

# Getting Started with CPALMS Code and Mantis Sensors



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## Document Propose

This document will explain how to use the Mantis sensors with the CPALMS Code App to first time users

## Acquire and Install the CPALMS Code App

Download the Windows or MacOS installer for your PC from the CPALMS Code App site: <http://code.cpalms.org>

Scroll halfway down the page:

### CPALMS Code App



The CPALMS Code app includes three main modes:

1. A Scratch Playground to start a blank code file and build any app. This includes access to libraries that connect the Mantis App and can be used online or offline;
2. Integrated CPALMS Lesson files that enables you and your students to easily access lesson files within the app; and
3. Example projects using Mantis Sensors that you can start from.

### Install the CPALMS Code App

Choose one of the following options to install the appropriate CPALMS Code app (current release - v18070901B):

- **MAC:** [Download installer | Installation instructions](#)
- **Windows Options:**
  - **Install App:** [Download installer | Installation instructions](#)
  - **Run without installation:** [Download files | Setup instructions](#)

#### System Requirements for Mac and Windows:

- The installation options on Mac and Windows require administrator privileges.
- A recent version of the operating system.
- Default browser that supports Adobe Flash Player. All current browsers on Mac and Windows currently do except Microsoft Edge. If your default browser is Microsoft Edge, you will need to change it to Internet Explorer, Chrome, or FireFox.
- An up-to-date [Adobe Flash Player plug-in](#) for Scratch to run
- (Optional) For using Mantis Sensors, you will need Bluegiga Bluetooth 4.0 dongle to connect wirelessly to the sensors

## Windows Installation and Start Up:

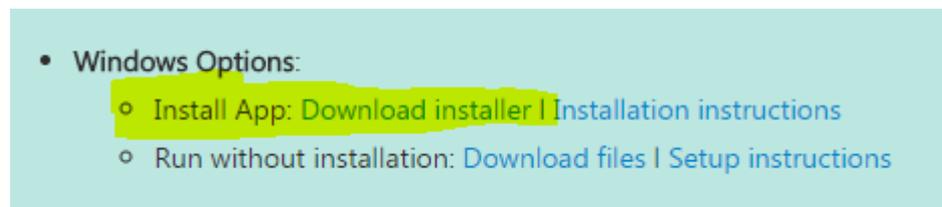
Windows offers two installation methods:

1. **Windows App Installer** – Use this method if you have administrative permissions to your PC and you are allowed to install software on the PC.
2. **Install From .zip File** - Use this method if you *do not* have administrative permissions to install software on the PC. This method bypasses the administrative check. You manually unzip the CPALMS Code App files and run the CPALMS Code App without having administrative privileges.

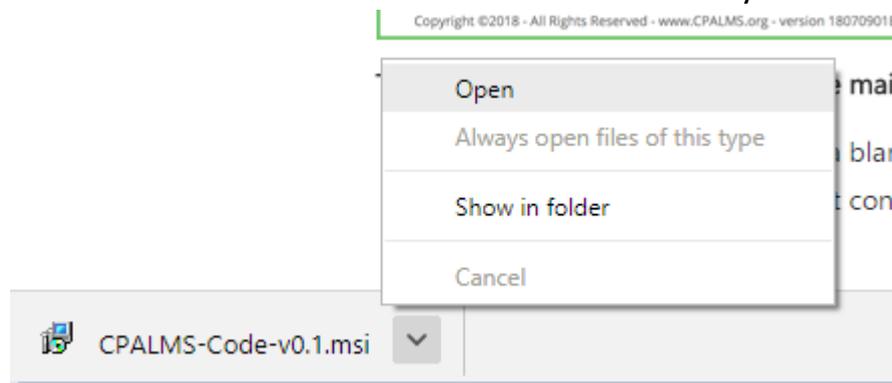
Each method is detailed below:

### Windows App Installer

Click on the link to start the download for the installer.



When the download is complete, run the file named “CPALMS-Code-vxxx.msi” to start the installation. This can be done directly from the browser:



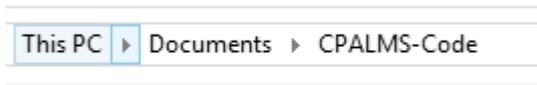
### Start the App

The installation process will create a desktop shortcut. Double-click on it to start the app:

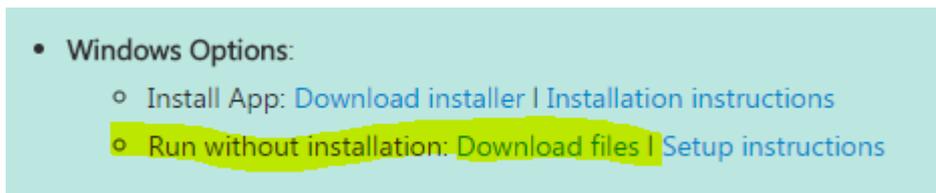


## Install From .zip File

Go to your Documents folder and create a new folder and give it a name. In this example we use the name CPALMS-Code:

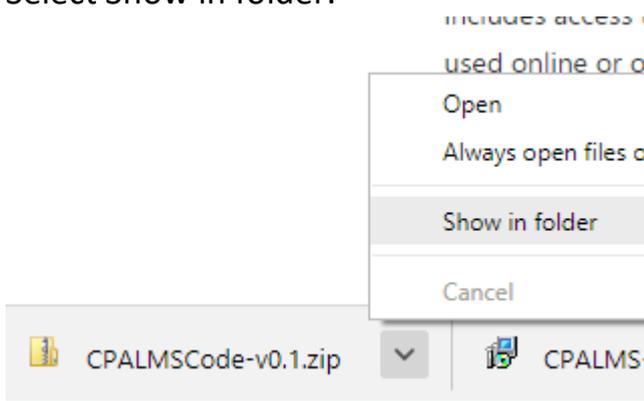


Click on the link to download the .zip file.

