APPLICATION NOTES

4D SYSTEMS
TURNING TECHNOLOGY INTO ART

General How to Update the PmmC for Goldelox

DOCUMENT DATE: **13th April 2019**
DOCUMENT REVISION: **1.1**

Description

This application note provides step-by-step instructions on how to power up the display module and update the firmware or PmmC (Personality-module-micro-Code).

Before getting started, the following are required:

- Any of the following 4D Goldelox display modules:

uOLED-96-G2	uOLED-128-G2	uOLED-160-G2
uLCD-144-G2		

and other superseded modules

- 4D Programming Cable or µUSB-PA5
- Workshop 4 IDE (installed according to the installation document)

Content

Install the Drivers for the Programming Modules

Either the **µUSB-PA5 programming adaptor** **OR** the **4D USB programming cable** can be used to download a program to, update the firmware or PmmC on, or test a Goldelox display module. Before using any of these programming modules, the drivers need to be installed first.

Drivers for the µUSB-PA5 Programming Adaptor

Information about and drivers for the **µUSB-PA5 programming adaptor** can be found on its product page. Click on the image to go to the product page.

Drivers for the 4D USB Programming Cable

Information about and drivers for the **4D USB programming cable** can be found on its product page. Click on the image to go to the product page.

Warning

Using a non-4D programming interface could damage the processor and void the warranty.

Install Workshop 4

Workshop 4 is a comprehensive software IDE for Microsoft Windows that provides an integrated software development platform for all of the 4D family of processors and modules. The IDE combines the Editor, Compiler, Linker and Downloader to develop complete 4DGL application code. All user application code is developed within the Workshop4 IDE.

Updated installation files and installation guide for Workshop 4 can be found on its product page. Click on the image to go to the product page.

How to Update the Firmware

Follow the instructions below to update the firmware or PmmC (Personality module micro Code) of the display module. In summary, the instructions are as follows:

a) Create a new project in Workshop
   (1) Launch Workshop 4
   (2) Create a new Project
   (3) Select an Environment

b) Connect the display module to the PC
   (1) Connect using the 4D USB programming cable
   (2) Connect using the uUSB-PA5 programming adaptor
   (3) Check if the display module is detected by the PC

c) Open the PmmC loader
   (1) Auto update mode
   (2) Manual update mode
   (3) Force update

Create a New Project

Launch Workshop 4

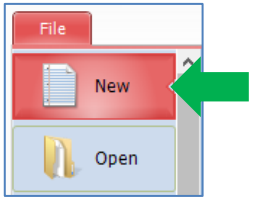
There is a shortcut for Workshop 4 on the desktop. Launch Workshop 4 by double-clicking on the icon.

Create a New Project

Workshop 4 opens and displays the **Recent** page.

To create a new project, there are two options.

Click on the top left-most icon, New.



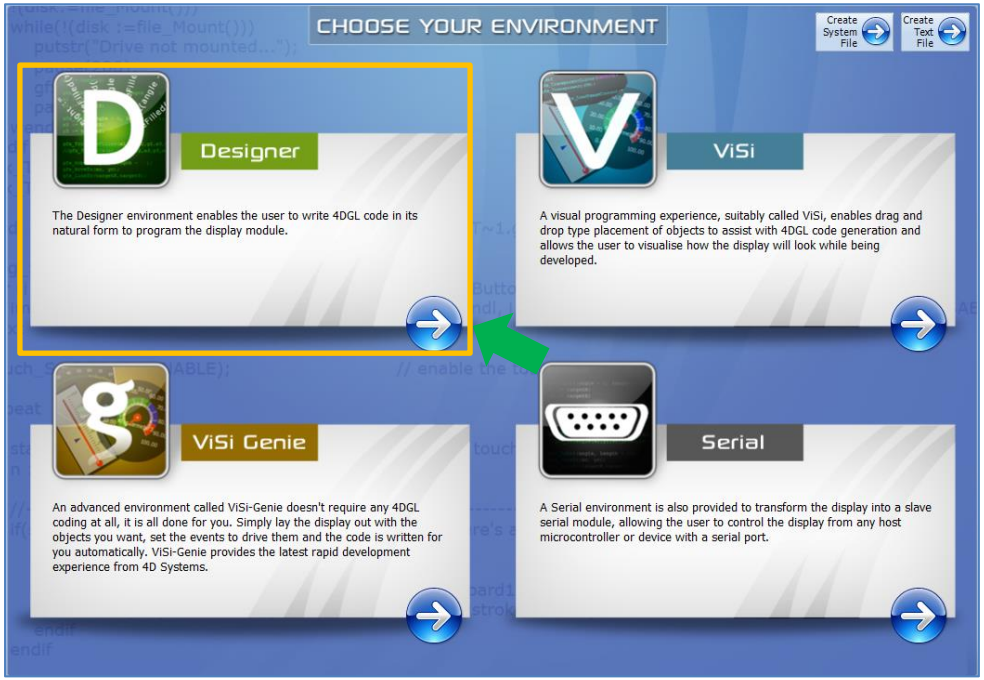
Or Click on the icon beside Create a new Project.

The Choose-Your-Product window appears.

