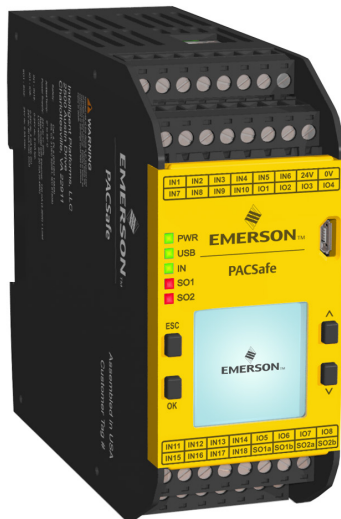


# PACSafe™ Safety Controller

## QUICK START GUIDE

GFK-3183 Rev. B  
Jan 2021





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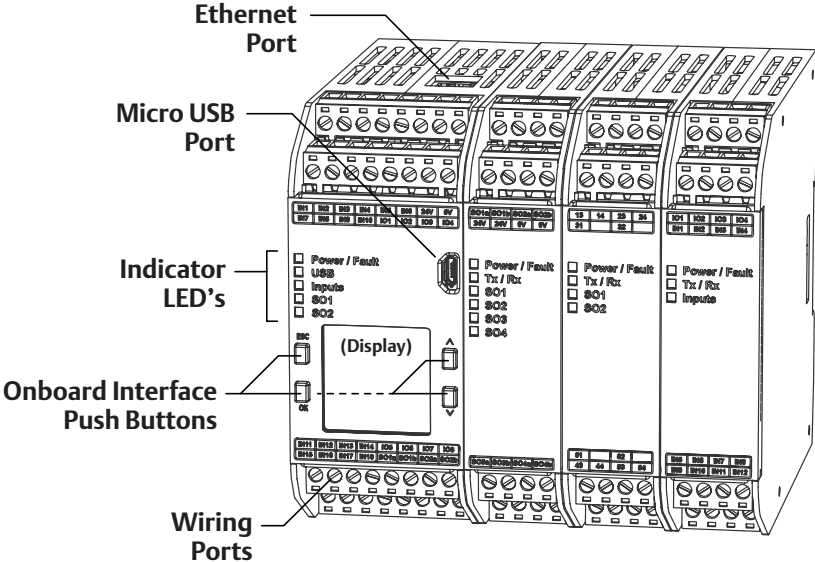


# About this Guide

This guide is designed to help you create a sample configuration for the PACSafe™ Safety Controller using the PACSafe™ Studio Software. For complete information on mounting, device installation and operation, commissioning checkout procedures, product specifications, troubleshooting, and glossary, please refer to the User Manual (p/n GFK-3184) and support documentation for individual safety input and output devices. Use of this document assumes familiarity with pertinent safety standards and practices as outlined in the Manual.

