RASWIN Module SRS
# Configuring Safety Parameters of Elements

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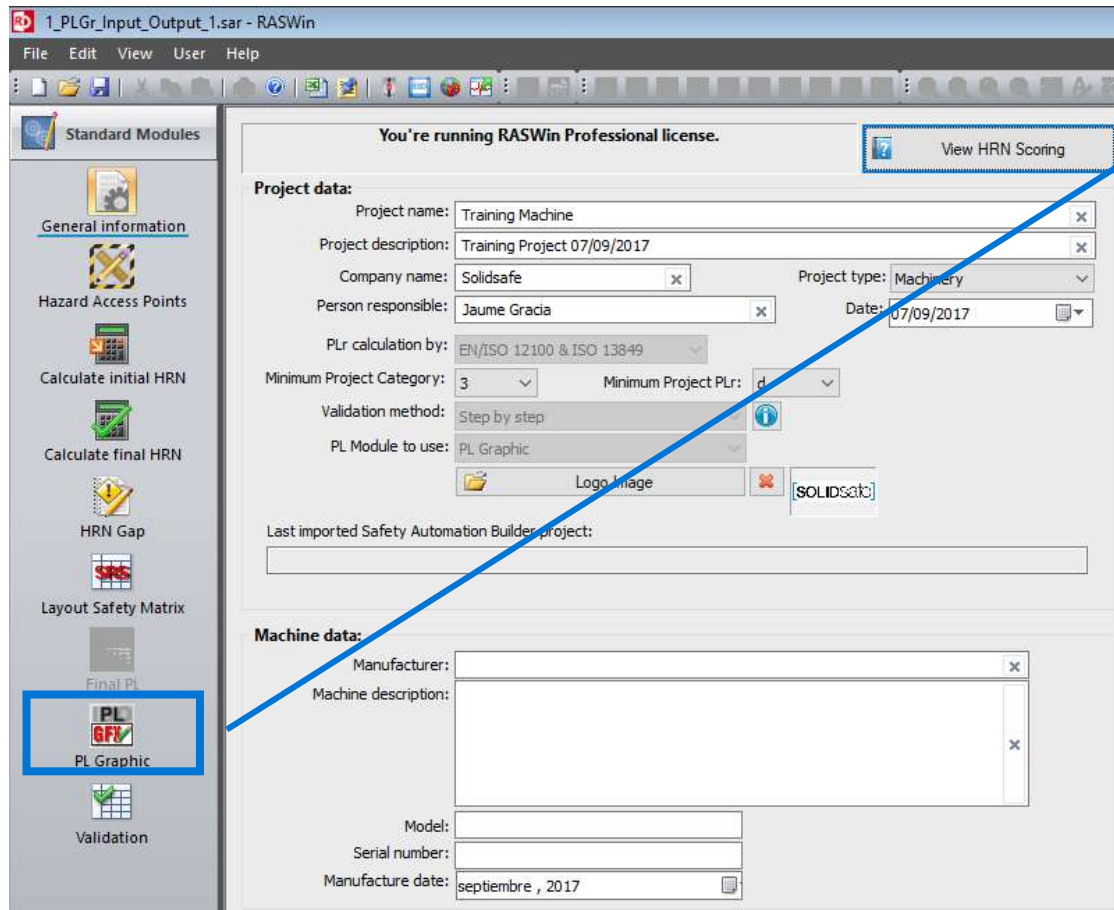PL is divided into five levels (a-e).

