

MMI DISPLAY INTERFACE PANEL

11-01-001-6

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ABSTRACT

This module consists of an TFT touchscreen shield mounted on Arduino Uno. This is used to display the name and manufacturer of any product.

1 COMPONENTS

1. 2.4" TFT Touch Shield for Arduino
2. Arduino Uno
3. USB Type A (male) to Type B (male) cable
4. 5.0V, 1A power supply with USB Type A (female) connector
5. micro-SD card (less than or equal to 4GB)

2 SYSTEM LEVEL BLOCK DIAGRAM

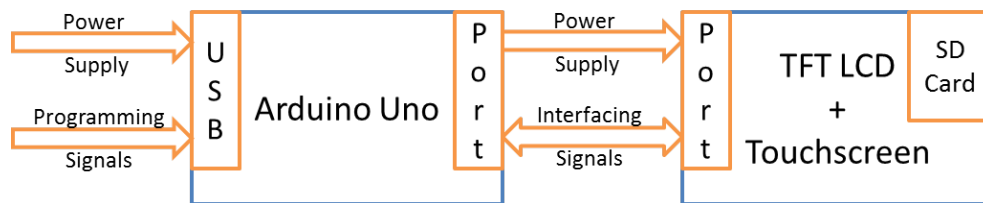


Figure 1: System level block diagram

3 HARDWARE SETUP

3.1 for usage

As shown in figure 1 the TFT Touch Shield is plugged onto Arduino Uno ports for interfacing. Vdd and Gnd pins on both boards should be matched for proper mounting. *If you are setting up arduino uno first time on this computer, do not mount TFT touchscreen shield on the arduino board yet. It will be mounted after arduino uno setup section.*

3.2 for programming

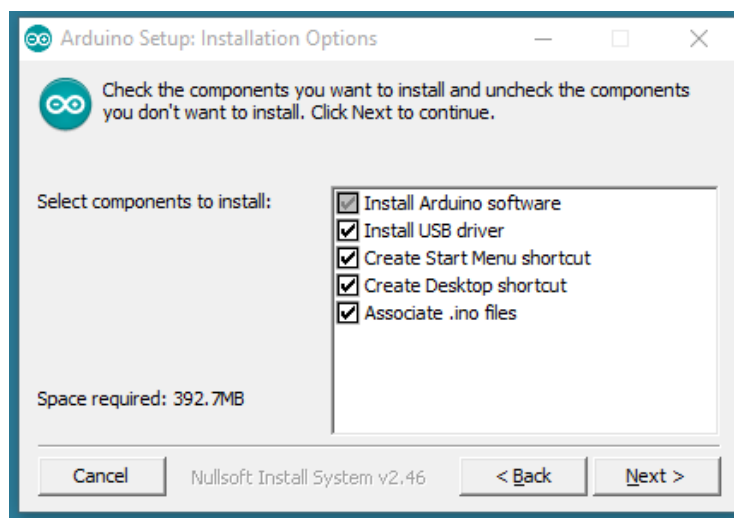
The USB cable's Type B end is connected to the Arduino Uno board and this cable provides both the power and programming signals. In case one wants to program the module, USB Type A end or cable should be connected to a computer else it should be connected to a 5V, 1A power supply. In both cases Arduino and LCD screen should power up and you should be able to see red lights on Arduino board and backlight or any random display on LCD.

