

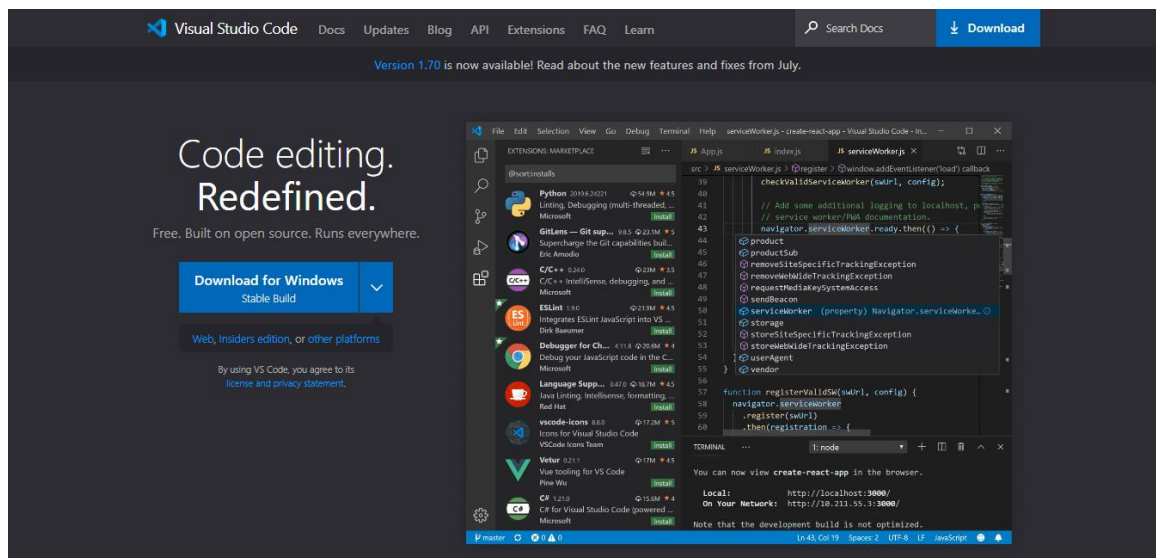


Power Meter Monitor

**Business and Mission-  
Critical Solutions Provider**

## PMM06 Integration with PlatformIO

# User Manual



**Document:** Guidelines  
**Document version:** 1.1  
**Date:** November 2022



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# 1. INTRODUCTION

This Document is a fully descriptive guidelines for integrating PMM06 series with PlatformIO. 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 our PLC Range is not just compatible with Arduino IDE, but with lots of other Arduino-compatible programming software such as Visual Studio Code + Visual Micro.

PlatformIO is an ultimate customizable white-label DSP that enables transparent, resource-efficient, and profitable advertising operations for digital ad agencies, networks, and brands. Manage your campaigns effectively in real time, eliminate disruptions, and minimize time-to-value with low startup costs and full customizability.

