autoSIM-200 quick start guide





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2. Installation and registration



After installing the software, the licence must be registered. So, go to *Start\All programs\SMC\AUTOSIM\Licence*. The screen below appears:

Mensaje auto	No license, do you want to enter a license code (select NO if you want to use the trial version)?
<u><u>S</u>í</u>	<u>No</u>

If you press on **Yes** button, a dialog box appears where you have to enter the licence number (register or connection number) given by SMC International Training and, then, press on **OK** button.

🎾 WReg 1.006	
Please enter license code bellow then press [OK]	
<u>I</u>	
	OK
🔲 Use a proxy	
Solve licenses problems	Quit



The licence code with the letter **R**., is used in case to register a licence definitely in the PC (standalone license). The software autoSIM works without Internet connection.

The licence code with the letter **C**., is used when you want to connect to a licence (network license). The software autoSIM only works if the PC is connected to Internet.

For any questions or problems during the installation and registration process, contact to SMC International Training by email: <u>support-IT@smctraining.com</u>





3. Circuit design

- 1. Open the software autoSIM-200.
- 2. Click with the right button of the mouse over **Simula** and select *Add SIMULA page*.



- 3. A page of **Simula** is opened where you can create pneumatic, hydraulic, electric, electronic and differential equation circuits.
- 4. Open the library of **Simula** by pressing on the library button.



5. The library is opened where the user can select the technolgy that he wants to use. In this guide, a pneumatic circuit will be done.

Electric Electric (JIC)	*	Preview
Hydraulic		
🖶 🕋 Hydraulic & pneumatic		
🗄 🕋 Modeling systems		
🕀 🕋 Other		
🖻 🚛 Pneumatic		
E Accessory		
E Actuators	E	
Cynners Cynners Cynners Stake Stake Stake Single acting cylinder with sensors Single acting cylinder spring exit Single acting cylinder spring return Single acting cylinder spring return		
the tree to select an object then click on "Open" to add the object to	а	
ect.		Canad





- 6. Select the object **Double acting cylinder** inside the directory *Preset objects\Pneumatic\Actuators\Cylinders\Double acting cylinder.*
- 7. Press on the button **Open**.
- 8. Paste the object in the **Simula** page created previously.



- 9. Select the object **Push buttons** inside the directory *Preset objetcs\Pneumatic\Directional valves\Directional Valves* 5/2\Push buttons.
- 10. Press on the button **Open**.
- 11. Paste the object in the **Simula** page created previously.



- 12. Add the objects **Pressure source** and **Exhaust** located in the directory *Preset objects**Pneumatic**Flow lines*.
- 13. Connect the valve to the cylinder. To do that, click once with the left button of the mouse over the initial connection and click once again with the left button of the mouse over the final connection.
- 14. The final result should be as the picture in the next page.









4. Running an application on a PC

1. The simulation **starts up** by pressing on **Go!** button, located inside the menu *Programs**Go!*. You can also start up the simulation by pressing on **Go!** button located in the tools bar.



2. If you want to **stop** the simulation, you have to press again the **Go!** button.





5. Programming design

- 1. Open the software autoSIM-200.
- 2. Click with the right button of the mouse over **Programs** and select *Add a new folder*.

🤪 autoSIM V4.00 - Project1	-
<u>File Edit Display Program Tools Window</u>	<u>H</u> elp
🛛 🗋 🖶 🚳 🥸	
Project x	
Project : (without name)	
Programe	
Symbol: 🛃 Add a new folder	
🕀 💮 Configu 📑 Import one or more exist	ting folders
Paste	Ctrl+V

3. The screen below is opened. Write a name for the program and click over **Ok** button.

reating a new folder	
Name (a generic name), leave the default name or enter a signifi	cant name.
Size (the dimensions of the surface of the folder, XXL can be us very large folders (recommended). To create a Gemma select "G	ed to create iemma''.
XXL (very large folders)	-
Comments (for example the last modifications, the author etc). Create 26/8/2015. Edit 26/8/2015.	

4. A new page of **Programs** is opened where you can créate the program in different languages: *Grafcet*, *Ladder*, *Flow chart* and *functional blocks* (you have to edit them in structured text).