4 PROGRAMMING INSTRUCTIONS

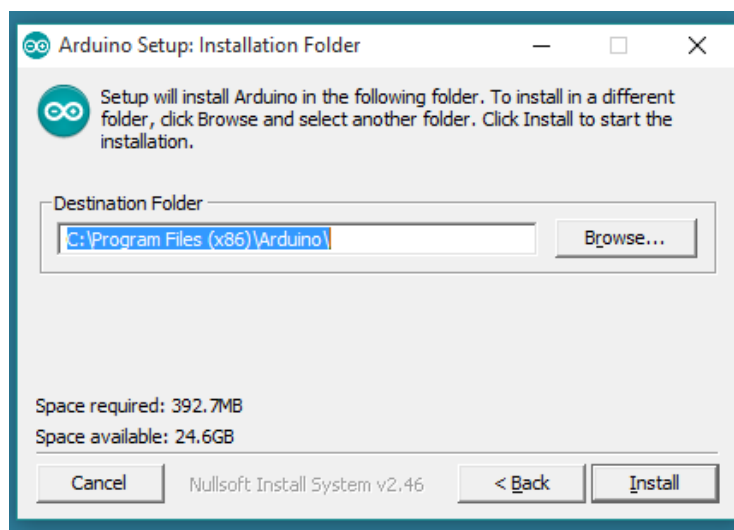
4.1 Arduino Uno Setup

If the module is connected to computer for programming, following instructions need to be followed

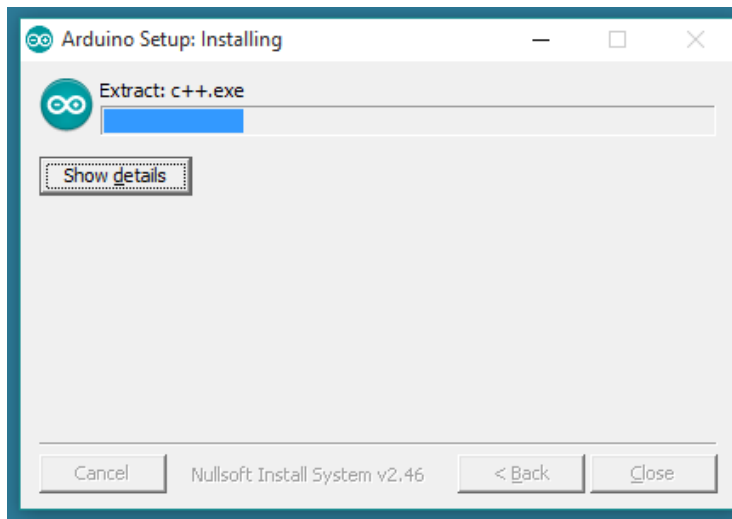
INSTALLING SOFTWARE The Arduino Uno is programmed using the Arduino Software (IDE), Arduino's Integrated Development Environment. Double click on *arduino-1.8.5-windows.exe* and please allow the driver installation process when you get a warning from the operating system.



Choose the components to install



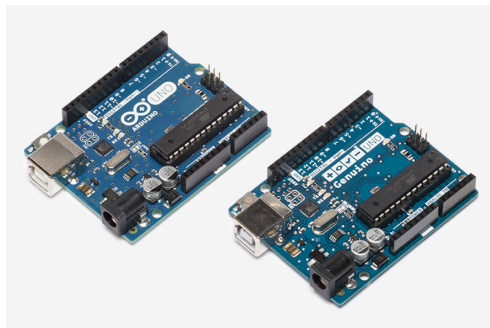
Choose the installation directory (we suggest to keep the default one)



The process will extract and install all the required files to execute properly the Arduino Software (IDE)

INSTALLING ADDITIONAL LIBRARIES Unzip libraries.rar and copy the folders *SPFD5408 – master* etc to
`C : \ProgramFiles(x86)\Arduino\libraries`

CONNECTING BOARD Connect your Uno board with an A B USB cable; sometimes this cable is called a USB printer cable



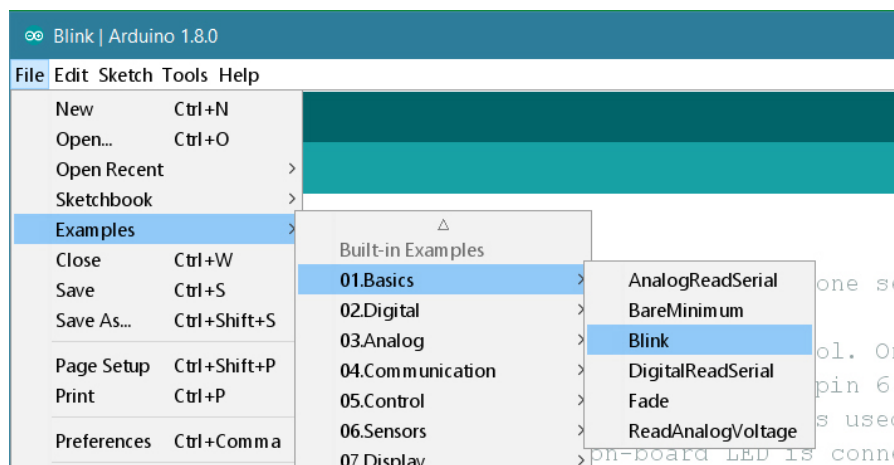
The USB connection with the PC is necessary to program the board and not just to power it up. The Uno automatically draw power from either the USB or an external power supply. Connect the board to your computer using the USB cable. The green power LED (labelled PWR) should go on.

