4D SYSTEMS
TURNING TECHNOLOGY INTO ART

General Serial File Transfer from PC to Display Module uSD Card

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Description

This application note shows how to transfer files from the PC to a uSD card mounted on the display module through the programming module.

Before getting started, the following are required:

Hardware

- Any [4D Systems display module](#) powered by any of the following processors:
  - o Picaso
  - o Diablo16
  - o Pixxi28/44
- [Programming Adaptor for target display module](#)
- [uSD Card](#)
- [USB Card Reader](#)

Software

- [Workshop4](#)

This application note comes with one (1) ViSi-Genie project:

- 4D-AN-00001.4DGenie

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

Content

Application Overview

This application note demonstrates a method for transferring files of a simple project from the PC to a uSD card mounted on the display module through the programming module. Using this method, the user will not need to unmount the uSD card from the display module and mount it to the PC and vice versa every time to update the supporting files on the uSD card. To be able to remotely transfer files to a uSD card mounted on the display module, the FileTransfer tool software is needed.

To extend this example, the ViSi-Genie program file is converted into a child program that will run from the uSD card, which will be transferred along with the graphics files. The stub parent program that will access and execute the child program from the uSD card, is uploaded to the display module the normal way. To learn more about parent and child programs, see the application note **ViSi-Genie Program Destination**.

Although this application note uses a ViSi-Genie project to demonstrate the use of the FileTransfer tool to remotely transfer files, the process would be similar for transferring files of ViSi, Designer, or even Serial projects.
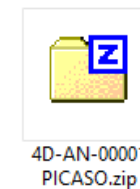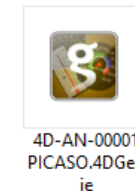
Instructions

Setup

Connect the display module to a USB port of the PC using a 4D programming module. The display module should have a FAT16-formatted uSD card mounted on it.
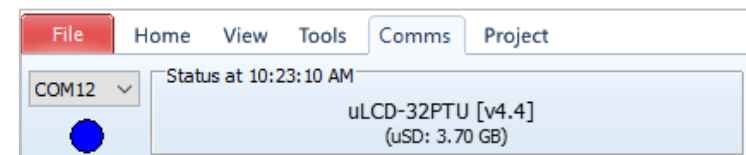
Open the Project File

Extract the contents of the attached project zip file to a folder.

4D-AN-00001
PICASO.zip

Double click on the project file to open it in Workshop4.
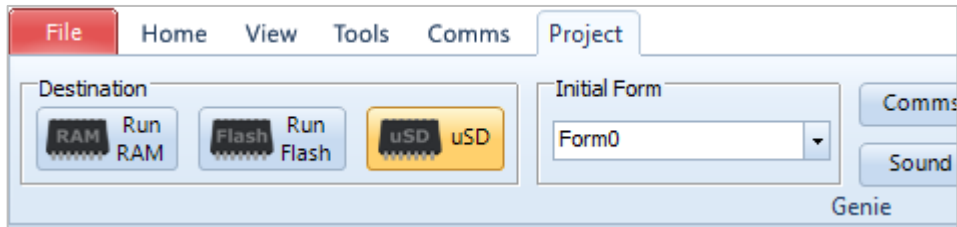

4D-AN-00001
PICASO.4DGen
ie

Note that Workshop4 should be able to detect the uSD card mounted on the display module, otherwise, the card is not present or cannot be read.

Generate the Supporting and Program Files

Go to the Projects menu and choose **"uSD"** under Destination. This option will cause Workshop4 to compile the main program into a child program, which will need to be copied manually to the uSD card.
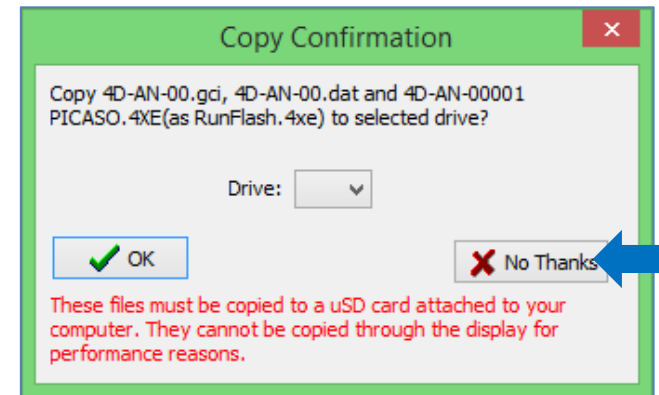

Go to the Home menu and click on the **(Build) Copy/Load** button.

