

Power Meter Monitor

Business and Mission-

Critical Solutions Provider

PMM06 Integration with Visual Studio







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www.Pmm-usa.us

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1. INTRODUCTION

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

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 visual studio.

Visual Studio is an integrated development environment (IDE) from Microsoft. It is used to develop computer programs, as well as websites, web apps, web services and mobile apps.

Visual Studio uses Microsoft software development platforms such as Windows API, Windows Forms, Windows Presentation Foundation, Windows Store and Microsoft Silverlight. It can produce both native code and managed code.

1.2 List of Compatible Devices

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



2. INTEGRATION GUIDELINES

2.1 Visual studio Installation Guidelines

- 1. <u>Click Here</u> to get to the installation page.
- 2. Once the main page is opened, click on "professional".

Download	S			
Visual Studio 2022 # The best comprehensive IDE for .NET and C++ developers on Windows.	Community Powerful IDE. free for students. open-source contributors. and indisidued	Professional Professional IDE best suited to small teams	Enterprise Scalable, end-to-end solution for teams of any size	Preview Get early access to latest features not yet in the main release
fully packed with a sweet array of tools and features to elevate and enhance every stage of software	Free download	Free trial	Free trial	Learn more > Release notes >

3. Click on "continue" to install the visual studio installer.

	×
Visual Studio Installer	
Before you get started, we need to set up a few things so that you can configure your installation.	
To learn more about privacy, see the Microsoft Privacy Statement. By continuing, you agree to the Microsoft Software License Terms.	
Continue	<u>:</u>
Visual Studio Installer	
Getting the Visual Studio Installer ready.	
Downloading: 8.64 MB of 13.6 MB 1.85 MB/sec	
Installing	

4. Visual studio installation process will start, click on "install" to continue after choosing the workloads you need.

Workloads	Individual components Language	packs Install	ation locations	
Veb & Clou	ıd (4)			 Installation details
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Pyti Edit con	von development ing, debugging, interactive development and source trol for Python.		Node.js development Build scalable network applications using Node.js, an asynchronous event-driven JavaScript runtime.	
esktop & I	Mobile (5)			
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5. Sign in to your account if you have one or create a new account. You can choose to skip this step.



6. In order to work with Arduino you have to <u>Click here</u> to download Arduino IDE for visual studio.

🗙 Visual Studio Ma	arketplace	Sign in .
Visual Studio > Tools :	> Arduino IDE for Visual Studio 2022	
Arduino	Arduino IDE for Visual Studio 2022 Visual Micro	!
Overview (Q & A Rating & Review	
Visual Micro	is an Arduino IDE compatible Build, Upload and Debugging solution udo 2022.	Categories Tods Build Coding Programming Languages Tags Jine Adahuit Arduine Athenel dhipKT Comple & updated debug IS922 explated oCC gdb DNu Intel IoT UB_VESION_CONTROL LIDCAL_UBS Mox Morecontroller
	VSIX Installer Install Arduino IDE for Visual Studio 2022 Digital Signature: None	X License Release Notes
	Select the product(s) you want to install the extension t ✓ Visual Studio Community 2022 Prerequisites: C++ core desktop features	<u>ACIEGZE INVIES</u>
	By clicking "Install", you agree with the above license terms (if any) and the installation of any prerequisites.	tall Cancel

7. Now everything is setup and the user can start with the device.

Isual Studio 2022	
pen recent	Get started
s you use Visual Studio, any projects, folders, or files that you open will show up here for quick access. ou can pin anything that you open frequently so that it's always at the top of the list.	Clone a repository Get code from an online repository like GitHub or Azure DevOps
	Open a project or solution Open a local Visual Studio project or .sin file
	Open a local folder Navigate and edit code within any folder
	Create a new project Choose a project template with code scaffolding to get started
	Continue without code \rightarrow



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3. PMM0625 INTEGRATION with Visual Studio TUTORIAL

This section is full descriptive of the instructions related to connecting PMM0625 to Visual Studio. 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







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.



BOTTOM VIEW

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-08	Indicating the status of Output x OFF: Output x is off Steady-Green: Output x is on



Connecting the USB

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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:

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 Description

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- 1. To start working click on "create a new project".

2. Choose the Arduino simple empty project.

Create a new project	arduino × • Clear all	
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🦌 Arduino Simple Empty Project	C++ <mark>Arduino</mark> Visual Micro Atmel Espressif Intel Microchip Nordic Smart Device ST TI WiFi+GDB WROOM	Teensy
	Archime Empty Project A new Archime compatible project with sub folder(s)	
	C++ <mark>Ardumo</mark> Visual Micro Atmel Espressifi Intel Microchip Nordic Smart Device ST TI WifFi+GDB WiROOM	Teensy
	Archime Library Project Add an <u>Archime</u> compatible library project, then click: 'Add Reference' in any <u>Archime</u> project to use the library, tip: If the lib located in a standard <u>Archime</u> library location then it will automatically be available to all <u>Archime</u> projects.	irary is
	C++ Arduino Visual Micro Library	
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	C++ Arduino Visual Micro Shared Code	
	Blink Led Example An example <mark>Ardumo</mark> sketch project that blinks an Led	
	C++ Arduino Visual Micro Example	
	Back	Next

3. Name your project and select desired location.



4. Choose the Arduino zero board, the Arduino IDE configure location and the port.



5. After writing your program, to build press on the play button and open the serial monitor by pressing on the small monitor next to the port.

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6. To debug and start go to the toolbar>debug> start debugging.

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7. If you wish to start without debugging go to the toolbar >debug> start without debugging

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8. Now your program should be running.



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