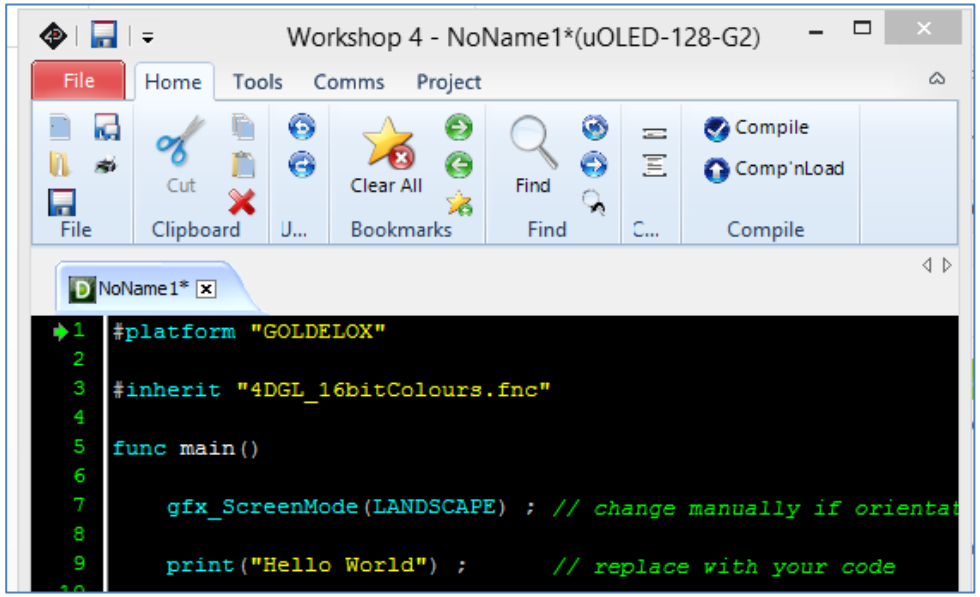
Select the appropriate screen and preferred orientation. The screen used in this example is a **uOLED-128-G2 (Landscape orientation)**.

Select an Environment

Select any of the available environments. In this tutorial, Designer is chosen.



A new project is created. The user can now update the firmware on the display module and can start designing an application as well. Workshop 4 displays a simple 4DGL code which the user can improve.



To learn how to create a basic application in Designer, read Designer Getting Started - First Project.

Connect the Display Module to the PC

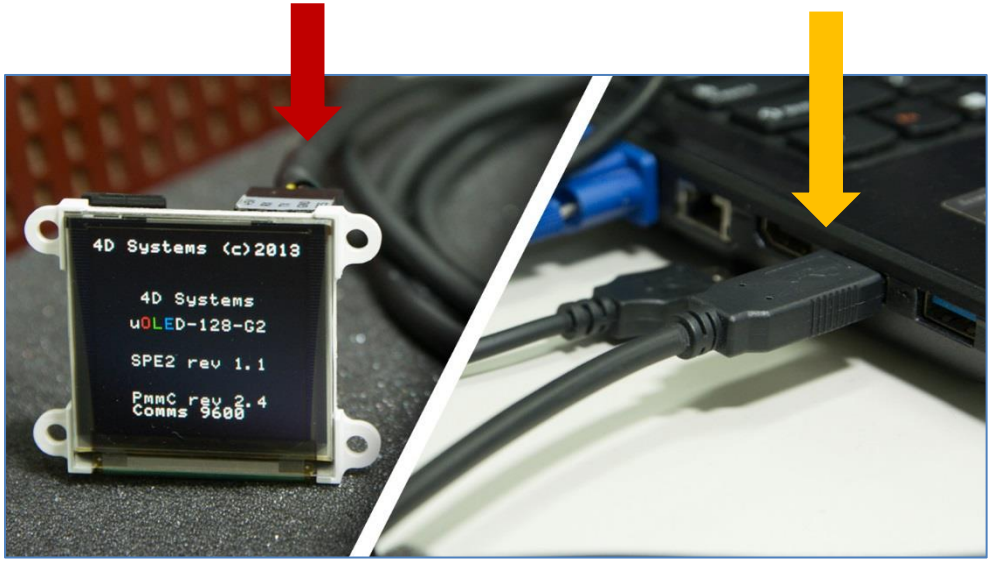
Connect the display module to the PC using a 4D USB Programming Cable or a µUSB-PA5 programming adaptor.

