

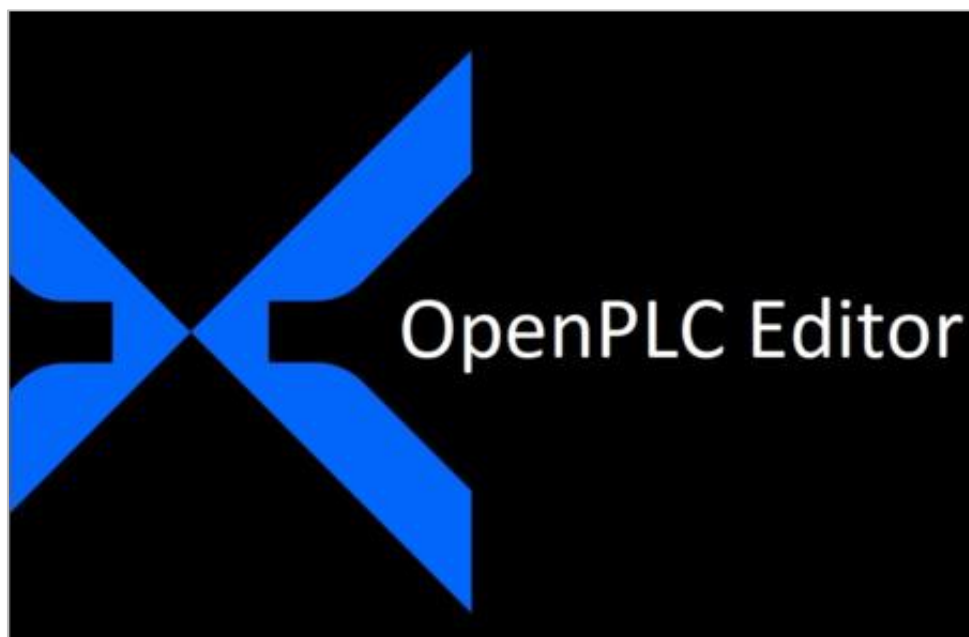


Power Meter Monitor

**Business and Mission-
Critical Solutions Provider**

PMM06 Integration with OpenPLC

User Manual



Document: Guidelines

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1. INTRODUCTION

This Document is a fully descriptive guideline for integrating PMM06 series with OpenPLC. Providing the operator with the needed information in terms of instructions and screen layout allowing for easy use.

1.1 Description

PMM PLC Systems are built to be Arduino compatible programming environment, where PMM's PLCs Range is not just compatible with Arduino IDE, but with lots of other Arduino-compatible programming software such as openPLC.

OpenPLC is an independent organization providing efficiency in industrial automation based on the needs of users. OpenPLC members have concentrated on technical specifications around IEC 61131-3, creating specifications and implementations in order to reduce cost in industrial engineering. The outcome for example is standardized libraries for different application fields, harmonized language conformity levels and engineering interfaces for exchange. Experts of the OpenPLC members are organized in technical committees and together with end users define such open standards.

