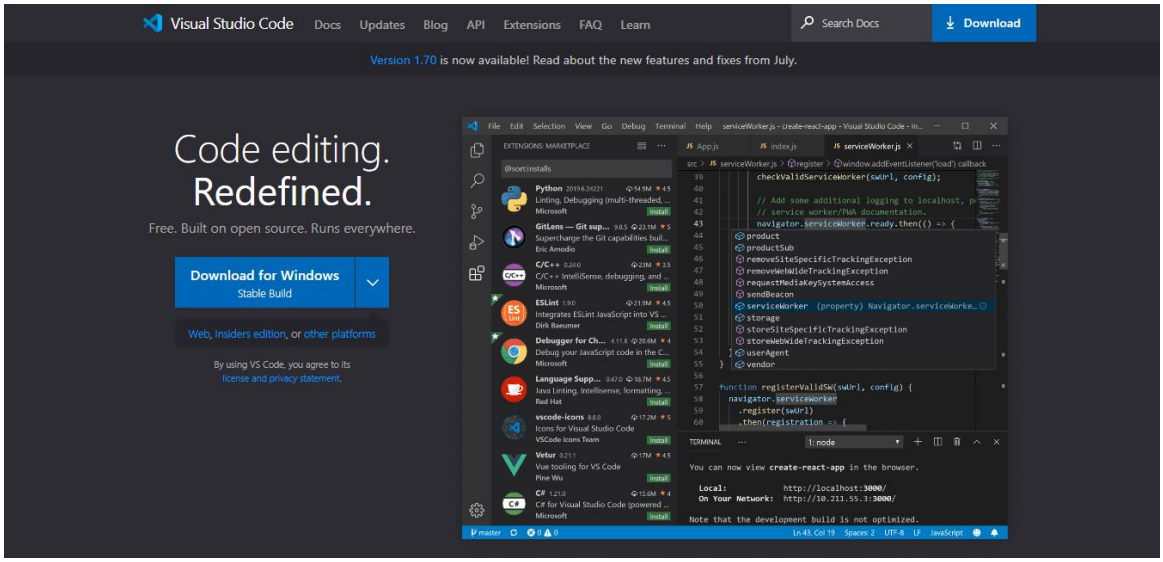
Power Meter Monitor

Business and Mission-

Critical Solutions Provider

PMM06 Integration with PlatformIO

User Manual



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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.

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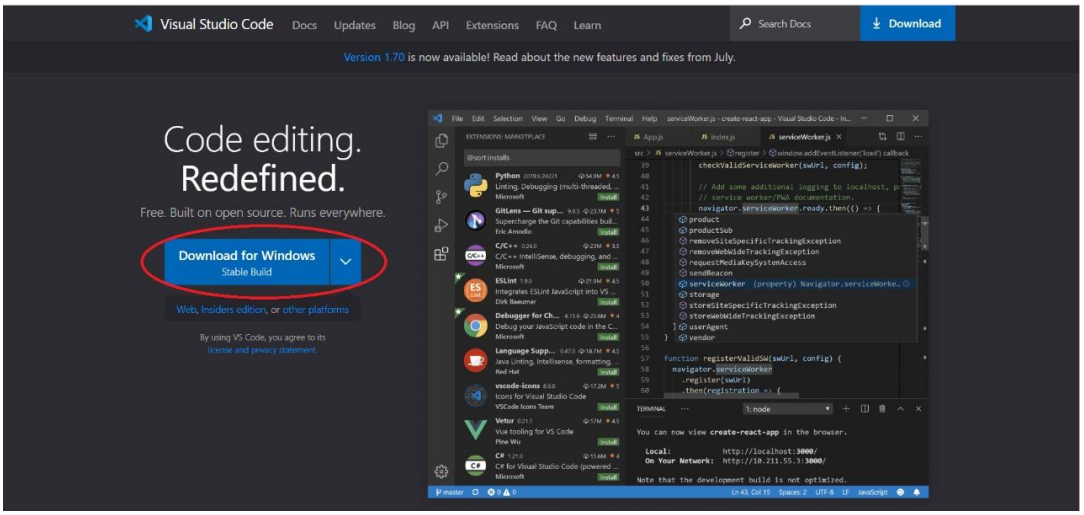
1.2 List of Compatible devices

