

RASWIN Module SRS Generating links from PL

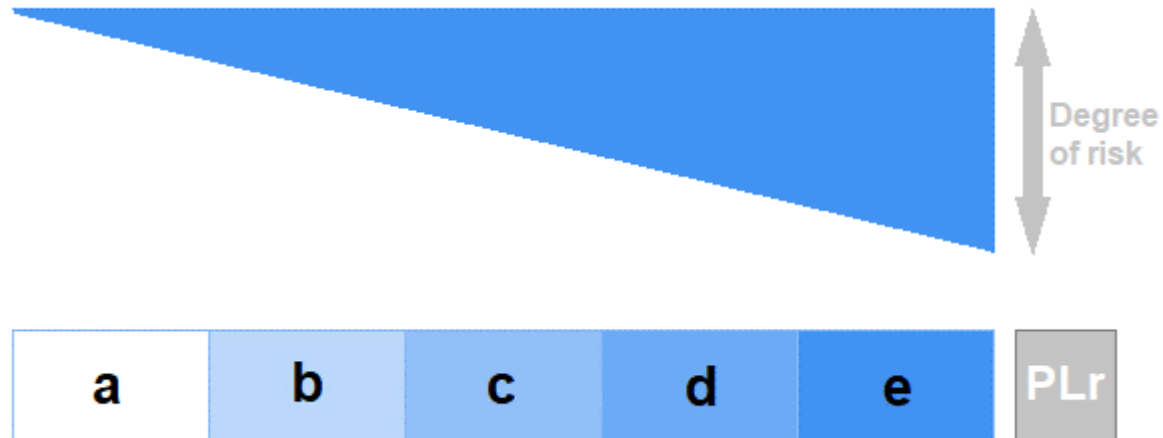
Performance Level?

PL Gfx Module

PL is a measure of the reliability of a safety function. This value depends on different parameters as Probability of failure or Mean time to failure.

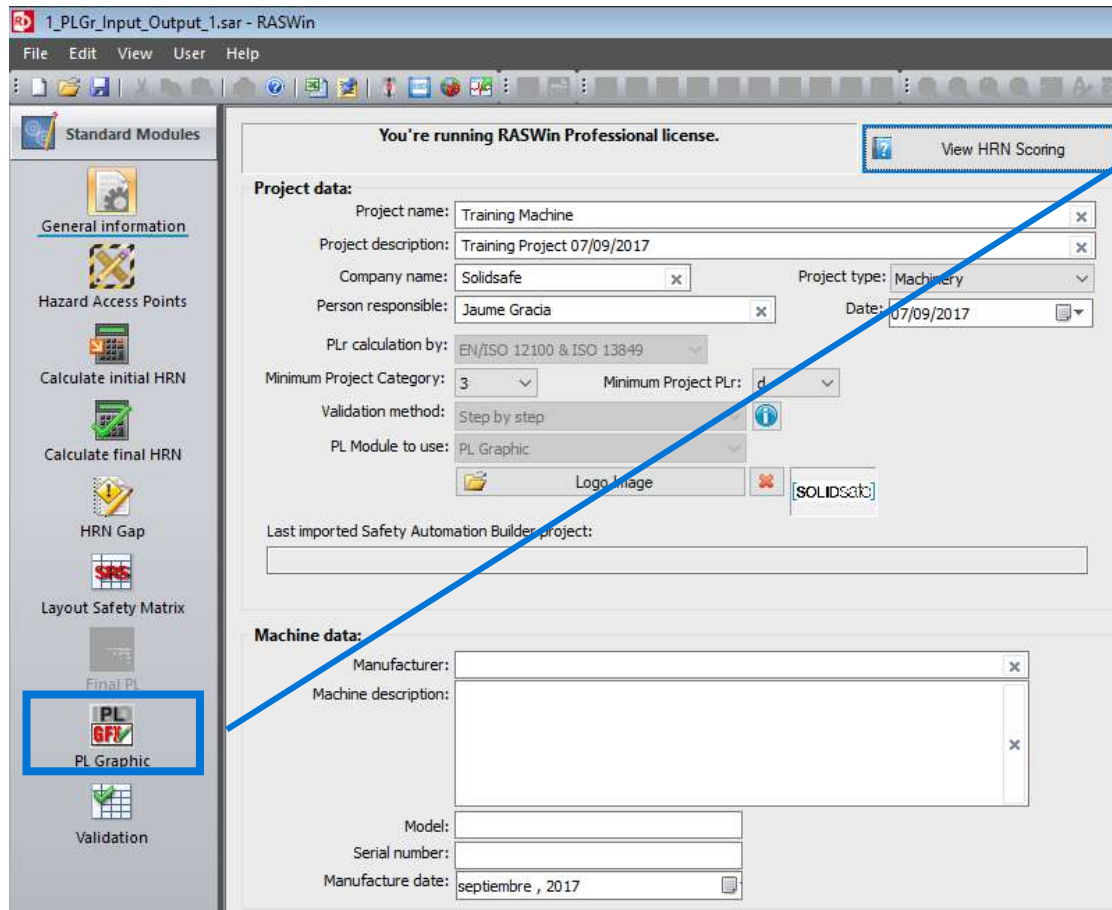
PL is divided into five levels (a-e).

