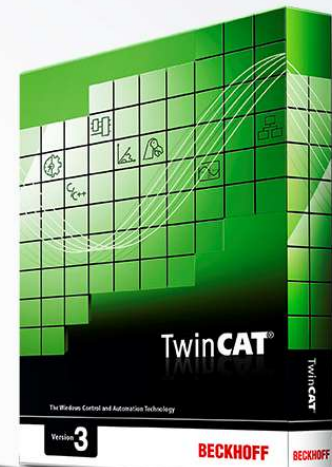
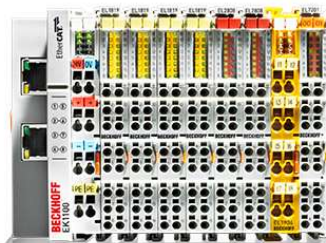


Getting Started

BECKHOFF



1. **Open New Project**
2. Scan Hardware
3. Add PLC
4. Declare Global Variables
5. Write Code
6. Check Code
7. Link Variables
8. Activate Configuration
9. Load PLC Code
10. Test

Open New Project

BECKHOFF

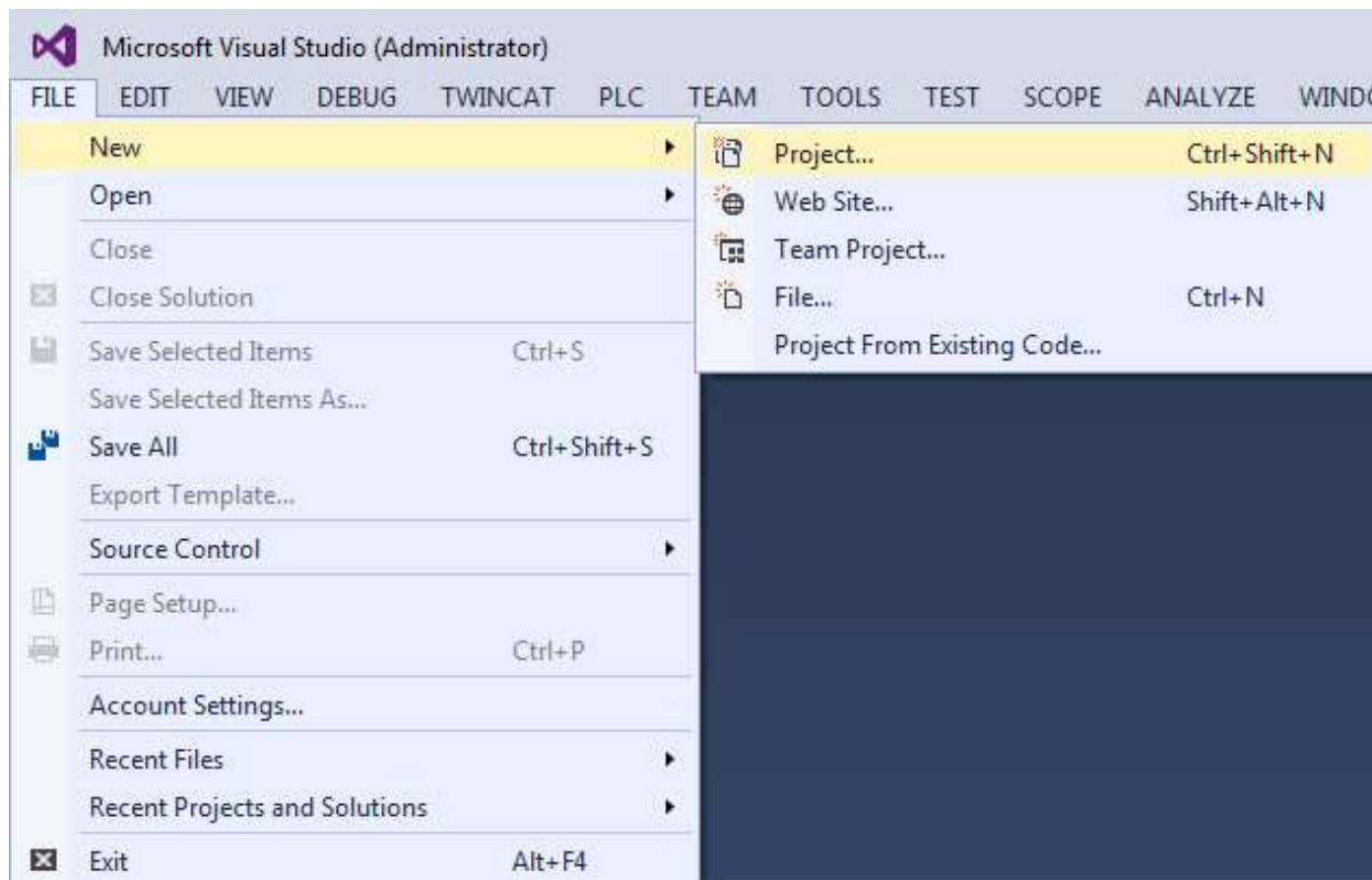
- Use the TwinCAT icon in the system tray, and select TwinCAT XAE
- Note: Pressing 'Alt' and '+' on the keyboard will also open the menu



Open New Project

BECKHOFF

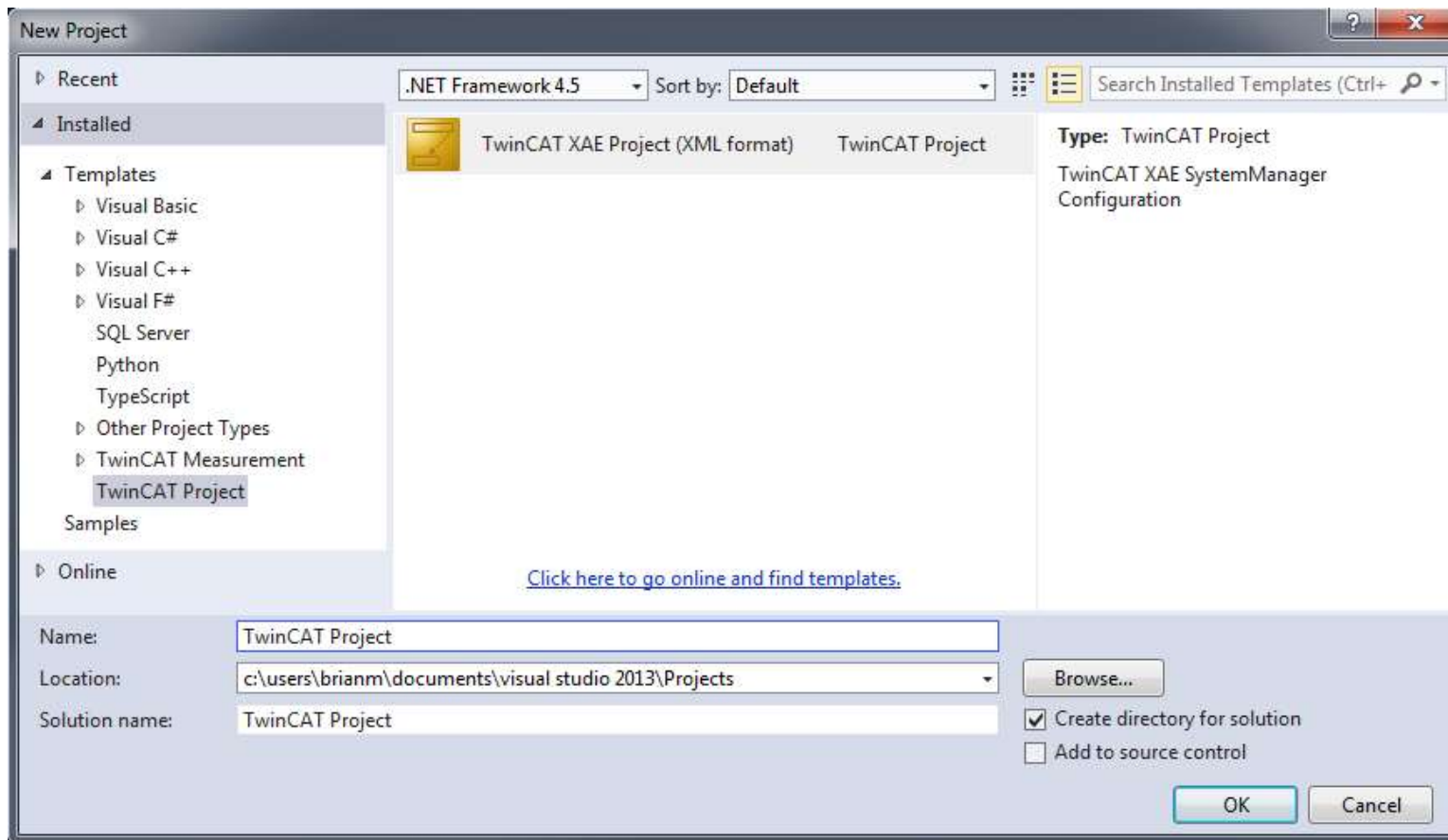
- From the 'File' menu, select 'New' and then 'Project'