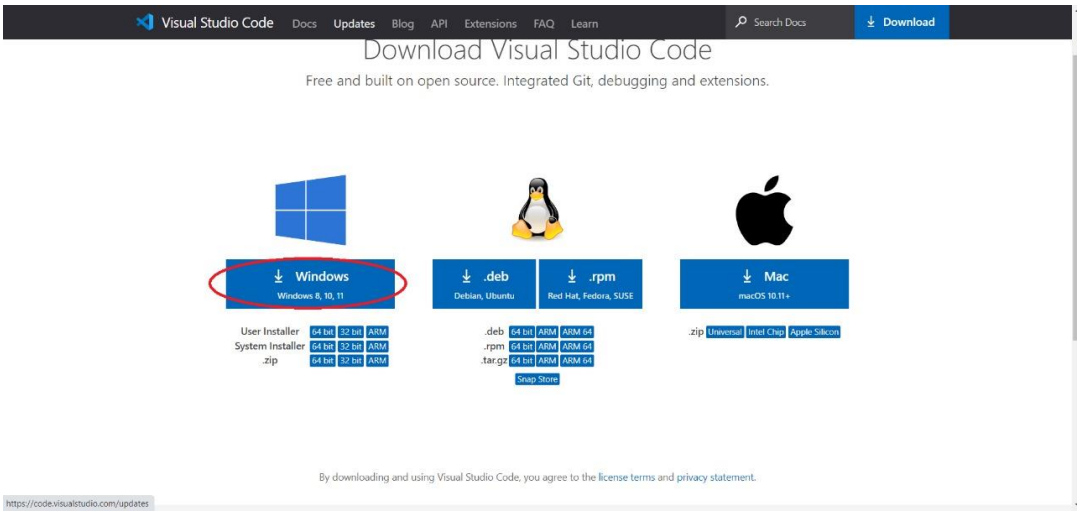
- PMM0612
- PMM0620
- PMM0625
- PMM0626
- PMM0627
- PMM0628
- PMM0630
- PMM0631
- PMM0632
- PMM0635
- PMM0636
- PMM0638
- PMM0639