PL e gives the best reliability and is equivalent to the required at the highest level of risk



How to calculate the PL in RASWin?

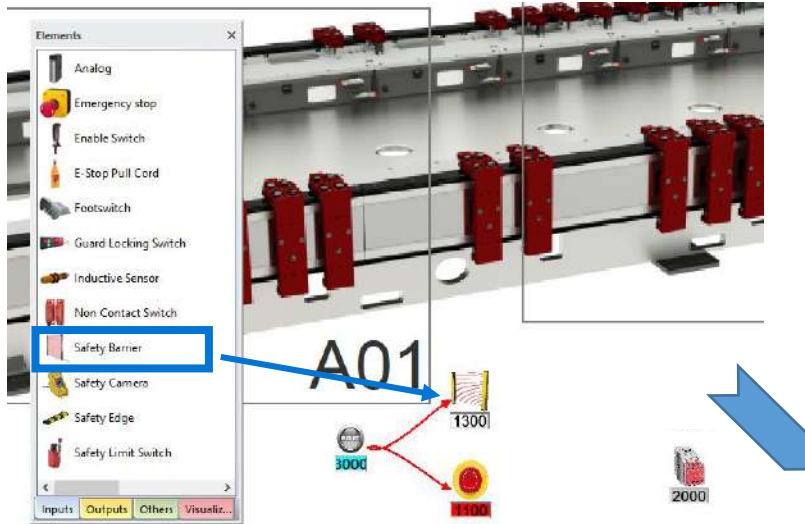
PL Gfx Module



1. Click on PL Gfx Module icon.

How to calculate the PL in RASWin?

PL Gfx Module



Select Component type for element:

1300

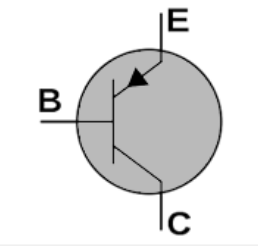
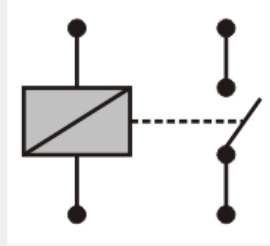
Access Point: A02 - Access Point 2

1 - Select source of element information

Enter Manually

2 - Select the type of component from the two below:

Electronic component Electromechanic component

3 - Select number of signals (automatic if connected to and IO module):

1 Signal 2 Signals

Cancel Ok

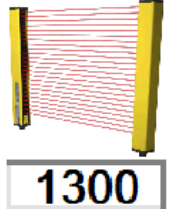
1. Add a new Input element (for example a Light Curtain)
2. Select the Access point of the element
3. Select electronic component (Light curtain is an electronic device).
4. Select the number of signals.

Step 1: Create input elements

How to calculate the PL in RASWin?


PL Gfx Module

Enter component data manually:



1300

Subsystem information	
Name:	Light Curtian
Documentation:	Light curtain zone 2
Reference:	XXX-XXXX
Manufacturer:	Sick
Performance level (PL):	e <input checked="" type="checkbox"/> PFH [1/h]: 3.16e-08
Reasoning:	Sick Manual
Operation period:	20
Shortest period of operation:	20

Document:  Load file ...