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

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R A S
Risk Assessment Software
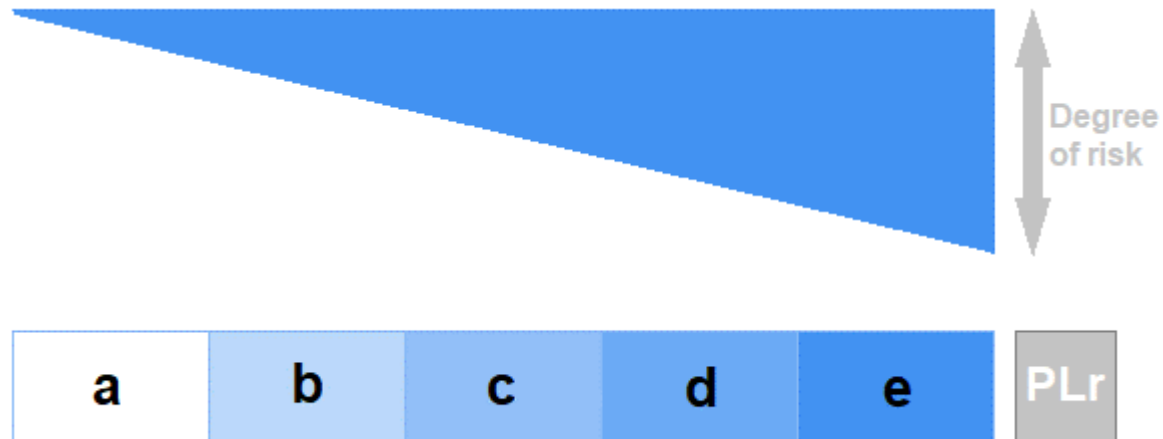
How to calculate the PL in RASWin?

PL Gfx Module

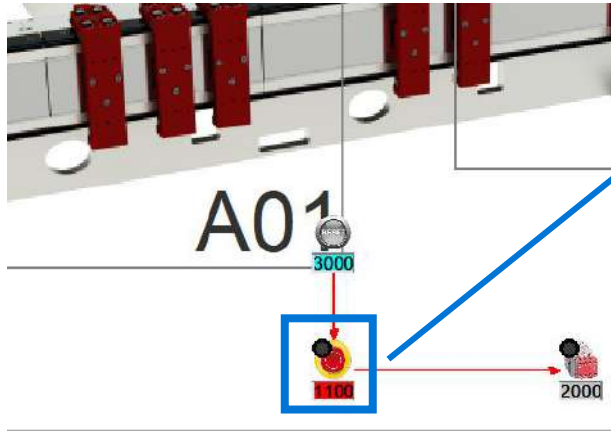1. Click on PL Gfx Module icon.

Module: PL Gfx

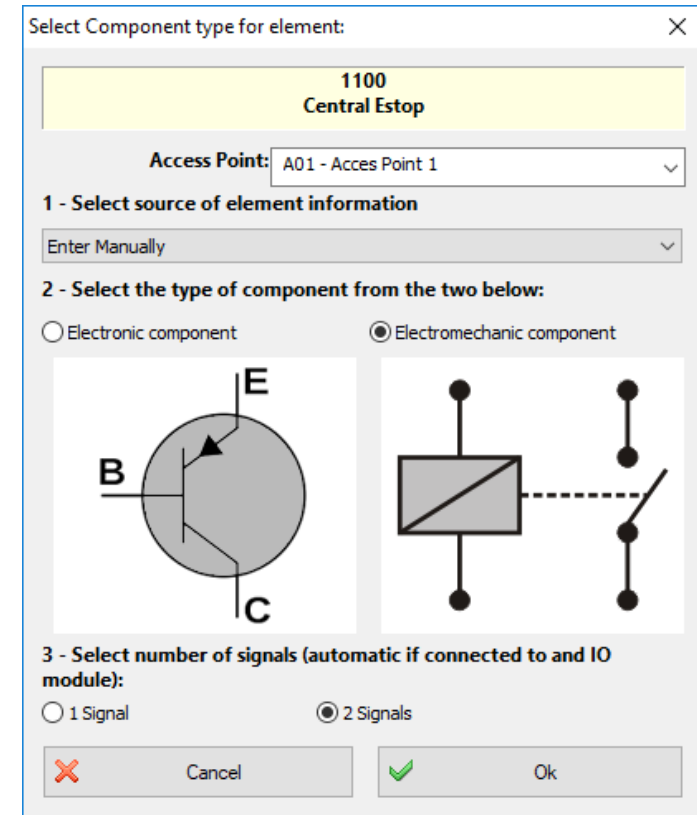# How to calculate the PL in RASWin?