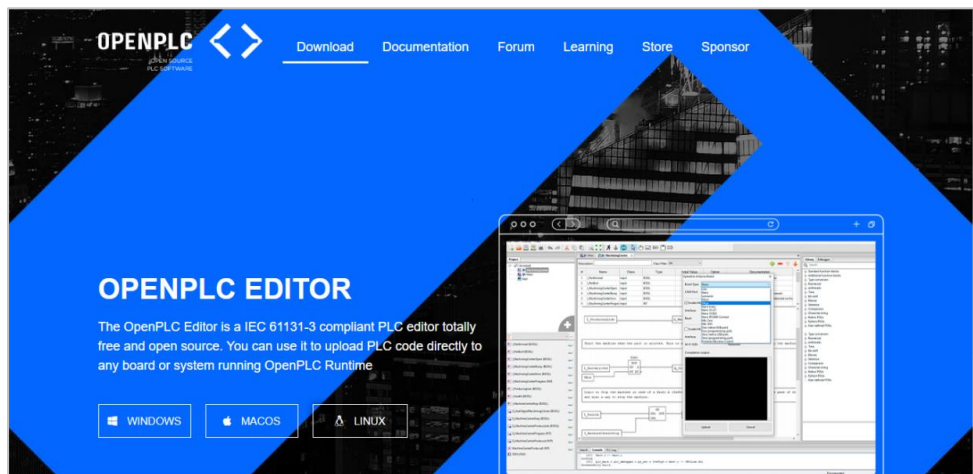
1.2 List of Compatible Devices

- PMM0612
- PMM0620
- PMM0625
- PMM0626
- PMM0627
- PMM0628
- PMM0630
- PMM0631
- PMM0632
- PMM0635
- PMM0636
- PMM0638
- PMM0639

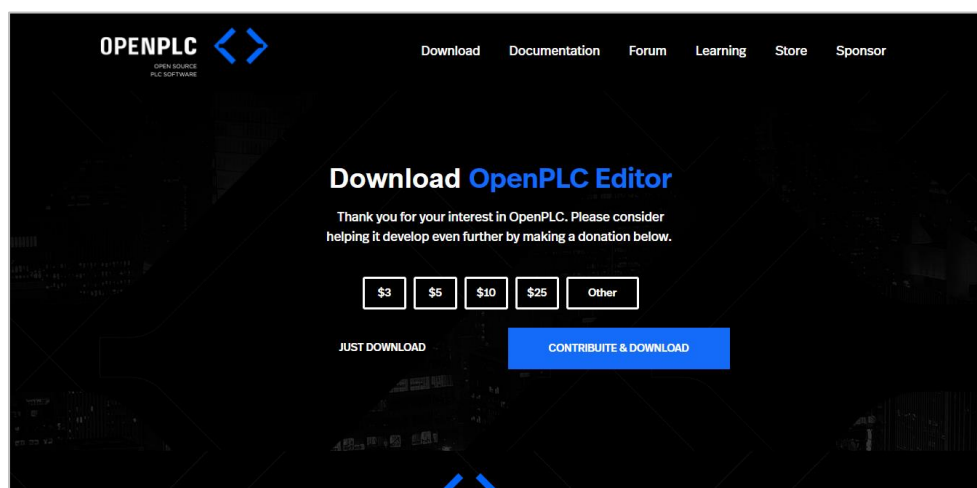
2. INTEGRATION GUIDELINES

2.1 OpenPLC Installation Guidelines

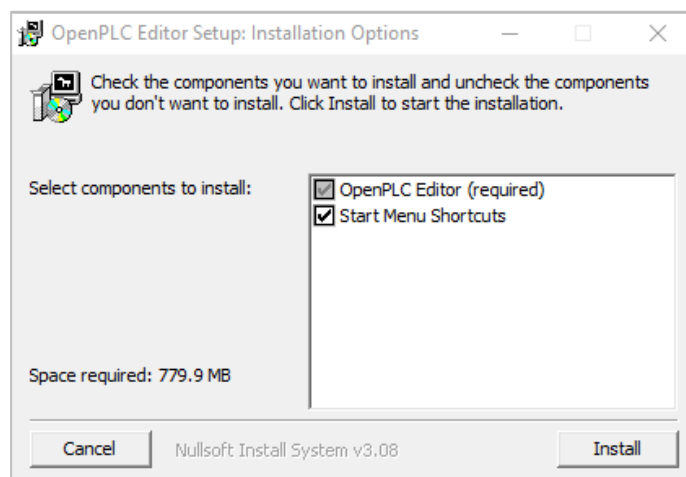
1. [Click Here](#) to get to the installation page.
2. Once the main page is opened, click on the compatible link with your device.