!	Description
Warning	The indicated number of signals does not match the signals required for the specified category

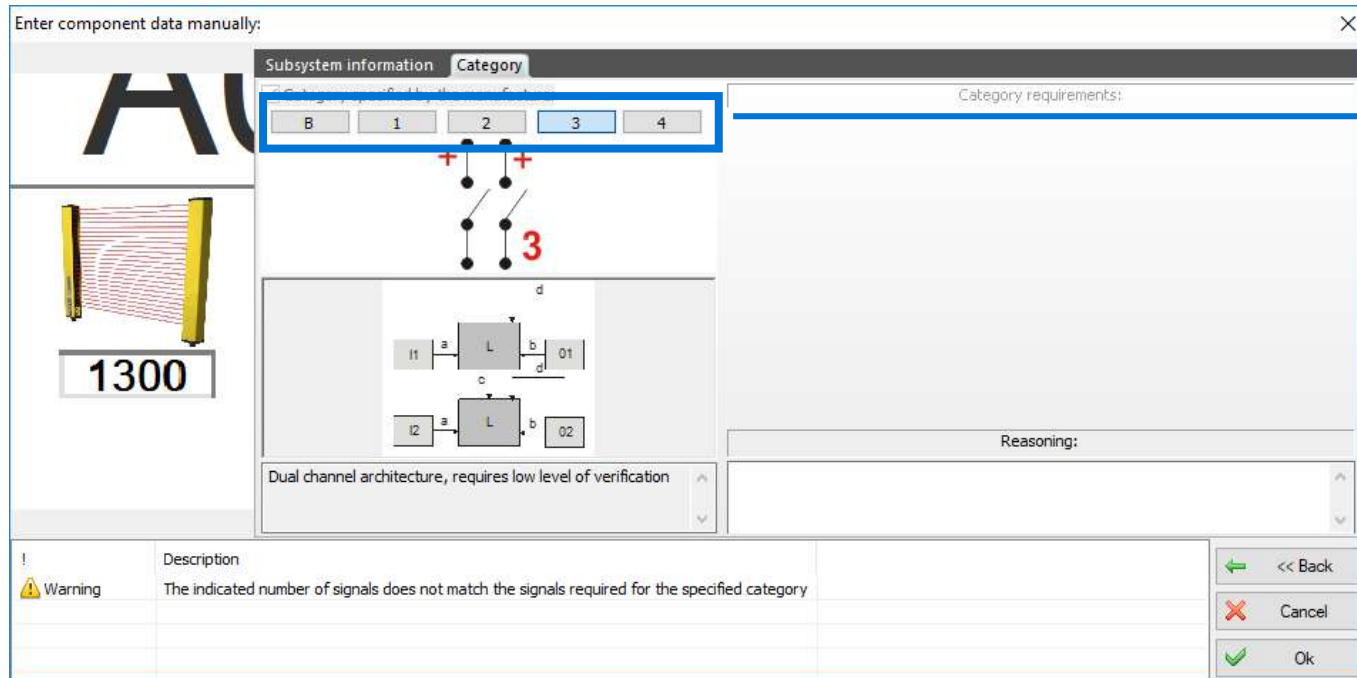
<< Back
Cancel
Ok

1. Add the element information
2. Load an image to describe the element
3. Select the PL of the element (Manufacturer's information)
4. Click on the checkbox
5. The PFH will be automatic loaded
6. Click on "Category"

Step 2: Add information of the Input element

How to calculate the PL in RASWin?

PL Gfx Module

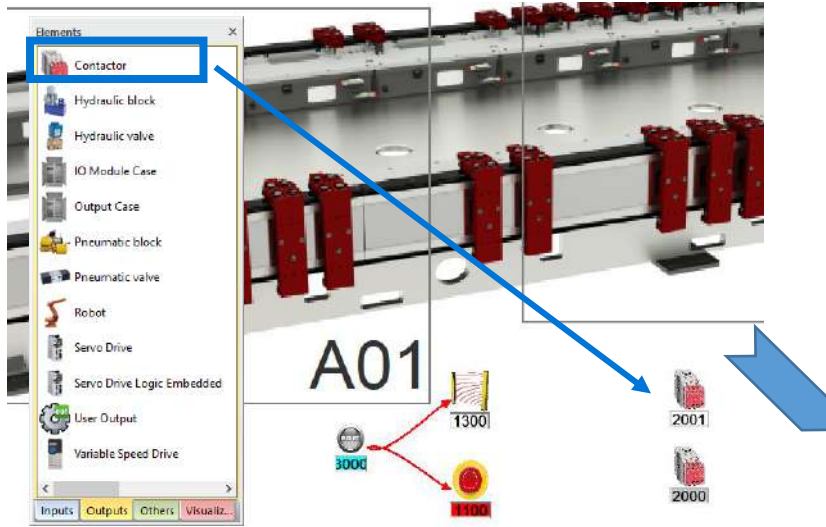


1. Select the Category of the element (Manufacturer's information)
2. Click "Ok"

Step 3: Add the category of the Input element

How to calculate the PL in RASWin?

