4D SYSTEMS
TURNING TECHNOLOGY INTO ART

General How to Update the PmmC for Picaso

DOCUMENT DATE: **1st MAY 2020**
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 Picaso display modules:

  uLCD-24PTU

  uLCD-28PTU

  uVGA-III

  gen4-uLCD-24PT

  gen4-uLCD-28PT

  gen4-uLCD-32PT

  other superseded modules

- 4D Programming Cable / μUSB-PA5/uUSBPA5-II
  for non-gen4 displays (uLCD-xxx)
- 4D Programming Cable & gen4-IB / 4D-UPA / gen4-PA
  for gen4 displays (gen4-uLCD-xxx)
- Workshop 4 IDE (installed according to the installation document)

Content

Install the Drivers for the Programming Modules

The **µUSB-PA5 programming adaptor,** the **4D USB programming cable,** the **gen4-Prgramming Adaptor,** or the **4D-Universal Programming Adaptor** can be used to download a program to, update the firmware or PmmC on, or test a Picaso display module. Before using any of these programming modules, the drivers need to be installed first.
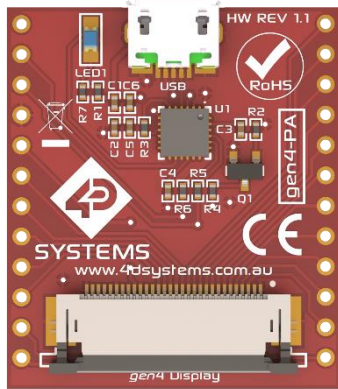
Drivers for the µUSB-PA5 Programming Adaptor

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.
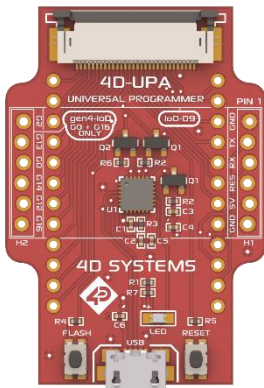
Drivers for the 4D USB Programming Cable

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.

Drivers for the gen4-PA

Information about and drivers for the **gen4 Programming Adaptor** can be found on its product page. Click on the image to go to the product page.

Drivers for the 4D-UPA

Information about and drivers for the **4D Universal Programming Adaptor** 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:

1. Create a new project in Workshop
   a. Launch Workshop 4
   b. Create a new Project
   c. Select an Environment
2. Connect the display module to the PC
   a. Connect using the uUSB-PA5 programming adaptor
   b. Connect using the 4D USB programming cable
   c. Check if the display module is detected by the PC
3. Open the PmmC loader
   a. Auto update mode
   b. Manual update mode
   c. Force update
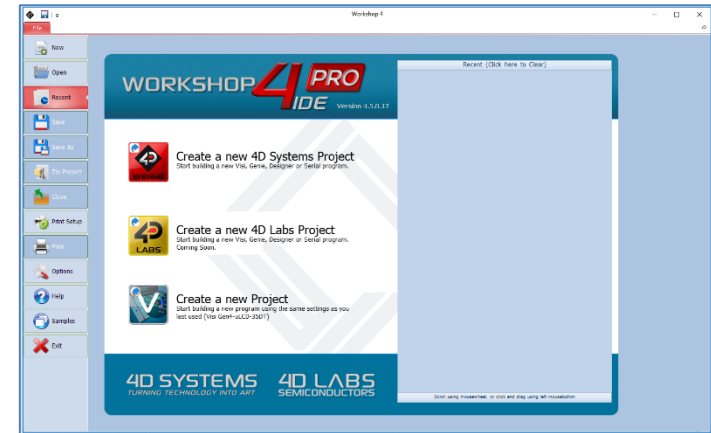
Create a New Project

Launch Workshop 4

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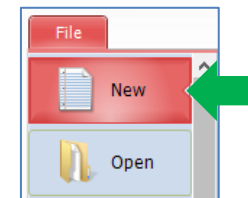

Create a New Project

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.

These options update the main window with the selection of the screen.

Select the appropriate screen and preferred orientation. The screen used in this example is a **uLCD-32PTU (Portrait orientation)**.

Select an Environment

Select any of the available environments. In this tutorial, ViSi-Genie 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 an empty screen, called **Form0**. A **form** is like a page on the screen. The form can contain **widgets** or **objects**, like trackbars, sliders, displays or keyboards. Below is an empty form.
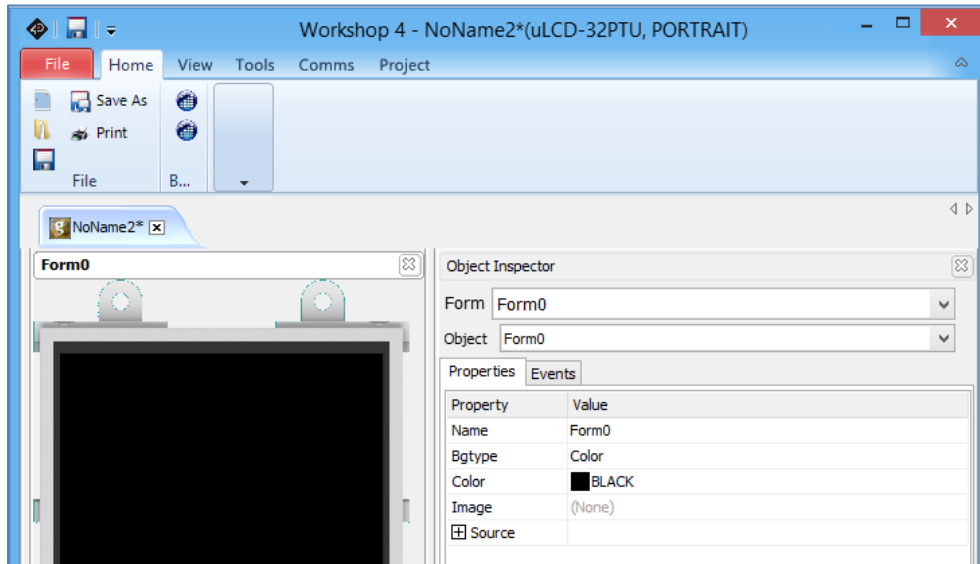
To learn how to create a basic application in ViSi-Genie, read ViSi-Genie Getting Started - First Project for Picaso Display Modules.