Connection using a 4D USB Programming Cable

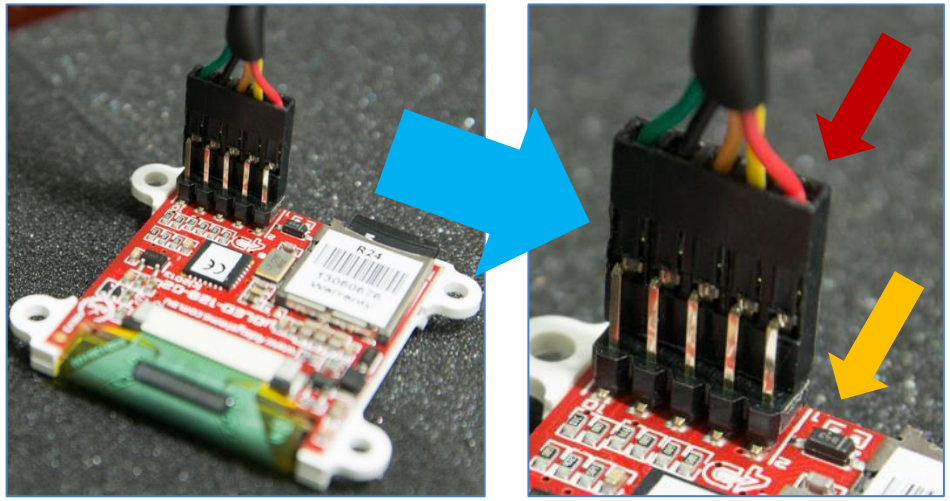
Complete Setup

One end of the programming cable is connected to the display module

The other end of the programming cable is connected to the PC



Check orientation of connection



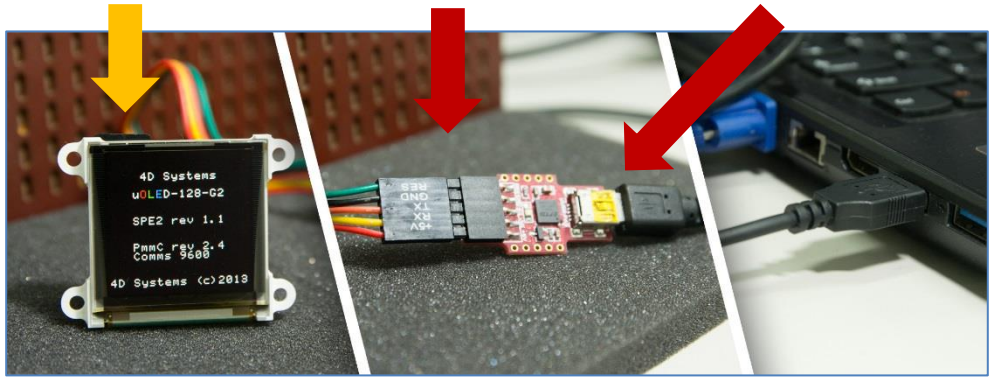
Connection using a uUSB-PA5

Complete Setup

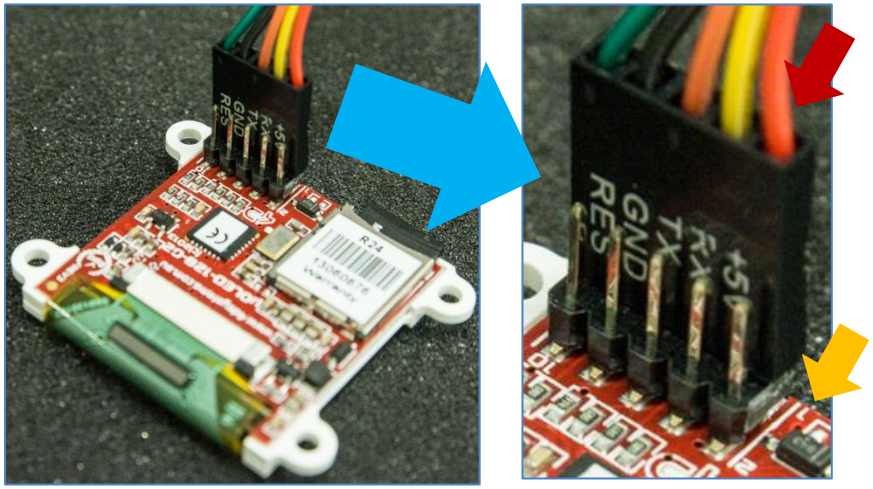
One end of the 5-way cable is connected to the display module.

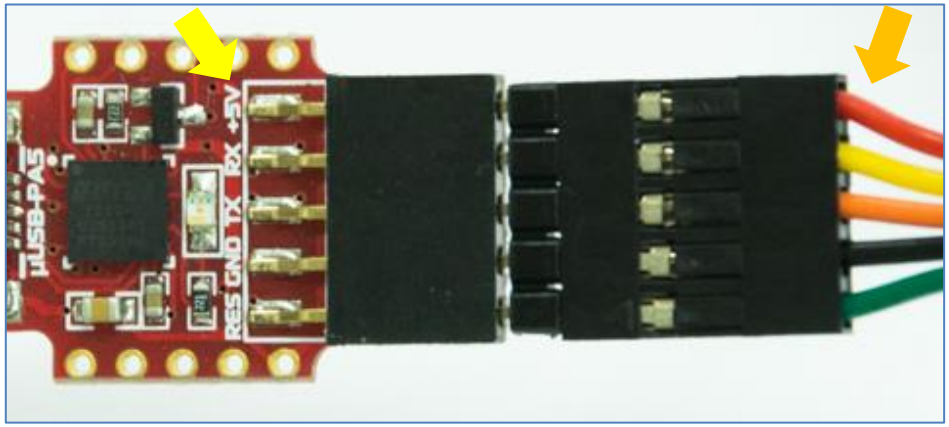
The other end of the 5-way cable is connected to the uUSB-PA5.

The uUSB-PA5 is connected to a USB-to-miniUSB cable.