PL Gfx Module



Select Component type for element:

2001

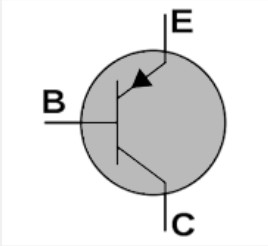
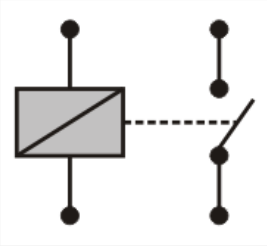
Access Point: A02 - Acces Point 2

1 - Select source of element information

Enter Manually

2 - Select the type of component from the two below:

Electronic component Electromechanic component

3 - Select number of signals (automatic if connected to and IO module):

1 Signal 2 Signals

Cancel Ok

1. Add a new Output element (for example a Contactor)
2. Select the Access point of the element
3. Select the type of component
4. Select the number of signals.

How to calculate the PL in RASWin?

PL Gfx Module

Enter component data manually:

Subsystem information | **Category**

Name: Contactor 2

Documentation: Contactor diagonal movement

Reference: XXX-XXXX


Manufacturer: Rockwell Automation

Performance level (PL): B PFH [1/h]: 1

Reasoning:

Operation period: 20 Shortest period of operation: 20

Load file ...



2001

!	Description
Error	: this subsystem must use the basic safety principles, modify this requirement in the Category tab.
Information	: In category B and 1 systems, the DCAvg is not considered.
Warning	The indicated number of signals does not match the signals required for the specified category

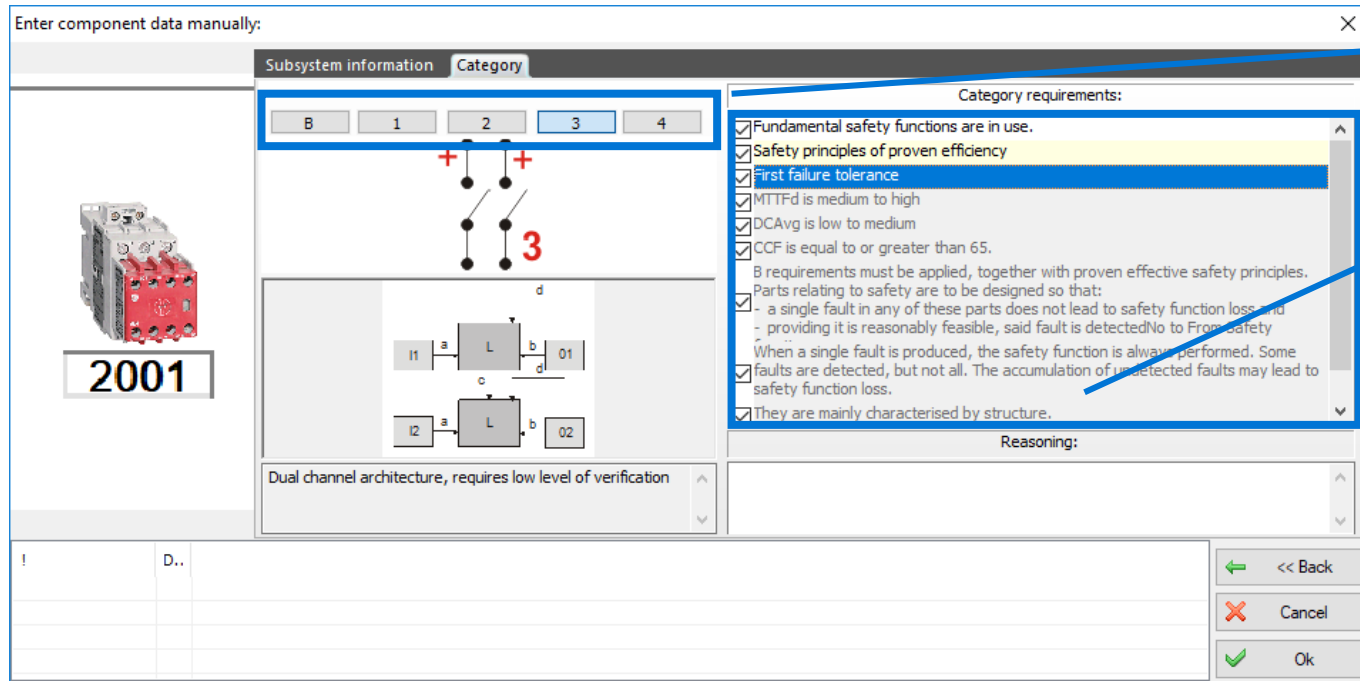
<< Back
Cancel
Ok

1. Add the element information
2. Load an image to describe the element
3. Click on "Category"

Step 5: Add information of the Output element

How to calculate the PL in RASWin?