Connecting gen4 Display Modules

Connect the display module to the PC using a 4D USB Programming Cable, gen4-PA or a µUSB-PA5-II programming adaptor.
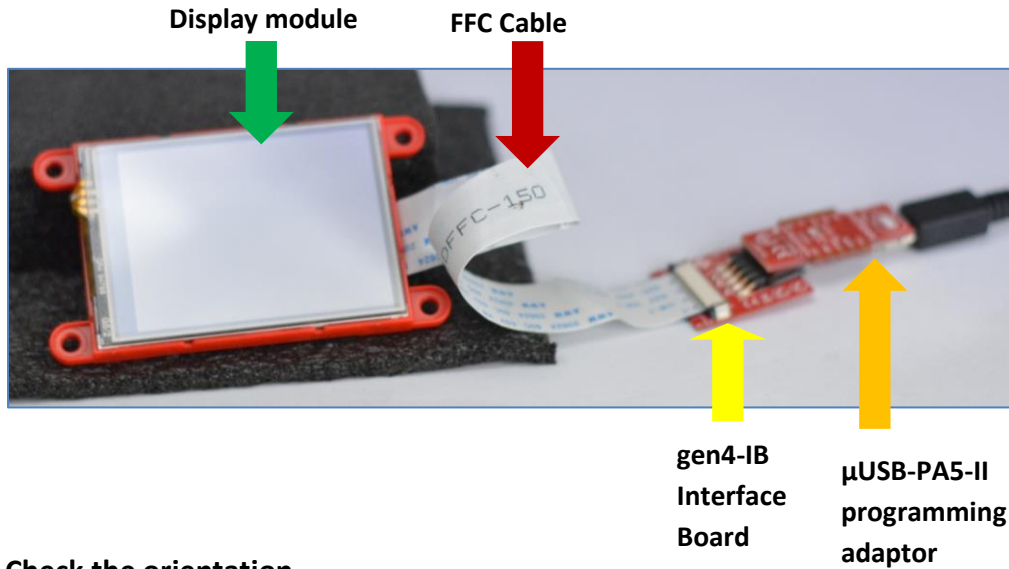
Note: Before using the 4D Programming Cable or the µUSB-PA5 adaptor, the drivers need to be installed first. Click any of the hyperlinks to go to their product pages. Follow the instructions on the page for installing the drivers.

FFC Cable

Using the μUSB-PA5 Programming Adaptor

Complete setup:

Display module

FFC Cable

gen4-IB Interface Board

μUSB-PA5-II programming adaptor

Check the orientation.

FFC Cable

Using the 4D USB Programming Cable

Complete setup:

FFC Cable

gen4-IB Interface Board

4D USB Programming Cable

Check orientation:

FFC Cable
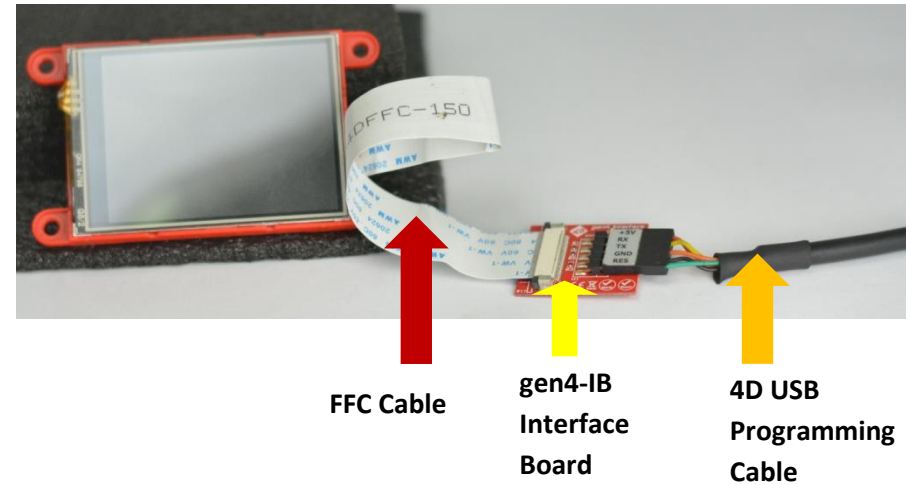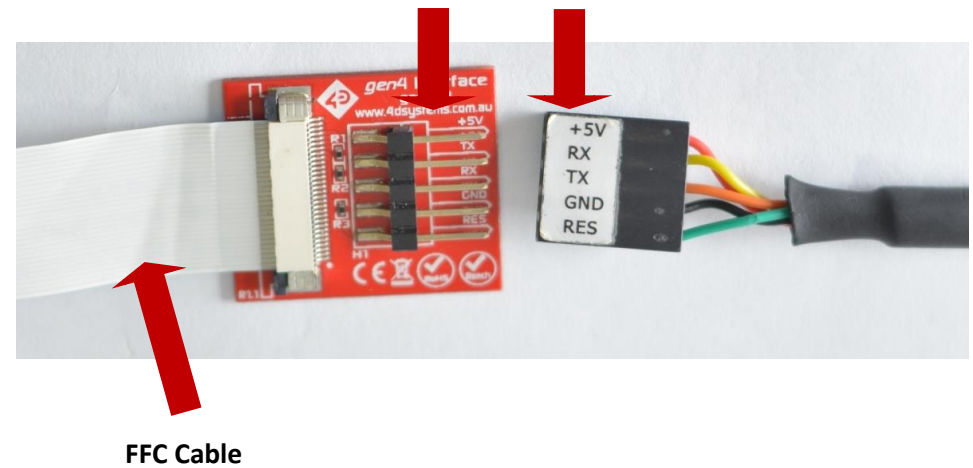
Using the 4D-UPA

Complete setup:

FFC Cable
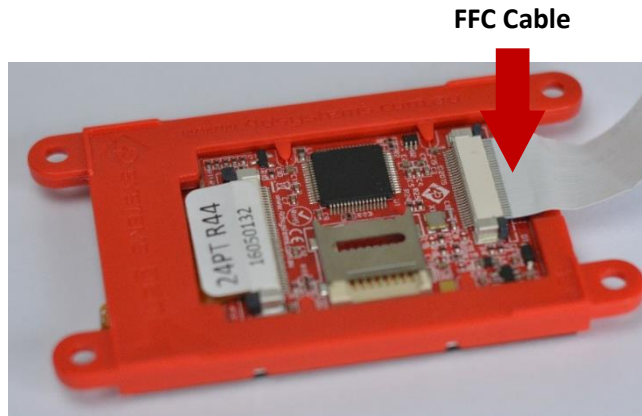
Check Orientation:

Using the gen4-PA

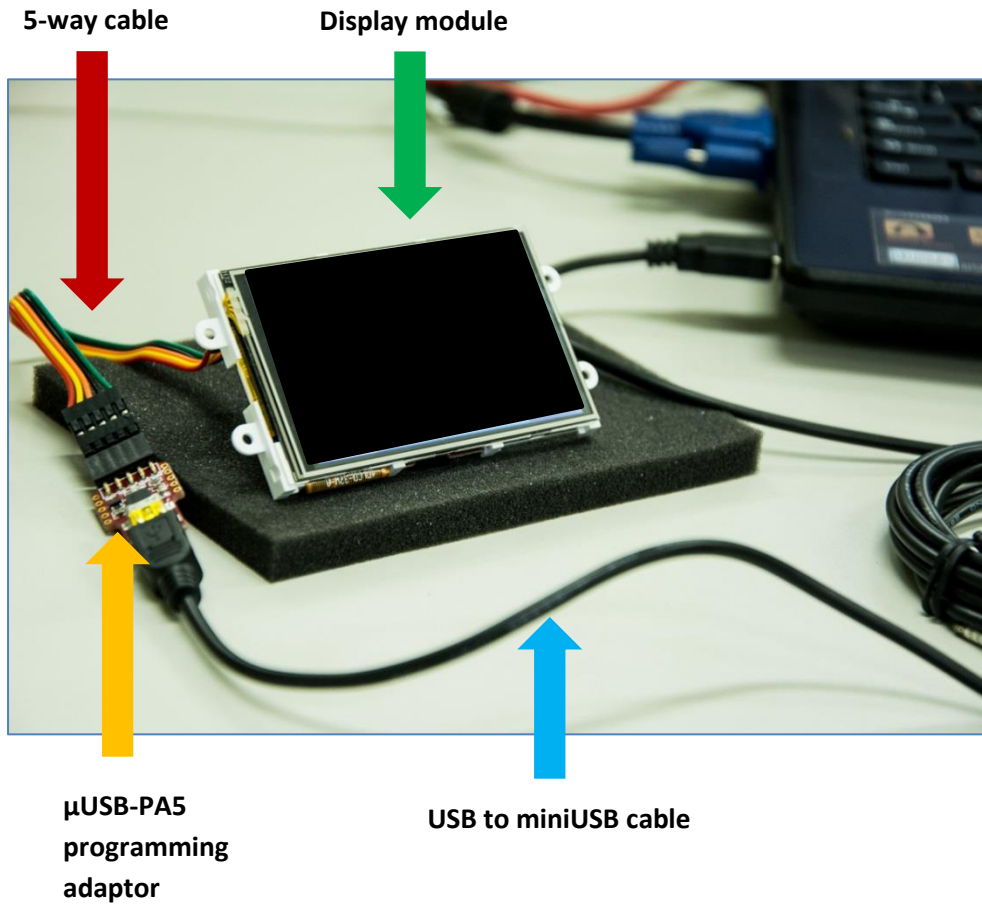**Complete setup:**

FFC Cable
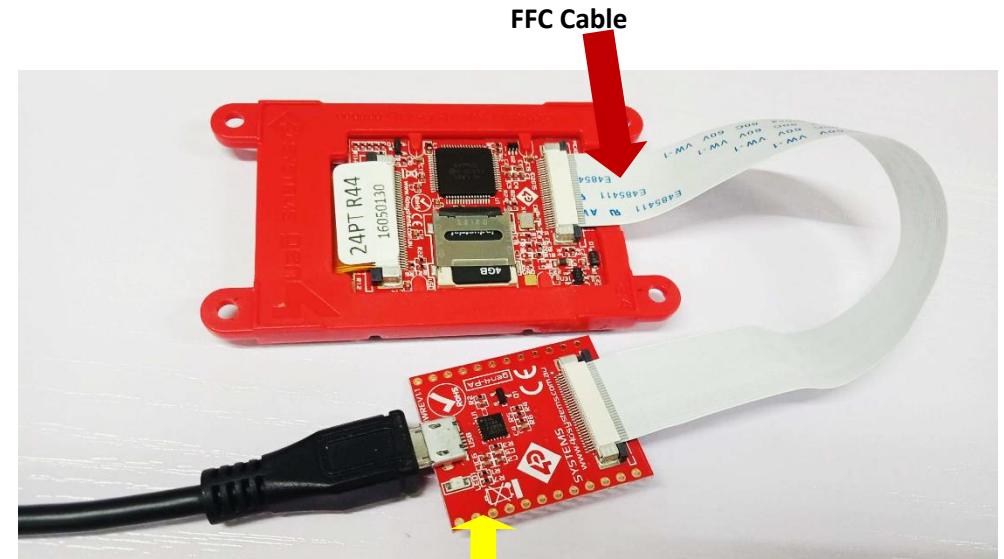
gen4-PA

Check Orientation:
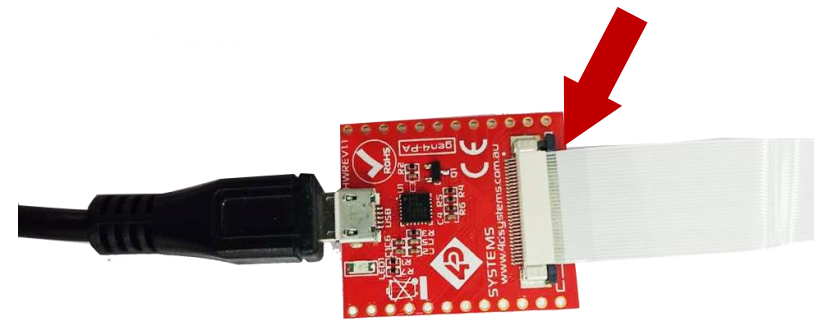
Connecting non-gen4 Display Modules

Using the µUSB-PA5 Programming Adaptor

Complete setup:

5-way cable

Display module

µUSB-PA5 programming adaptor

USB to miniUSB cable

5-way cable connected to the µUSB-PA5

Check the orientation.