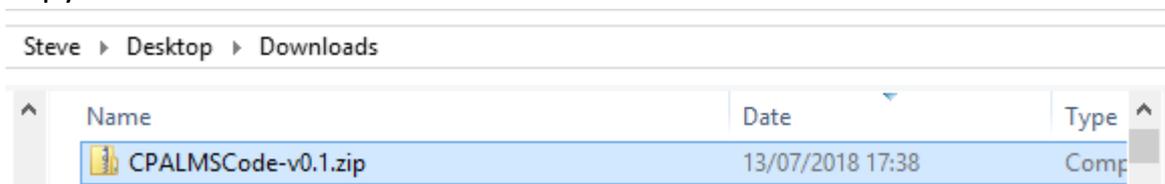


When the download is done, copy it to the new folder you've created.

Select Show in folder:

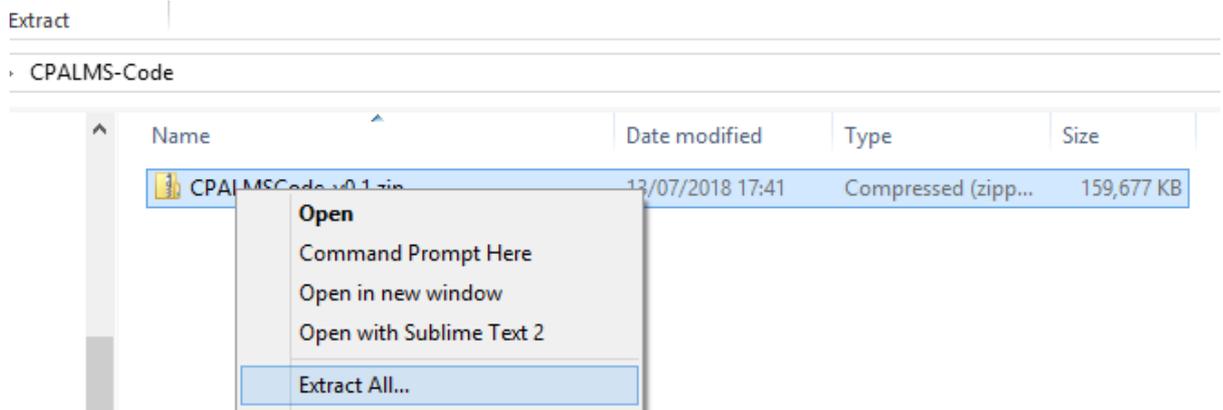


This will allow you to access the file in the downloads folder so you can copy it over to the new folder:

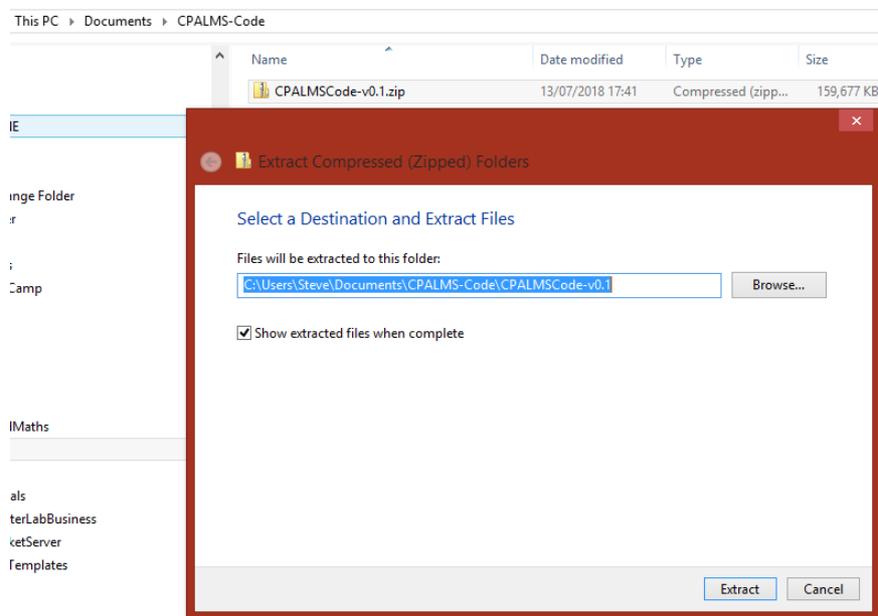


Copy the .zip file from the Downloads folder to your new folder.

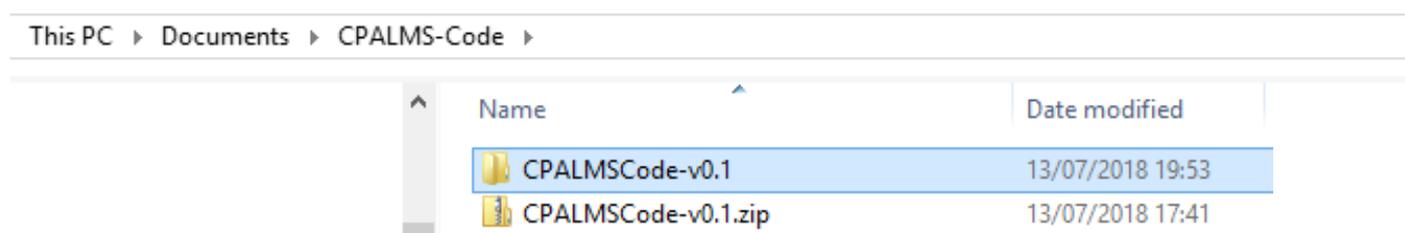
From your new CPALMS-Code folder right click and choose Extract All:



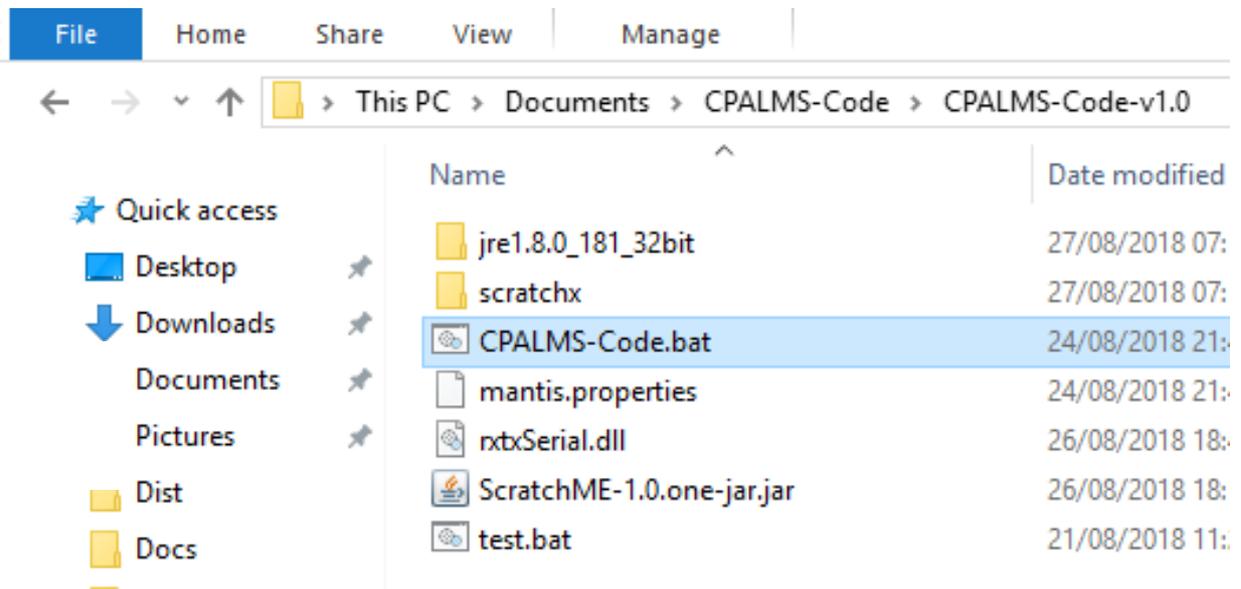
Since you are already in the desired folder, just accept the default and click Extract. The files will be extracted to the current folder:



You'll now see the unzipped folder along with the original .zip file:

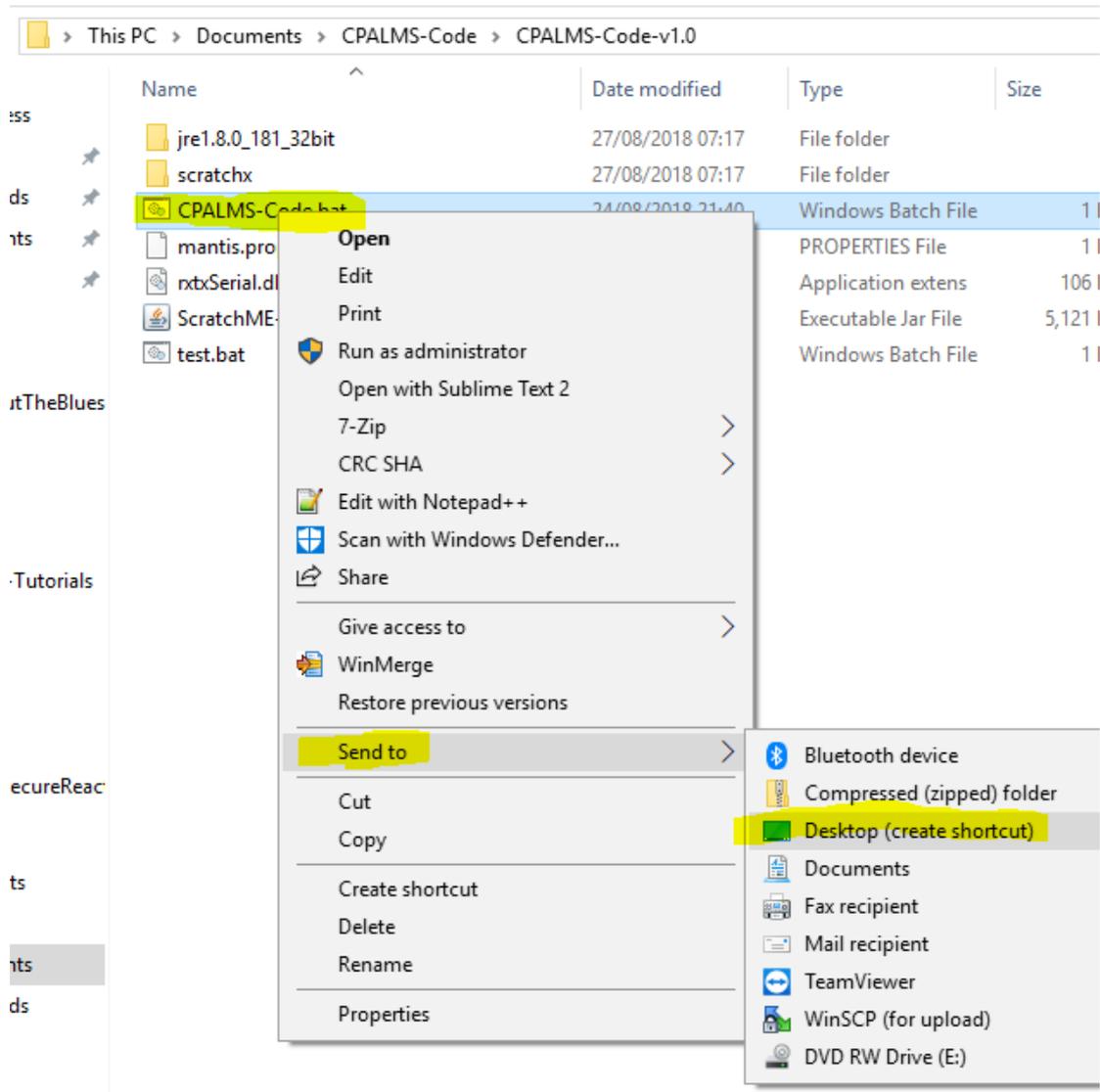


Navigate into the unzipped folder to see the application files. The main application file CPALMSCode.bat is highlighted below:



Double Click on CPALMS-Code.bat to run the app.