2. INTEGRATION GUIDELINES

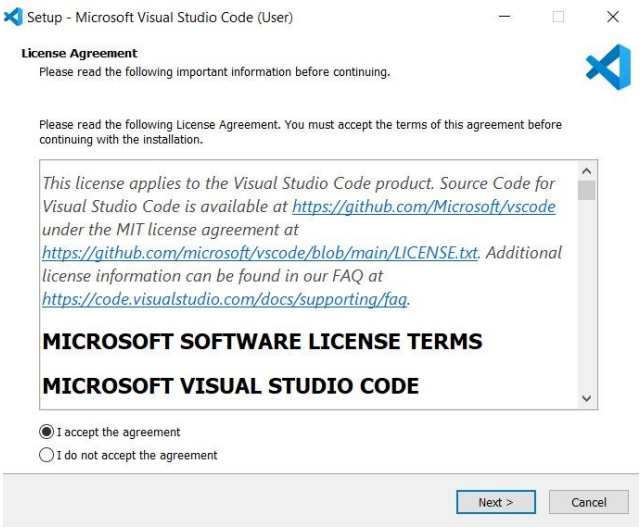
2.1 Platform IO Installation Guidelines

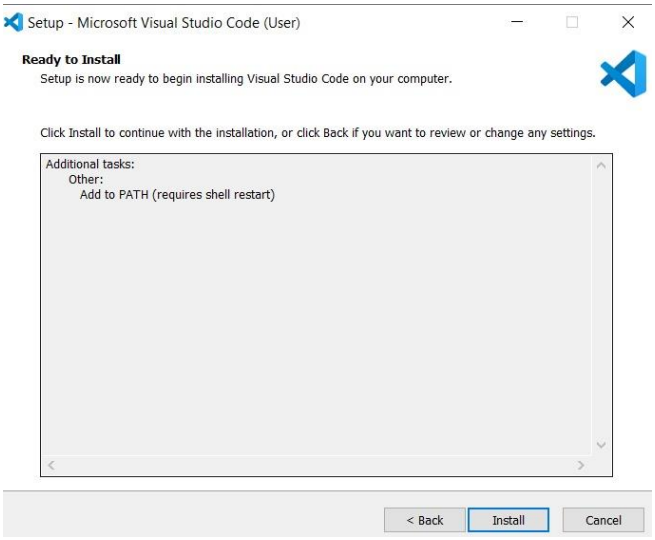
1. Click Here to get to the installation page.
2. Once the main page is opened, click on “Download for windows”.





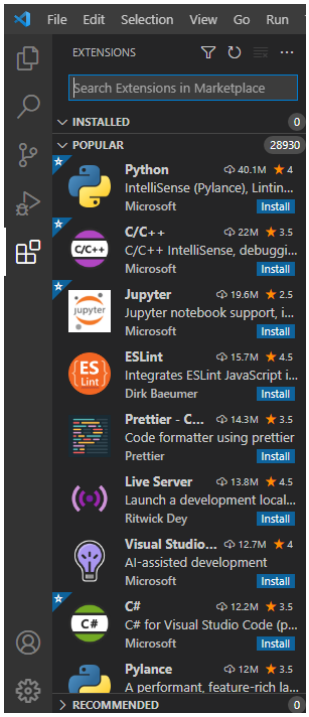
3. Continue the setup process. Click on “Next” and when the application is ready for installation click on “Install”.



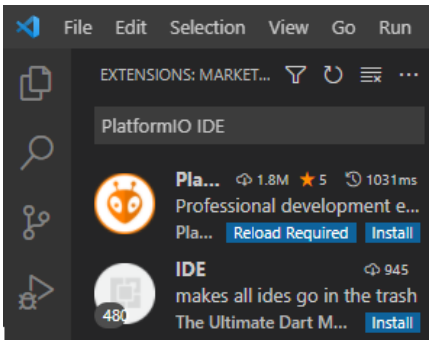


4. Enable the option “Launch Visual Studio Code” then click on “Finish”.

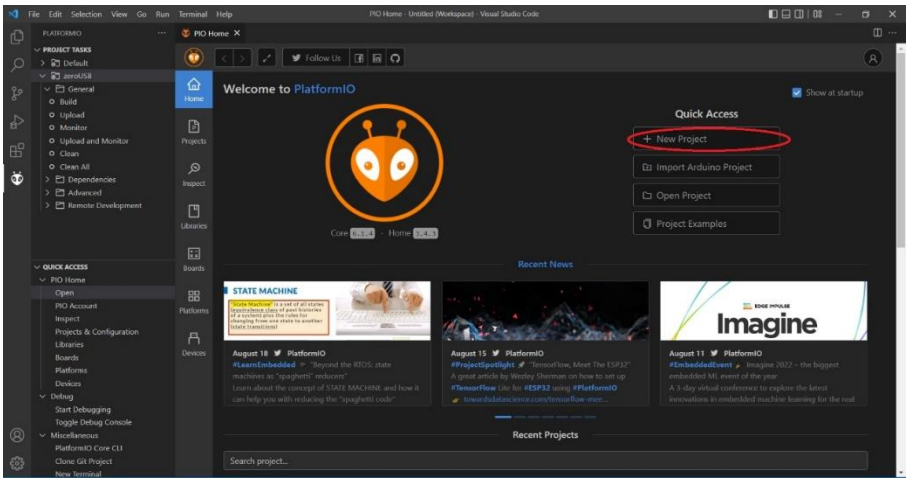
5. Click on “Extensions” as shown below.