USB to miniUSB cable connected to the PC

5-way cable going to the display module

µUSB-PA5 programming adaptor
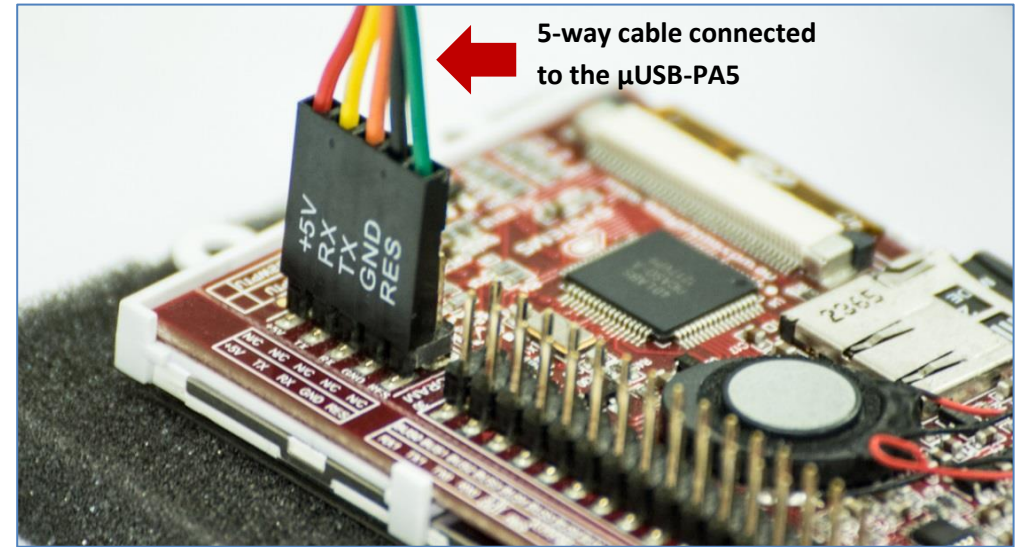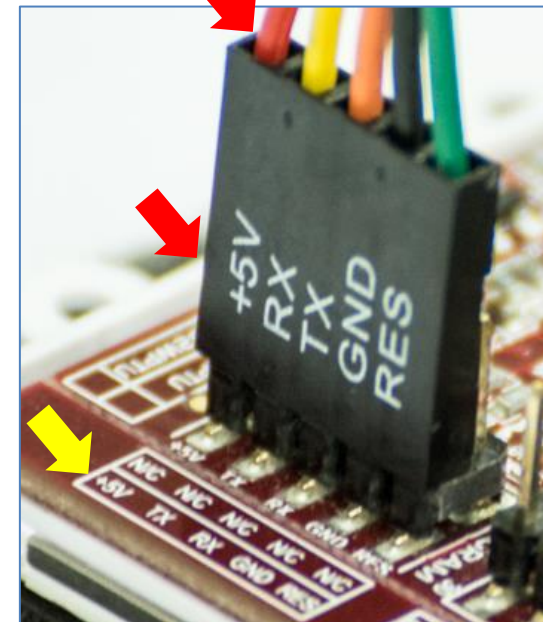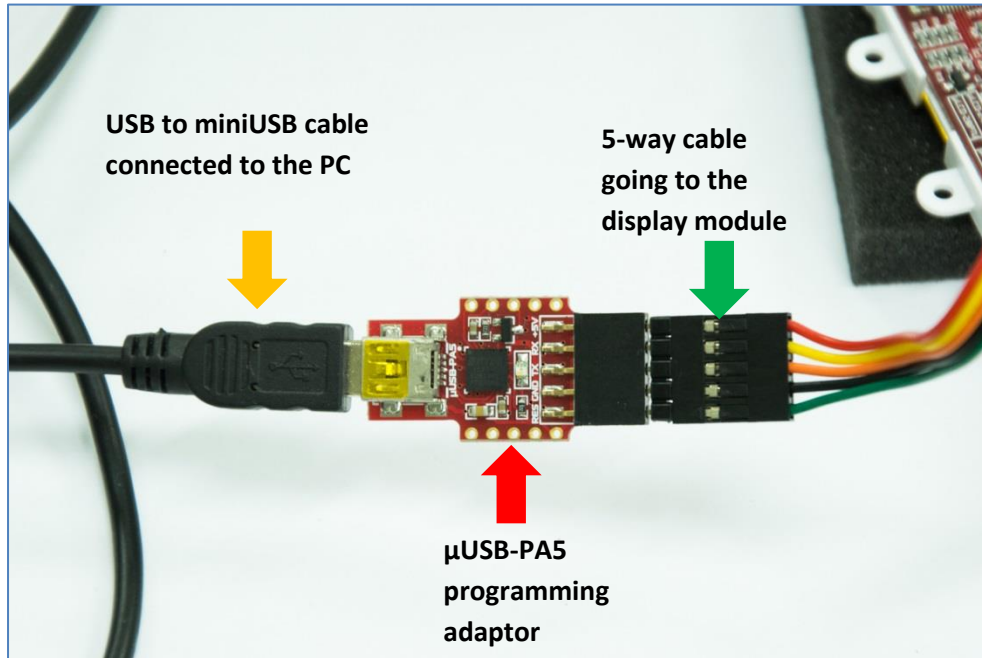
Check the orientation.
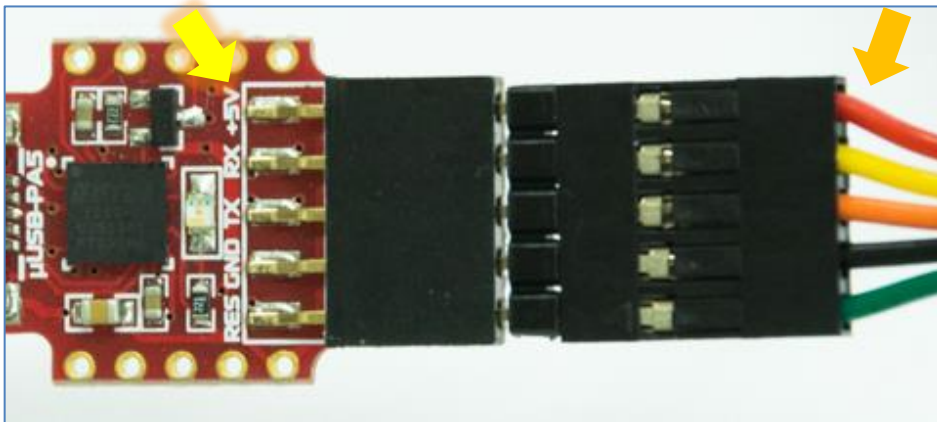
Using the 4D USB Programming Cable

Check the orientation

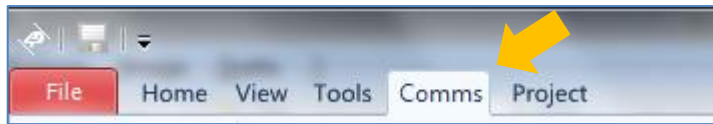**4D USB Programming Cable**
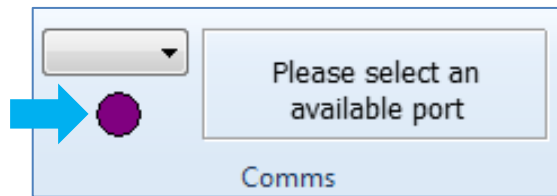

Check the orientation.

+5V
RX
TX
GND
RES
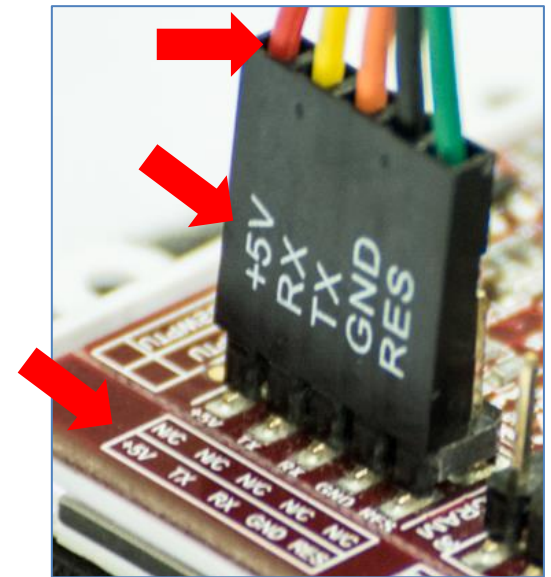
## Check if the Display Module is Detected by the PC

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.
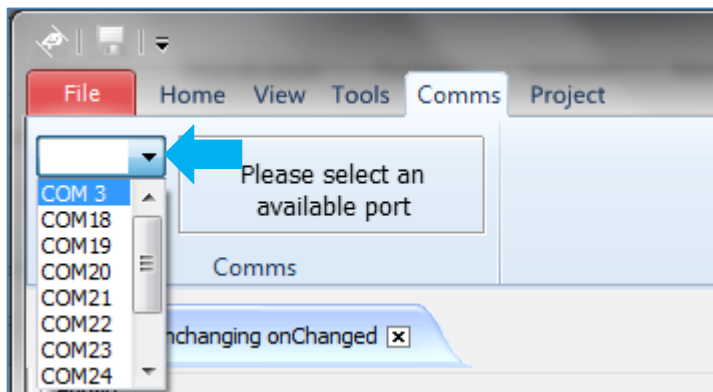
The light turns yellow while the connection is being established:
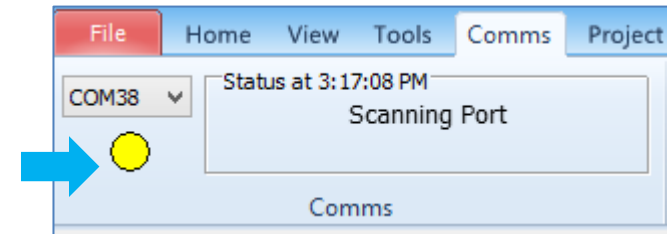
Finally, the light goes blue when the connection is established.
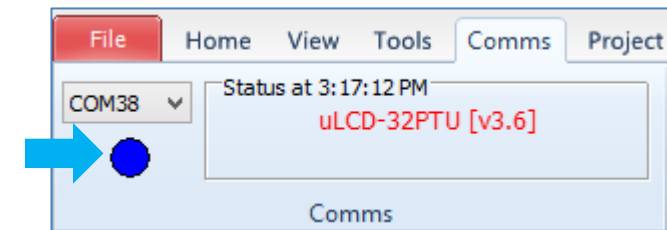
Note that the model of the target display and its current PmmC are printed in red font, which means that a later version of the PmmC is available in Workshop. In this case, the outdated PmmC on the target display is version 3.6.