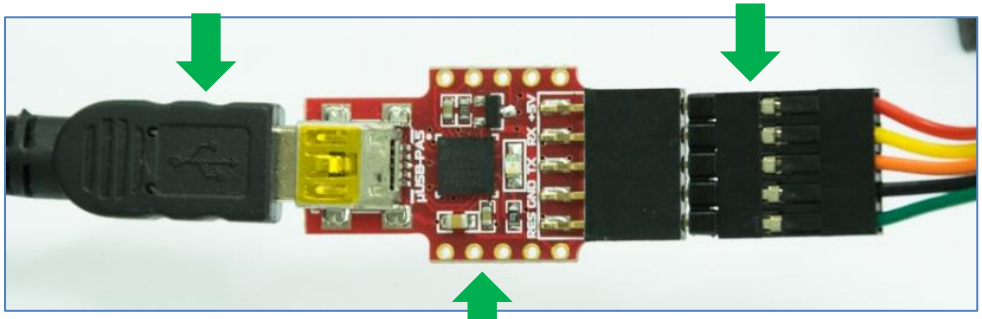
Check orientation of connections





USB to miniUSB cable connected to the PC

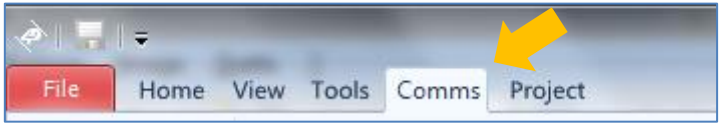
5-way cable going to the display module



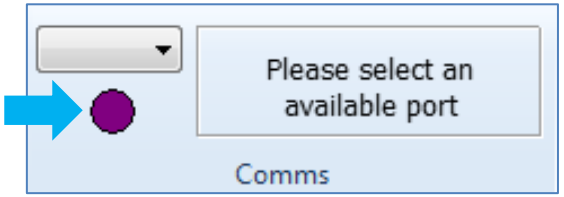
µUSB-PA5 programming adaptor

Check if the Display Module is Detected by the PC

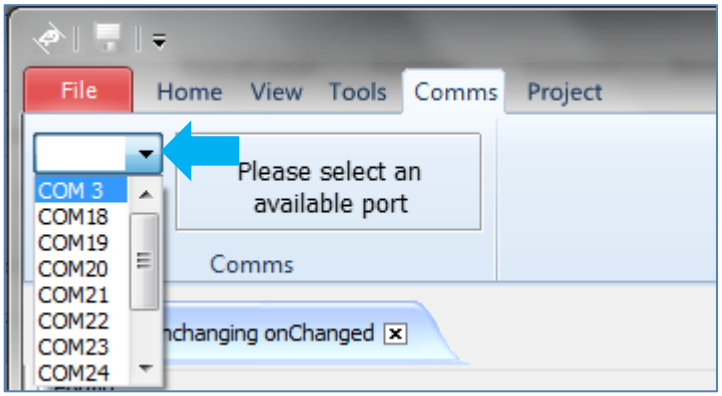
Go to the Comms menu to check if the module is detected.



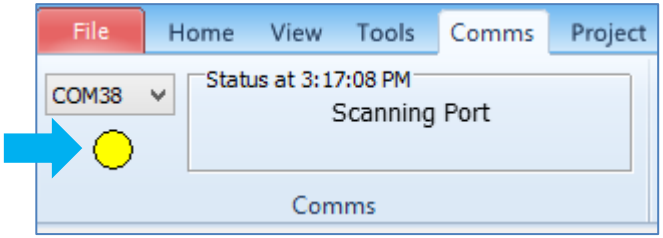
The violet light mentions no programming module is currently connected.



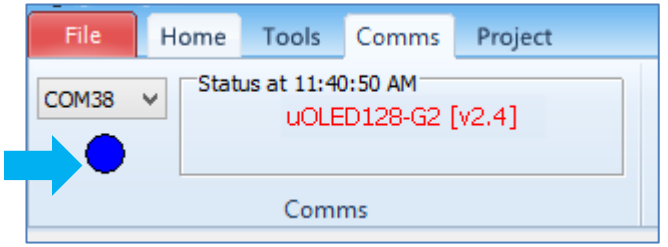
With the display module connected to the 4D USB programming cable (or µUSB-PA5), plug the cable into the USB port. Click on the drop-down list and select the COM port allocated to the cable. The product pages for the programming cable and µUSB-PA5 have instructions on how to determine the allocated COM port.



The light turns yellow while the connection is being established:

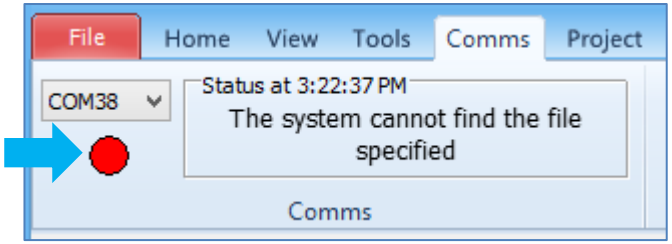


Finally, the light goes blue when the connection is established.



Note that the model of the target display and its current PmmC are printed in red font, which means that a later version of the PmmC is available in Workshop. In this case, the outdated PmmC on the target display is version 2.4. The latest available version is 2.5 or higher.

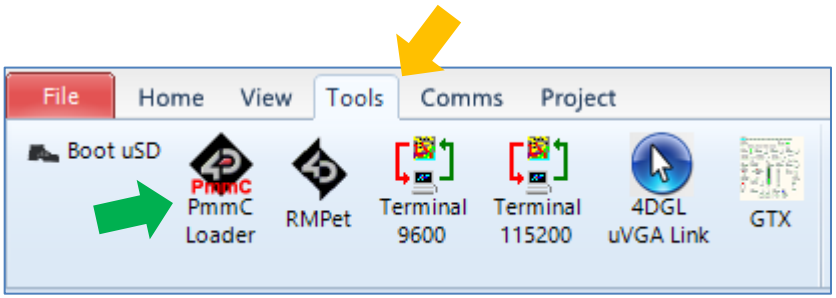
The light turns red when no module is attached to the selected port:



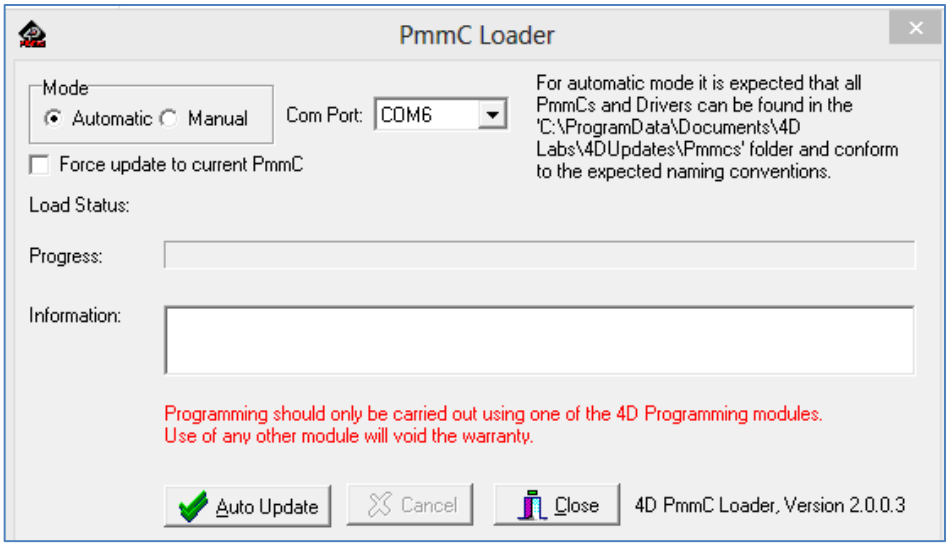
If the connected target display cannot be detected, double check all connections, ensure that the drivers are correctly installed, and verify the correct COM port allocation for the programming module. Check continuity of the 5-way cable and try replacing the USB-to-miniUSB cable (if using a uUSB-PA5) as well. Some USB-to-miniUSB cables transfer power only and not data.