PL Gfx Module



1. Select the Category of the element (Manufacturer's information)

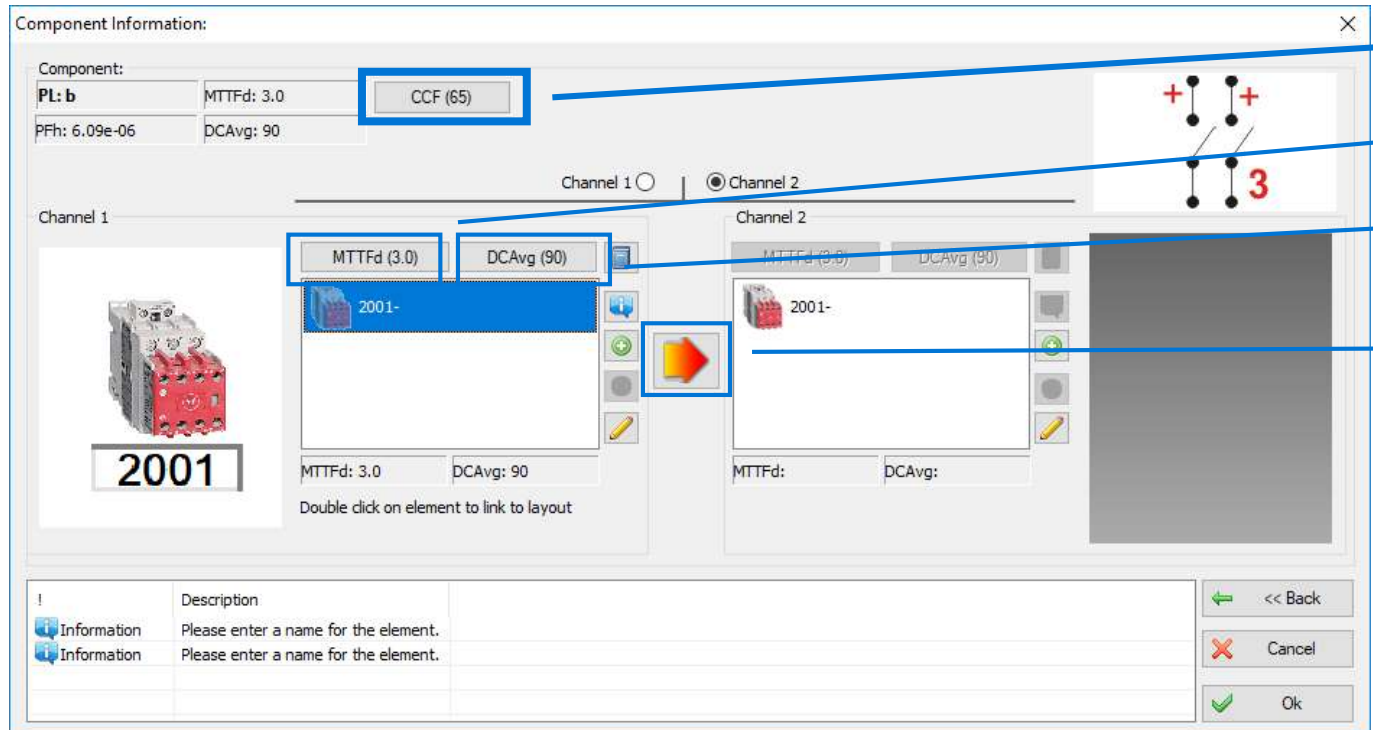
2. Select the category requirements

3. Click "Ok"

Step 6: Add the category of the Output element

How to calculate the PL in RASWin?

PL Gfx Module



1. Add the CCF value

2. Enter the MTTFd value

3. Enter the DCAvg value

4. Click on the arrow to copy the parameters of channel 1 to channel 2

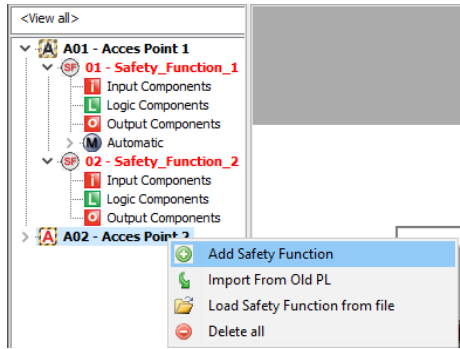
5. Click "Ok".