The light turns red when no module is attached to the selected port:
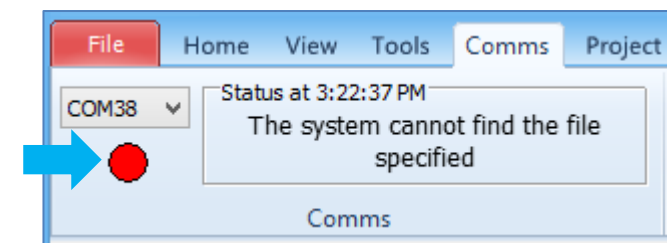
If the connected target display cannot be detected, double check all connections, ensure that the drivers are correctly installed, and verify the correct COM port allocation for the programming module. Check continuity
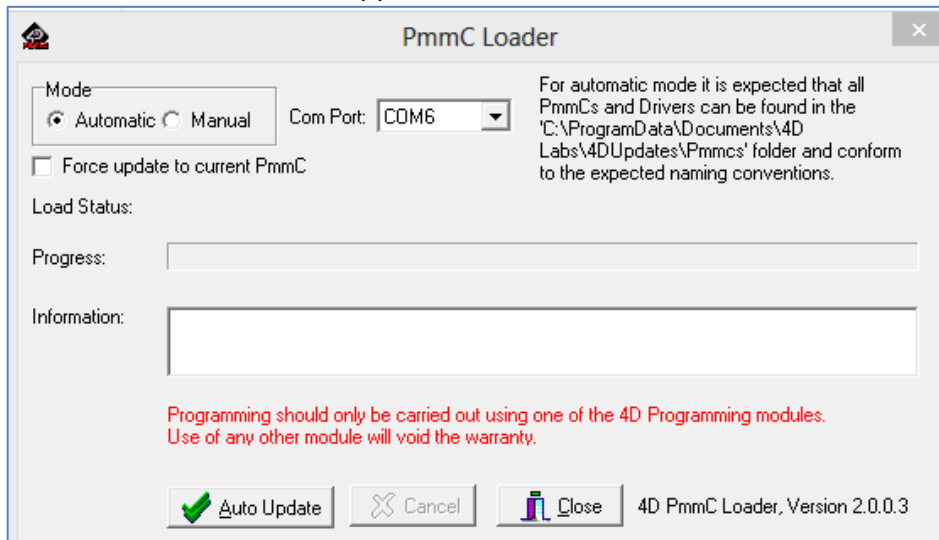
of the 5-way cable and try replacing the USB-to-miniUSB cable (if using a uUSB-PA5) as well. Some USB-to-miniUSB cables transfer power only and not data.

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.
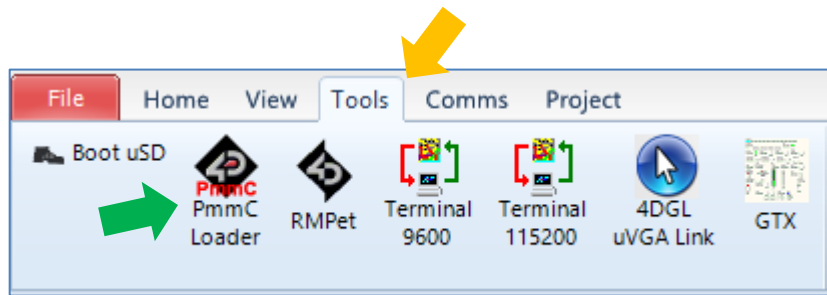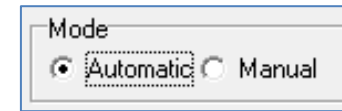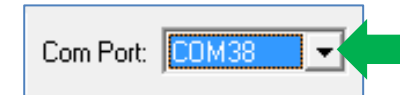

The PmmC Loader window appears.
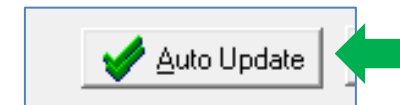

Auto Update Mode

By default, the mode is set to automatic.

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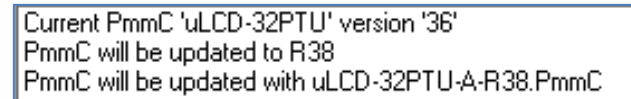

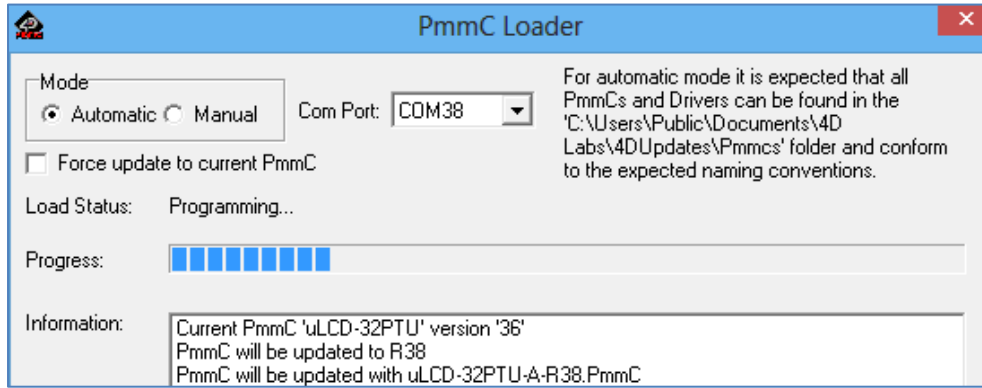Click on the Auto Update button at the bottom part of the window.