Open the PmmC Loader

Workshop uses the PmmC loader to download a PmmC onto the display module. To open it, go to the Tools menu and click on the PmmC Loader icon.

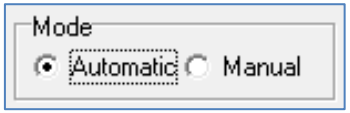


The PmmC Loader window appears.

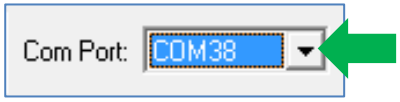


Auto Update Mode

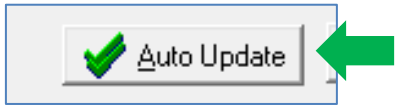
By default, the mode is set to automatic.



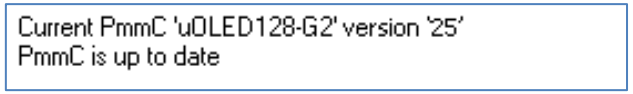
Select the appropriate Com Port by clicking the drop-down menu arrow.



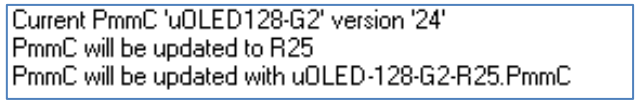
Click on the Auto Update button at the bottom part of the window.



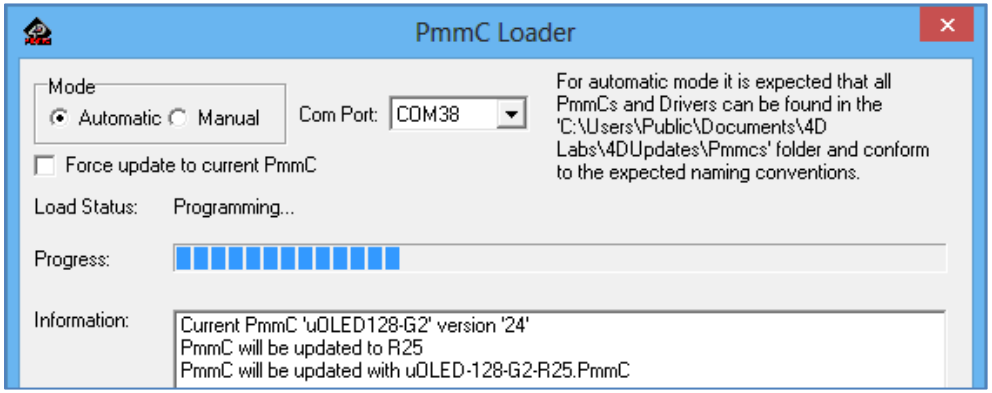
If the firmware on the display module is up-to-date, the information box will display the message shown below. There is no need to update the firmware in this case.



On the other hand, if the PmmC is not up-to-date, the information box will display the message shown below.

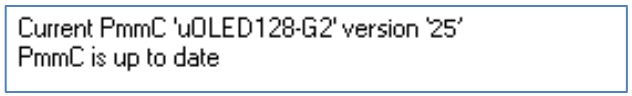


Download is now in progress.

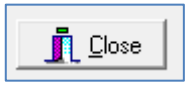


Check that the load status is successful.

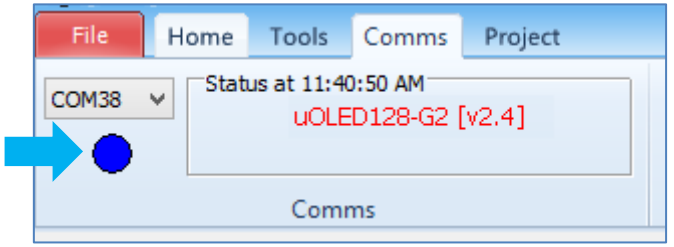
Click on the Auto Update button to check the current firmware. The PmmC should now be up-to-date.



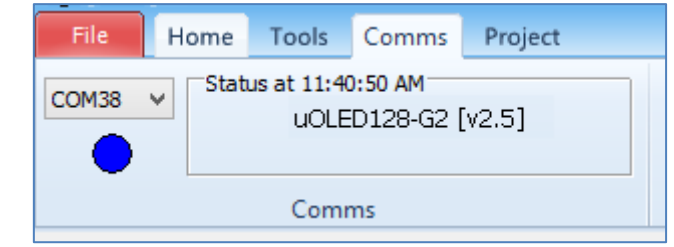
Click on the Close button to exit.



Go back to the Comms menu and click on the blue button/light to redetect the target display.