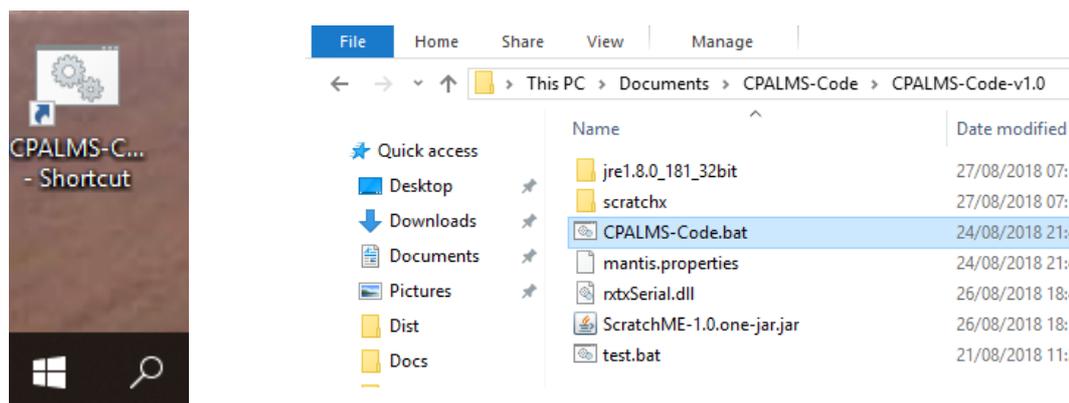
For convenience you can add a shortcut to the CPALMS-Code application batch file to the desktop by right clicking on the file and sending it to the desktop:



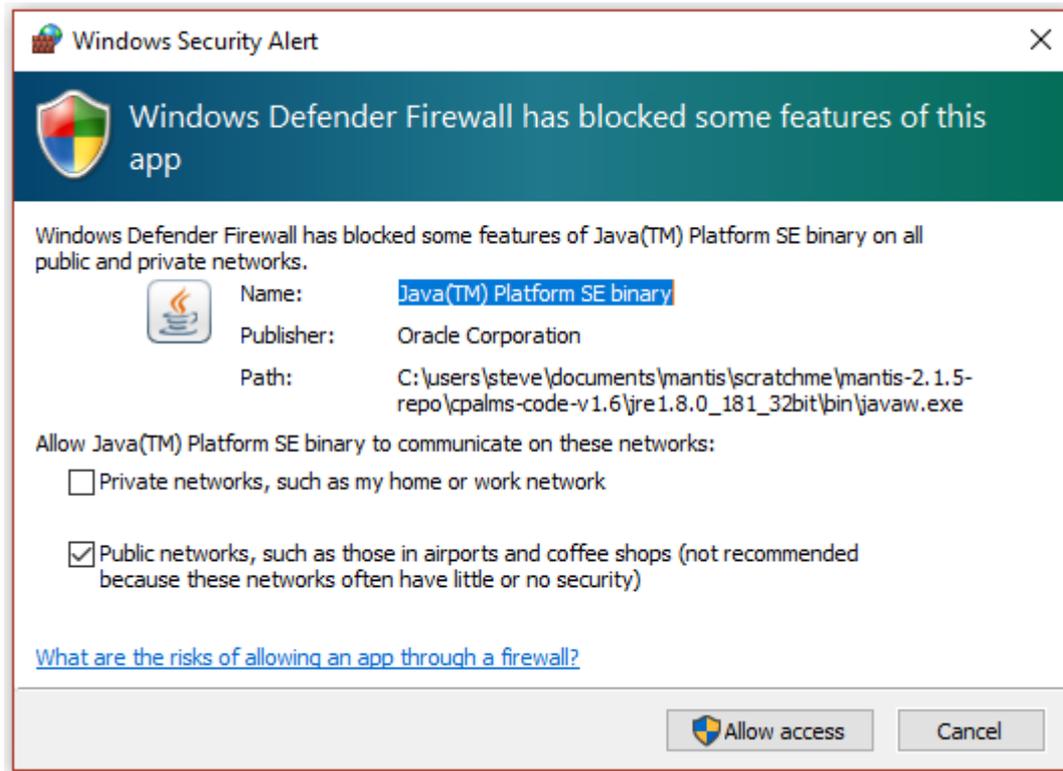
The desktop shortcut is shown below:

[Start the App](#)

Double clicking on the desktop short will start the app. Alternately, you can double click on the .bat file directly:



On starting up for the first time you may see this message:



Click “Allow access” as shown above.

## Apple Mac OS Installation and Start Up

Download the CPALMS-Code-v.xxx.app.zip file to your Mac:

Choose one of the following options to install the appropriate CPALMS Code app (current release - v18070901B):

- MAC: [Download installer](#) | [Installation instructions](#)
- Windows Options:
  - Install App: [Download installer](#) | [Installation instructions](#)
  - Run without installation: [Download files](#) | [Setup instructions](#)

Double click on the CPALMS-Code-v.xxx.app.zip file. This will extract the CPALMS-Code-v.xxx.app file.