PL Gfx Module

1. To create a Safety Block of the Emergency Stop Button, double click on Estop icon.

2. Complete the following information and click *"Ok"*:

    Access Point
    Type of component
    Number of signals

How to calculate the PL in RASWin?

PL Gfx Module

1. Complete the Subsystem information.

2. Load an image that describes the subsystem.

How to calculate the PL in RASWin?

PL Gfx Module

1. Click on the Category tab.

2. Select the category of the architecture used.

5. Select the Category requirements.

6. Click *"Ok"*

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PL Gfx Module

1. On the Component Information window, click on "*CCF*".

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Option 1: Directly

On CCF window, there are two option to enter the parameters:
1. Directly
2. Selecting applied measurements

1. Select "Enter CCF value directly"

2. Enter the Total CCF points

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Option 2: Selecting applied measurements

CCF Measures

◯ Enter CCF value directly

Total points: 65   Minimum required: 65 ponits

◉ Select applied measurements to determine CCF

⊕ Add
⬤ Delete

Measurement   Points

✖ Delete all

Total points: 65   Minimum required: 65 ponits

1. Select *"Select applied measurements to determine CCF"*

2. Click on *"Add"*

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PL Gfx Module

Select the measurements type agree with the element.

How to calculate the PL in RASWin?

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The measurements selected will be appear

CCF Measures

○ Enter CCF value directly

Total points: 65   Minimum required: 65 ponits

◉ Select applied measurements to determine CCF

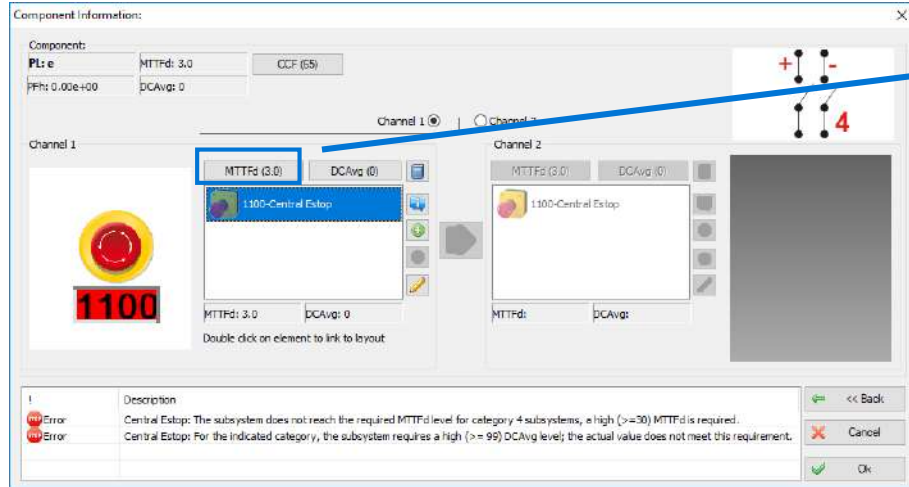| Add	Measurement	Points
	Physical separation between signal paths: sufficient wiring separation in piping, isolation distances and lea...	15.00
Delete	Use different technologies/design principles or physical principles, for example:first programmable electron...	20.00
	Protection against over-voltage, over-pressure and over-current etc	15.00
	Use components of proven capability	5.00
	Does the design take into account the analysis results of failure modes and their effects to avoid the com...	5.00
Delete all	Have the designers and maintenance personnel been trained to understand the causes and consequence...	5.00

Total points: 65   Minimum required: 65 ponits

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How to calculate the PL in RASWin?

PL Gfx Module

1. Select MTTFd.

2. (Optional) Enter the MTTFd value directly

3. Click on Determine MTTFd value from B10d value.

4. Add a B10d value and a additional process cycles.

5. If the B10d value of the element is not known, click on "typical components values", and select the component type.

6. Press enter on the keyboard.

Step 6: Adding MTTFd Value

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RAS Risk Assessment Software

How to calculate the PL in RASWin?

PL Gfx Module

Option 1: Directly

There are two option to enter the parameters:
1. Directly
2. Determining MTTFd value from the B10d value

1. Select MTTFd.

2. Enter the MTTFd value directly

How to calculate the PL in RASWin?