Open New Project

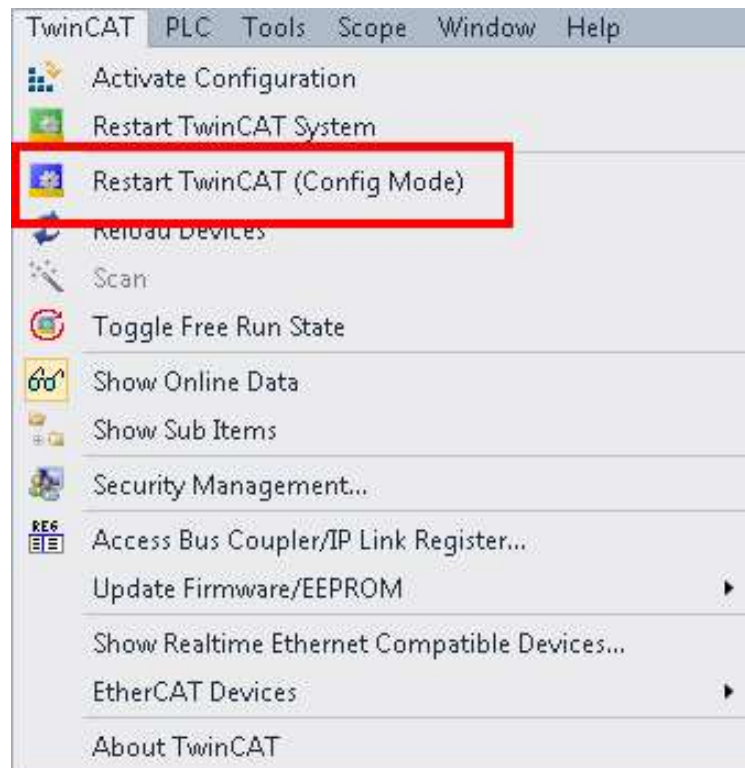
BECKHOFF

- Click 'OK' to create the project with the existing name

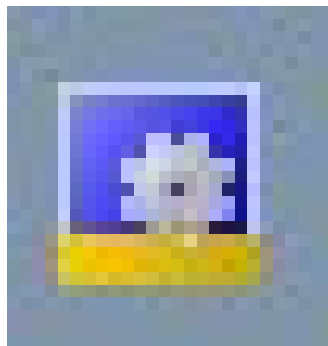


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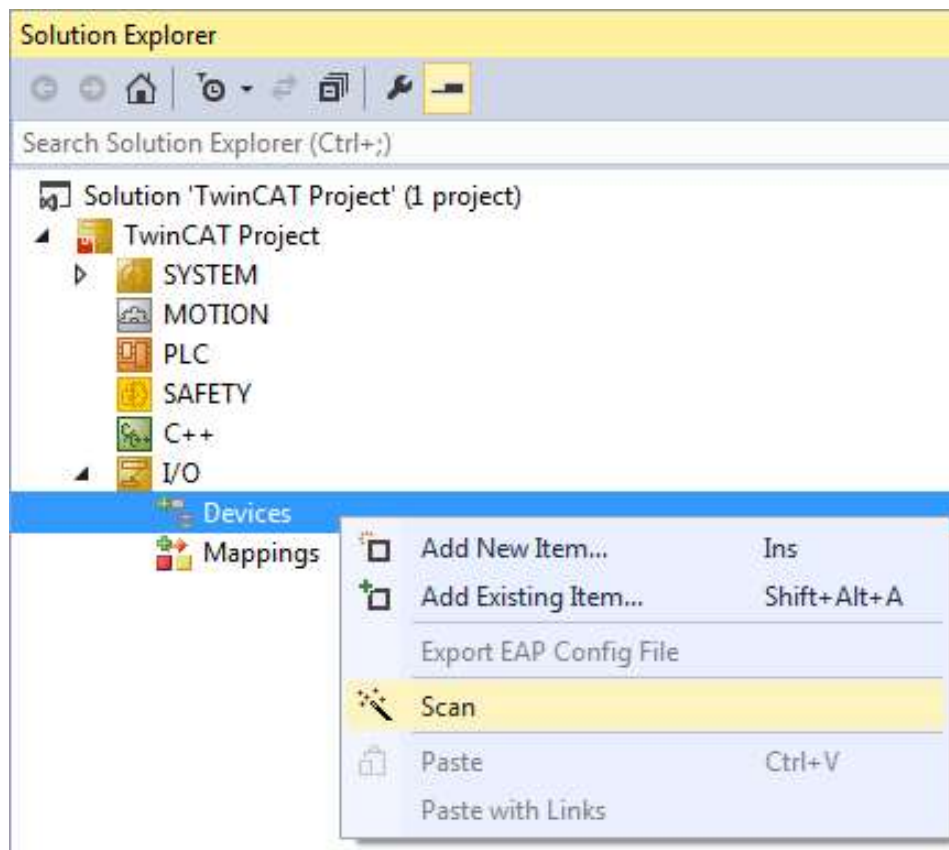
- TwinCAT must be in 'Config Mode' to be able to scan the I/O devices
- From the 'TwinCAT' menu, select
 'Restart TwinCAT (Config Mode)'
- Confirm the prompt by clicking on 'OK'