# Product Overview

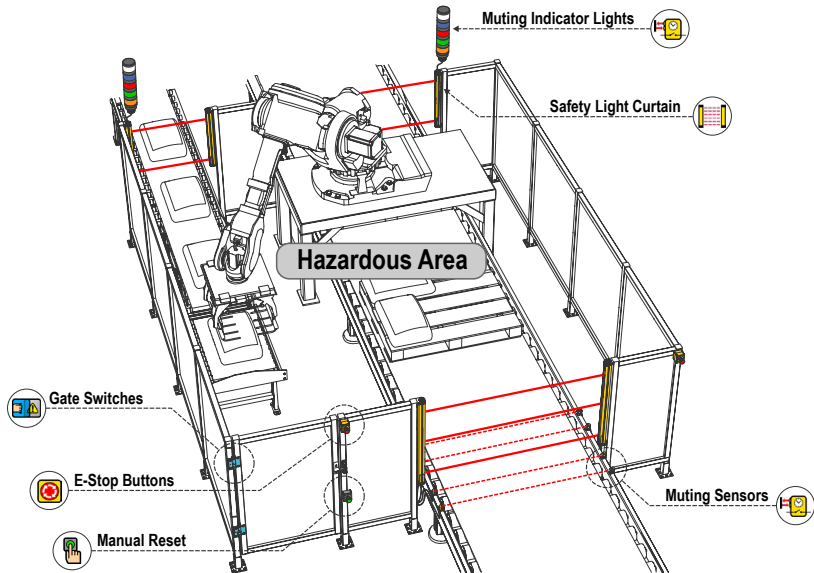
Figure 1: Features



# Designing a Sample Configuration

The configuration process used in this guide provides basic understanding of the software features that are necessary to create a configuration for any application. The example configuration is based on a sample application which makes use of the following devices: a PACSafe Safety Controller, an E-stop button, a safety light curtain, an interlocked gate switch, and a manual reset. The illustration below depicts these devices and additional safety equipment for a sample robotic cell application.

**Figure 2: Sample Robotic Cell Application**



# Software Installation

System Requirements	
Operating system:	Windows 10 <sup>1</sup>
System Type:	32-bit, 64-bit
Hard drive space:	80 MB (plus up to 280 MB for Microsoft .NET 4.0, if not already installed)
Memory (RAM):	512 MB minimum, 1 GB+ recommended
Processor:	1 GHz minimum, 2 GHz+ recommended
Screen Resolution:	1024×768 full color minimum, 1650×1050 full color recommended
Third-party software:	Microsoft .NET 4.0 (included with installer), PDF Viewer (such as Adobe Acrobat)
USB port:	USB 2.0 (not required to build configurations)

The PACSafe Studio Software can be downloaded from [https://emerson-mas.force.com/communities/en\\_US/Download/PACSafe-Configuration-Tools](https://emerson-mas.force.com/communities/en_US/Download/PACSafe-Configuration-Tools).

1. Windows is a registered trademark of Microsoft Corporation in the United States and/or other countries.



**Important:** Administrative rights are required to install the Safety Controller drivers (needed for communication with the controller).

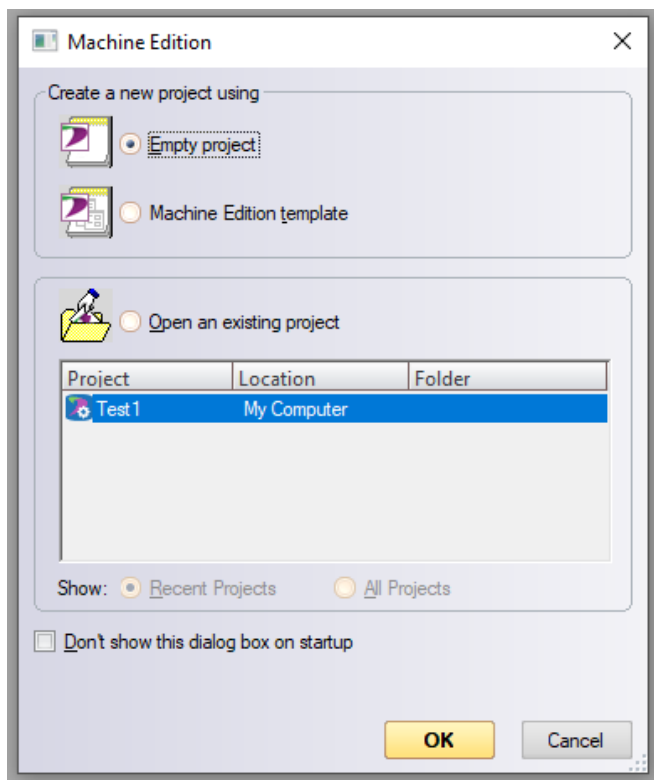
### **To install the software from the Emerson website:**

1. Download the latest version of the software from [https://emerson-mas.force.com/communities/en\\_US/Download/PACSafe-Configuration-Tools](https://emerson-mas.force.com/communities/en_US/Download/PACSafe-Configuration-Tools).
2. Navigate to and open the downloaded file.
3. Click **Next** to begin the installation process.
4. Confirm the software destination and availability for users and click **Next**.
5. Click **Install** to install the software.
6. Depending on your system settings, a popup window may appear prompting to allow PACSafe Studio to make changes to your computer. Click **Yes**.
7. Click **Finish** to exit the installer.