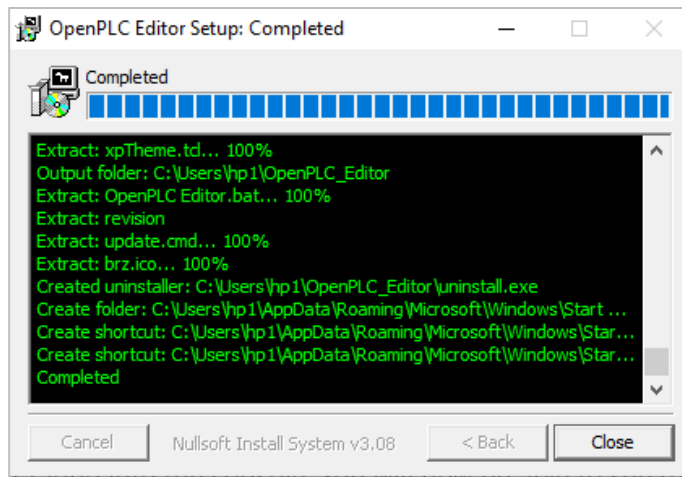


3. Click on “open file” to proceed to installation.

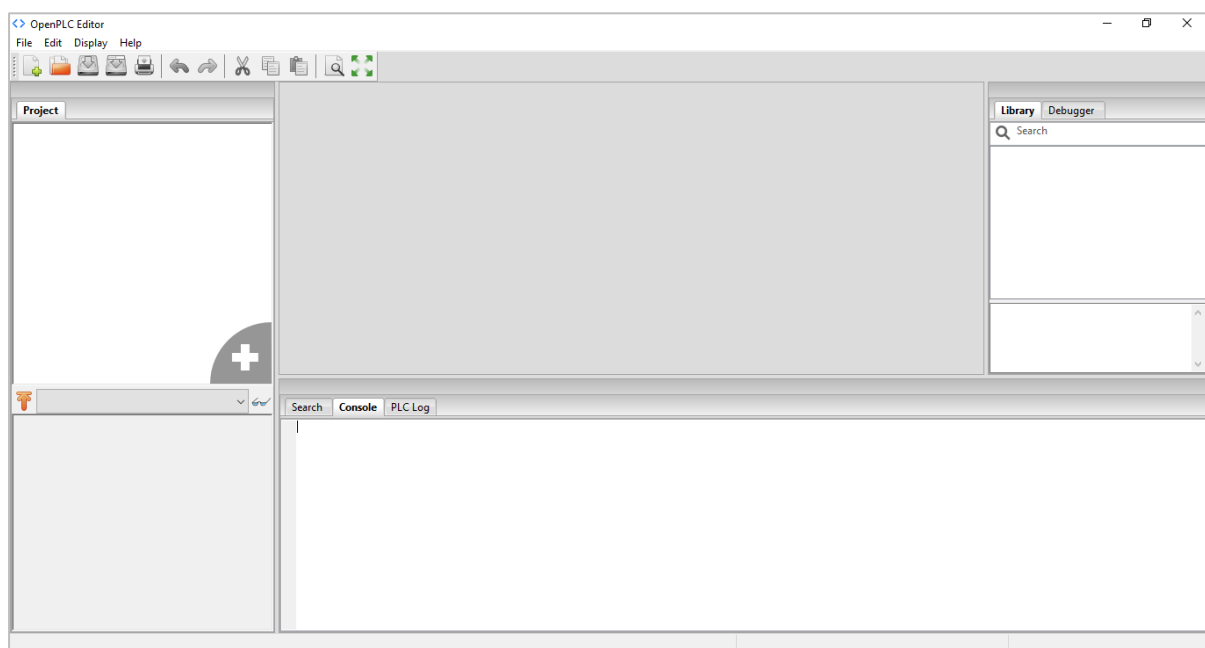


4. OpenPLC setup process will start, click on “Install” to continue the setup to the completion as shown in the figures below.





5. Now everything is setup and the user can start using the program.



3. PMM0625 INTEGRATION with OPENPLC TUTORIAL

This section is full descriptive of the instructions related to connecting PMM0625 to OpenPLC. PMM0625-T is a reliable digital output module with 8 (80VDC) transistor isolated channels. The module sends digital signals from the CPU to the field actuators controlling their status between on/off. Each output can be individually switched on or off and can handle up to 5A. In addition, the opto-coupled architecture makes each output channel rather rugged, capable of isolating the CPU from transient voltage “spikes” and other electrical phenomena capable of causing damage. PMM0625-T is widely used in signal interface switching of PLC, single chip or other industrial control board.