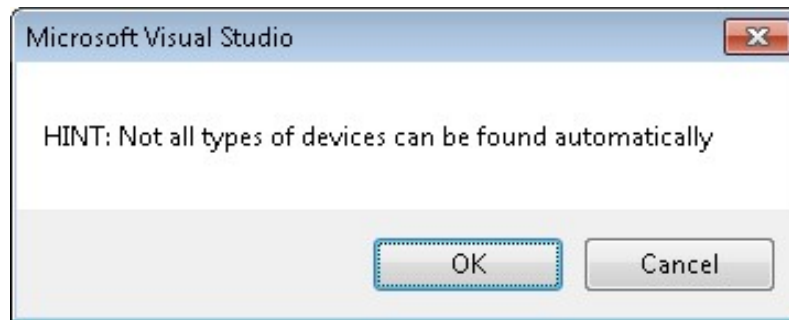
- The TwinCAT icon should now be Blue



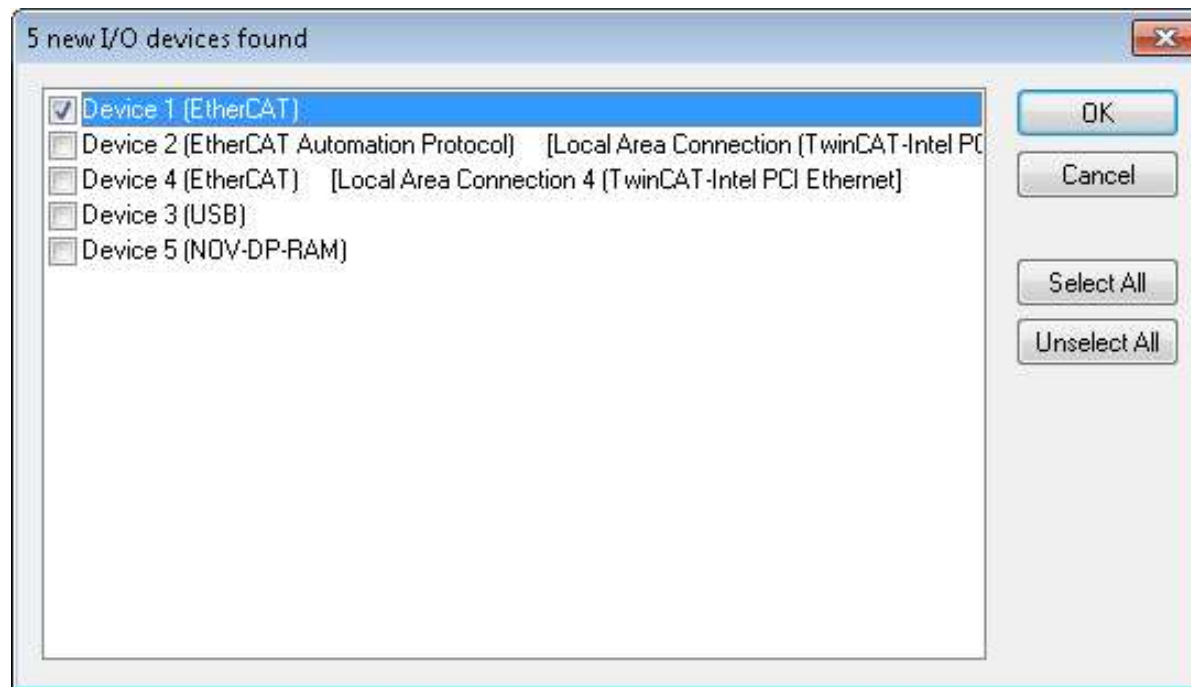
- Right-click on 'Devices' and select 'Scan'



- Confirm the prompt with 'OK'



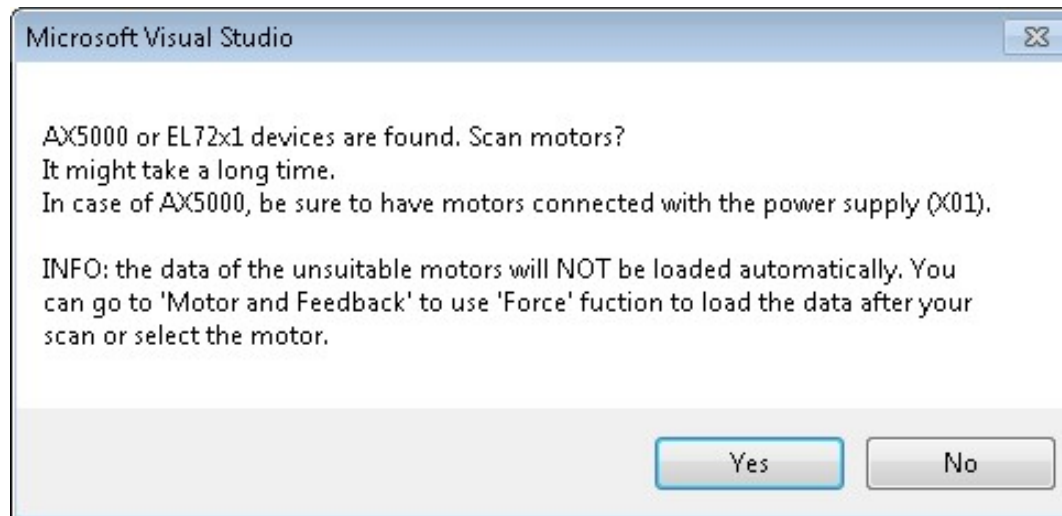
- Remove all check marks except for 'Device 1 (EtherCAT)' and click 'OK'



- Click 'Yes' to scan for boxes outside of the PC, that are connected to the 'Devices' from the previous screen

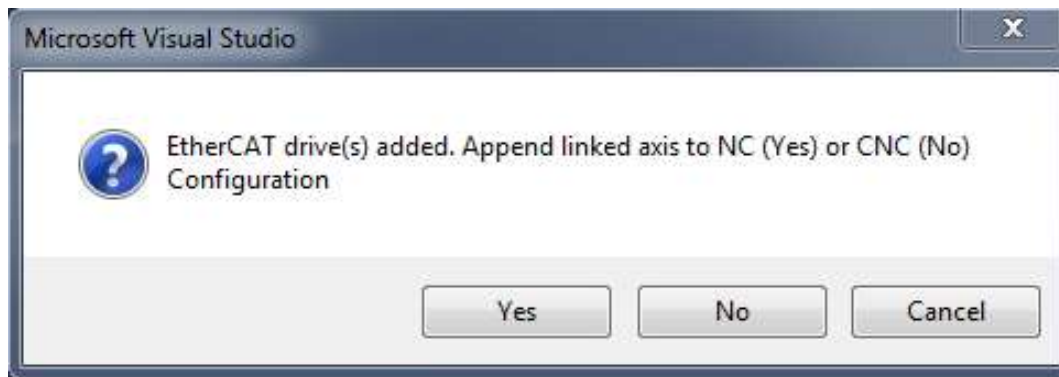


- Click 'Yes' to scan for the motors



- Note: This will only function on motors that have their nameplate data stored in the EEPROM of the motor.

- Click 'Yes'

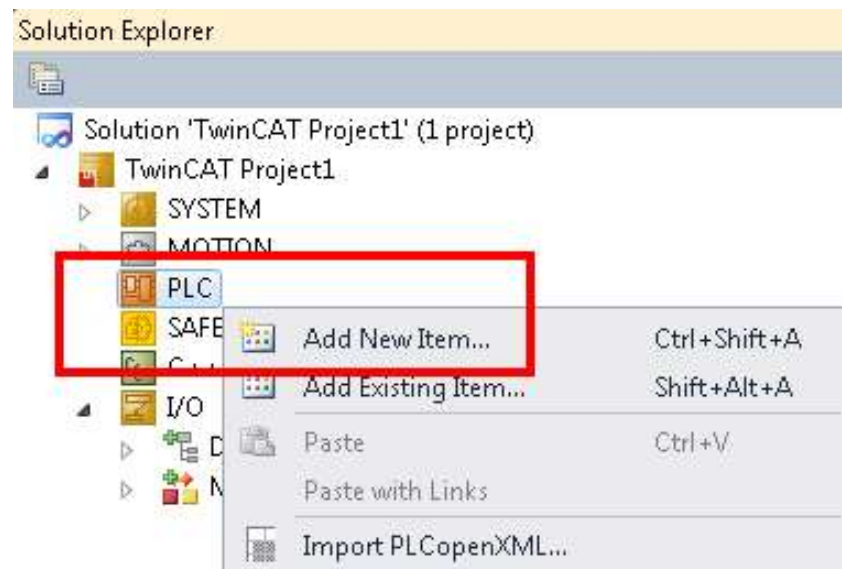


- Click 'Yes'