5. Open the library of **Programs** by clicking over the icon showed below.



6. The wizard of **Programs** is opened where the user can select the programming language and write the first lines of code.

sistant Grafcet Ladder Row chart Function t	blocks			
Initial step ○ divergence in Or ○ divergence in And	 ✓ Loop branches action width 	✓ action rectangles	÷2 ÷0 ÷10	Steps first interval
			Aceptar	Cancelar

7. You have to generate the **Symbol table** to link the memory addresses with the symbols selected by the user. To do this, click with the right button of the mouse over **Symbols** and select *Create a symbol table*.





autoSIM-200 - HELP CONTENT

8. The page of **Symbol table** is opened where the user can enter the symbols that he needs by pressing over the button *New symbol*.



9. The next screen appears where the user have to enter the name of the symbol, the memory address and a comment for the symbol (the comment is optional).

Name				
Associated variabl	le			
Associated comm	ents			
The name can co	ntain any characte	r with the except	ion of '_'.	<u></u>
comply with IEC-1	131-3 or autoSIM	syntax.		Cancel



10. Now, you can start to write the code of the program. So, click with the left button of the mouse over the red square (see the picture). This square must be positioned over the action or transition that you want to create (this example has been generated with *Grafcet* language).



11. When you press over the 3 points button, a new screen with all symbols generated by the user appears. Click twice over the symbol (the symbol must appear in the upper gap) and press on *Ok* button.







6.2D application design

- 1. Open the software autoSIM-200.
- 2. Click with the right button of the mouse over **Iris** and select *Add an IRIS 2D object*.

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3. The library of 2D object is opened where the user can select the object for the application: pushbuttons, switches, displays, etc.

Base objects Analog value Betton and light	
Sound Sound Objetos de base Objetos predefinidos	
Console elements	
Parameters	Values
Gupervision	Values
Parameters Preview	Use the tree to select an object. Modify any parameters if necessary (by clicking on the elements in the "values" column) then click on "Open" to ado the object to a project.
Parameters Preview	Values Use the tree to select an object. Modify any parameters if necessary (by clicking on the elements in the "values" column) then click on "Open" to ado the object to a project.





4. It is recommended to select the object *desktop* or **console** firstly, because it is the main screen where the user can insert the rest of the 2D objects.



5. If you click with the right button of the mouse over this window, the object changes between editing and monitoring mode. In editing mode, some buttons appear in the right top side, whose meaning is explained below:







- 6. If the **Menu** button is pressed, the user can insert more object to the desktop. To do that, select the option *Add an object*. Then, the 2D objects library is opened where the user can select the object that he wants to insert.
- 7. Every 2D object has the buttons mentioned previously, except the **Menu** button, located only in the object called desktop or console.
- 8. If the **Properties** button is pressed, the user can modify the appearance of the objects and link the objects to the symbols.

Push button C Light C Push button	and light	Colors Red • Green • Blue •	Back, unlit
Size of the object Width Hi 84 8	eight 4	Font	Change
Form Rectangle Texts Text	C Ellipse Direction	Margin : 0 Help text	Bubble text
Vertical text posi Horizontal text p	tion :	entere C Top entere C To left	C Bottom C To right
Preview			Cano

In the tab **Aspect**, the user can modify the appearance of the object: add text, select the shape and size of the object, the colour,...



e tion condition	when the button is released
e	ate
e	ate
tion condition	ate
tion condition	er
tion condition	vation condition
tion condition	vation condition
1.444.0	

In the tab **Links**, the user can link this object to the memory address or symbol. To do this, the user must fill in both gaps as follows:

- Action when the button is pressed \rightarrow <memory address>=1
- Action when the button is released \rightarrow <memory address>=0





7. Import 3D drawings

- 1. Open the software autoSIM-200.
- 2. Click with the right button of the mouse over **Resources** and select *Import one or more 3D files*.



3. Select the 3D drawing that you want to import to the project (autoSIM accepts these drawing formats **3DStudio** and **SolidWorks**).