### **To configure PACSafe Safety Tool in an RX3i control:**

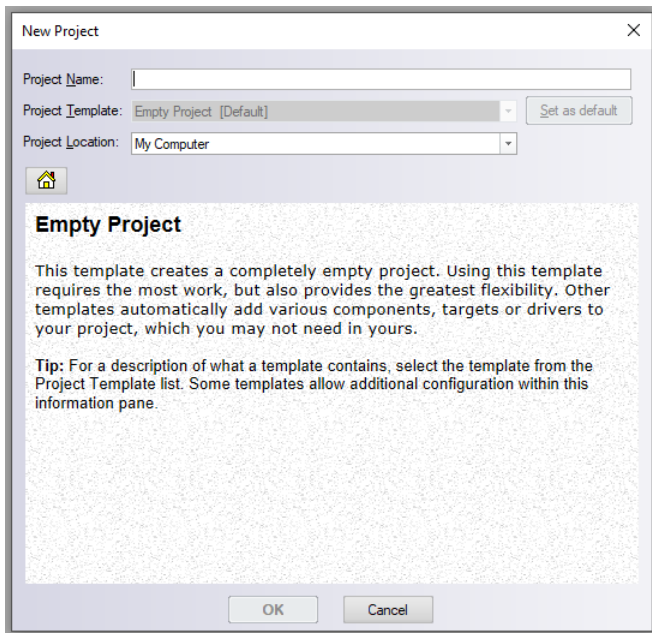
1. Open the PAC Machine Edition application.
  - a. Create a new project or Open an existing project.
  - b. Click **OK**.

**Figure 3: PAC Machine Edition**



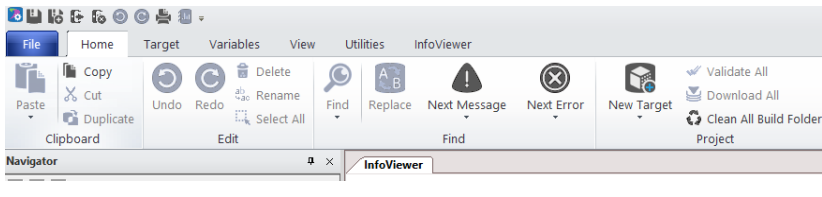
2. To create an Empty Project, enter the Project Name and click **OK**.

**Figure 4: New Project**



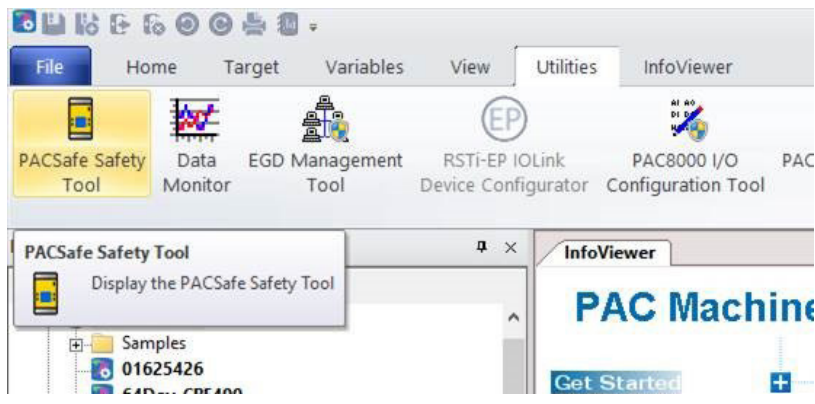
3. On the TaskBar, select **Utilities**.