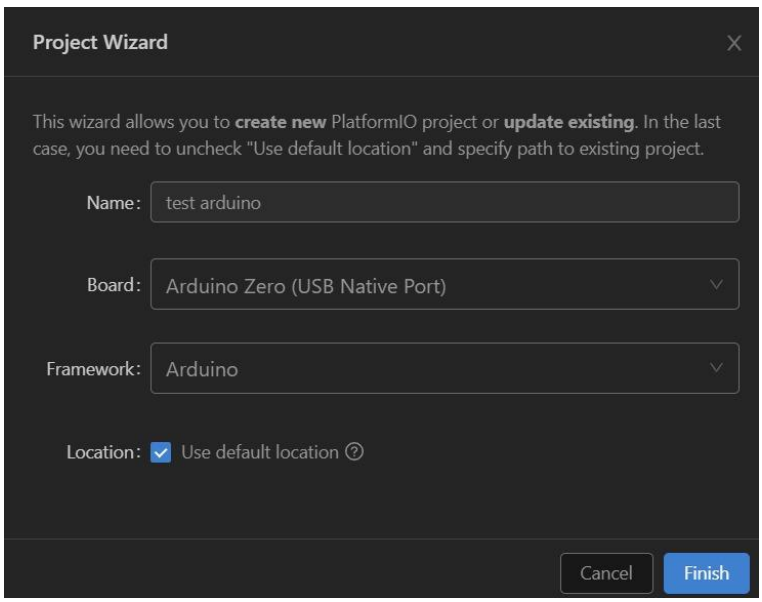
6. Type in the search space “PlatformIO IDE”
7. Click on “Install” as shown below.



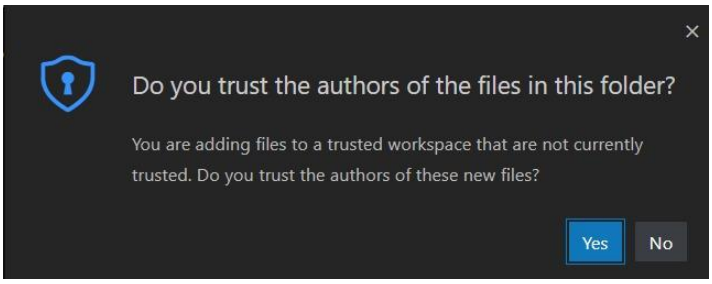
8. To start writing the code, click on “new project” to open a new one.



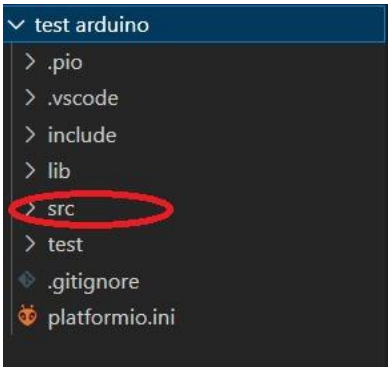
9. The project wizard window will be displayed.
10. Type the project name in the “Name” field.
11. Choose “Arduino Zero (USB Native Board)”
12. Framework is “Arduino”
13. Click on “Finish”



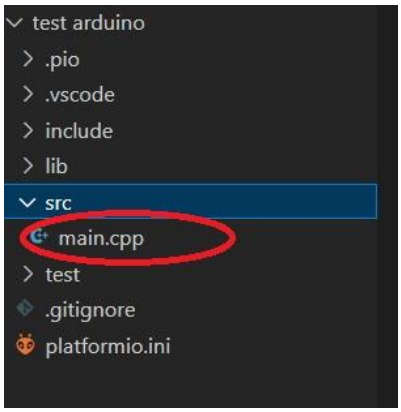
14. A security confirmation message will pop up, click on “Yes”.