Bus <u>c</u> ar en:	3DStud	lio	•	⇐ 🗈 💣 💷 ◄	
Ca	Nombre	*		Fecha de modifica	Tipo
	Base.3	ds		05/11/2009 17:20	Archiv
Sitios recientes	Base_S	oporte_Expedicion.3ds		12/11/2009 10:48	Archiv
	Cil_Ali	mentador_Cam.3ds		05/11/2009 17:04	Archiv
Escritorio	Cil_Ali	mentador_Vast.3ds		05/11/2009 17:05	Archiv
	Cil_Exp	pedicion_Cam.3ds		12/11/2009 10:24	Archiv
	Cil_Exp	pedicion_Vast.3ds		12/11/2009 10:24	Archiv
Bibliotecas	Cil_Exp	pedicion2_Cam.3ds		12/11/2009 10:25	Archiv
	Cil_Exp	pedicion2_Vast.3ds		12/11/2009 10:25	Archiv
	Cil_Exp	oulsor_Cam.3ds		06/11/2009 9:16	Archiv
Equipo	Cil_Exp	oulsor_Vast.3ds		06/11/2009 9:16	Archiv
	Cil_Me	edidor_Cam.3ds		05/11/2009 17:53	Archiv
Bed	Cil_Me	edidor_Vast.3ds		05/11/2009 17:54	Archiv
neu	Cil Tra	aslacion Cam.3ds		05/11/2009 17:34	Archiv
	•		_		•
	Nombre:			▼	Abrir
	Tipo:	3D Studio files (*.3DS)		•	Cancelar



4. When the user opens the file, autoSIM converts it automatically into the format used by **Iris 3D** (DirectX format).



5. Now, the 3D drawing is available to be used in the project.

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8.3D application design

- 1. Open the software autoSIM-200.
- 2. Click with the right button of the mouse over **Iris** and select *Add an IRIS 3D console*.

//



3. The 3D desktop is opened, where the user can select the background colour of the virtual universe (leave the other fields as they appear by default).

IRIS 3D object properties
Position of the lighting x= y= -1 z= -1
 manage the transparent objects (slower if checked) authorize the configuration
 ○ rotation of the camera on X ○ rotation of the camera on Y ○ rotation of the camera on Z
Gravity vector x= 0 y= -19 z= 0
These parameters set the mode used in IRIS 3D. "authorize the configuration" must be checked in design mode (to add objects to the scene and set their parameters). The rotation axis affects 3D browsing.
Others <u>C</u> ancel <u>O</u> K





- 4. Press on **Ok** button.
- 5. Now, the next window is opened, where the user can start to insert the 3D drawings imported previously. To do this, press on **Options** button and select *Open the configuration window*.



6. Select the 3D object that you want to import to the virtual universe and press on **Add** button.



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X:	North and Local and the			Contraction of Contractions
				trend to the
y:				
Z:				
Axis position of rot.				
8:				
y:				
z:				
J Detetion on (andian)				
x:				
9:]				
2:]				
Size				
	I			
Colour	Import	<u>B</u> efresh	Center on sele	cted object
▼ Texture		-	Add	Add all
	conveyor		-10	10
Invisible Detectable			Min	0
Transparencu				
				Max
1			10	
Physical engine C Motused		Marr		
C Fixed		Eriction	Apply phy	sics
C Use gravity		- Bectitution		
C Moving object	1	riestitution	Execute auto	omatically
Object form: C Box	C Sphere	C Capsule		
Physical engine : 🚺 Tokamak	C Bullet			
Script				
				*
1				

7. When the 3D object has been inserted in the virtual universe (**apply the size 200**), the user can add different actions: translation movement, rotation movement, colour change, link and another behaviour.





8. In the case of adding a translation movement, the user must fill in the following fields:

onveyor: 0				
Position				Axis
				(X
No piloting				O Z
C Bistable piloting				
C Monostable piloting				
C Numerical piloting				۱ <u> </u>
C AUTOMSIM				Ju
Mini	0.0000			
Maxi	0.0000			
Time to run in ms	0.0000	0.0000		٦.
	1	1		
Detection				7
Mini sensor		f		
Maxi sensor				
C Other sensor		0.0000	0.0000	-
Other sensor		0.0000	0.0000	
		0.0000	0.0000	Cancel
Other sensor				

- a. **Axis.** Direction of the movement.
- b. **Position.** Type of piloting. Enter a physical output address to do the movement (no enter the symbol). When this address is activated, the movement will be done.
- c. Mini. Initial position of the movement.
- d. Maxi. Final position of the movement.
- e. **Time to run in ms.** Time that the object needs to go from "mini" to "maxi". If the second gap is 0, the object takes the same time to go from "mini" to "maxi" and from "maxi" to "mini".
- f. Detection.
 - i. **Mini sensor.** Detection of the initial position. Introduce a physical input address (no enter a symbol). This memory address will be activated when the object reaches the position.
 - ii. **Maxi sensor.** Detection of final position. Introduce a physical input address (no enter the symbol). This memory address will be activated when the object reaches the position.