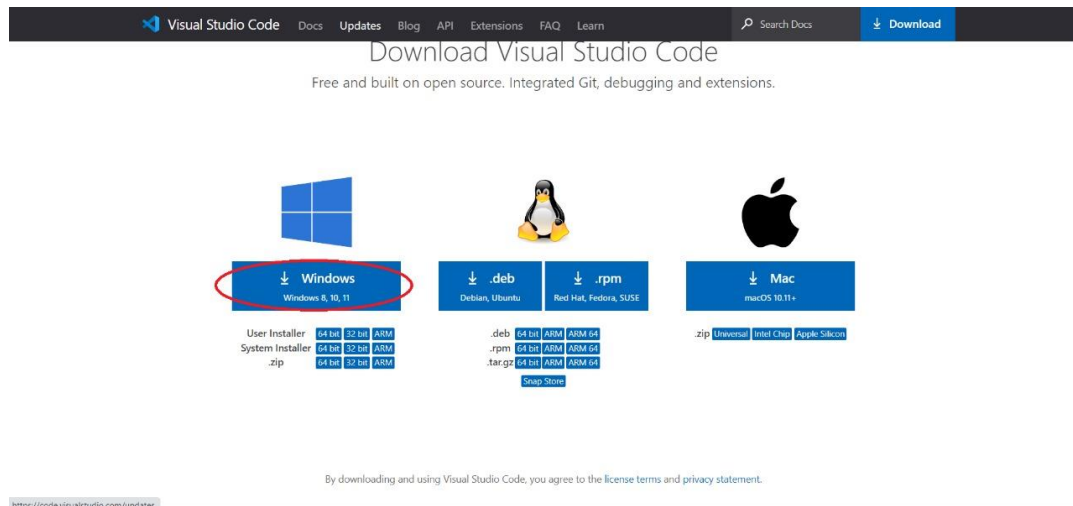
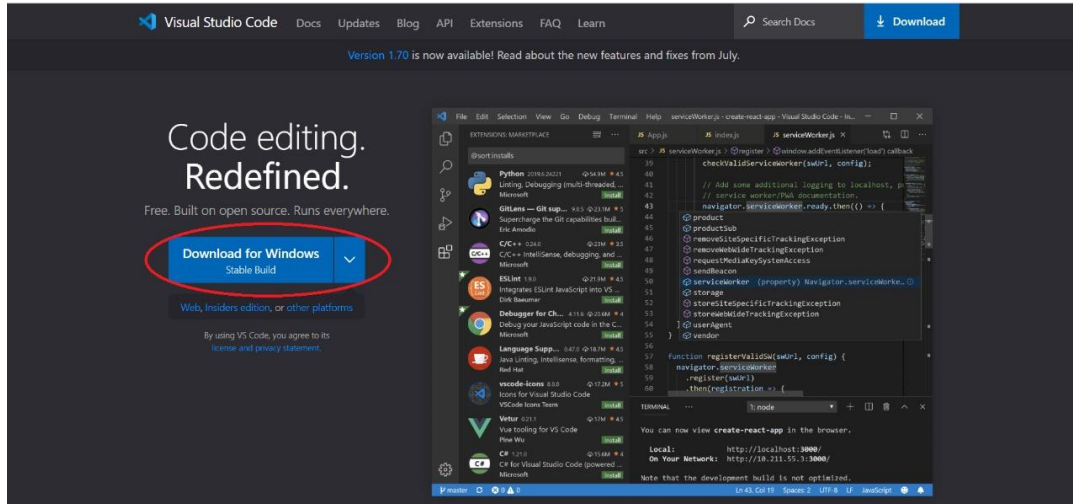
## 1.2 List of Compatible devices

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

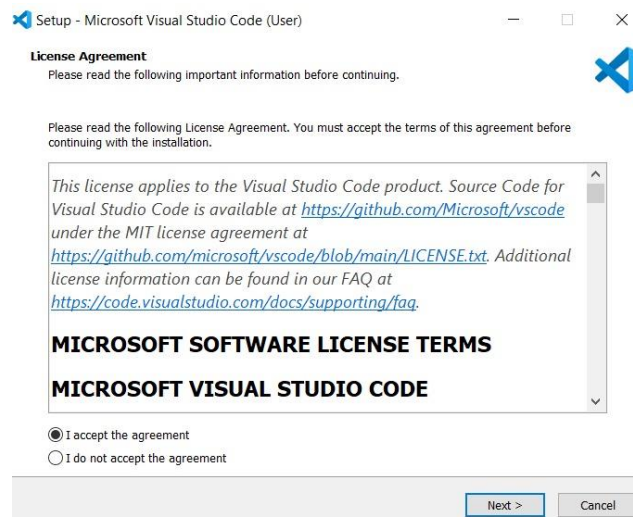
## 2. INTEGRATION GUIDELINES

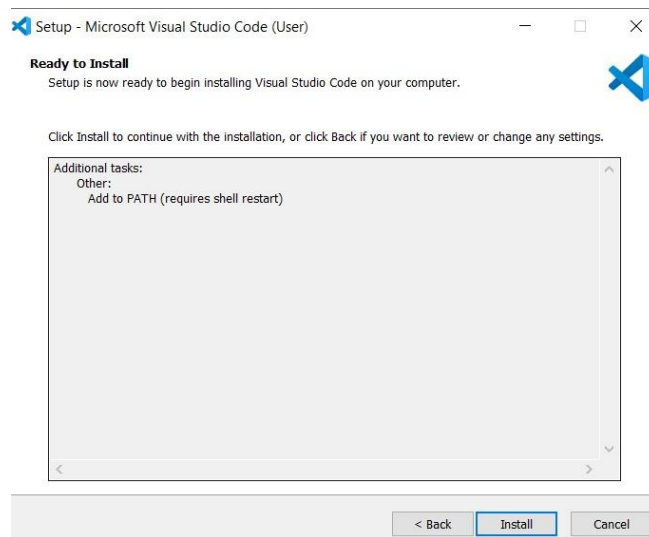
### 2.1 Platform IO Installation Guidelines