**Figure 5: Task Bar > Utilities**



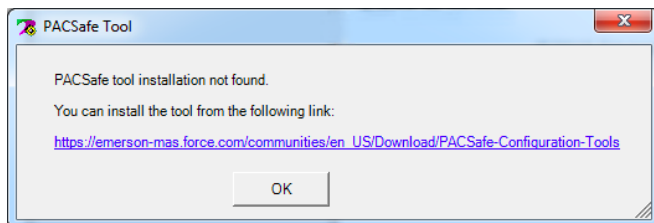
#### 4. Select **PACSafe Safety Tool**.

**Figure 6: PACSafe Safety Tool**



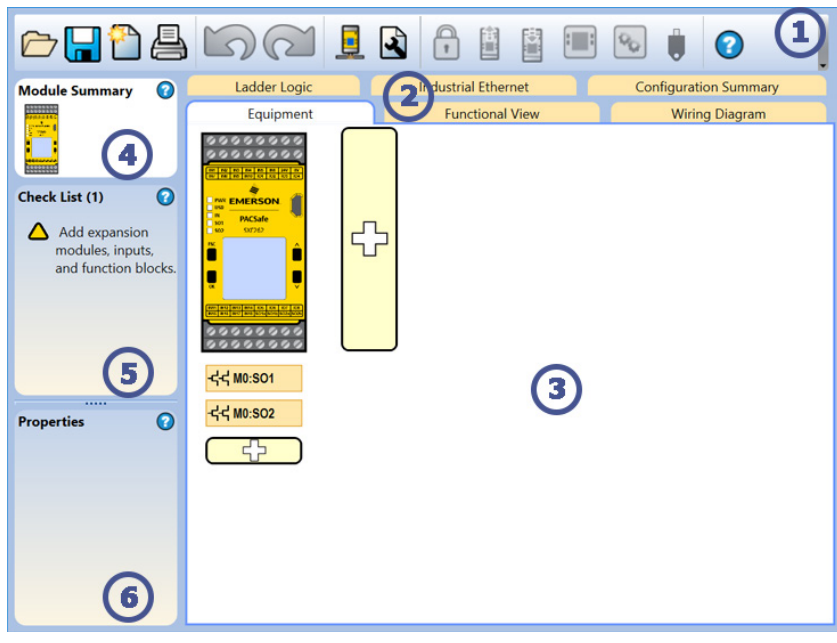
5. If the PACSafe Safety Tool has not been properly installed on the computer, the following message will appear. Download and install the latest version of the software.

**Figure 7: Not Installed Message**












# Software Features

Figure 8: PACSafe Studio Software



# 1 Navigation Toolbar

-  Opens an existing project, opens a **Recent** project, or opens **Sample Projects**
-  Saves (or Saves As) the project to the user-defined location
-  Starts a New Project
-  Prints a customizable Configuration Summary
-  Reverts up to ten previous actions
-  Re-applies up to ten previously reverted actions
-  Displays Network Settings and writes the Network Settings to the Safety Controller
-  Displays Project Settings
-  Opens Password Manager
-  Reads data, such as Fault Log, Configuration, Network Settings, and Device Information from the Safety Controller
-  Writes the data, such as Configuration Settings, to the Safety Controller
-  Makes the Live Mode view available
-  Makes the Simulation Mode View available
-  Indicates IC225ACC001 drive connection
-  Opens the Help options

## 2 Tabs

- Equipment—displays an editable view of all connected equipment
- Functional View—provides an editable iconic representation of the control logic
- Wiring Diagram—displays the I/O device wiring detail for use by the installer
- Ladder Logic—displays a symbolic representation of the Controller’s safeguarding logic for the use by the machine designer or controls engineer
- Industrial Ethernet—displays editable network configuration options
- Configuration Summary—displays a detailed configuration summary
- Live Mode (when enabled)—displays the live mode data, including current faults
- Simulation Mode (when enabled)—displays the simulation mode data

## 3 Selected view

Displays the view corresponding to the selected tab (**Equipment** view shown).

