Findings TwinCat Software

Robot arm project

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# The setup of TwinCAT

TwinCat is an application that will host and form the backbone and software of a PLC. In this case we will use this software because the PLC we are using is made by Beckhoff, the same company that developed TwinCat. And the application does fit within our needs and requirements, one of which is the ability to write the code in Structured text, TwinCat is perfect for the structured text language.

Afbeelding met tekst

Automatisch gegenereerde beschrijving

Figure 1, source: https://www.beckhoff.com/en-en/products/automation/twincat/texxxx-twincat-3-engineering/te1000.html

The version of TwinCat we will use is the, TE1000 TwinCAT 3 Engineering, it will integrate into the Visual Studio software on device and download their own platform to use if preferred.

If downloaded properly, the software should now be available to use in combination with the Beckhoff PLC.

# Afbeelding met tekst Automatisch gegenereerde beschrijvingConnecting the PLC

If the PLC is already known on the device, it will be showed under the <LOCAL> device. It can then be selected as the target and the connection is complete.

If the PLC is new on the device, the Search via Ethernet button can be used to search for the PLC. After delectating the new PLC within the search results the PLC can be selected as the target. The PLC will now be known on this device.

We connected with the PLC via Ethernet, other ways might be possible, but this is the easiest within this application and with the PLC hardware.

We have been having some trouble with the connection, the PLC won’t show up with the search results and can’t be selected as target. The solution for this problem has not yet been found.

I personally had some trouble with my MacBook with M1 chip. After some research it became clear that the TwinCat software is not able to run the code on an Arm64 based M1 chip. Virtual machines did not overcome this problem so I started using another laptop for this project.

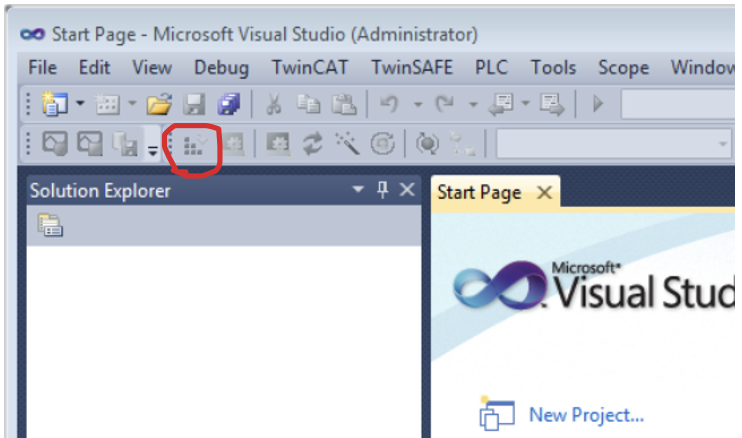
# The TwinCAT basics

A new project can be created and will create a work environment for the connected PLC. The PLC can be equipped with external devices which it could use. Those devices will show up on the I/O tab and devices interface. But to start programming the PLC, a PLC must be created in the work environment. Under the tab PLC a new PLC can be created and named, (here Untitled10 Project).

Such project has a pre determent structure for its software.

* POU's (Program Organizational Unit) -- Program all functions, programs and all general code here.
* GVL's (Global Variable Library) -- set all variables in here.
* DUT's (Data Unit Types) -- create all new structures and types here.

In general, the program will work the same as a normal Visual Studio project and that makes it quite easy.



An important addition to this Visual Studio Shell is how to run the code. In this shell it is through the button shown on the left.