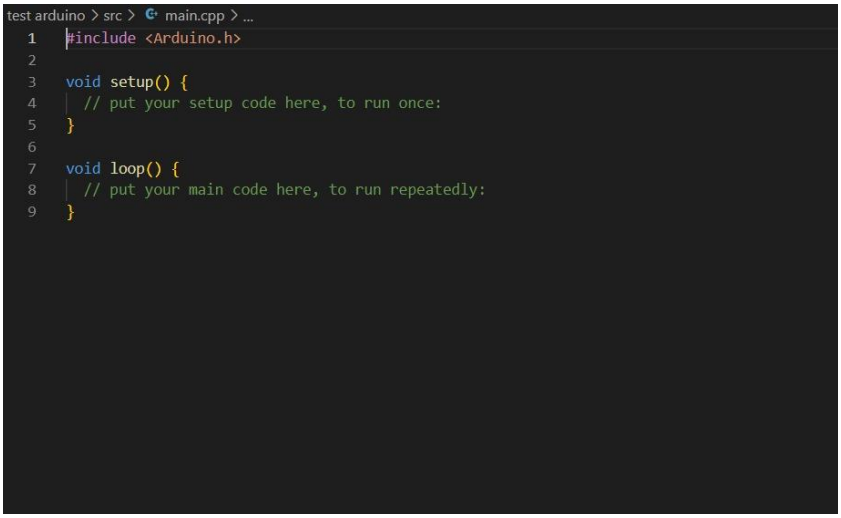
15. After completing the previous instructions, your project is created now as shown below.



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



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



3. PMM0620 INTEGRATION with PlatformIO

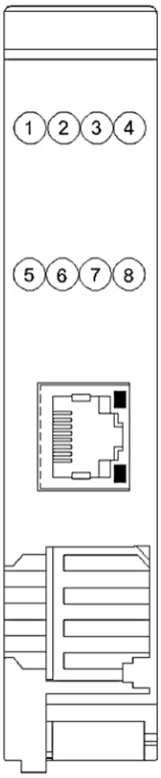
This section is full descriptive of the instructions related to connecting PMM0620 to Node-RED. PMM0620-024 is a reliable, and simple to set up digital Input module that has 12 isolated channels. The module receives digital signals from sensors and field devices of 24V range. The LED indicators indicate the instantaneous status of the field devices whether ON or OFF. PMM0620-024 is widely used in signal interface switching of PLC, single chip or other industrial control board.

Moreover, PMM0620-024 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.

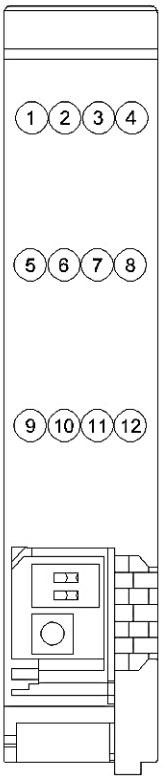
3.1 Pin Assignments

TOP VIEW



1. D+ (RS485)
2. D- (RS485)
3. Common
4. Common
5. V DC+ (10-60)
6. V DC- (10-60)
7. Earth
8. Earth

BOTTOM VIEW



1. Digital Input 01
2. Digital Input 02
3. Digital Input 03
4. Digital Input 04
5. Digital Input 05
6. Digital Input 06
7. Digital Input 07
8. Digital Input 08
9. Digital Input 09
10. Digital Input 10
11. Digital Input 11
12. Digital Input 12

3.2 Hardware Connections

Connecting Power

PMM0620-024 has two power supply options 10-60V DC or 10-40 V AC, 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:

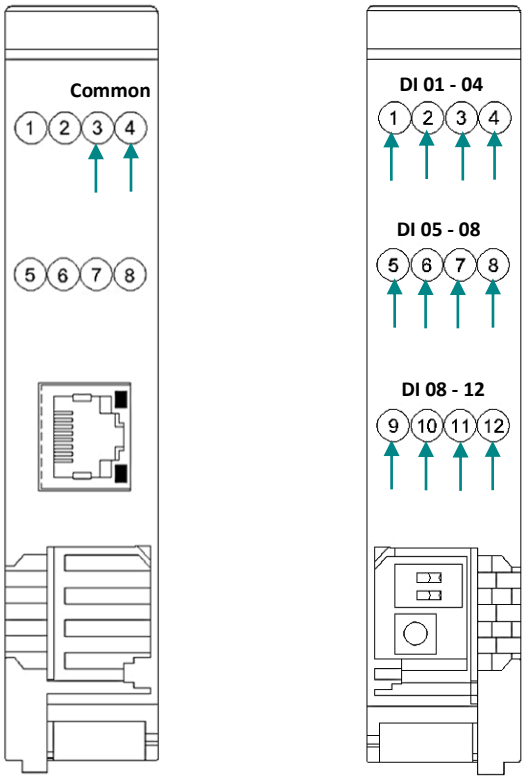
- All devices that are connected to a single serial port must use the same protocol (i.e., either Modbus RTU or Modbus ASCII).
- Connect the D+ with pin no.1 and D- with pin no.2 and Earth with pin no.4 as illustrated in the pin's assignments to complete the connection successfully.
- Turn on the dip 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.