## 4 Module Summary

Displays the Base Controller and any connected modules.

## 5 Check List

Provides action items to configure the system and correct any errors to successfully complete the configuration.

## 6 Properties

Displays the properties of the selected device, function block, or connection (properties cannot be edited in this view, click **Edit** to make changes).

# Designing a Configuration

The example configuration is based on a sample application which makes use of the following devices: a PACSafe Safety Controller, an E-stop button, a safety light curtain, an interlocked gate switch, and a manual reset.

1. Open **PACSafe Studio Software** from the **Desktop** or the **Start Menu**.
2. Select **PACSafe Safety Controller Models** and click **Continue**.

## Define the Project Settings

1. Click  **Project Settings**.
2. Enter the information about the project:

### **Configuration Name**

Name of the configuration; displayed on the controller (models with display); different from file name.

### **Project**

Project name is useful for distinguishing between various application areas.

### **Author**

Person designing the configuration.

### **Notes**

Supplemental information for this configuration or project.

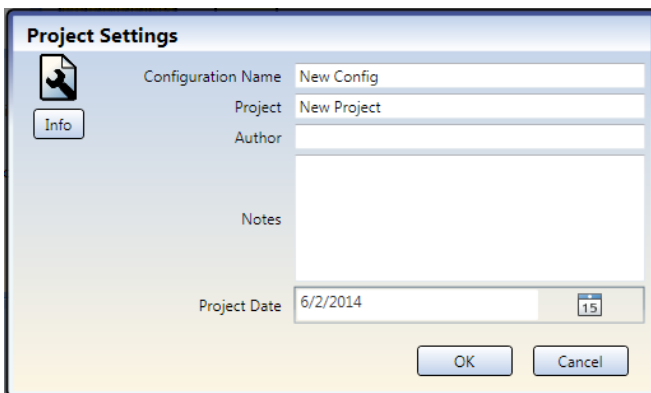
### **Project Date**

Date pertaining to the project.



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**Figure 9: Project Settings Screen**



The screenshot shows a dialog box titled "Project Settings". On the left side, there is a document icon with a wrench and a button labeled "Info". The main area contains several input fields: "Configuration Name" with the text "New Config", "Project" with "New Project", "Author" (empty), and "Notes" (a large empty text area). At the bottom, there is a "Project Date" field showing "6/2/2014" with a calendar icon. At the bottom right, there are "OK" and "Cancel" buttons.

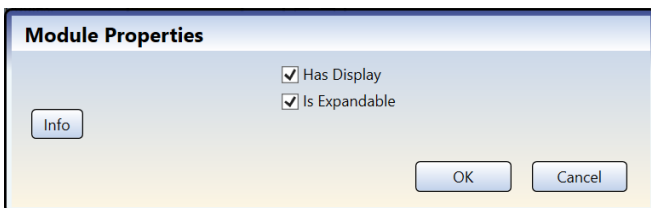
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## Add Equipment

3. On the **Equipment** view select your Base Module properties (Has Display, Is Expandable) by either double-clicking the module or clicking **Edit** under the properties table when the module is selected.

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**Figure 10: Module Properties Screen**



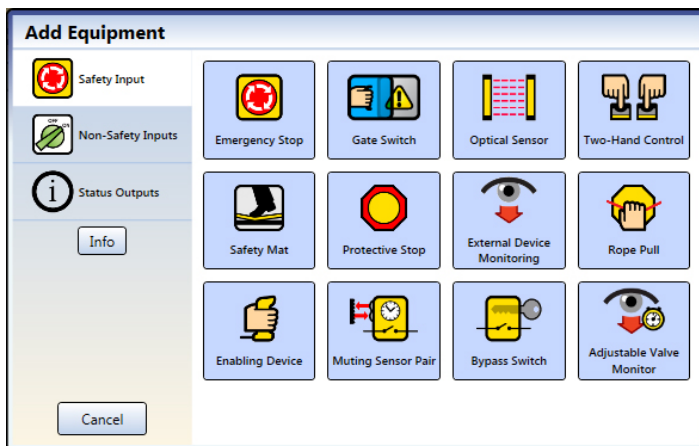
The screenshot shows a dialog box titled "Module Properties". On the left side, there is an "Info" button. The main area contains two checked checkboxes: "Has Display" and "Is Expandable". At the bottom right, there are "OK" and "Cancel" buttons.