The Copy Confirmation box opens and asks for the correct drive of the uSD card. For this project however, the uSD card is mounted on the display module so click "**No Thanks**".

Take note of the filenames listed in the message box. Listed in here: **4D-AN-00.gci** and **4D-AN-00.dat** graphics files, and **4D-AN-00001 PICASO.4XE** child program file.

Note: Workshop4 will only automatically rename the child program file to "**RunFlash.4xe**" when copied into the uSD card the normal way.

Now go to the folder to which the project was extracted. Note that new files are present. Workshop4 also creates copies of the supporting and program files and places them inside the project folder.
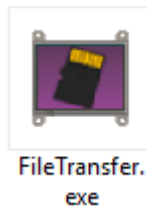

The set of newly generated files includes the graphics files and the program file. Manually create a copy of the file **"4D-AN-00001 PICASO.4XE"** and rename it to "**RunFlash.4xe**", as would normally be done by Workshop4.
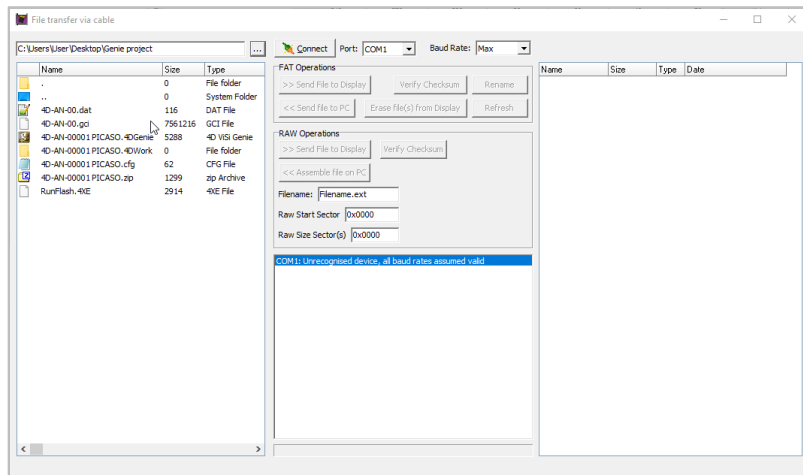

Note: For more complex projects, there may be other supporting files (e.g. font and audio files) besides the graphics files that need to be copied to the uSD card. The Copy Confirmation box usually lists all of the supporting files.

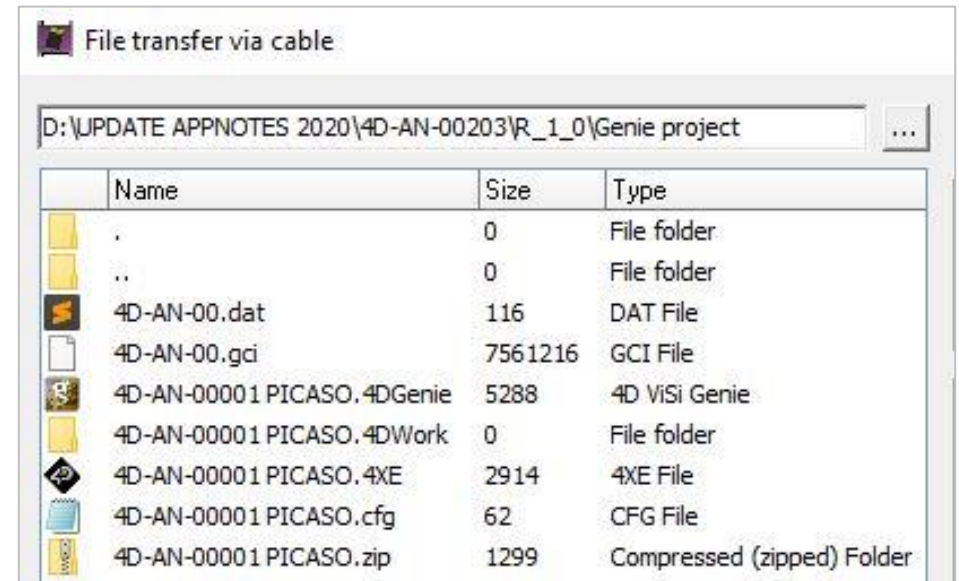## Copy Files to the uSD Card Mounted on the Display Module