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.
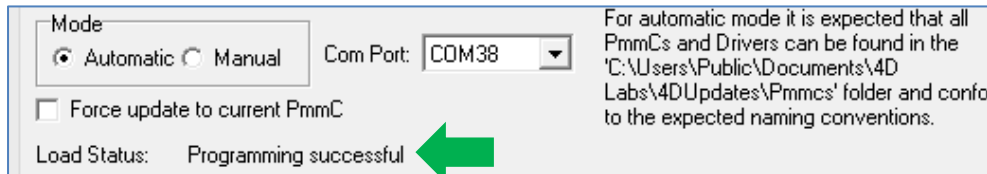


```
Current PmmC 'uLCD-32PTU' version '38'
PmmC is up to date
```
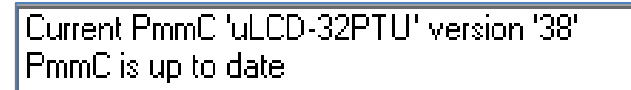
On the other hand, if the PmmC is not up-to-date, the information box will display the message shown below.

```
Current PmmC 'uLCD-32PTU' version '36'
PmmC will be updated to R38
PmmC will be updated with uLCD-32PTU-A-R38.PmmC
```
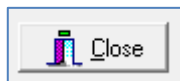
Download is now in progress.

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.
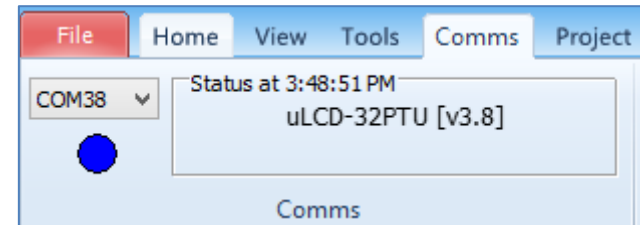

Click on the Close button to exit.

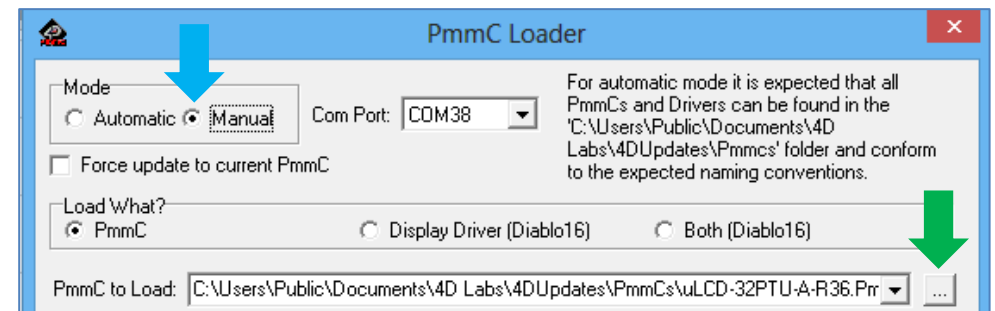Go back to the Comms menu and click on the blue button/light to redetect the target display.
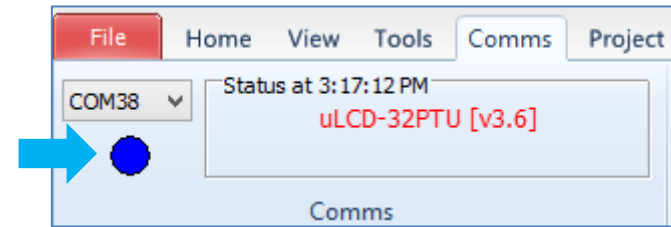
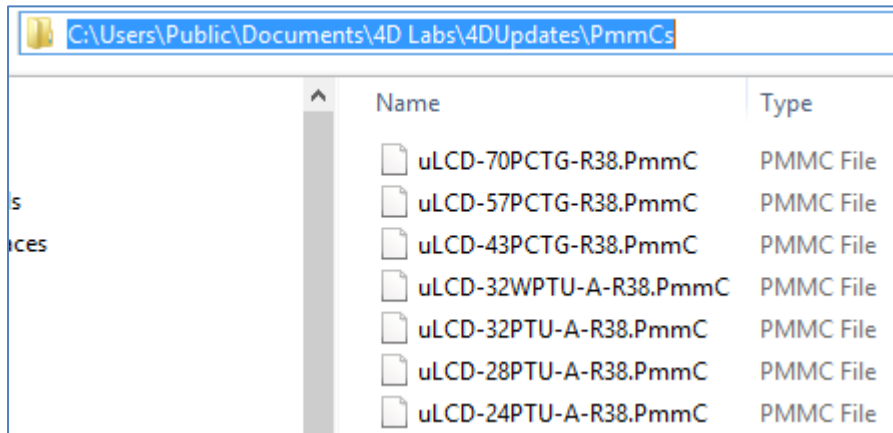The updated PmmC on the display should now be recognized.

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.
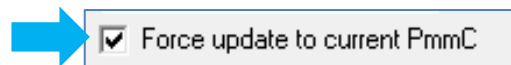
Click on the Auto Update button at the bottom part of the window.
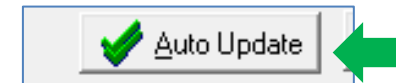
Download is now in progress.
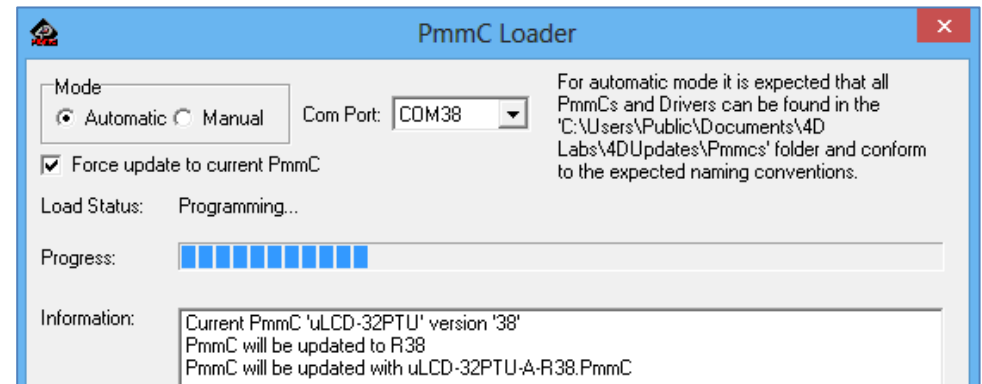
Check that the load status is successful.

Click on the Close button to exit.

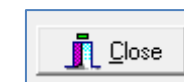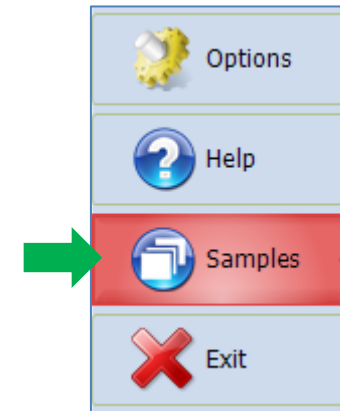# How to Open a Sample Project