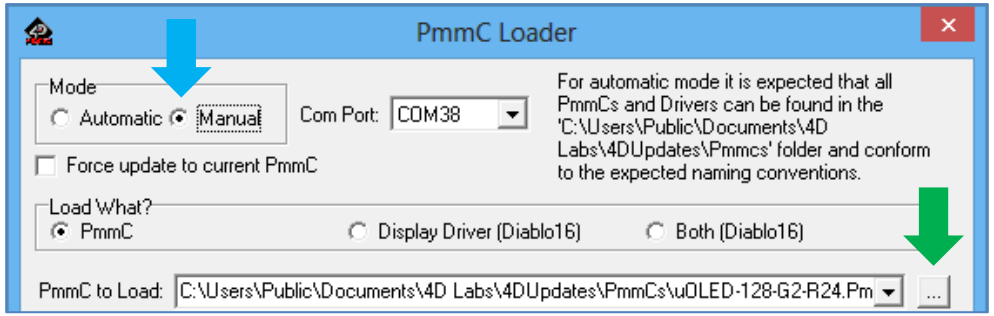


The updated PmmC on the display should now be recognized.

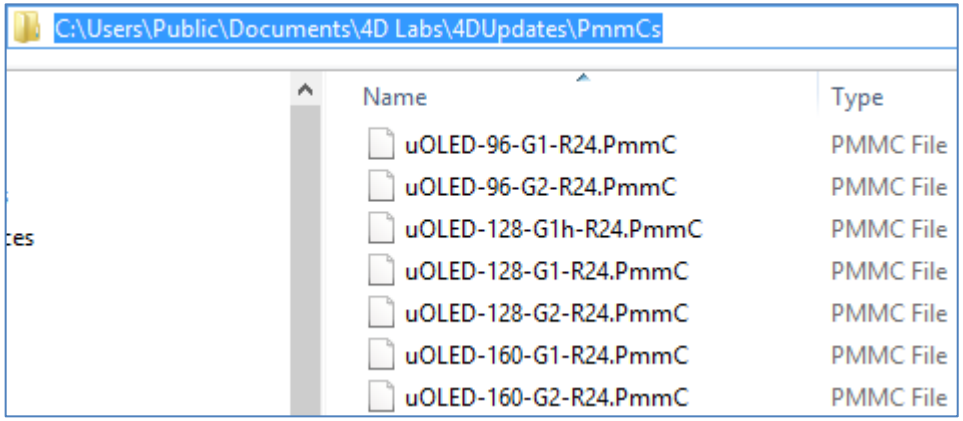


Manual Update Mode

Use the manual update mode to manually select the desired PmmC file to be downloaded onto the display module.



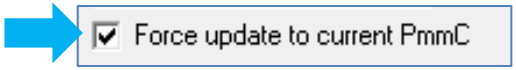
During installation of Workshop, the latest PmmC files are copied to the default folder shown below (Windows 8).



Previous versions of PmmC files from previous installations of Workshop are also retained in this folder. The user may choose the desired and appropriate PmmC file to load among the contents of this folder.

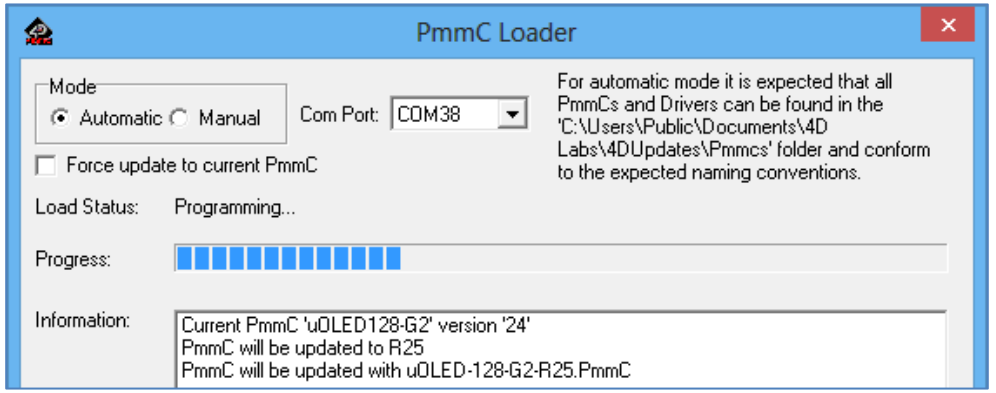
Force Update

In the Auto Update mode, no action is taken if the PmmC loader detects that the firmware is up-to-date. However, it is possible to force the PmmC loader to load the latest PmmC file onto the display module. To accomplish this, enable the Force-update-to-current-PmmC option by clicking on the tick box beside it.

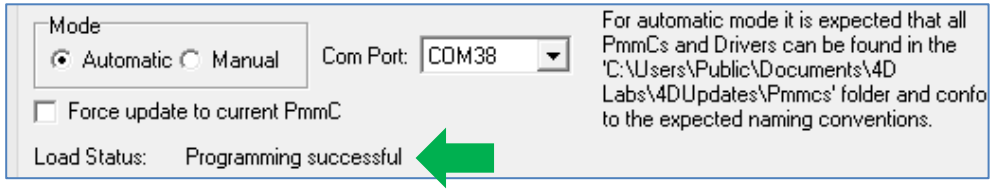


Click on the Auto Update button at the bottom part of the window.

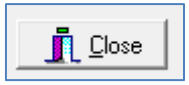
Download is now in progress.



Check that the load status is successful.



Click on the Close button to exit.