The next step now is to copy the graphics and child program files from the PC to the uSD card mounted on the display module. The files will be transferred serially through the programming module. Workshop4 has a tool called "**FileTransfer**" which will be used to transfer the files which is usually located in the Workshop4 installation folder at: **C:\Program Files (x86)\4D Labs\4D Workshop 4 IDE\DEP**
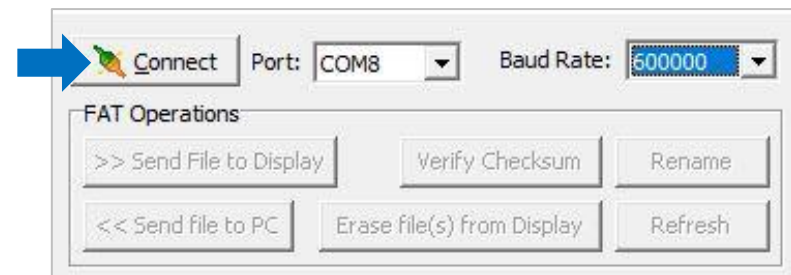

FileTransfer. exe

The FileTransfer tool interface is generally divided into two parts – the left-hand side, which shows the files on the PC and the right-hand side, which shows the files on the uSD card mounted on the display module.
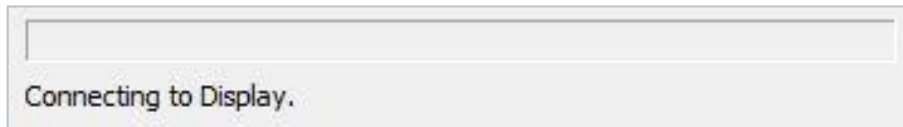

In the image below, the files inside the Genie project folder are shown. This is our working folder from earlier. Note that the graphics and the child program file are visible.
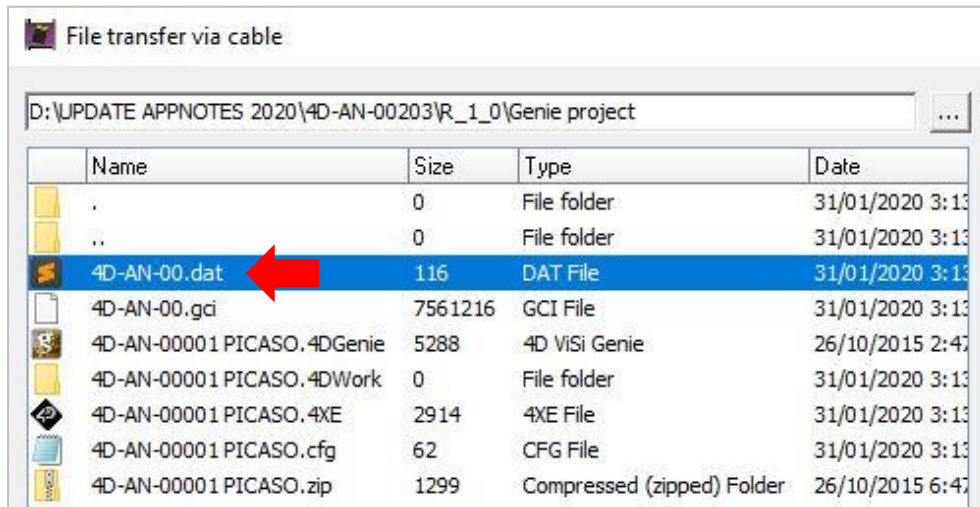

At this point, the right-hand side of the interface shows nothing since the software is not yet connected to the display. Click on the **"Connect"** button.

Connection with the display module is now being established.

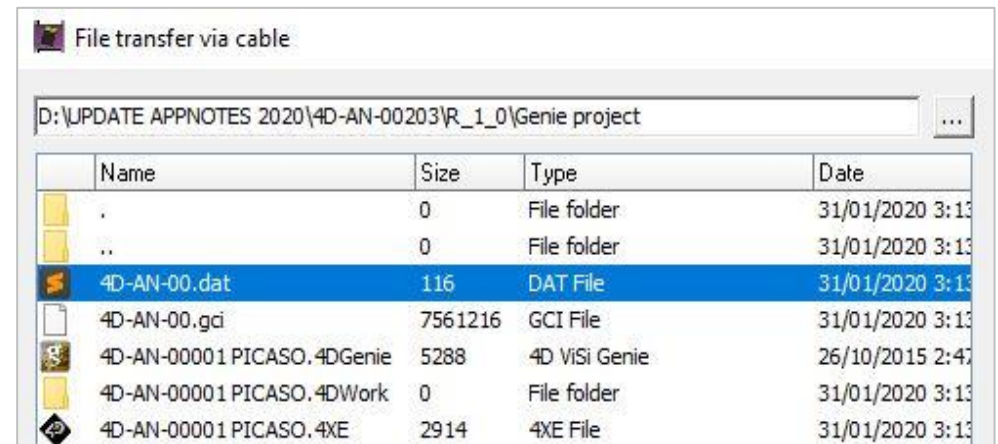To transfer a file, select the file on the left-hand side of the interface,