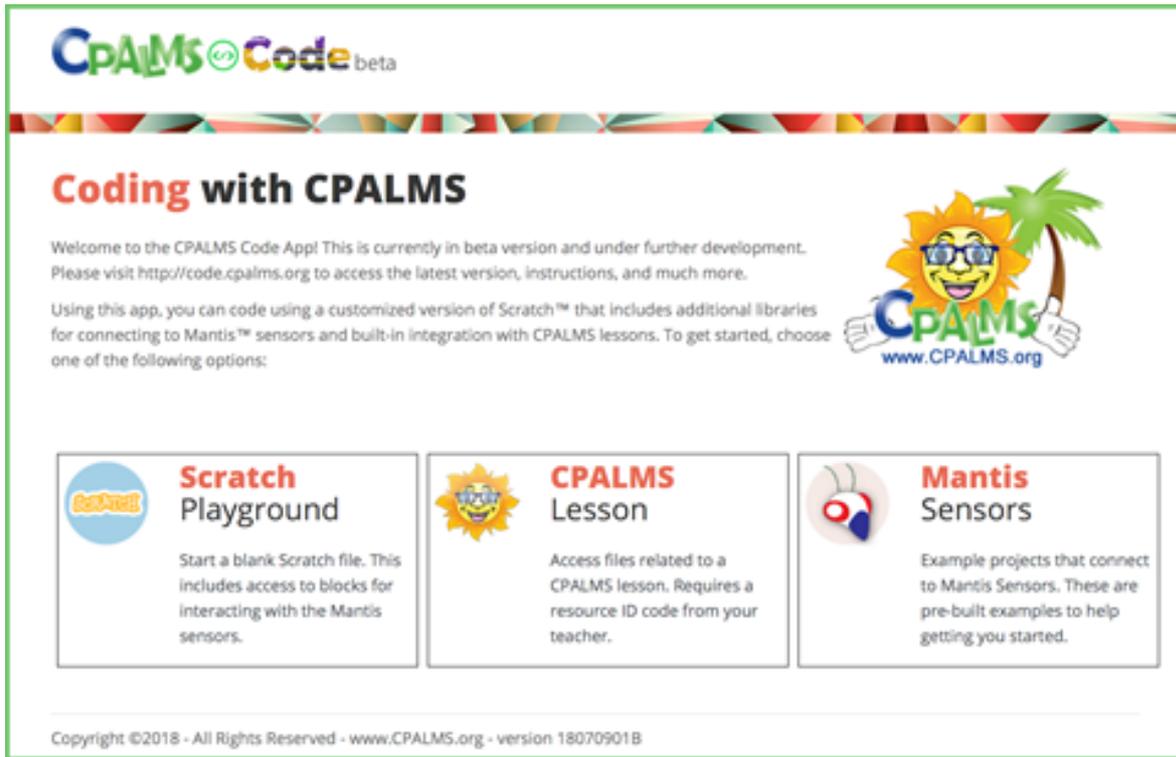
The CPALMS-Code-v.xxx.app file *must be dragged from the download folder and placed in the Applications folder*. From there you can drag it to the dock to be able to start the app from there.

### App Startup

Go to the Finder and navigate to the Applications folder. Locate the CPALMS-Code-v.xxx.app file and double click on it. Or you can double click on the CPALMS code icon you placed in the dock. You will see the CPALMS Code icon bouncing in the dock as it is starting up.

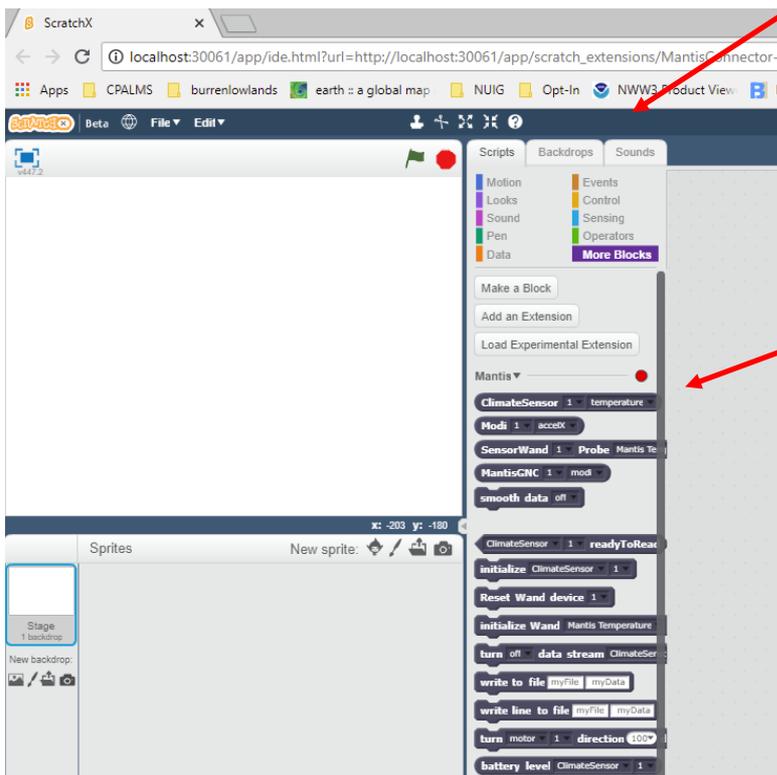
## CPALMS-Code App

The home screen of the CPALMS-Code app gives the user three options:



### Scratch Playground

A Scratch Playground to start a blank project file and build any Scratch app. This includes access to libraries that connect the Mantis App which can be used online or offline:



ScratchX code environment:  
<http://scratchx.org/>

### Mantis Scratch Extensions

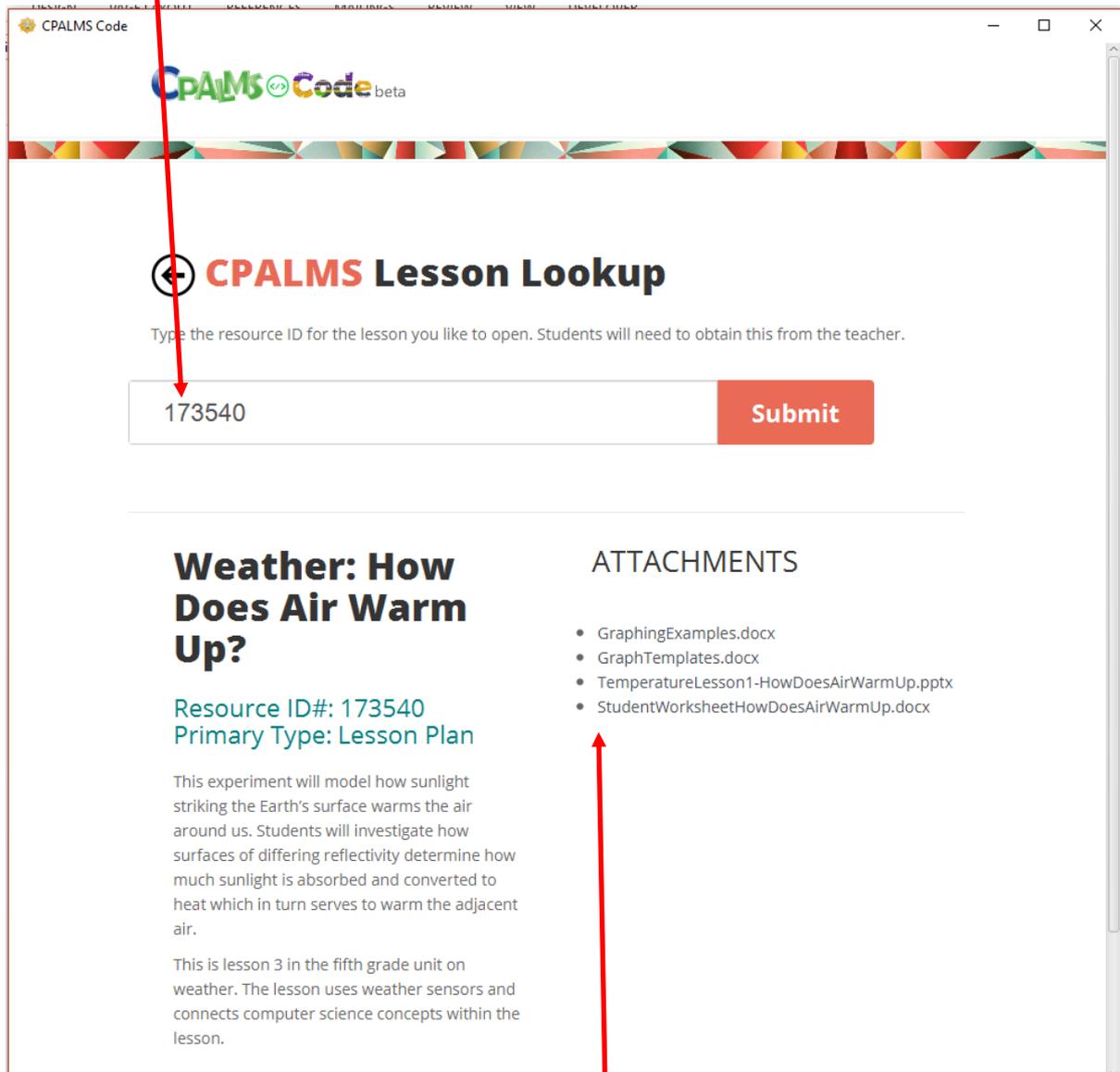
These are specially made Scratch blocks which allow users to write programs which interact with the Mantis sensors.

## CPALMS Lesson Lookup

Integrated CPALMS Lesson files that enables you and your students to easily access lesson files within the app.

Typing in the resource ID of a lesson will return the lesson description and links to the resources required by the students:

Lesson Resource ID:



CPALMS Code

### CPALMS Lesson Lookup

Type the resource ID for the lesson you like to open. Students will need to obtain this from the teacher.

173540 **Submit**

## Weather: How Does Air Warm Up?

Resource ID#: 173540  
Primary Type: Lesson Plan

This experiment will model how sunlight striking the Earth's surface warms the air around us. Students will investigate how surfaces of differing reflectivity determine how much sunlight is absorbed and converted to heat which in turn serves to warm the adjacent air.

This is lesson 3 in the fifth grade unit on weather. The lesson uses weather sensors and connects computer science concepts within the lesson.

### ATTACHMENTS

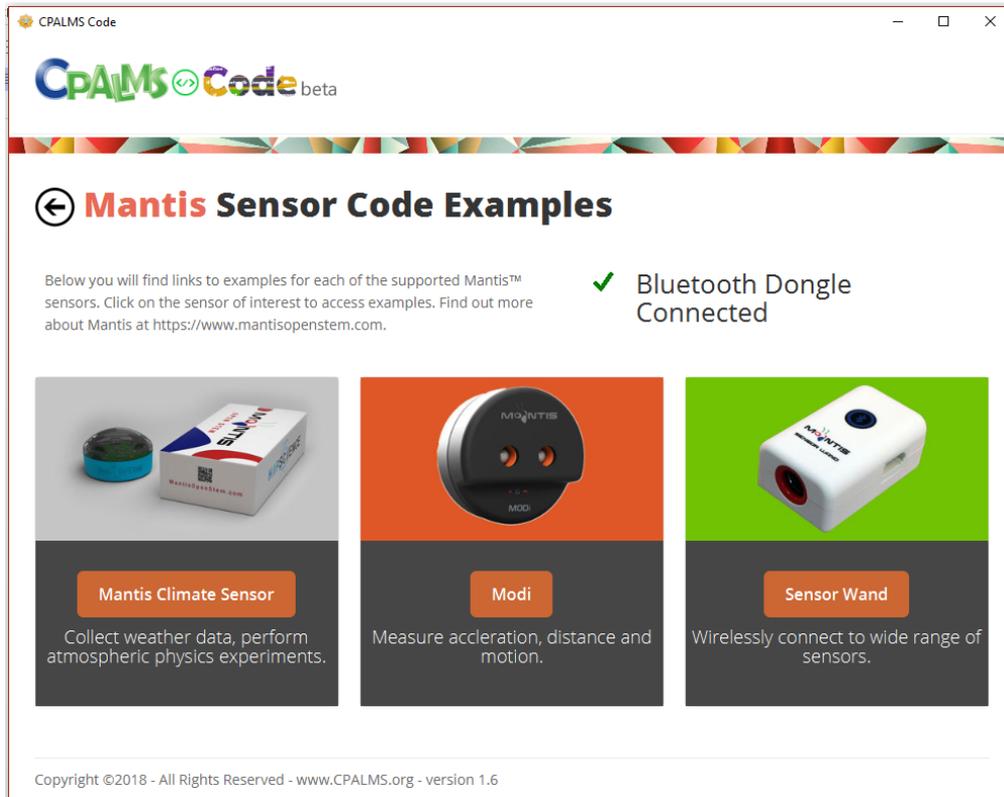
- GraphingExamples.docx
- GraphTemplates.docx
- TemperatureLesson1-HowDoesAirWarmUp.pptx
- StudentWorksheetHowDoesAirWarmUp.docx