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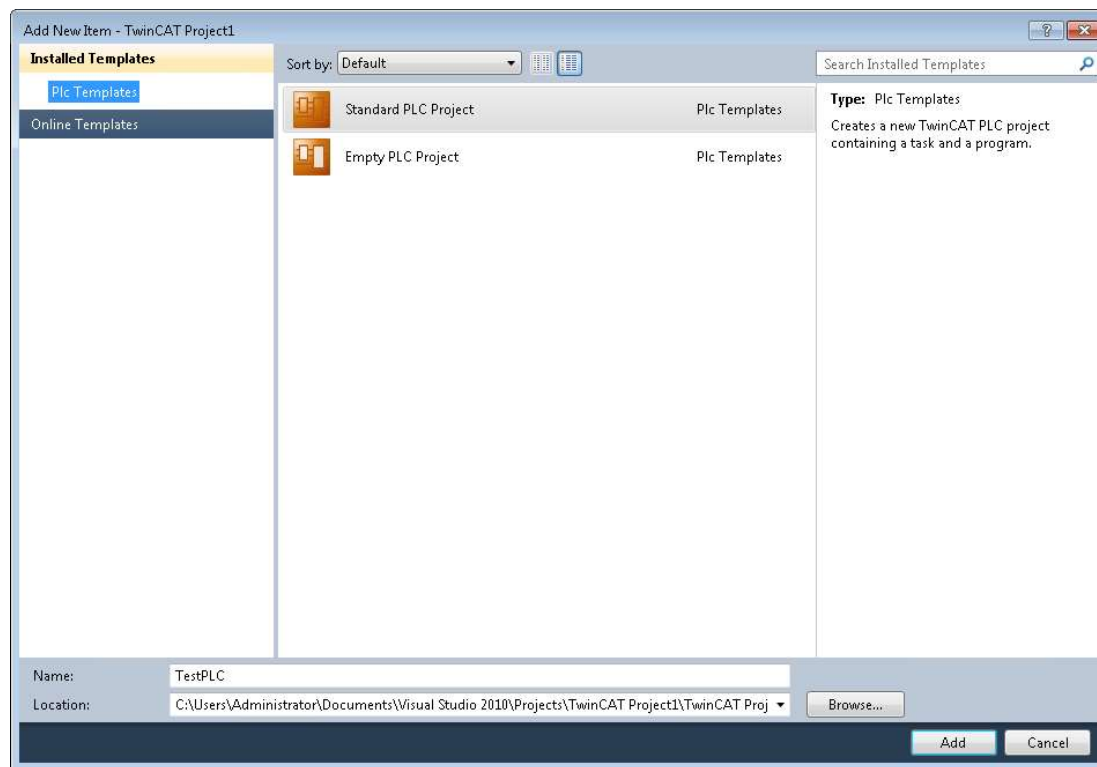
- Right-click on the 'PLC' component and select 'Add New Item'



Add PLC

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- With 'Standard PLC Project' selected
- Click 'Add'

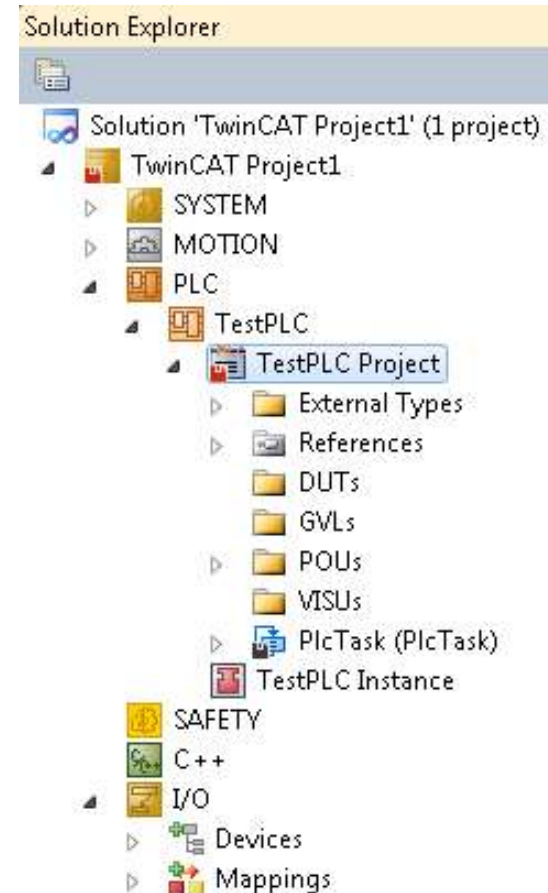
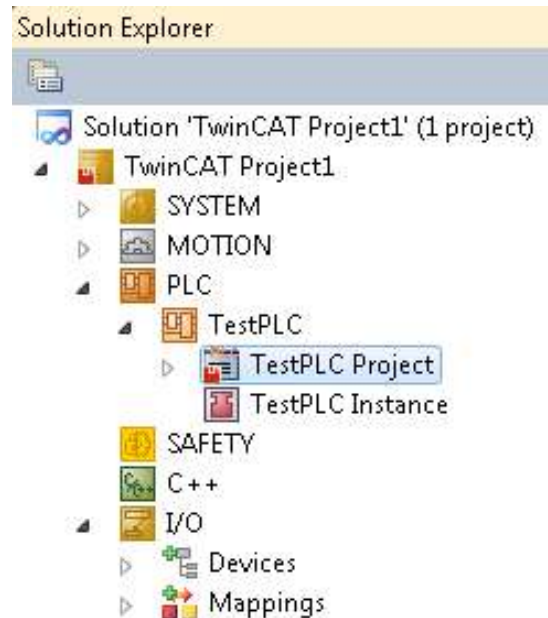