1. [Click Here](#) to get to the installation page.
2. Once the main page is opened, click on “Download for windows”.



3. Continue the setup process. Click on “Next” and when the application is ready for installation click on “Install”.

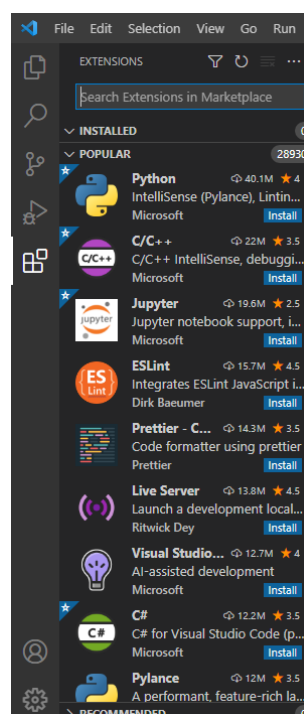




4. Enable the option “Launch Visual Studio Code” then click on “Finish”.

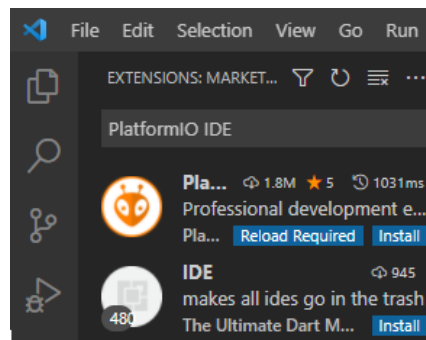


5. Click on “Extensions” as shown below.





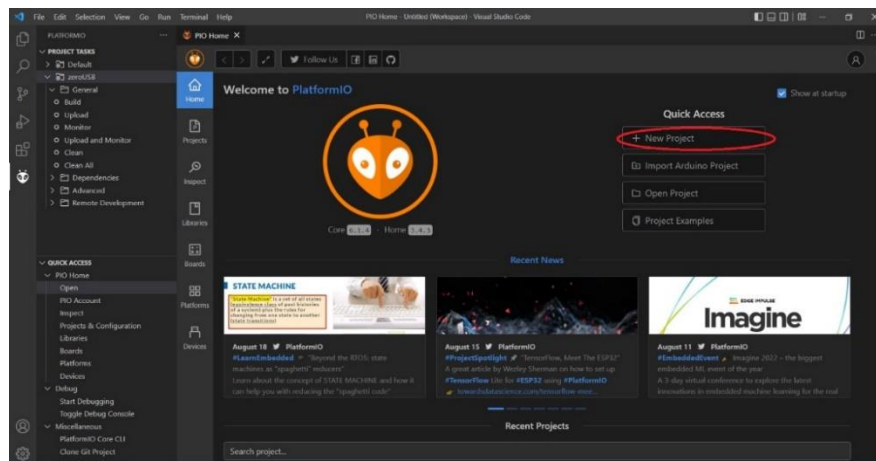
6. Type in the search space “PlatformIO IDE”
7. Click on “Install” as shown below.



8. Click on “Home Icon” to go to PlatformIO home.



9. To start writing the code, click on “new project” to open a new one.



10. The project wizard window will be displayed.
11. Type the project name in the “Name” field.
12. Choose “Arduino Zero (USB Native Board)”
13. Framework is “Arduino”
14. Click on “Finish”

Project Wizard

This wizard allows you to **create new** PlatformIO project or **update existing**. In the last case, you need to uncheck "Use default location" and specify path to existing project.