Open a Sample Project

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

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

Select Picaso Designer.
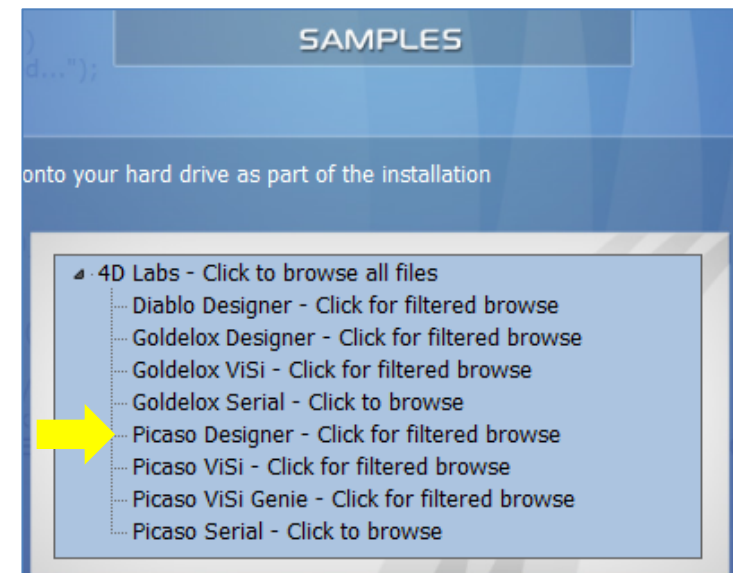
A standard Open window appears. Open the folder **PICASO – TOUCH SCREEN.**
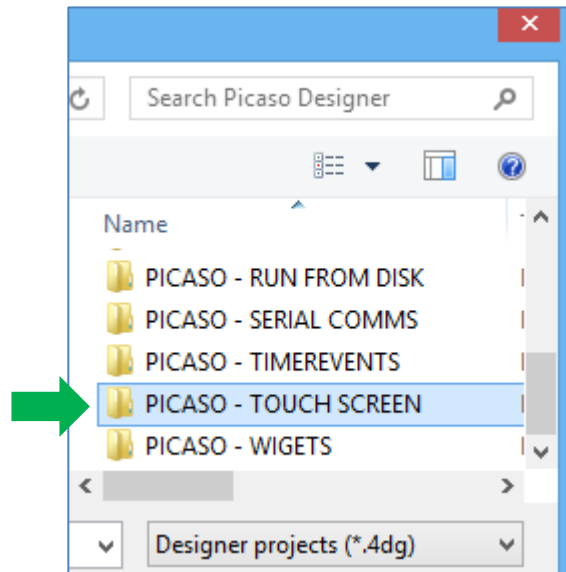
Choose the Designer file "TOUCHSLIDERS.4DG".

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.
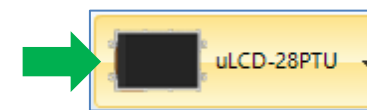
The Change Display window appears.
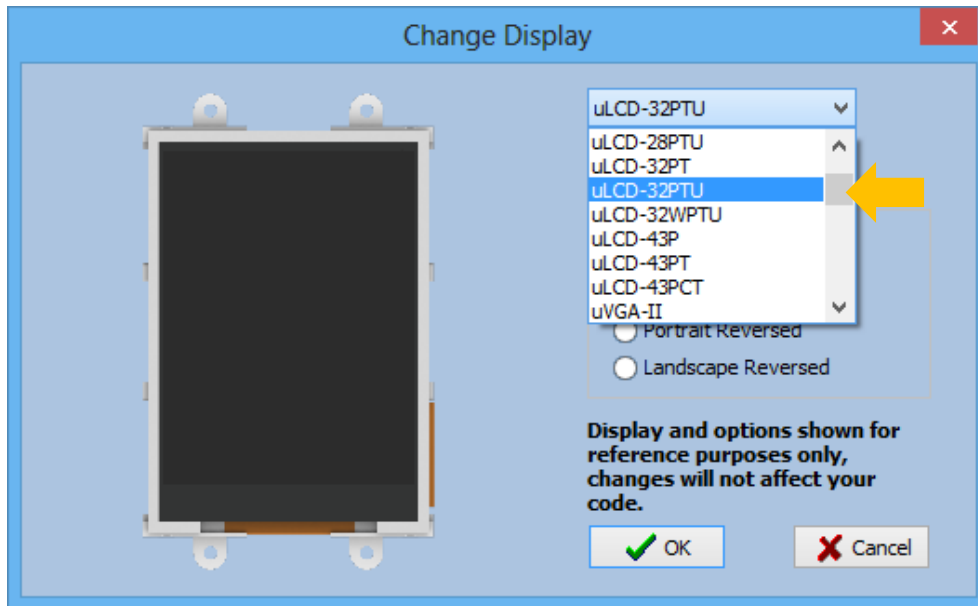
Select the appropriate screen on the drop-down list and define the orientation.
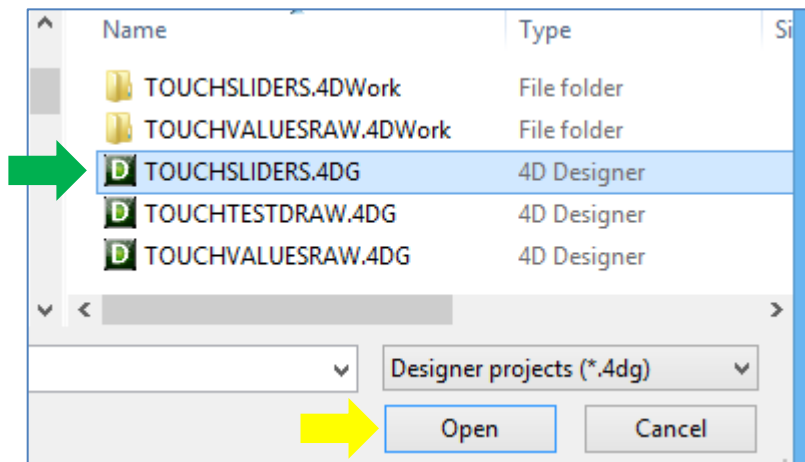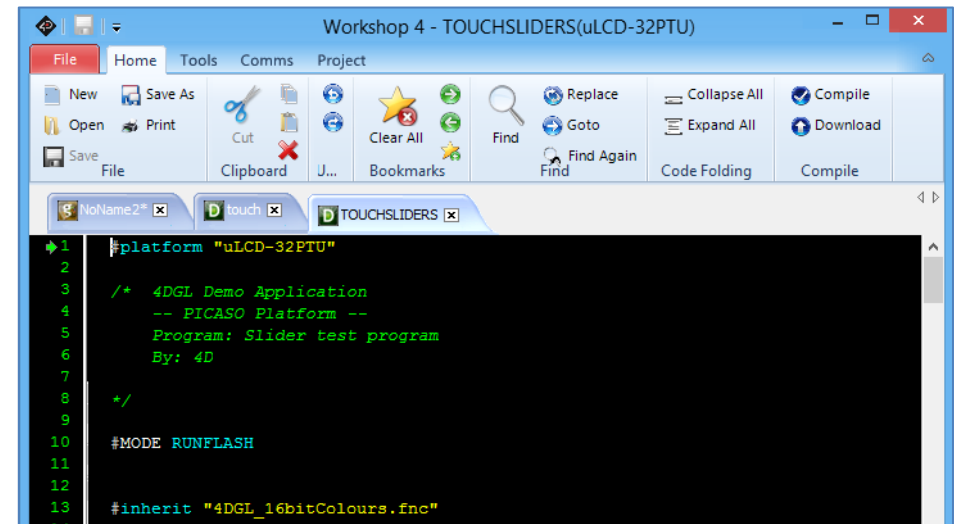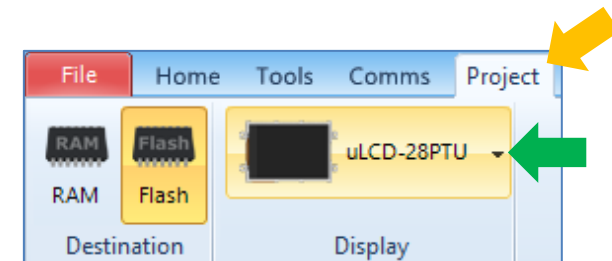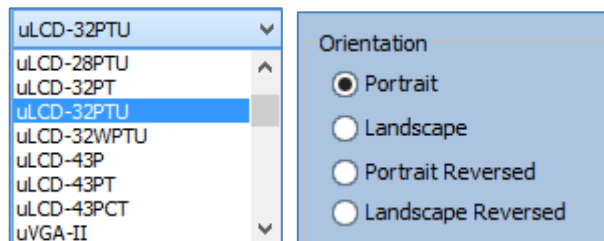

…and confirm by clicking on .