and click **"Send File to Display"** button.

After a successful transfer, the file should now appear on the right-hand side of the interface. Both files on the right- and left- hand sides of the interface are highlighted in blue so the user can easily determine which files have already been copied.

Left-hand Side:

Right-hand Side:

Repeat the same procedure to transfer the files **"4D-AN-00.gci"** and **"RunFlash.4xe"**. Note however that the size of the GCI file is relatively large at 7,561.216 kB. With a transfer rate of about 600 MBits/s, the total time it takes to transfer this file is around 2 minutes. Transferring even larger files at this rate would take more time. Hence, the need to simply copy the files directly to a uSD card mounted on the PC. Once the transfer has started, display module will display the following image.
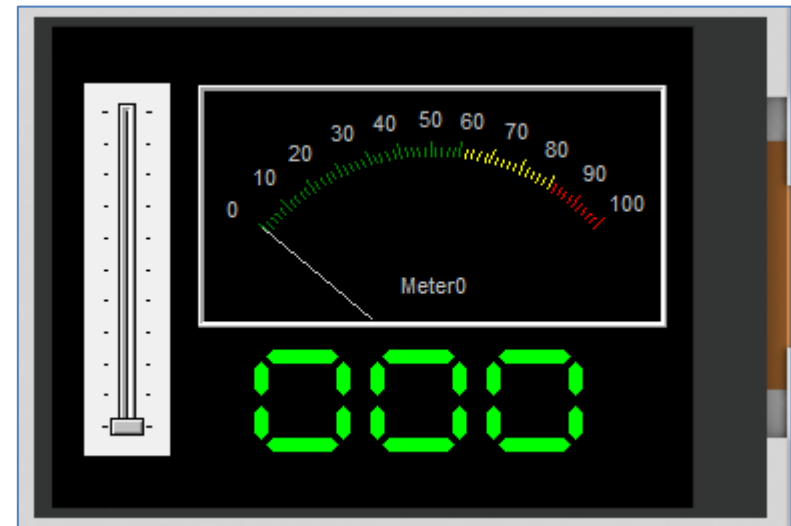

After a successful transfer of the three files, the FileTransfer tool interface will now look like as shown below. Note that all of the three files should appear on the right hand side list of the utility.
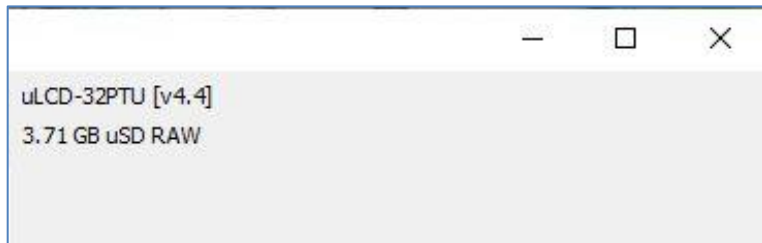
Right-hand Side:

The last step now is to test the display module by pressing the **"Disconnect"** button.

Note: If the user encounters baud rate compatibility, it is recommended to use SiLabs CP210x Baud Rate Configuration tool to maximise transfer rate of File Transfer Utility tool.

The uSD Card cannot be Identified

If the FileTransfer tool is not able to detect and identify the uSD card mounted on the display module, it will display a message on the right hand side, like as shown below.

One way to get around this is to use RMPET to partition and format the uSD card. To do this, unmount the uSD card first from the display module, mount it to the PC, and use RMPET to partition and format it. You may choose to allot 100% of the uSD card size to the FAT16 partition.

Now properly unmount the uSD card from the PC and return it to the display module. The FileTransfer tool software should now be able to detect and identify the uSD card mounted on the display module. If not familiar with the RMPET software, see the application note **General Partitioning a micro-SD into FAT and RAW Components**.

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