Step 7: Add the Safety parameters of the element

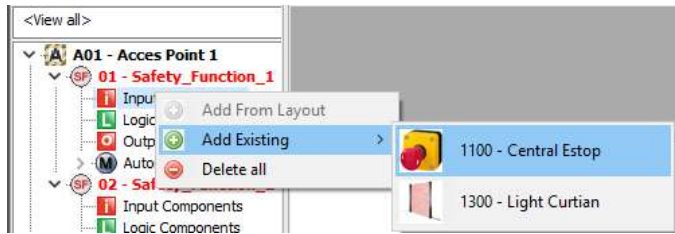
How to calculate the PL in RASWin?

PL Gfx Module

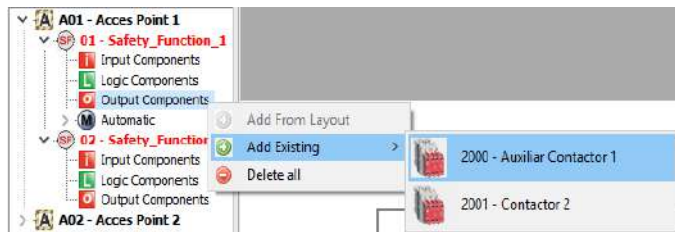
Step 8: Enter the elements to each Safety Function



1. Create a safety function



2. Add the input elements to a Safety Function

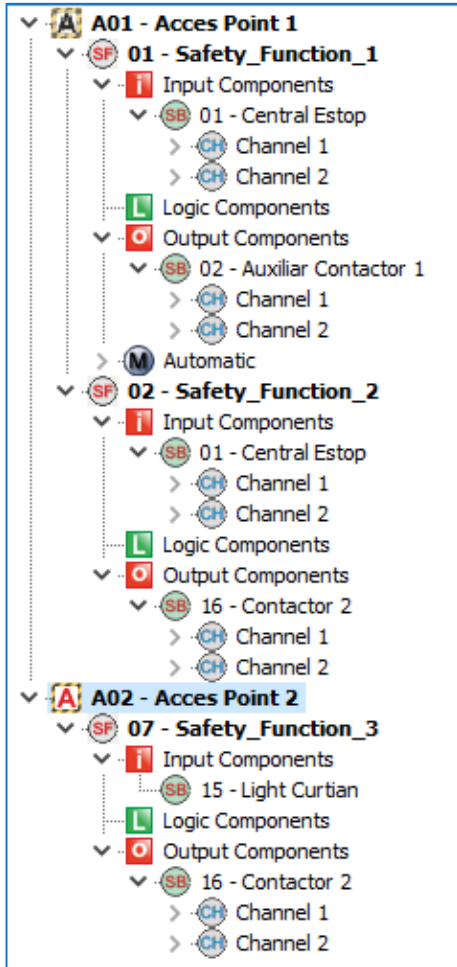


3. Add the Output elements to a Safety Function

4. Repeat for each Safety Function

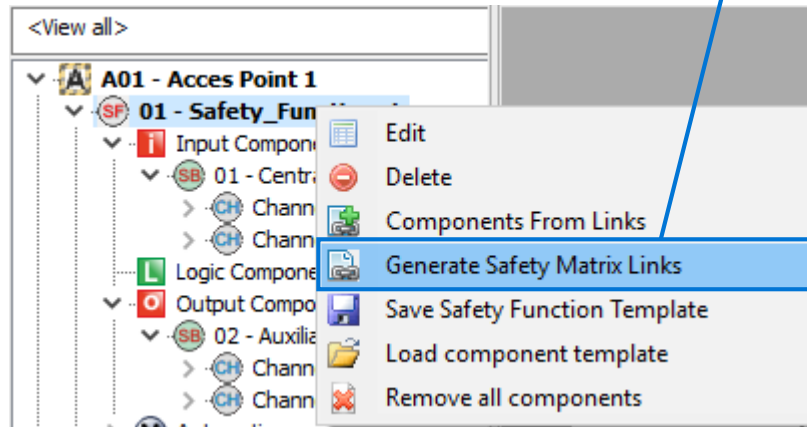
How to calculate the PL in RASWin?