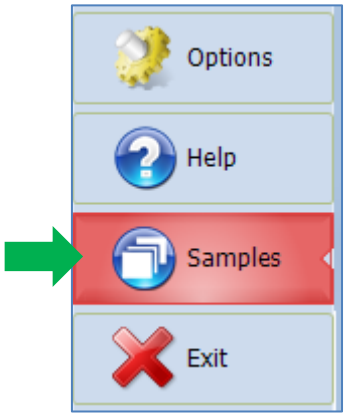


How to Open a Sample Project

Open a Sample Project

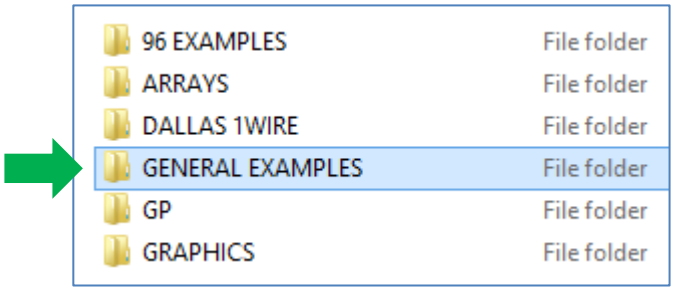
Workshop 4 opens and displays the **Recent** page.

To open a sample project, click on the Samples tab.

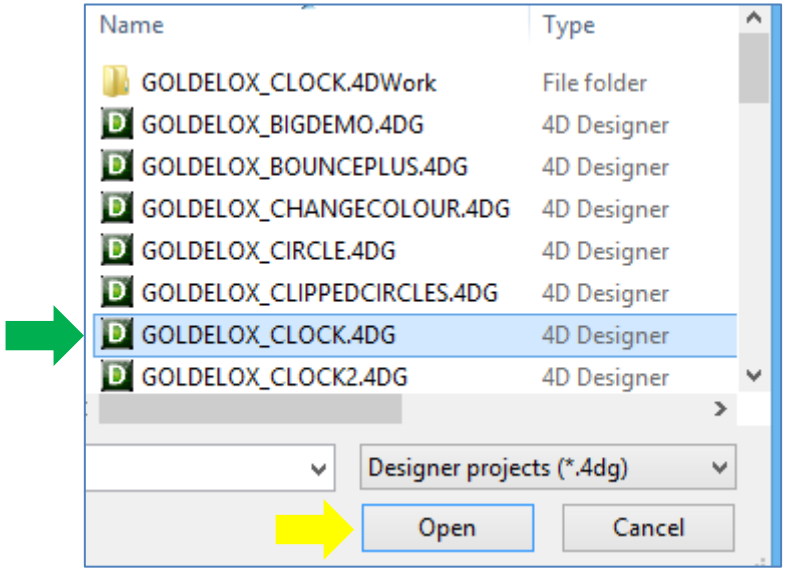


Select Goldelox Designer.

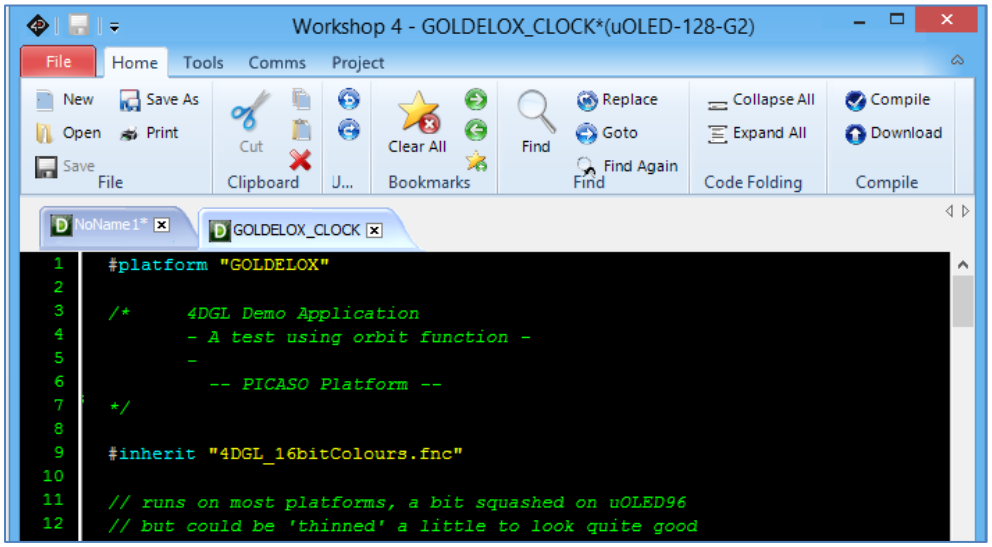
A standard Open window appears. Open the folder **GENERAL EXAMPLES.**



Choose the Designer file “GOLDELOX_CLOCK.4DG”.

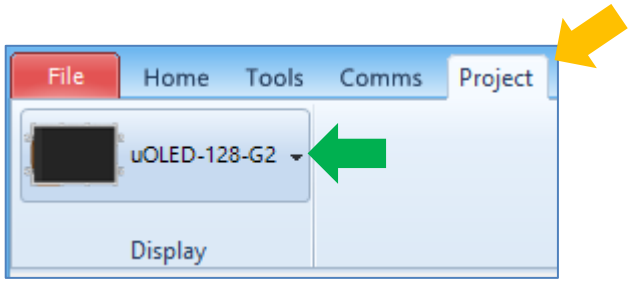


The sample project now opens.