Program Destination

Choose the destination of the project. Select the **Project** menu and click on **Flash** as the destination.
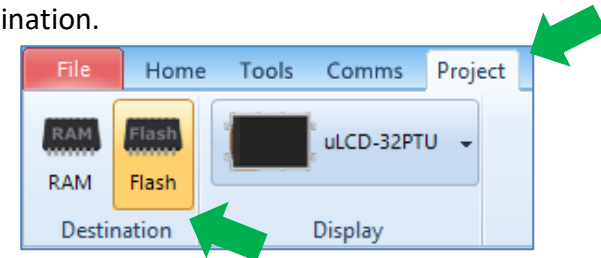
Compile and Download

Go to the Home menu and click on the Compile button.
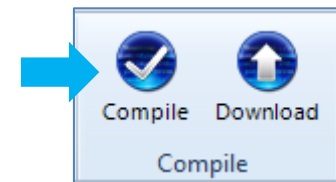
The message box at the bottom part shows no compilation errors.

```
0 errors
0 warnings
1 notice
No Errors, code size = 1291 bytes out of 14400 total
Initial RAM size = 216 bytes out of 14400 total
```

After making sure that the device is detected, click on the Download button.
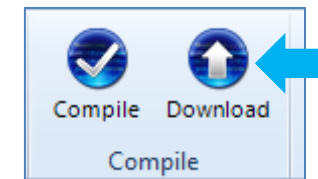
If Workshop detects that the PmmC on the target display module is outdated, it will display a confirmation dialog box.
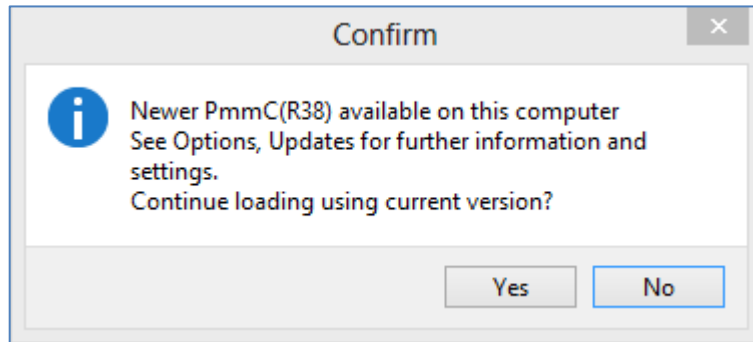
To update the PmmC of the target display, click **No** then follow the procedures described earlier in this document (Auto Update Mode). Make sure that Workshop recognizes the updated PmmC of the display. The user can then repeat the download process.
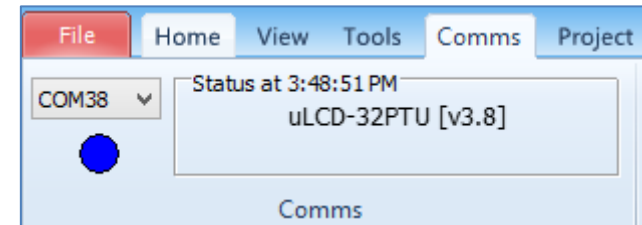
The user can also ignore the notification and proceed to loading the program by clicking **Yes**. Either way, Workshop now downloads the program to the flash memory of the display module.
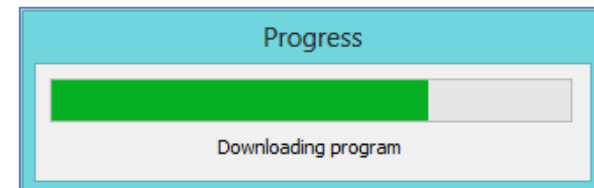
Finally, the message box confirms that the download to the flash memory has been successful.

```
0 errors
0 warnings
0 notices
No Errors, code size = 870 bytes out of 32750 total
Initial RAM size = 3720 bytes out of 32768 total
Program will run from ram so total initial RAM size
Download to RAM successful.
Download to Flash successful.

Insert          Line:1 Col:1
```

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

Application Notes

Application notes are documents designed to provide useful information showcasing the spectrum of features that 4D products have to offer, through easy to read documentation supported by illustrative images and sample code extracts. To start learning how to create your own applications, visit the application notes page.

Proprietary Information

The information contained in this document is the property of 4D Systems Pty. Ltd. and may be the subject of patents pending or granted, and must not be copied or disclosed without prior written permission.

4D Systems endeavours to ensure that the information in this document is correct and fairly stated but does not accept liability for any error or omission. The development of 4D Systems products and services is continuous and published information may not be up to date. It is important to check the current position with 4D Systems.

All trademarks belong to their respective owners and are recognised and acknowledged.

Disclaimer of Warranties & Limitation of Liability

4D Systems makes no warranty, either expresses or implied with respect to any product, and specifically disclaims all other warranties, including, without limitation, warranties for merchantability, non-infringement and fitness for any particular purpose.

Information contained in this publication regarding device applications and the like is provided only for your convenience and may be superseded by updates. It is your responsibility to ensure that your application meets with your specifications.

In no event shall 4D Systems be liable to the buyer or to any third party for any indirect, incidental, special, consequential, punitive or exemplary damages (including without limitation lost profits, lost savings, or loss of business opportunity) arising out of or relating to any product or service provided or to be provided by 4D Systems, or the use or inability to use the same, even if 4D Systems has been advised of the possibility of such damages.

4D Systems products are not fault tolerant nor designed, manufactured or intended for use or resale as on line control equipment in hazardous environments requiring fail – safe performance, such as in the operation of nuclear facilities, aircraft navigation or communication systems, air traffic control, direct life support machines or weapons systems in which the failure of the product could lead directly to death, personal injury or severe physical or environmental damage ('High Risk Activities'). 4D Systems and its suppliers specifically disclaim any expressed or implied warranty of fitness for High Risk Activities.

Use of 4D Systems' products and devices in 'High Risk Activities' and in any other application is entirely at the buyer's risk, and the buyer agrees to defend, indemnify and hold harmless 4D Systems from any and all damages, claims, suits, or expenses resulting from such use. No licenses are conveyed, implicitly or otherwise, under any 4D Systems intellectual property rights.