1. Open New Project
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Declare Global Variables

BECKHOFF

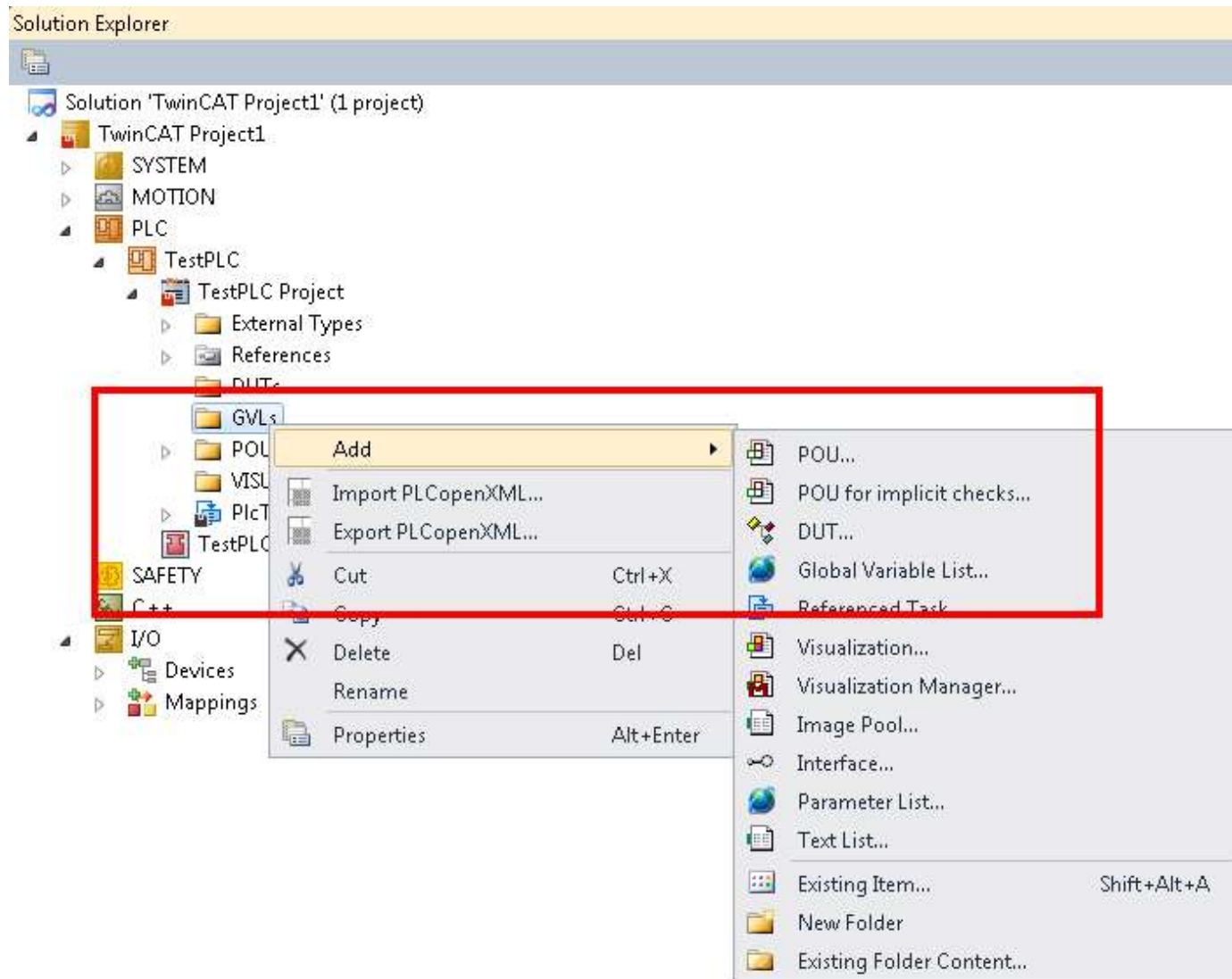
- Click on the 'Triangle' to expand the PLC Project



Declare Global Variables

BECKHOFF

- Right-Click on the 'GVLs' folder and select 'Add' then select 'Global Variable List'



Declare Global Variables

BECKHOFF

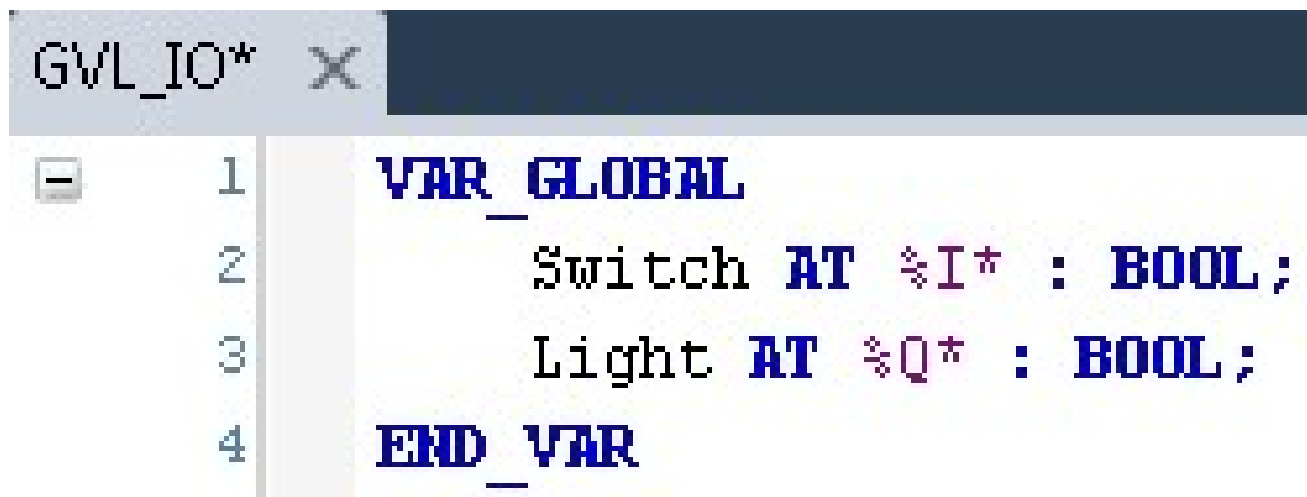
- Provide a unique name
- GVL_IO
- Click 'Open'



Declare Global Variables

BECKHOFF

- Type in the following, in between VAR_GLOBAL and END_VAR
- Switch at %I* : bool;
- Light at %Q* : bool;
- When typing in the variables the KEYWORDS will be read to warn that they are not allowed to be used as variable names.



The screenshot shows a Beckhoff ladder logic editor window titled 'GVL_IO*' with a close button 'X'. The editor displays a global variable declaration block. On the left, there is a vertical toolbar with a minus sign icon and a line number column (1, 2, 3, 4). The code is as follows:

```
1  VAR_GLOBAL
2      Switch AT %I* : BOOL;
3      Light AT %Q* : BOOL;
4  END_VAR
```

Declare Global Variables

BECKHOFF

- From the 'Build' menu select 'Rebuild Solution'