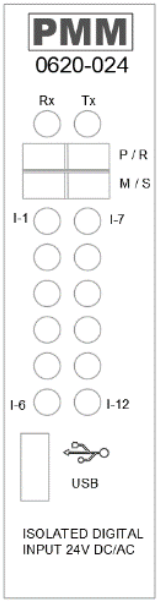
Connecting Digital Input

Connect the signal line with one of the twelve digital input pins on the bottom view (01-12) and the common line with pin no.3 or 4.



There are 14x LED indicators at the front panel. 2x LED are for communication indication through RS485 port and 12x LED for indicating the inputs status.

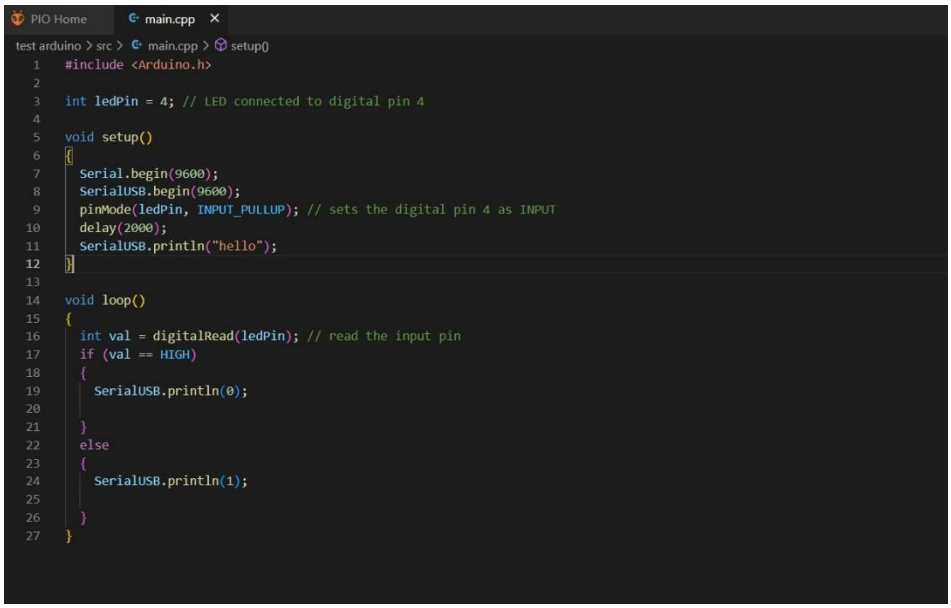
LED No.	Indication
Rx, Tx	Indicating the communication through RS485 port OFF: No Data is being transmitted or received through the port Steady-Green: Data is being transmitted or received through the port
Ix-I12	Indicating the status of Input x OFF: Input x is off Steady-Green: Input x is on