4. Add **Safety Input** devices by clicking  under the Base Module. For this example, select the following:

- **Emergency Stop**
- **Gate Switch**
- **Optical Sensor**

All three Safety Inputs use the default parameters. Click **OK** to accept the default parameters.

**Figure 11: Add Equipment Screen**



5. Add **Non-Safety Inputs** by clicking  under the Base Module. For this example, select **Manual Reset**. The Manual Reset Input uses the default parameters. Click **OK** to accept the default parameters.

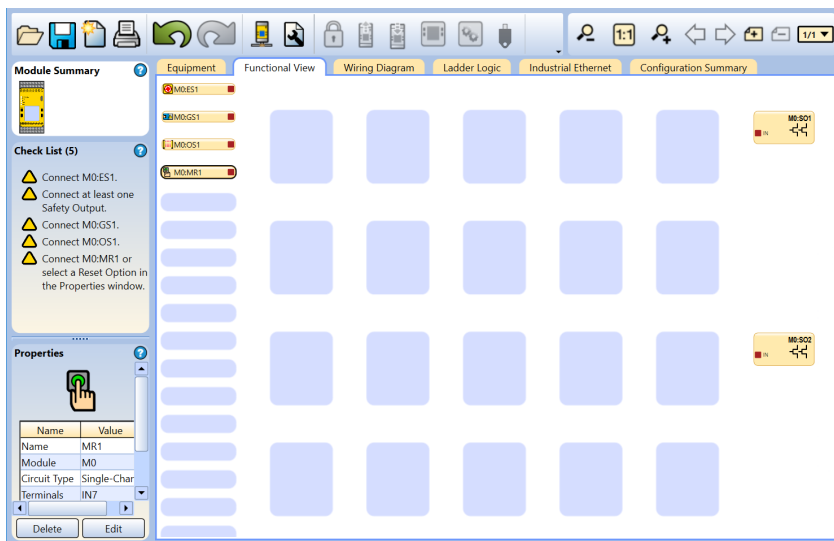
**Figure 12: Add Equipment Screen**



## Create Connections

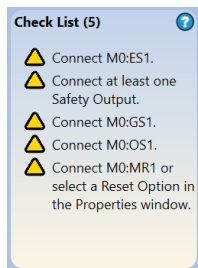
6. Go to **Functional View**.

**Figure 13: Functional View Screen**



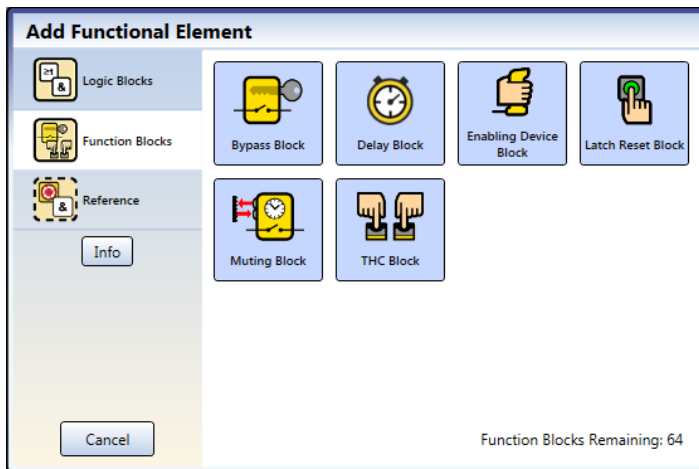
**Note:** The **Check List** on the left lists any missing connections that need to be added before the configuration is valid.