PL Gfx Module



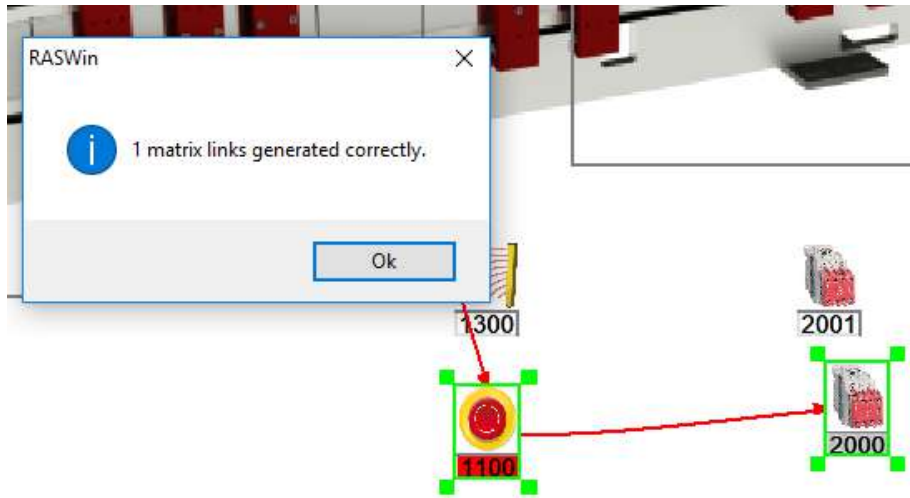
Once all the Safety Function have been created is able to generate the links of the Safety Matrix from the Safety Function.

1. Select the safety function
2. Select Generate Safety Matrix Links



How to calculate the PL in RASWin?

PL Gfx Module



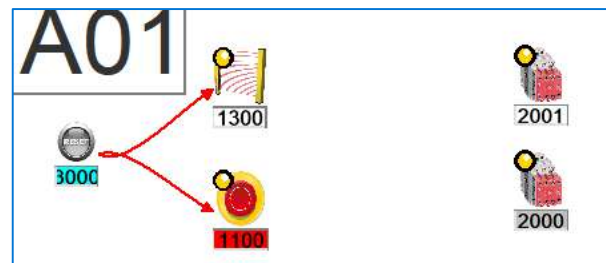
A message will appear with the information of how many links have been generated.

The link of the first Safety Function (Estop-KA1), has been created

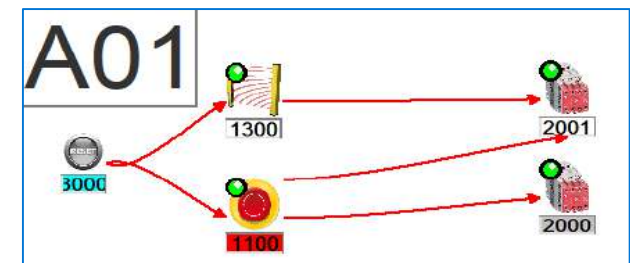
Repeat the process for each Safety Function