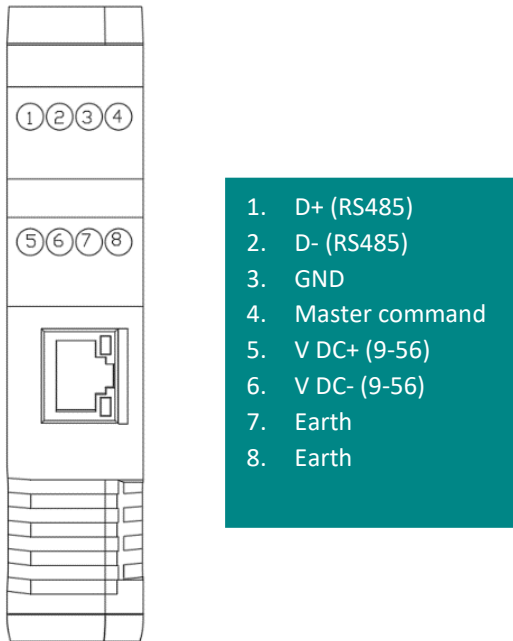


Moreover, PMM0625-T operates under three operational modes:

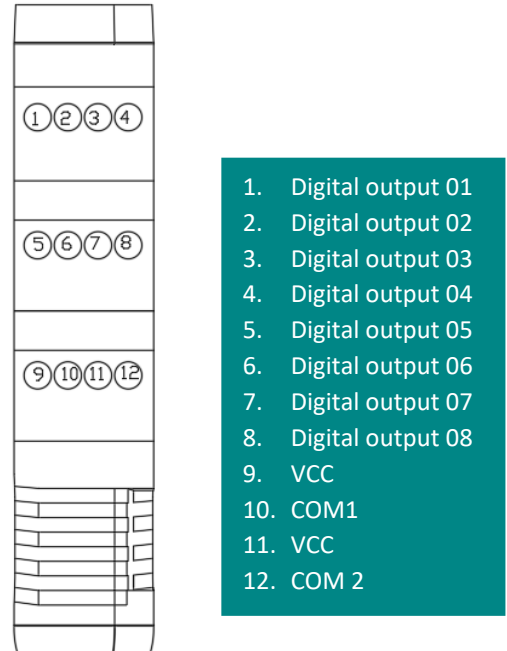
- **Modular operation mode:** the module is connected to a PLC by RS485 and implement specific function assigned by the PLC.
- **Fail Safe mode:** the module should be pre-programmed in case of lost connection with the PLC to carry on its function effectively.
- **Stand-alone:** the module can be programmed to work as PLC and control the field devices.

3.1 PIN ASSIGNMENTS

TOP VIEW



BOTTOM VIEW



3.2 HARDWARE CONNECTIONS

Connecting Power

PMM0625-T has two power supply options 10-60 VDC (10-48 VAC), the user has to connect the positive power line (+) to pin no.5 in the top view and the negative line (-) to pin no.6 as illustrated in the pin's assignments.

Note: the power is protected against overvoltage and reverse polarity in case of wrong connection.

Connecting Serial Device

The unit's serial port is located on the top panel. If you are connecting an RS485 multidrop network with multiple devices, note the following:

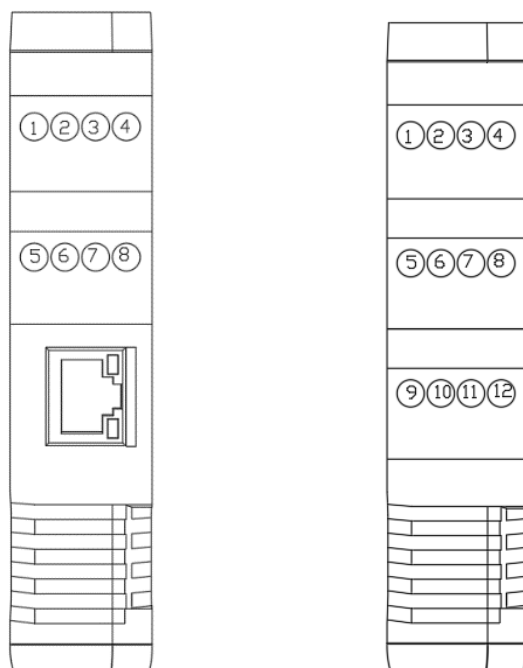
- All devices that are connected to a single serial port must use the same protocol (i.e., either Modbus RTU or Modbus ASCII).
- Connect the D+ with pin no.1 and D- with pin no.2 and Earth with pin no.7 or 8 as illustrated in the pin's assignments to complete the connection successfully.
- Turn on the dip switch to have 120 Ω termination resistor between the D+ and D- lines. Refer hardware configuration section.

Connecting to a Host or the Network

There is a 10/100 Ethernet port at the module's top panel. This port is used to connect the module with a host or Ethernet network.

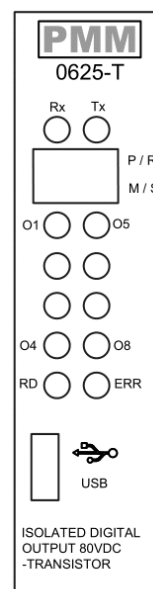
Connecting Digital Output

Connect the signal line with one of the eight digital output pins on the bottom view (01-08) and the common line for digital outputs from (1-4) with pin no.10 and the common line for digital outputs from (5-8) with pin No. 12.



There are 12x LED indicators at the front panel. 2x LED are for communication indication through RS485 and 8x LED for indicating the outputs status.

LED No.	Indication
Rx, Tx	Indicating the communication through RS485 port OFF: No Data is being transmitted or received through the port Flickering Green: Data is being transmitted or received through the port
Ox-O8	Indicating the status of Output x OFF: Output x is off Steady-Green: Output x is on

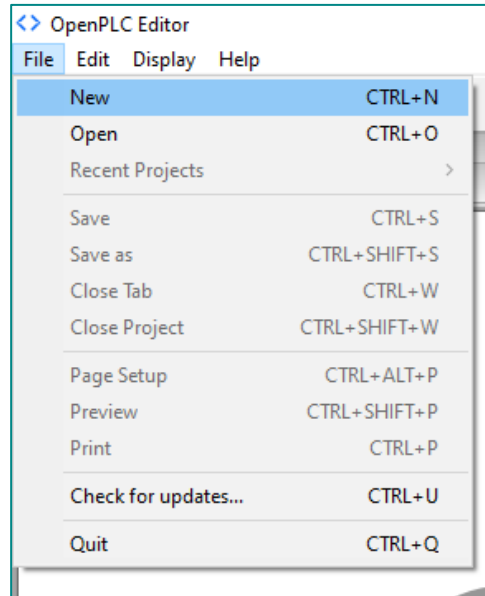


Connecting the USB

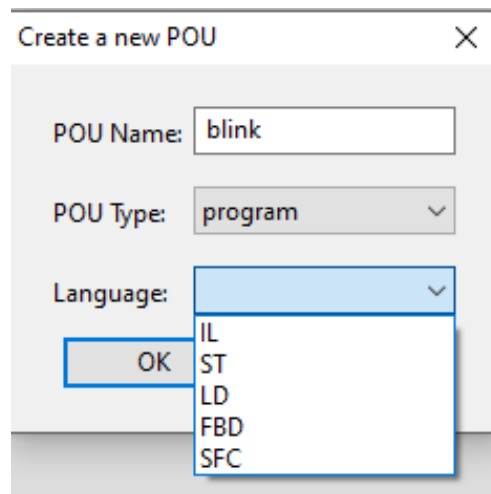
Connect the USB to the device through the USB port in the front panel (Micro-USB type), and connect the other side with personal computer (PC). Once the USB is connected correctly between the device and PC, the user can start the integration as explained in the Integration Guidelines:

