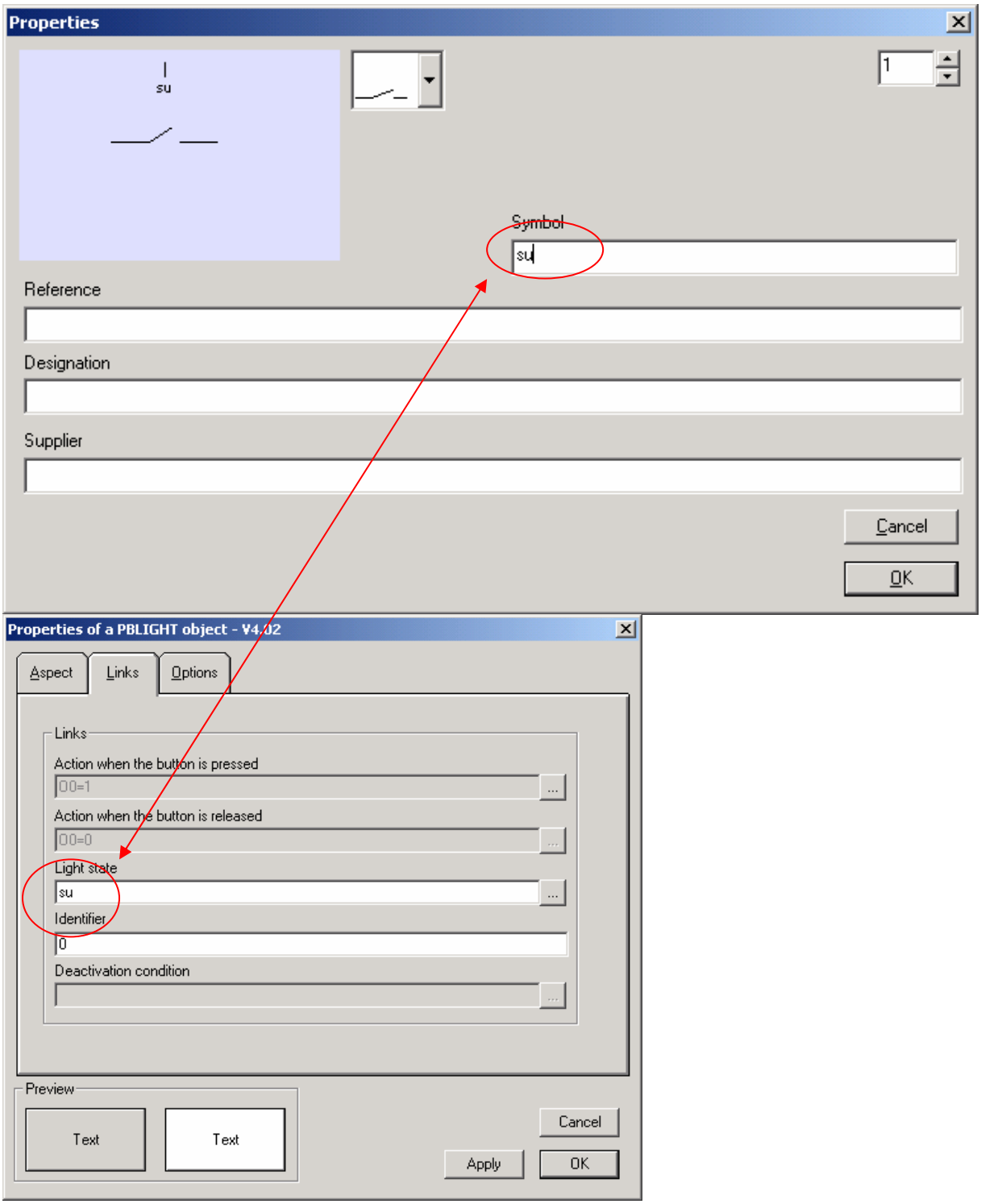
How can a link be made between an AUTOMSIM object and an IRIS2D indicator light?



Comments: note that the AUTOMSIM variables are considered as numerical variables. It is therefore necessary to write “su=1”