Links to Student Resource Documents

## Mantis Sensor Project Files

Clicking on the Mantis Sensors option displays the following screen:

Choose the option for the Mantis sensor you wish to work with:



The screenshot shows a web browser window titled "CPALMS Code" with a "beta" label. The main heading is "Mantis Sensor Code Examples". Below the heading, there is a message: "Below you will find links to examples for each of the supported Mantis™ sensors. Click on the sensor of interest to access examples. Find out more about Mantis at <https://www.mantisopenstem.com>." To the right of this message, a green checkmark icon is followed by the text "Bluetooth Dongle Connected".

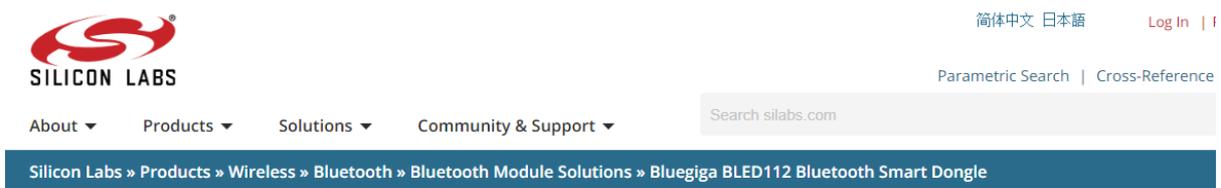
There are three sensor options displayed in a grid:

- Mantis Climate Sensor:** Collect weather data, perform atmospheric physics experiments. (Image shows a small blue sensor and its packaging.)
- Modi:** Measure acceleration, distance and motion. (Image shows a black circular sensor.)
- Sensor Wand:** Wirelessly connect to wide range of sensors. (Image shows a white rectangular sensor.)

At the bottom of the page, there is a copyright notice: "Copyright ©2018 - All Rights Reserved - www.CPALMS.org - version 1.6".

## Bluetooth Dongle

In order to use the Mantis Sensors, the Bluetooth Dongle (BLED112) must be inserted into a USB port on the computer for both Windows and Mac.



The screenshot shows the Silicon Labs website. The logo "SILICON LABS" is on the left. On the right, there are links for "简体中文 日本語" and "Log In |". Below the logo, there are navigation links: "About", "Products", "Solutions", and "Community & Support". A search bar contains the text "Search silabs.com". A breadcrumb trail at the bottom of the page reads: "Silicon Labs » Products » Wireless » Bluetooth » Bluetooth Module Solutions » Bluegiga BLED112 Bluetooth Smart Dongle".

## Bluegiga BLED112 Bluetooth® Low Energy Dongle

**Bluetooth LE ready for Linux, Android and Windows devices**

The BLED112 Bluetooth Low Energy Dongle integrates all Bluetooth LE features. The USB dongle has a virtual COM port that enables seamless host application development using a simple application programming interface. The BLED112 can be used for Bluetooth Low Energy development. With two BLED112 dongles you can quickly prototype new Bluetooth LE application profiles by utilizing the Profile Toolkit™ and also automate in module software functions with BGScript™.



## Dongle Status

If the dongle is connected and working properly the green check mark and “Bluetooth Dongle Connected” status will be displayed:

 **Bluetooth Dongle Connected**

However, if there is a problem with the dongle the following will appear:

 **Bluetooth Dongle Not Connected.  
Is it plugged in?**

The dongle must be connected in order to work with the Mantis sensors.

Check the following:

- 1. Is the dongle plugged in?
- 2. If it is plugged in, then unplug it and plug it back in.

Click the connect button to try again.

**Connect**

Each Mantis Sensor has its own Getting Started document which details how to connect to Scratch and work with sensor data:

[Getting Started with the Mantis Climate Sensor](#)

[Getting Started with the Mantis Modi](#)

[Getting Started with the Mantis Sensor Wand](#)

Note: If you wish to create Scratch projects the Scratch Playground without using the Mantis Sensors, then the Bluetooth dongle is not required and the “Bluetooth Dongle Not Connected” message can be ignored.

## Bluetooth Dongle Troubleshooting

Note: This issue and workaround applies to Windows only.

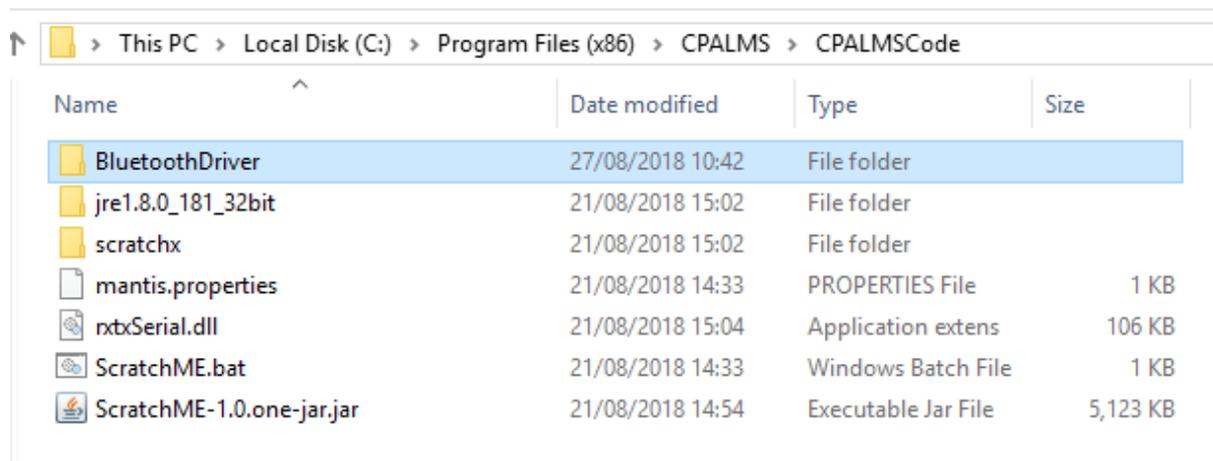
On rare occasions the CPALMS-Code app cannot connect to the dongle when it is run for the first time. This is because the Windows Plug and Play service did not install the Bluegiga Bluetooth driver automatically.