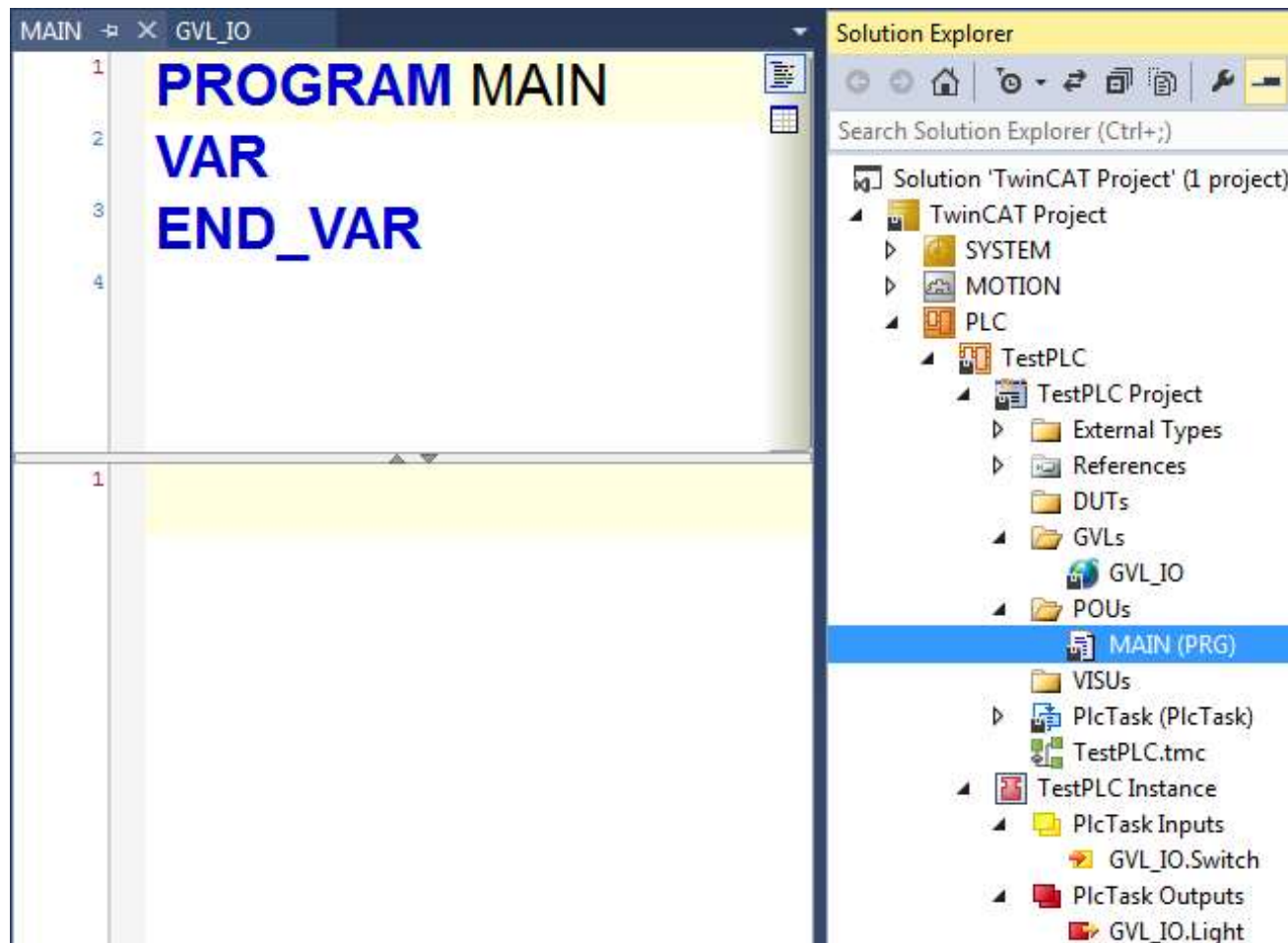


1. Open New Project
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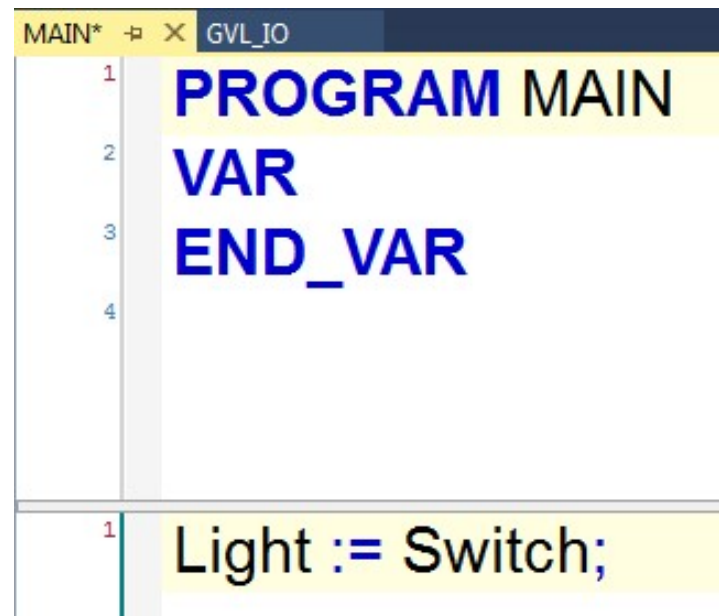
Write Code

BECKHOFF

- Click on the Triangle next to POU's to expand it
- Double-Click on 'MAIN' to open it



- Light := Switch;
- Light is assigned a value of Switch

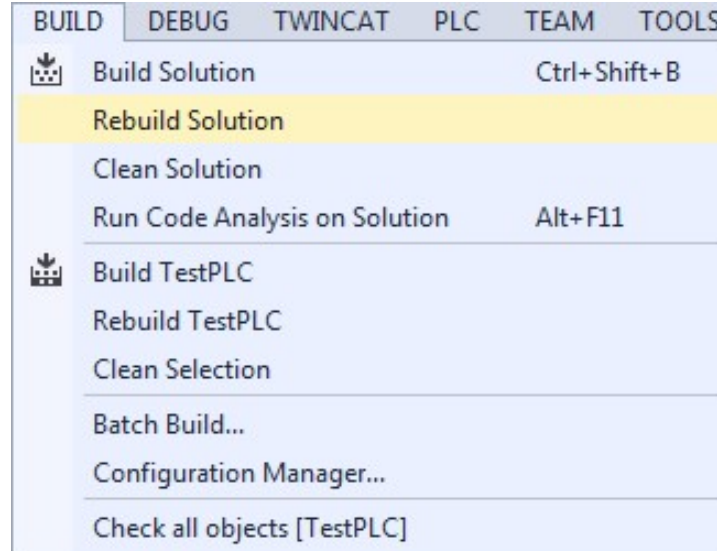


The screenshot shows a Beckhoff LAD editor window with two tabs: 'MAIN*' and 'GVL_IO'. The 'MAIN*' tab is active and displays a program structure. The first section, labeled 'PROGRAM MAIN', contains the following code:
1 PROGRAM MAIN
2 VAR
3 END_VAR
4
Below this, a second section contains the assignment statement:
1 Light := Switch;

- Hint: CTRL + SPACE

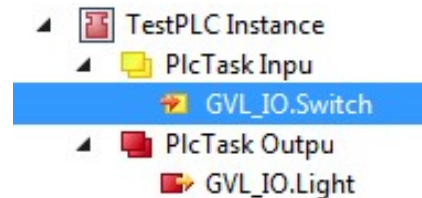
1. Open New Project
2. Scan Hardware
3. Add PLC
4. Declare Global Variables
5. Write Code
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9. Load PLC Code
10. Test