1. To open a new project: select “New”, then select the destination file.

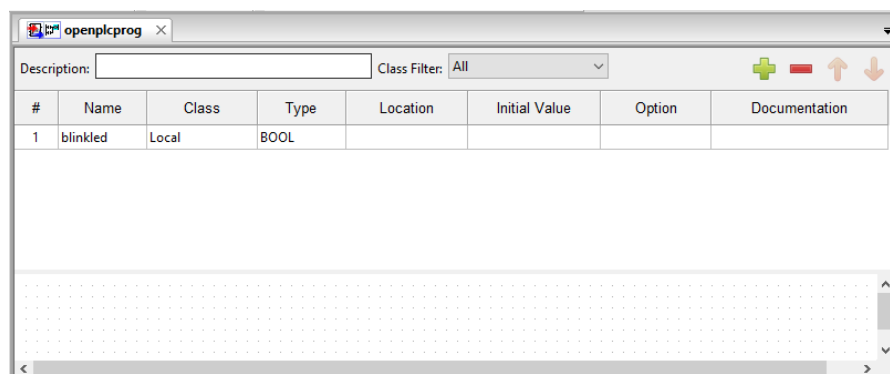
Note: the folder of destination should be empty.



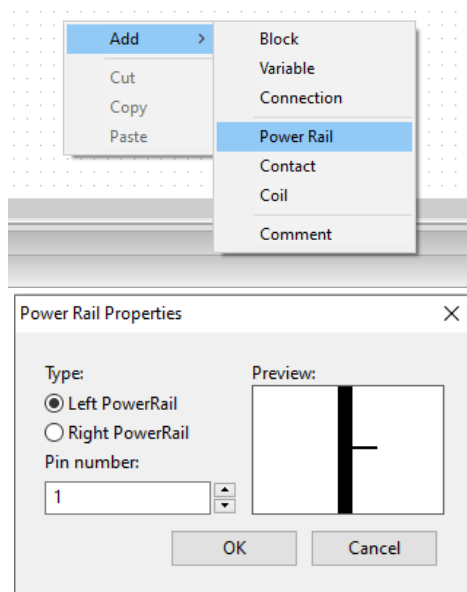
2. Name your file then choose the desired programming language.



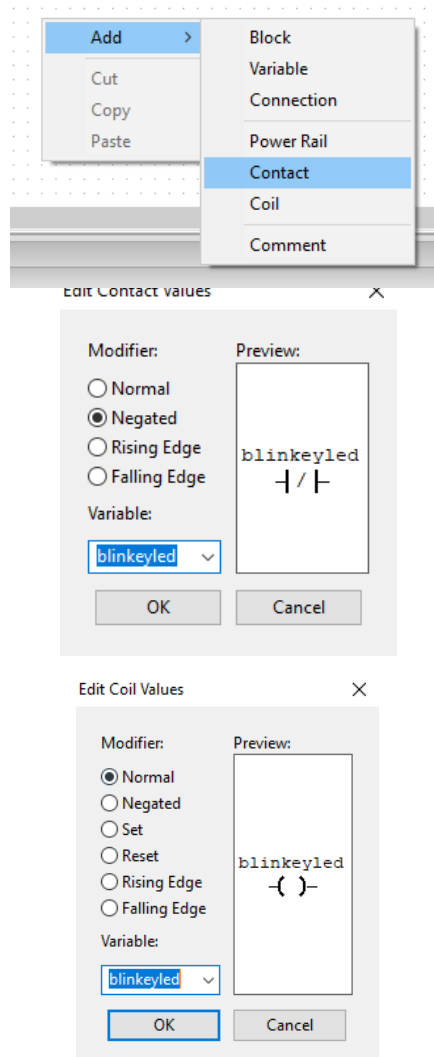
3. Now press on the green plus icon to create a variable, choose the name and the desired type.