Connecting the USB

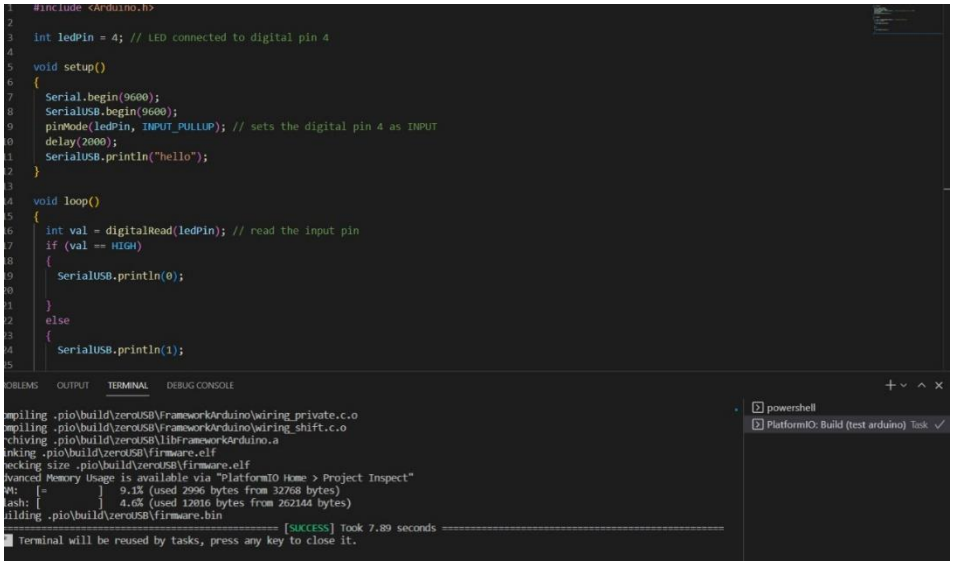
Connect the USB to the device through the USB port in the front panel (Micro-USB type), and connect the other side with personal computer (PC). Once the USB is connected correctly between the device and PC, the user can start the integration as explained in the Integration Guidelines:

1. Write the desired code in the specified space.

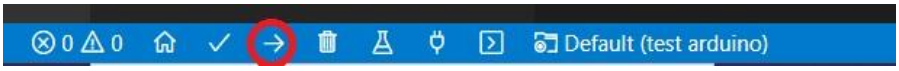


2. Click on "✓ icon; PlatformIO: build" to auto check the code to ensure nothing is wrong in the syntax.

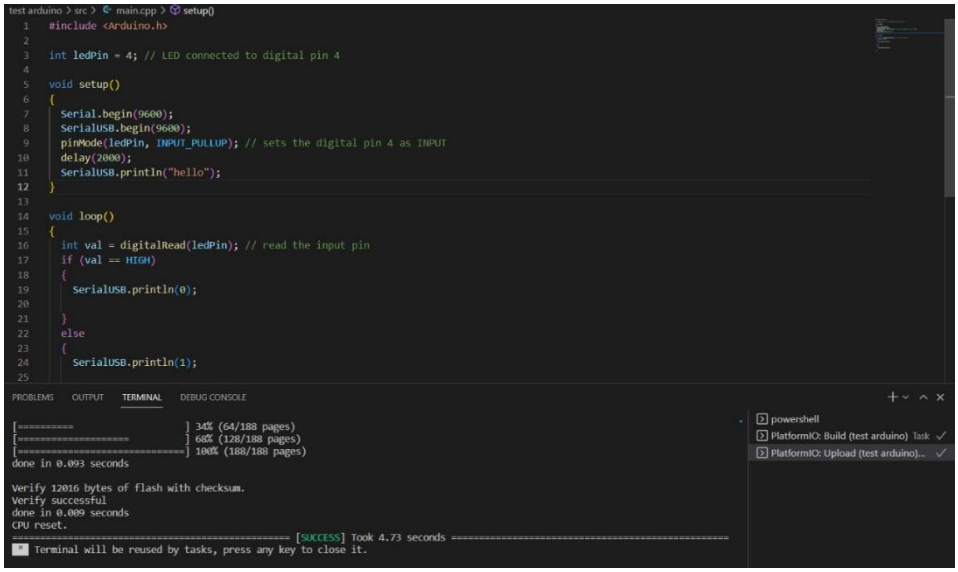
3. After checking the code, if the code is correct then "**SUCCESS**" is displayed.



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.



Note: the previous code example aims to define Pin No.4 as an input and monitor its status between ON/OFF when a power is connected to it, as shown in the figure below

6. In order to verify that the code is uploaded on the device and working properly:

- Click on " serial monitor icon".
- When the input status is OFF "**0**" will be displayed.

- When the input status is changed to ON the reading will change to "**1**" automatically.