Name:

Board:

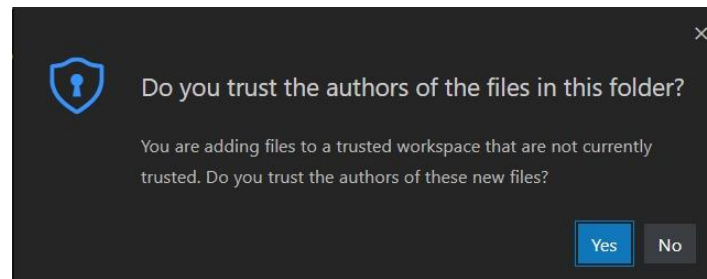
Framework:

Location: ☒ Use default location

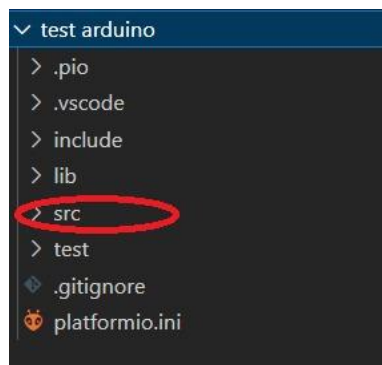
Cancel

Finish

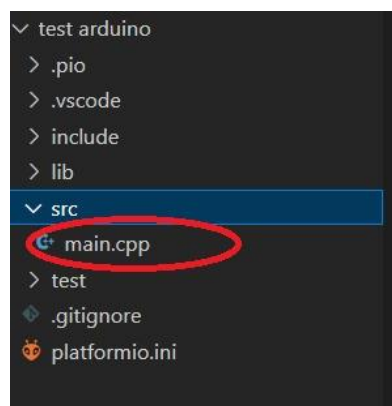
15. A security confirmation message will pop up, click on “Yes”.



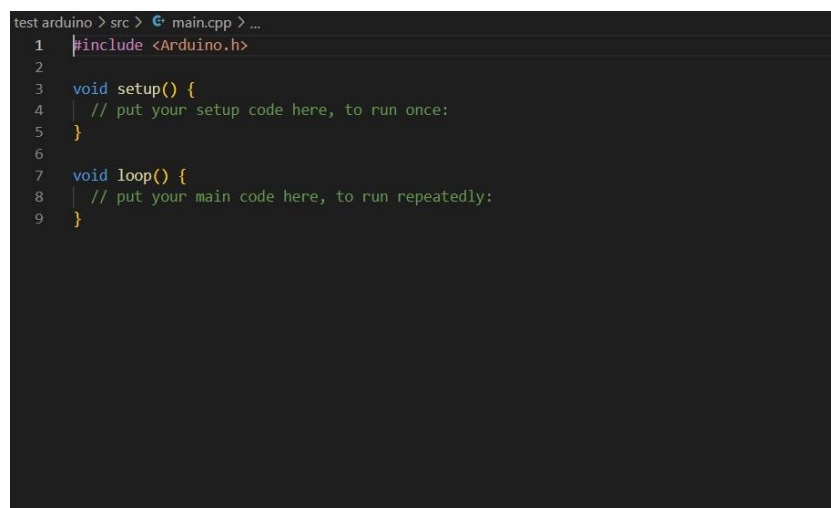
16. After completing the previous instructions, your project is created now as shown below.



17. To start writing your code click on “src” then click on “main.cpp” as shown below.



18. The coding page will be opened as shown below.



### 3. PMM0625 INTEGRATION with PlatformIO 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.

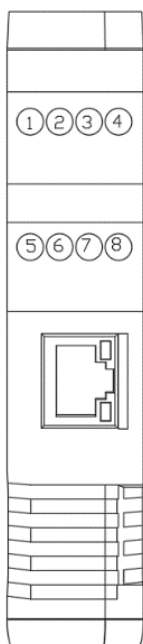


Moreover, PMM0625-T operates under three operational modes:

- **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.