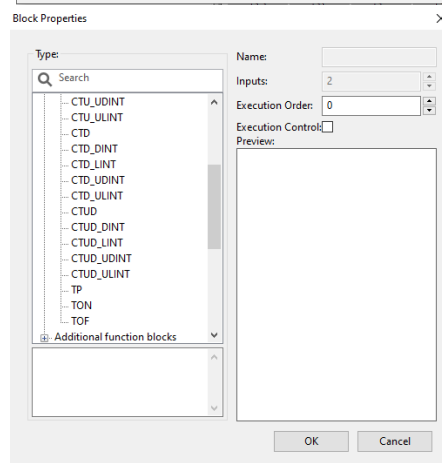
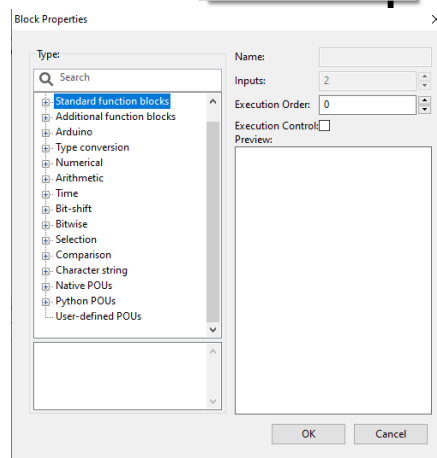
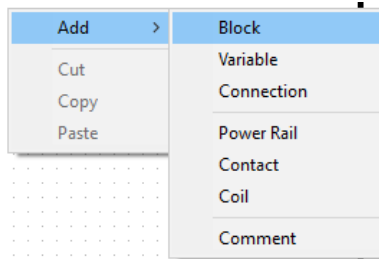
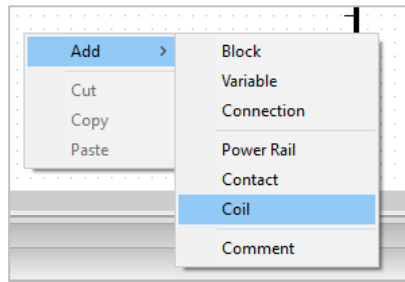


4. Now add the power rails in both left and right, and select the pin number.



5. You can add the contact and coil by right clicking and pressing on the needed one.





6. To know the location of the pins, go to the website >documentation >openPLC runtime >physical addressing >zero >digitaloutput>

Download

Documentation

Forum

Learning

Store

Sponsor

1. Get Started

1.1 OpenPLC Overview

1.2 Installing OpenPLC Editor

1.3 Installing OpenPLC Runtime on Windows

1.4 Installing OpenPLC Runtime on Linux

1.5 Installing OpenPLC Runtime on Microcontrollers

2. OpenPLC Runtime

3. OpenPLC Editor

> 1. Get Started > 1.1 OpenPLC Overview

1.1 OPENPLC OVERVIEW

OpenPLC is an open-source **Programmable Logic Controller** that is based on an easy to use software. It is the first fully functional standardized open source PLC, both in software and in hardware. The OpenPLC project was created in accordance with the IEC 61131-3 standard, which defines the basic software architecture and programming languages for PLCs.

OpenPLC is mainly used on industrial and home automation, internet of things and SCADA research. You can check OpenPLC in action on the short video below:

1. Get Started

2. OpenPLC Runtime

2.1 OpenPLC Runtime Overview

2.2 Uploading Programs to OpenPLC Runtime

2.3 Input, Output and Memory Addressing

2.4 Physical Addressing

2.5 Modbus Addressing

2.6 Slave Devices

3. OpenPLC Editor

> 2. OpenPLC Runtime > 2.4 Physical Addressing

2.4 PHYSICAL ADDRESSING

OpenPLC Runtime is compatible with several different hardware platforms with different I/O module configurations. Internally, all I/O variables are associated with a PLC Address, as explained on **2.3 Input, Output and Memory Addressing**. The hardware layer is the component responsible for translating internal PLC Address variables into physical hardware locations. Each platform OpenPLC supports must have a different hardware layer. Below you can find the pinout description for each platform, extracted from the platform's hardware layer file:

Microcontroller-based boards

Controllino Maxi

Digital In	A4, A5, A6, A7, A8, A9, I0, I1	XI0.0 - XI0.7
Digital Out	D4, D5, D6, D7, D8, D9, D10, D11 Q0, Q1, Q2, Q3, Q4, Q5, Q6, Q7 Q8, Q9	QX0.0 - QX0.7 QX1.0 - QX1.7 QX2.0 - QX2.1
Analog In	A0, A1, A2, A3	XI0 - XI3
Analog Out	D0, D1, D2, D3	QX0 - QX3

Uno, Leonardo, Nano, Micro, Zero

Digital In	2, 3, 4, 5, 6	XI0.0 - XI0.4
Digital Out	7, 8, 12, 13	QX0.0 - QX0.3
Analog In	A0, A1, A2, A3, A4, A5	XI0 - XI5
Analog Out	9, 10, 11	QX0 - QX2

7. Write down the location in the box

firstproj

...s0.instance0

Description:

Class Filter: All

+

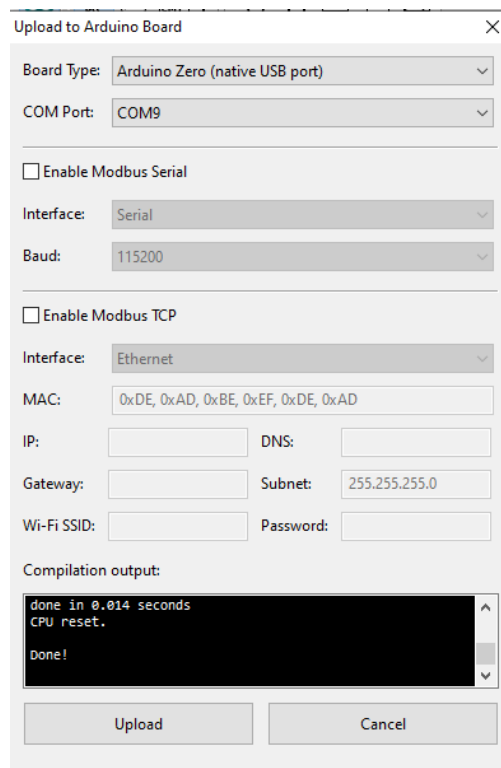
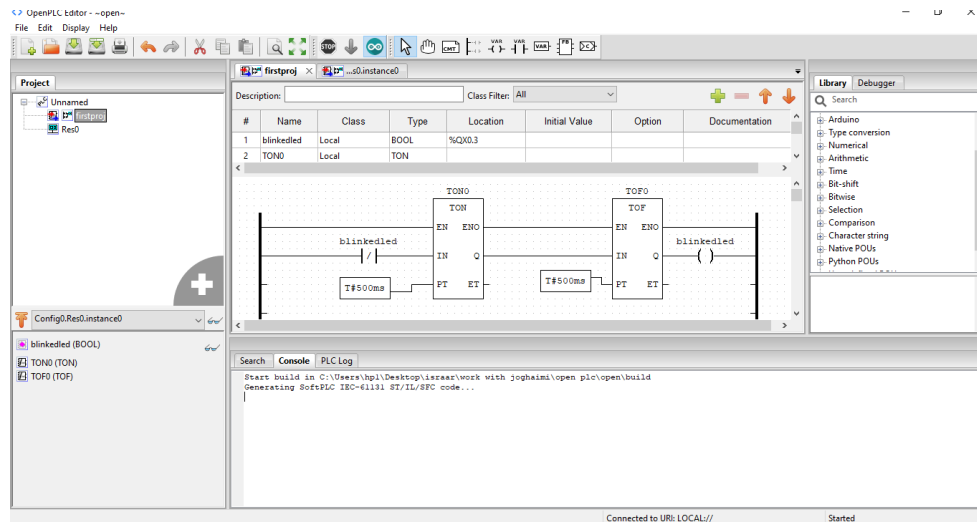
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#	Name	Class	Type	Location	Initial Value	Option	Documentation
1	blinkedled	Local	BOOL	%QX0.3			
2	TON0	Local	TON				

8. After assembling your project press on the Arduino sign to upload the program to your device



9. Now the program should be running on your device.