The first step to solve this issue is to make sure the PC is connected to the internet so that it may download and automatically install the driver when the dongle is plugged in.

If this fails then the workaround is to install the Bluetooth driver manually by following these steps:

### If you installed the app via the installer:

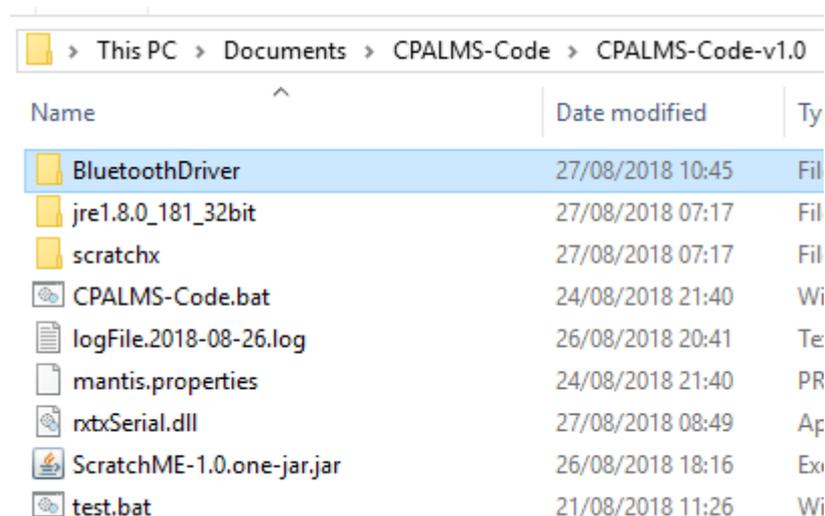
Navigate to C:\Program Files (x86)\CPALMS\CPALMSCode:



### If you extracted the CPALM-Code files from the .zip file:

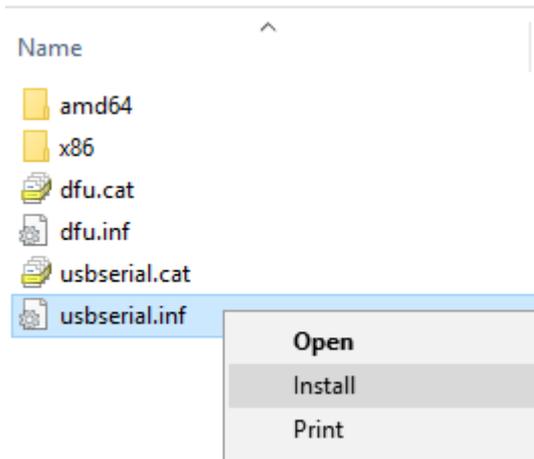
Navigate to the folder where you extracted the file to i.e.

C:\Users\\Documents\CPALMS-Code\CPALMS-Code-v1.0:



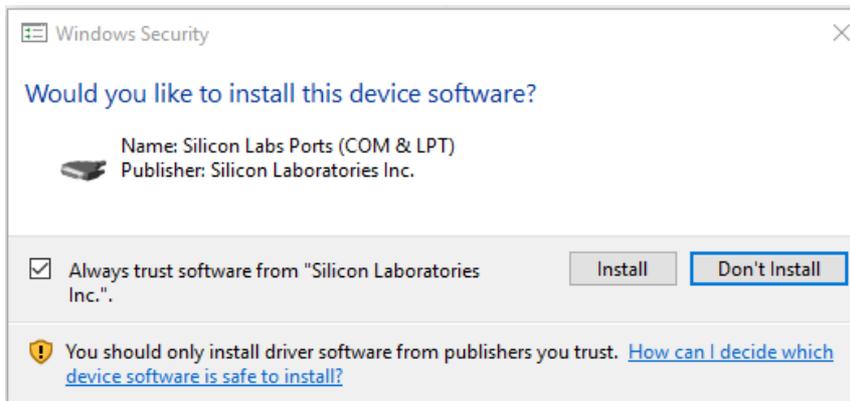
**For both installation types:**

Go into the BluetoothDriver folder and right click on the file “usbserial.inf” and choose “install”:

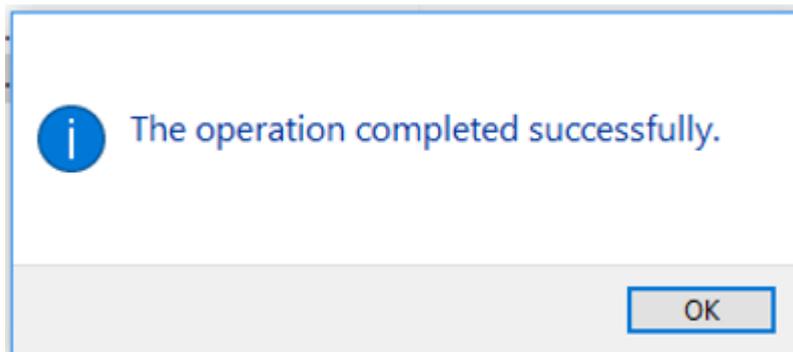


You will be asked to approve of this operation. If you are not running as administrator you will be asked for the administrator password.

After you’ve approved and/or entered the administrator password, the following dialog appears. Choose to install the driver.



A successful installation will be indicated like so:



Usually a PC reboot is not required. The dongle should now connect when the green “Connect” button is clicked:

-----  
Click the connect button to try again.



If this does not succeed, then try rebooting the PC and start the CPALMS-Code app up again.