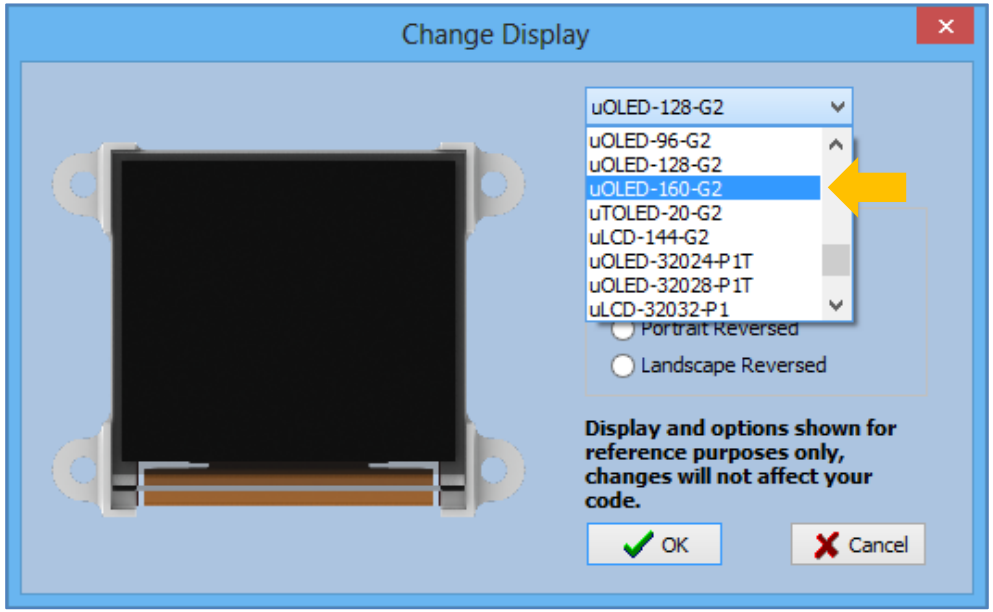
How to Change the Screen Module

Now, check the type of the screen module by selecting the **Project** menu.

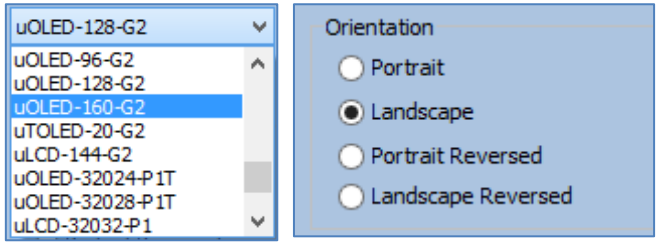


If using a different display module, change the target display module by clicking on the display button.

The Change Display window appears.



Select the appropriate screen on the drop-down list and define the orientation.

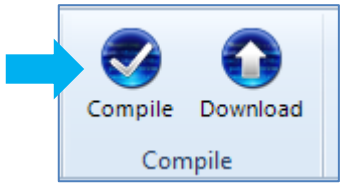


…and confirm by clicking on 

.

Compile and Download

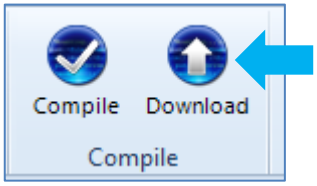
Go to the Home menu and click on the Compile button.



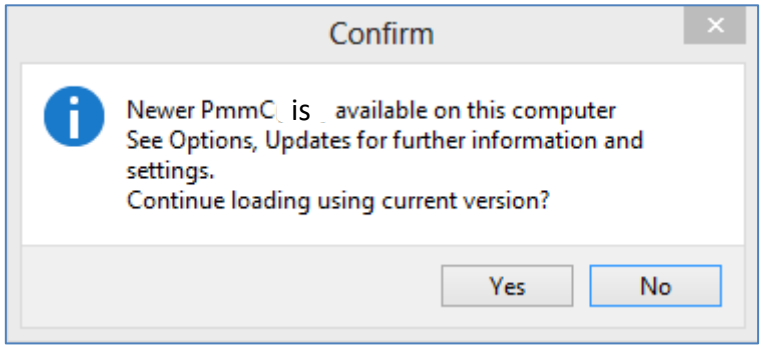
The message box at the bottom part shows no compilation errors.

```
0 errors
0 warnings
3 notices
No Errors, code size = 1073 bytes out of 9216 total
Initial RAM size = 20 bytes out of 510 total
```

After making sure that the device is detected, click on the Download button.

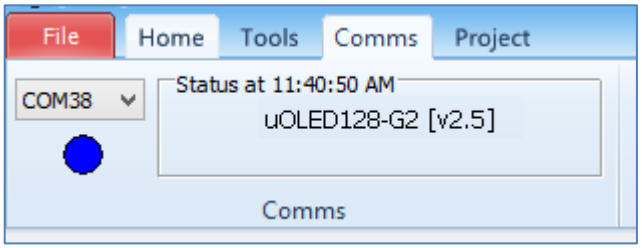


If Workshop detects that the PmmC on the target display module is outdated, it will display a confirmation dialog box.

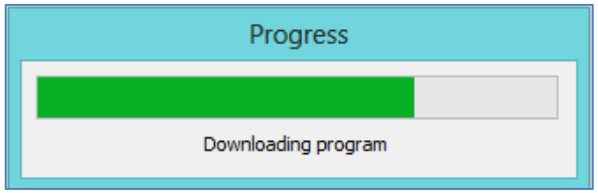


To update the PmmC of the target display, click **No** then follow the procedures described earlier in this document (Auto Update Mode). Make

sure that Workshop recognizes the updated PmmC of the display. The user can then repeat the download process.



The user can also ignore the notification and proceed to loading the program by clicking **Yes**. Either way, Workshop now downloads the program to the display module.



Finally, the message box confirms that the download has been successful.

```
0 errors
0 warnings
3 notices
No Errors, code size = 1073 bytes out of 9216 total
Initial RAM size = 20 bytes out of 510 total
Download successful.
```

The demo now starts and runs on the screen. Note that a uSD card is not needed for this demo.

Proprietary Information

Disclaimer of Warranties & Limitation of Liability