- From the Build menu, select Rebuild Solution

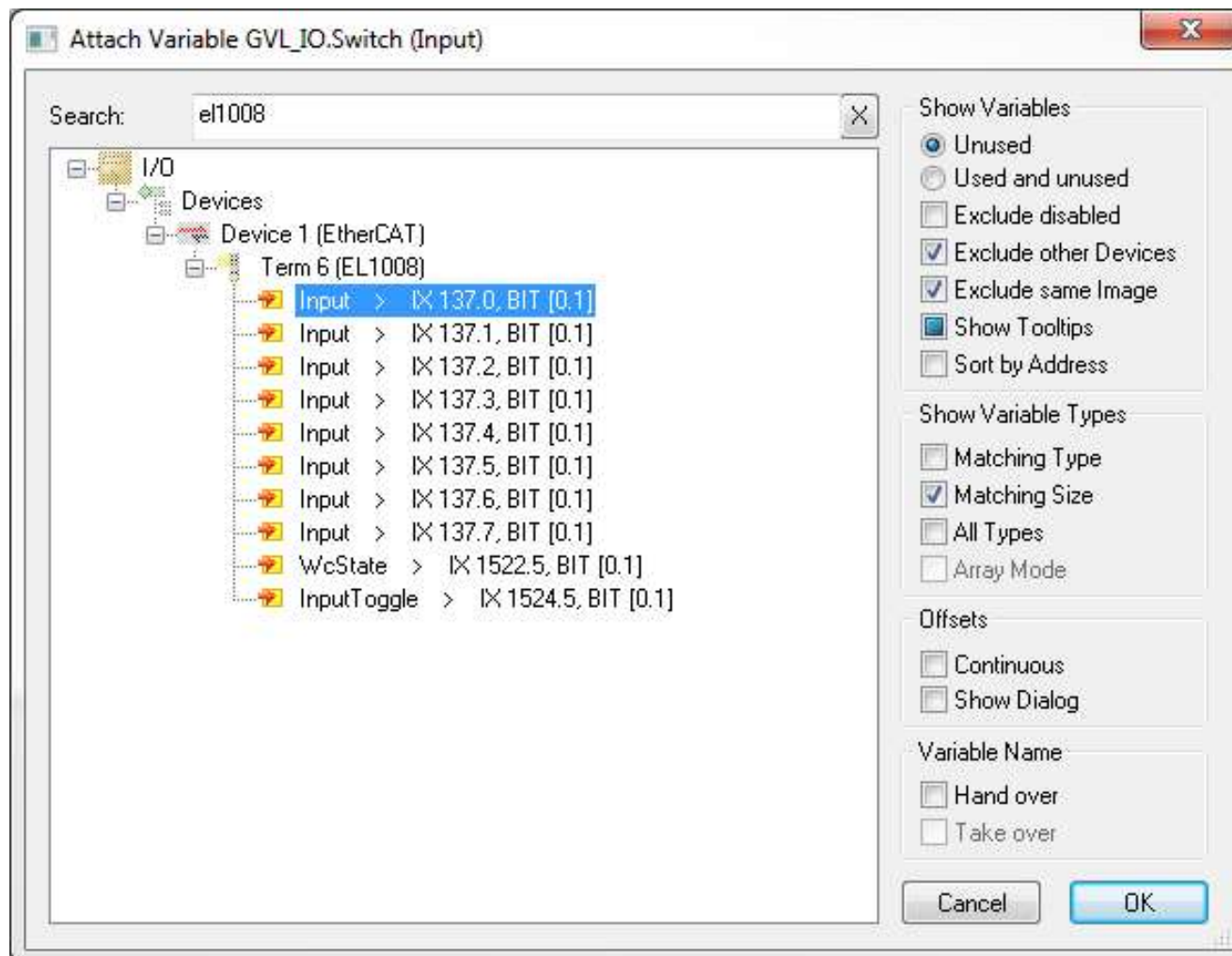


1. Open New Project
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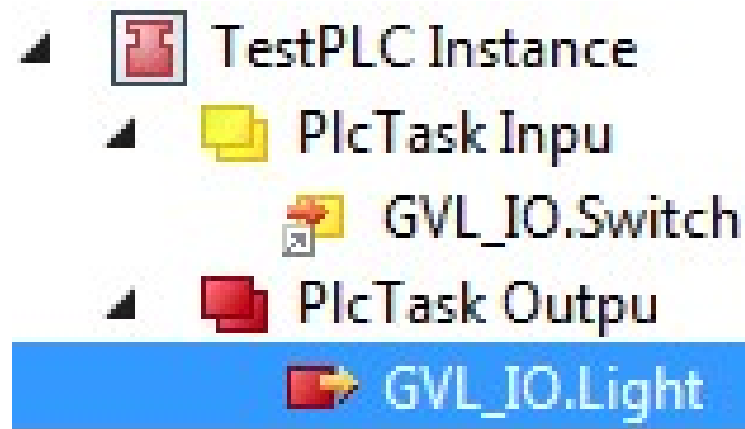
- Double click on GVL_IO.Switch to open the Variable window.
- Double Click on it again to open the Attach Variable Dialog



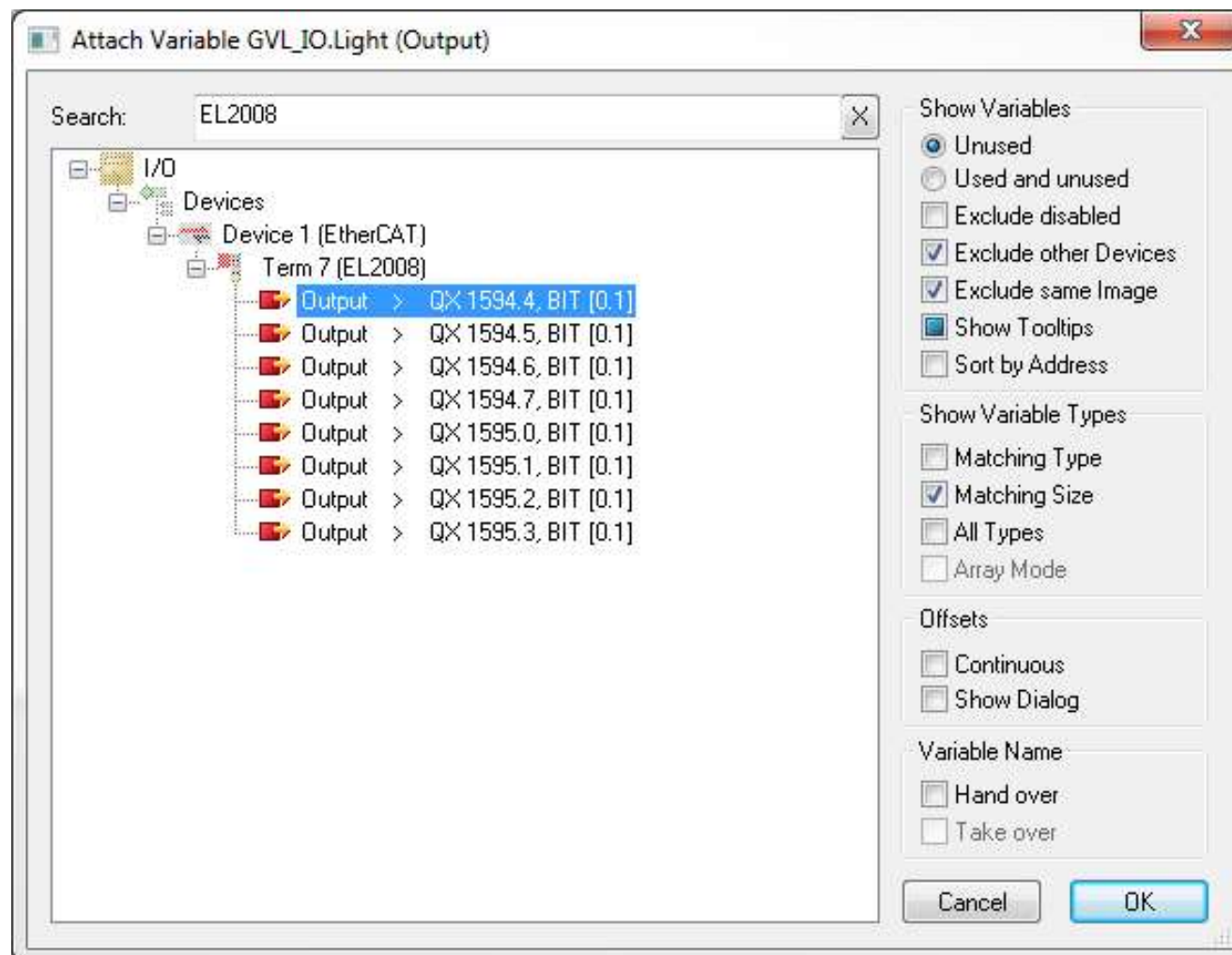
- Select the first Input under the EL1008 and click 'OK'



- Double click on GVL_IO.Light to open the Variable window.
- Double Click on it again to open the Attach Variable Dialog