**Figure 14: Check List**



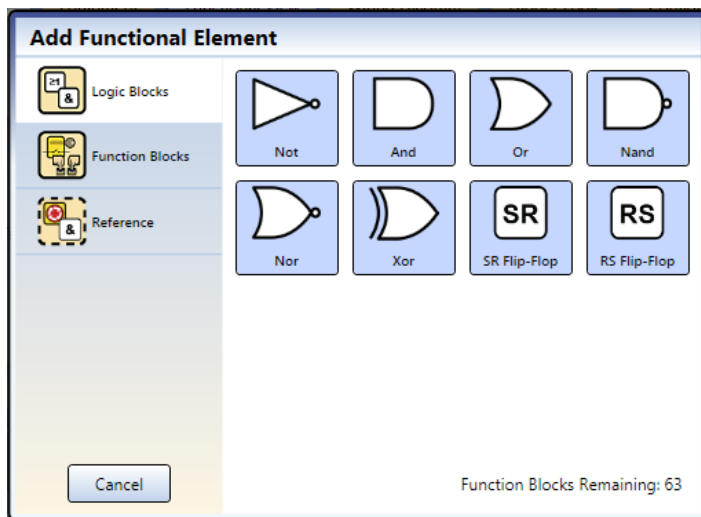
- Click on one of the empty placeholders in the middle area and select **Latch Reset Block**. The Latch Reset Block uses the default parameters. Click **OK** to accept the default parameters.

**Figure 15: Add Functional Element Screen - Logic Blocks**



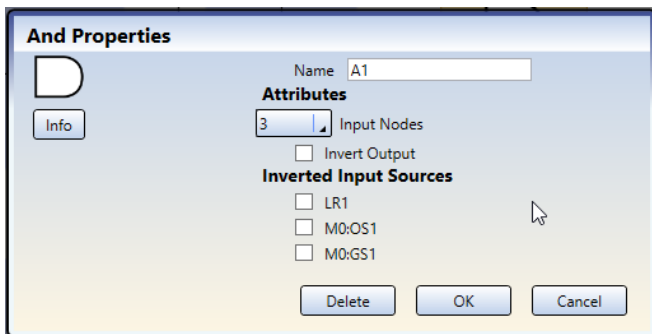
- Add **Logic Blocks** by clicking on one of the empty placeholders in the middle area. For this example, select **And**.

**Figure 16: Add Functional Element Screen - Logic Blocks**



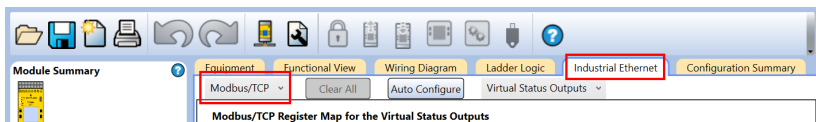
- For this configuration, increase the number of **Input Nodes** to **3**. Keep the other default parameters for the AND logic block and click **OK** to accept the parameters.

**Figure 17: And Properties Screen**



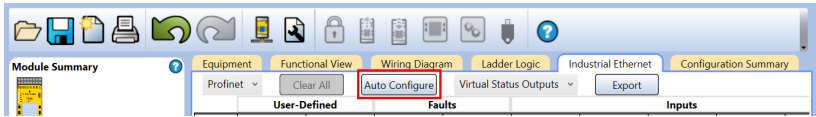
10. Connect the **Optical Sensor**, **Gate Switch**, and **Latch Reset Block** to one of the input nodes on the **AND** block.
11. Connect the **Emergency Stop** and **Manual Reset** to the **Latch Reset Block**.
12. Connect the **AND** block to the **Solid State Output (SO1)**.
13. Look at the Check List to verify that the configuration is valid.
14. Select the desired network communication protocol.
  - a. Go to the **Industrial Ethernet** tab.
  - b. Keep the default **Modbus TCP** selection or use the dropdown menu to select **PROFINET**.