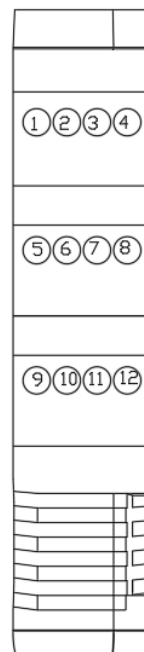
#### 3.1 PIN ASSIGNMENTS

TOP VIEW



1. D+ (RS485)
2. D- (RS485)
3. GND
4. Master command
5. V DC+ (9-56)
6. V DC- (9-56)
7. Earth
8. Earth

BOTTOM VIEW



1. Digital output 01
2. Digital output 02
3. Digital output 03
4. Digital output 04
5. Digital output 05
6. Digital output 06
7. Digital output 07
8. Digital output 08
9. VCC
10. COM1
11. VCC
12. COM 2

#### 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:

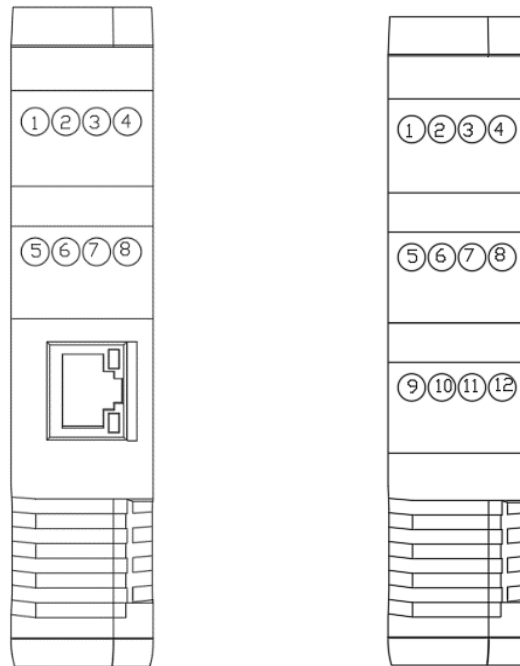
- All devices that are connected to a single serial port must use the same protocol (i.e., either Modbus RTU or Modbus ASCII).
- Connect the D+ with pin no.1 and D- with pin no.2 and Earth with pin no.7 or 8 as illustrated in the pin's assignments to complete the connection successfully.
- Turn on the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

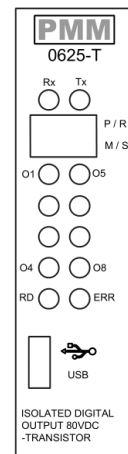
## Connecting Digital Output

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.

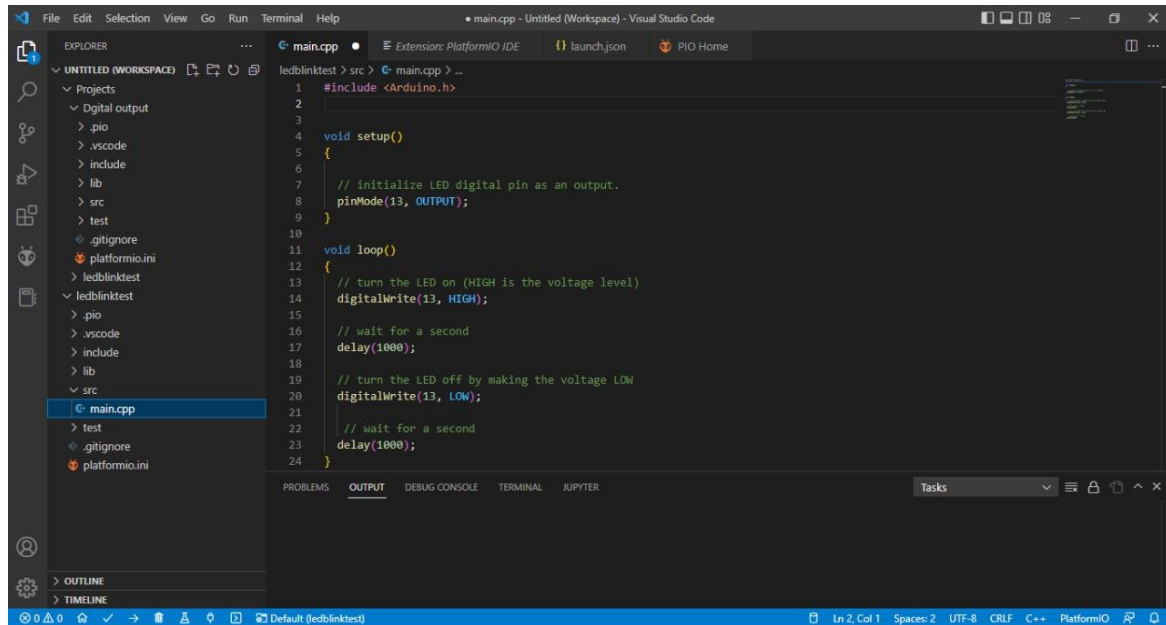
LED No.	Indication
Rx, Tx	Indicating the communication through RS485 port OFF: No Data is being transmitted or received through the port Flickering Green: Data is being transmitted or received through the port
Ox-O8	Indicating the status of Output x OFF: Output x is off Steady-Green: Output x is on