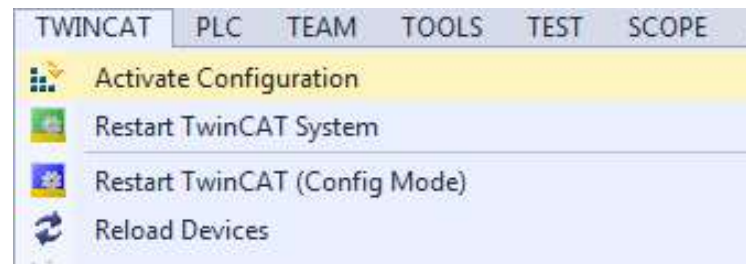


- Locate and select the first Output under the EL2008

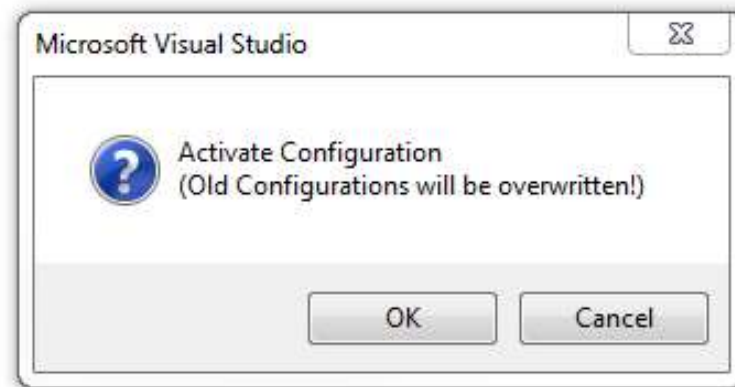


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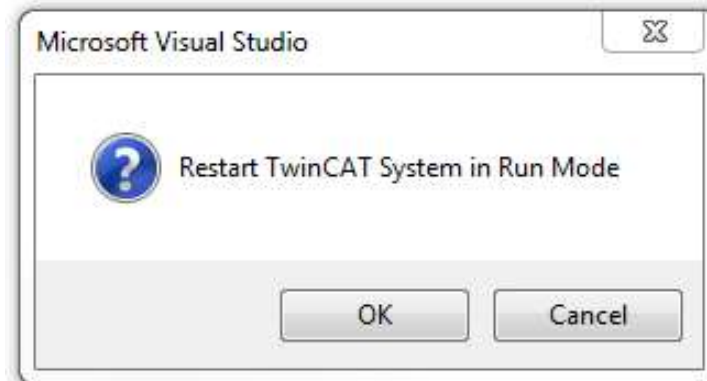
- From the TwinCAT menu, select Activate Configuration



- Click 'OK' to acknowledge that the files in the Boot folder will be replaced/updated.

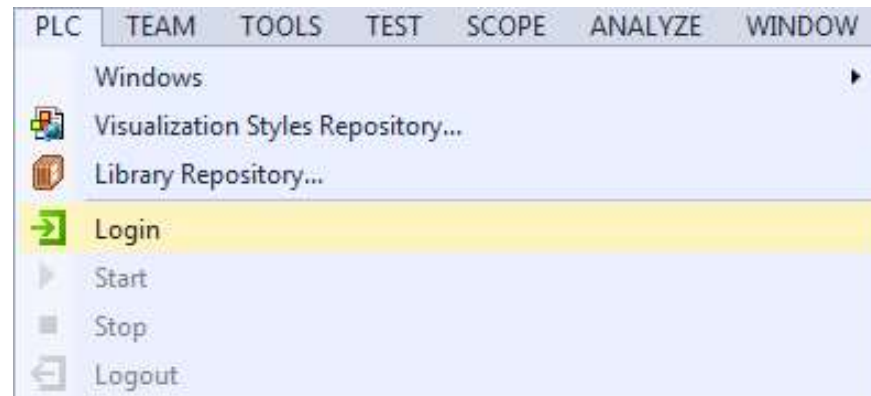


- Click 'OK' to restart TwinCAT in Run Mode



1. Open New Project
2. Scan Hardware
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- 9. Load PLC Code**
10. Test

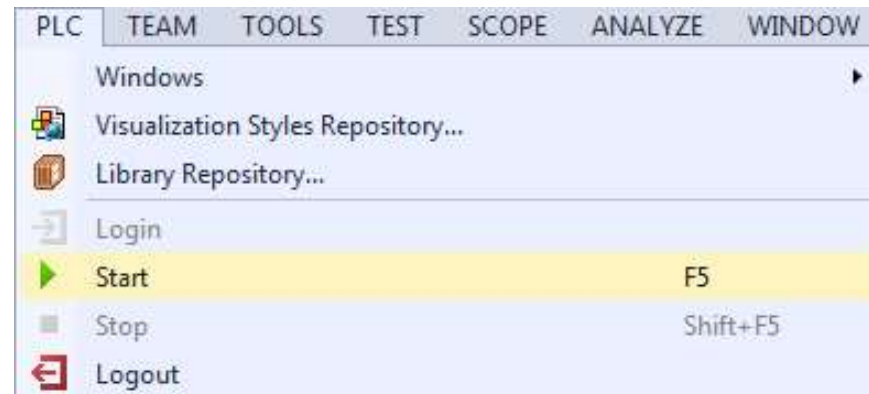
- From the PLC menu select Login



- Click 'Yes' to create the PLC Run-Time and load your code.

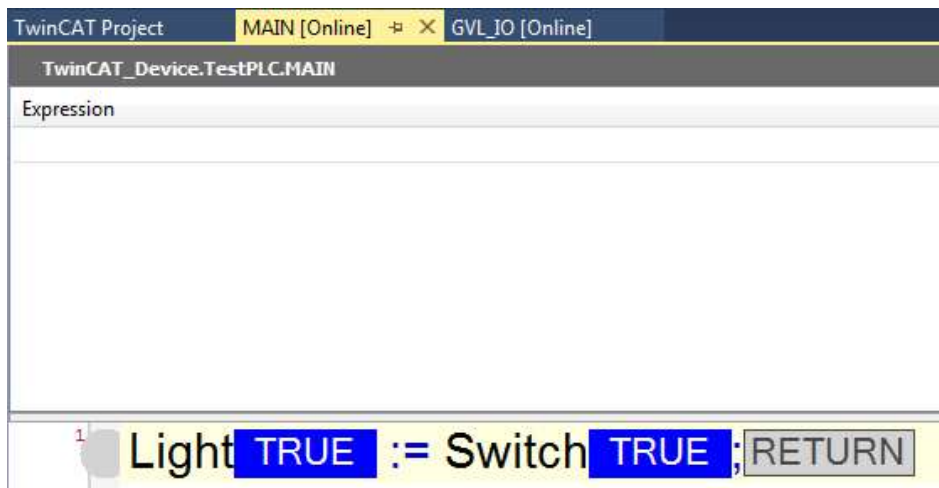
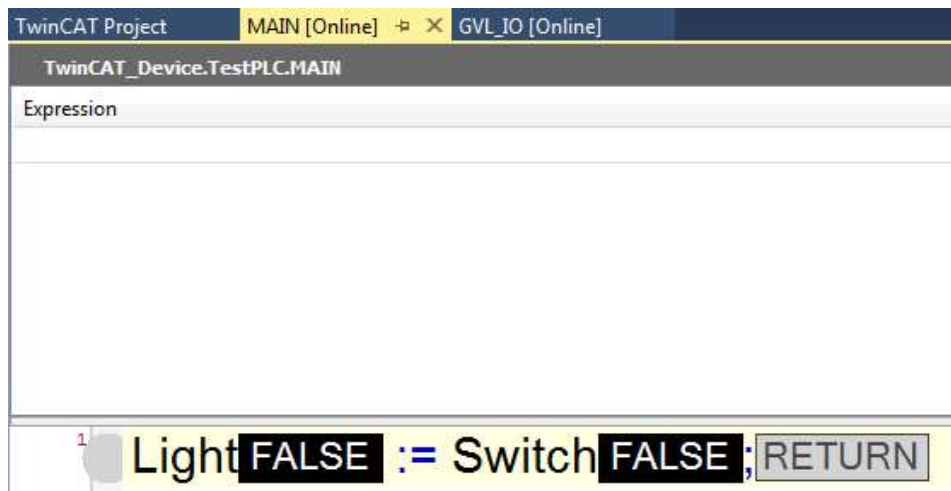


- From the PLC menu select Start



1. Open New Project
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9. Load PLC Code
- 10. Test**

- When the button is pressed, the variables should toggle and the LED should turn on



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