**Figure 18: Select Industrial Ethernet Tab and Desired Protocol**



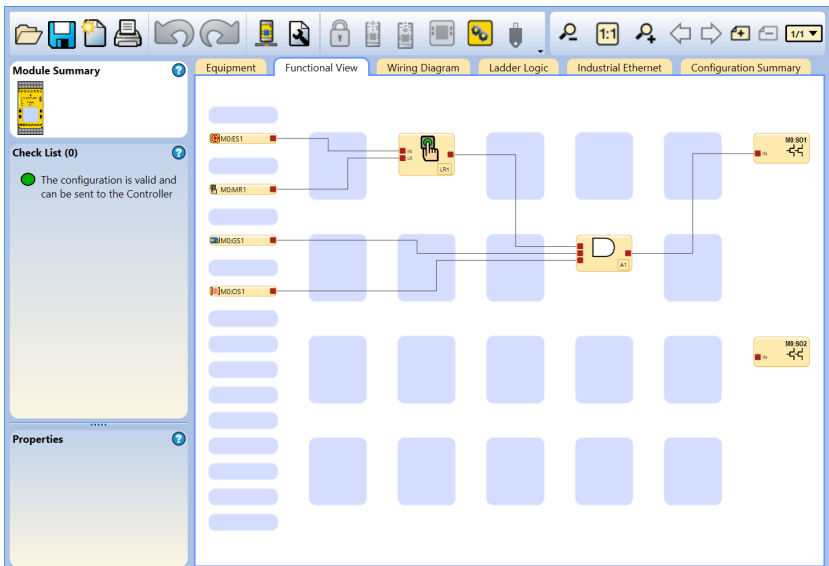
15. Select **Auto Configure**. This populates the functions prior to downloading to the PACSafe Safety Controller.

**Figure 19: Select Auto Configure**




**Note:** You may re-arrange any of the Equipment blocks or Functional Elements blocks for a better visual representation of the connections. Solid State Output blocks cannot be moved.

**Figure 20: Functional View**






# Save the Configuration

1. Click  **Save Project**.
2. Select **Save As**.
3. Navigate to the folder where you wish to save your configuration.
4. Name the file (may be the same or different from the configuration name).
5. Click **Save**.

# Confirm the Configuration

1. Power the Safety Controller and connect it to the PC using the appropriate USB cable.
2. Click  **Write Configuration to Controller**.
3. If prompted, enter the password (default password is 1901). The **Entering config-mode** screen opens.
4. Click **Continue** to enter the configuration mode. After the **Reading Configuration from the Controller** process is completed, the **Confirm Configuration** screen opens.
5. Verify that the configuration is correct.
6. Scroll to the end of the configuration and click **Confirm**.
7. After the **Writing Configuration To Controller** process is completed, click **Close**.
8. Cycle power or perform a System Reset for the changes to take effect in the Safety Controller.

You have completed the sample configuration.

## **WARNING**

It is the responsibility of the Qualified Person who configures, installs, or maintains the PACSafe Safety Controller to:

- Carefully read, understand, and follow the information in the PACSafe Configurable Safety Controller User Manual (which can be accessed via the drop-down Help menu of the Software)
- Perform a risk assessment of the specific machine guarding application
- Determine what safeguarding devices and methods are appropriate per the requirements defined in ISO 13849-1 and those referenced in the PACSafe Configurable Safety Controller User Manual
- Create and confirm each PACSafe Safety Controller configuration and then verify that the entire safeguarding system (including input devices and output devices) is operational and working as intended
- Periodically re-verify, as needed, that the entire safeguarding system is working as intended

Failure to follow any of these recommendations may potentially create a dangerous condition that may lead to serious injury or death.

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# General Contact Information

Please visit us for product support or updated product information:

Online Technical Support

<https://www.emerson.com/en-us/support>

Additional Information:

<https://www.emerson.com/industrial-automation-controls>

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