PL Gfx Module

Option 2: Determine MTTFd value from B10d

1. Select *"Determine MTTFd value from B10d value"*.

2. Add a B10d value and a additional process cycles.

3. Press enter on the keyboard.

How to calculate the PL in RASWin?

PL Gfx Module

Element MTTFd (Central Estop) ✕

⦿ Enter the MTTFd value directly

MTTFd:	3	a	MTTFd level: Low
Failures per hour rate:	0	FIT	☐ Failure exclusion

▣ Typical component values

○ Determine MTTFd value from the B10d value

B10d:	0	Cycles	Process cycles: 0
T10d:		a	SFT nop 0
MTTFd:	3.00	a	MTTFd level: Low

Operation period:

Operation period: 20

Typical component values ✕

Select component type

Auxiliary relays and contactors with light loads (mechanical load)
Auxiliary relays and contactors with maximum loads
Contactors with light loads (mechanical load)
Contactors with rated loads
Emergency shutdown device with maximum A operation demands
Emergency shutdown device, independent of load A
Hydraulic components
Mechanical components
Pneumatic components
Position switch (with separate actuator, safeguarded with block), independent of load A
Position switch, independent of load A
Proximity switches with light loads (mechanical load)
Proximity switches with maximum loads
Pushbutton (for example, validation switches) independent of load A

✖ Cancel   ✔ Accept (OK)

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5. If the B10d value of the element is not known, click on "typical components values", and select the component type.

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PL Gfx Module

Select DCAvg.

Step 7: Adding DCAvg Value

How to calculate the PL in RASWin?

PL Gfx Module

Option 1: Directly

There are two option to enter the parameters:
1. Directly
2. Select "Select applied measurements to evaluate DC"

1. Select *"Determine MTTFd value from B10d value"*.

2. Enter the Diagnostic Coverage value directly

2. If it cannot be entered directly, click on Select applied measurements to evaluate DC.

How to calculate the PL in RASWin?

PL Gfx Module

Option 2: Selecting applied measurements

1. Select *"Select applied measurements to evaluate DC"*.

2. Select measurement from the list.

How to calculate the PL in RASWin?

PL Gfx Module

1. Select the device type agree whit the component.

2. Select the measurement type agree whit the component.

3. Click "*Ok*".

All the information will appear

How to calculate the PL in RASWin?
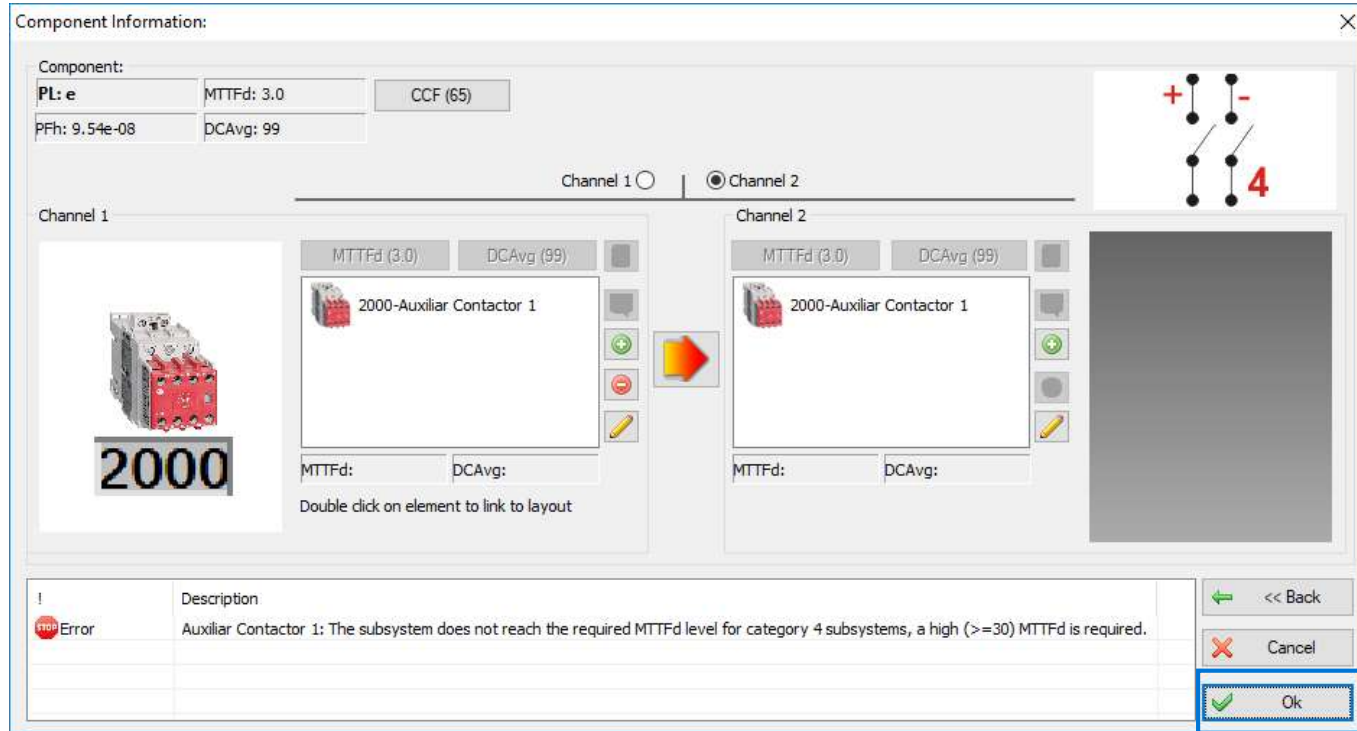
PL Gfx Module