Finally all the links of the Safety Matrix will be generated

Before Generating links

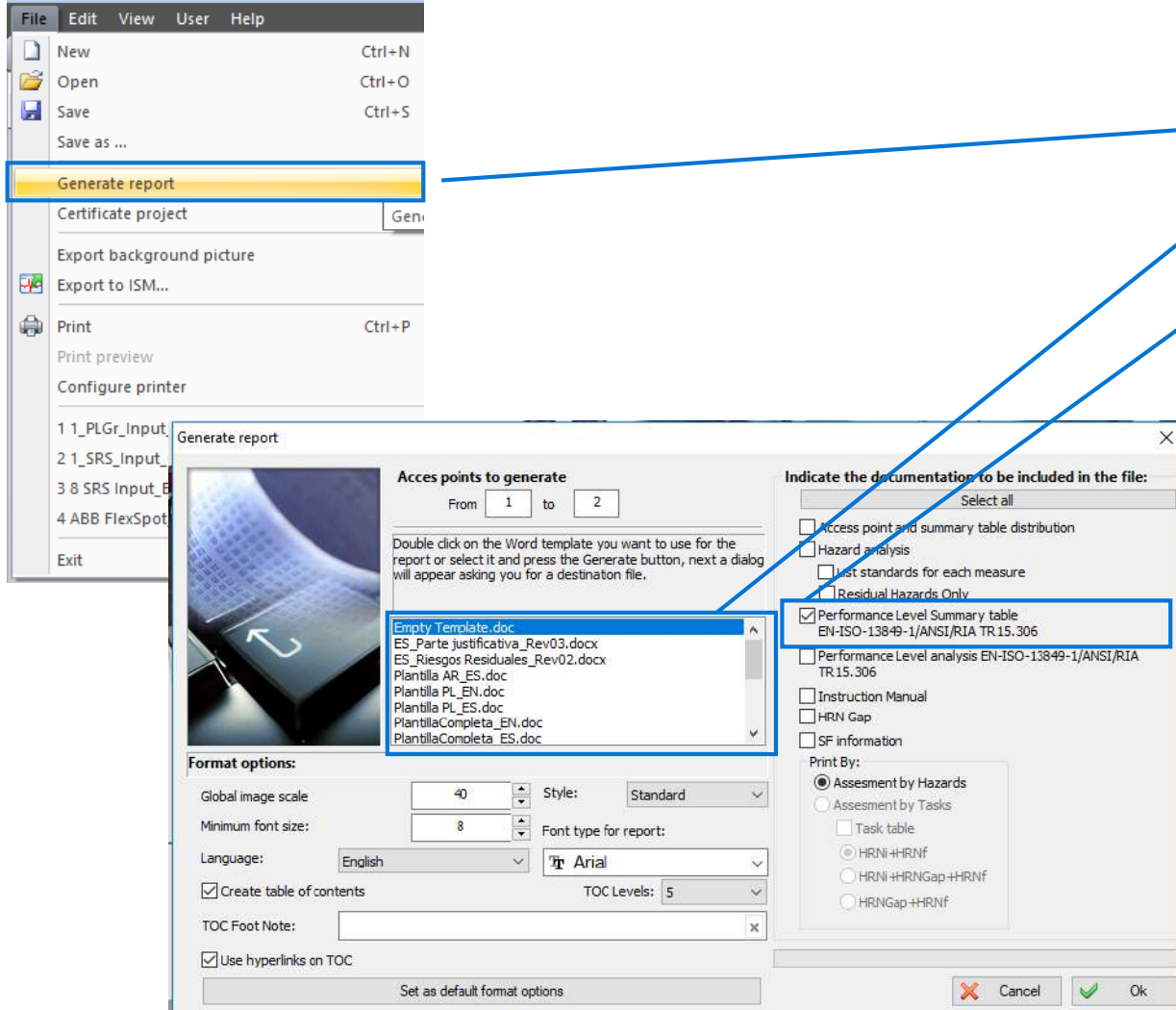


After Generating links

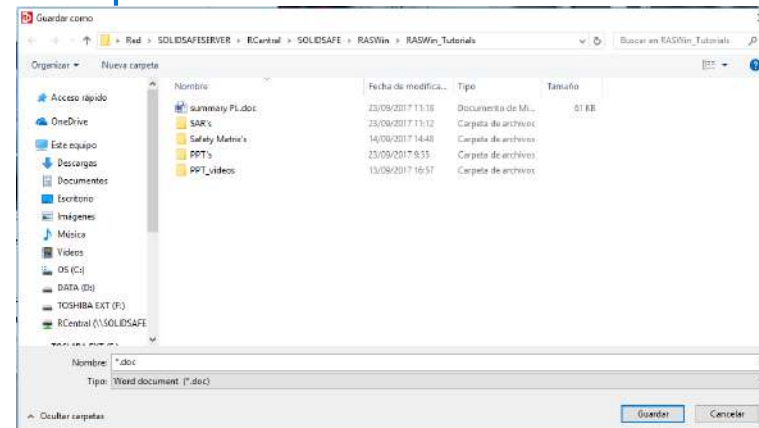


How to calculate the PL in RASWin?

PL Gfx Module



1. Click on “File”
2. Select “Generate report”
3. Select the Word Template
4. Select “Performance level Summary table”
5. Click “Ok”
6. Save the document



Step 11: Generating report

How to calculate the PL in RASWin?

PL Gfx Module

Access point	Function	Subsystem	PLr	PL	PFh
A01-Access Point 1	A01.01 - Safety_Function_1	Central Estop	d	e	4.98e-09
		Auxiliar Contactor 1			4.08e-09
	A01.02 - Safety_Function_2	Central Estop	d	e	9.06e-10
		Contactor 2			4.70e-08
A02-Access Point 2	A02.07 - Safety_Function_3	Light Curtian	c	e	4.08e-09
		Contactor 2			4.29e-08
					7.45e-08

The summary of the PL has been created

PL Summary generated