## 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:

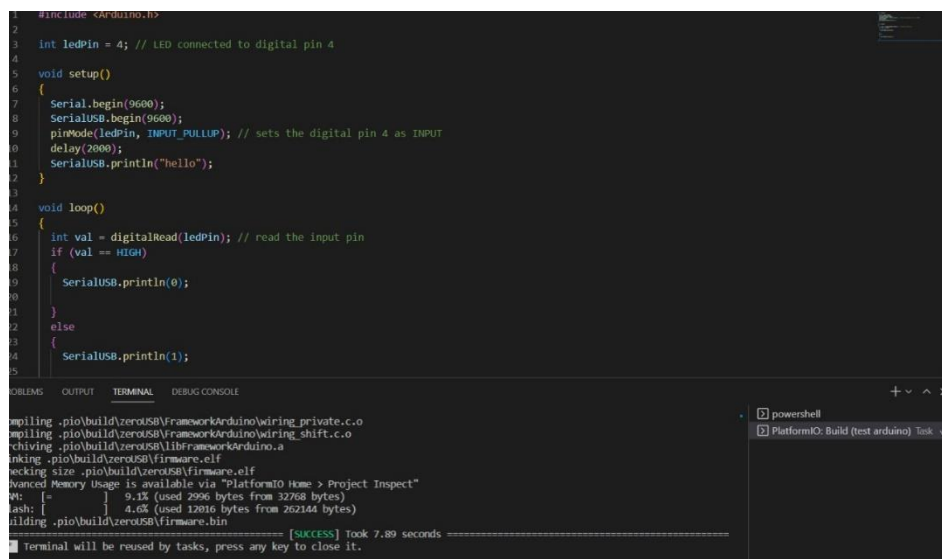
1. Write the desired code in the specified space.



2. Click on “✓” icon; PlatformIO: build” to auto check the code to ensure nothing is wrong in the syntax.



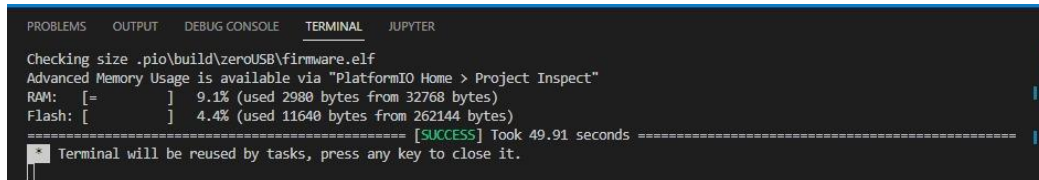
3. After checking the code, if the code is correct then “SUCCESS” is displayed.



4. Click on “→” icon ” that Connects the board to the USB ports to enable the user to upload the code.




5. The uploading process will take a minute, the uploading is completed successfully when “**SUCCESS**” is displayed.



```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  JUPYTER
Checking size .pio\build\zeroUSB\firmware.elf
Advanced Memory Usage is available via "PlatformIO Home > Project Inspect"
RAM:  [=          ]  9.1% (used 2980 bytes from 32768 bytes)
Flash: [=         ]  4.4% (used 11640 bytes from 262144 bytes)
===== [SUCCESS] Took 49.91 seconds =====
Terminal will be reused by tasks, press any key to close it.
```

**Note:** the previous code example aims to define Pin No.13 as an output and monitor its status between ON/OFF.

6. In order to verify that the code is uploaded on the device and working properly:
- When the input status is **OFF** “0” the LED light will be OFF.
  - When the output status is changed to **ON** “1” LED light will be changed to steady green  automatically.