1. To add the Safety Parameters to the channel 2, click on the arrow in the middle of both channels.

2. The values on channel 1 and channel 2 will be the same.

3. Click "Ok".
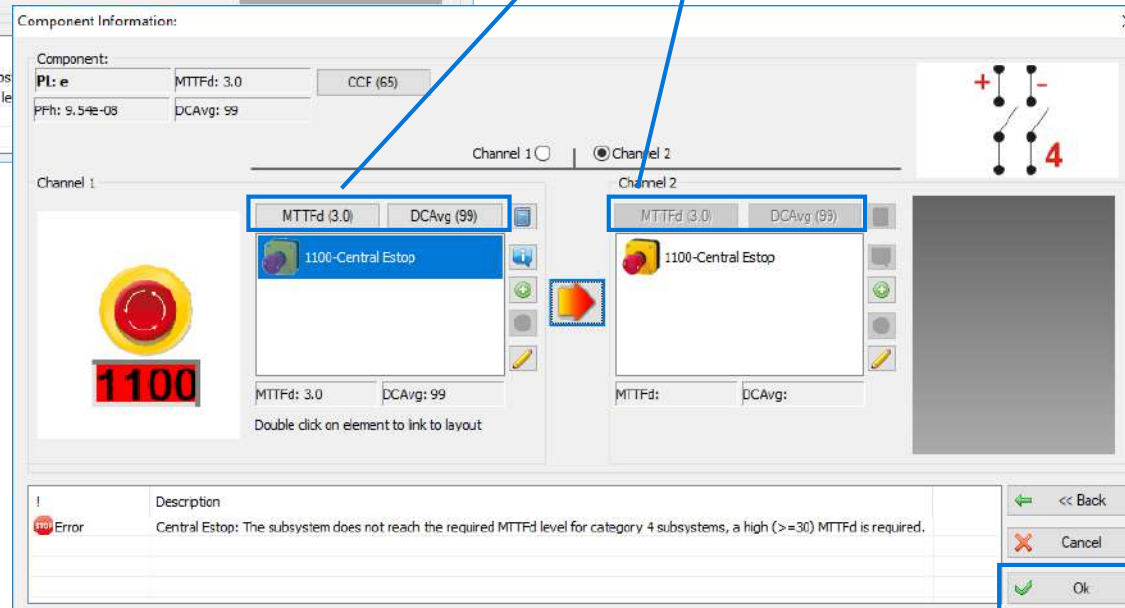
How to calculate the PL in RASWin?

PL Gfx Module

1. Repeat the same procedure for the output element.

2. Click *"Ok"*