INSTALL THE BOARD DRIVERS If you downloaded and expanded the Zip package or, for some reason, the board wasn't properly recognized, please follow the procedure below.

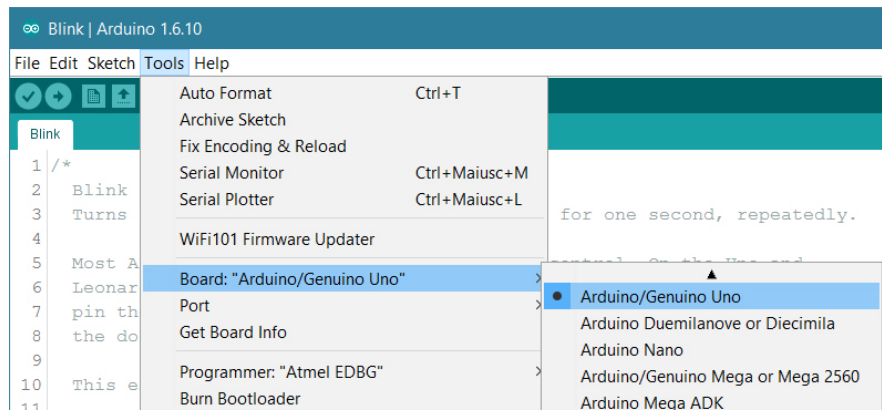
- Click on the Start Menu, and open up the Control Panel.

- While in the Control Panel, navigate to System and Security. Next, click on System. Once the System window is up, open the Device Manager.
- Look under Ports (COM & LPT). You should see an open port named "Arduino UNO (COMxx)". If there is no COM & LPT section, look under "Other Devices" for "Unknown Device".
- Right click on the "Arduino UNO (COMxx)" port and choose the "Update Driver Software" option.
- Next, choose the "Browse my computer for Driver software" option.
- Finally, navigate to and select the driver file named "arduino.inf", located in the "Drivers" folder of the Arduino Software download (not the "FTDI USB Drivers" sub-directory). If you are using an old version of the IDE (1.0.3 or older), choose the Uno driver file named "Arduino UNO.inf"
- Windows will finish up the driver installation from there.

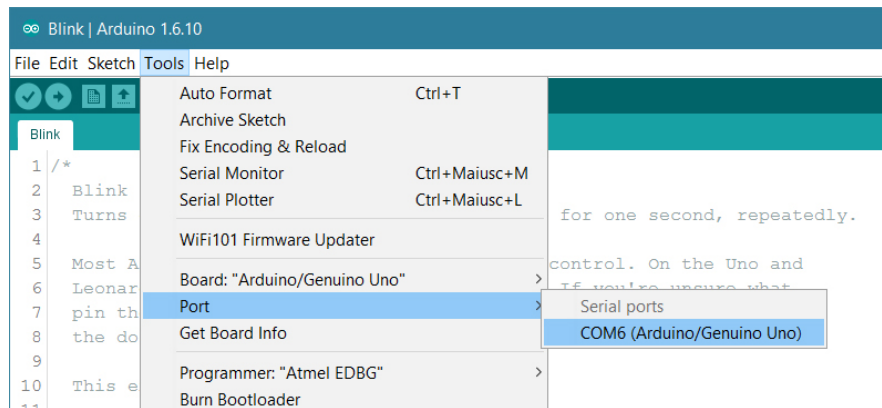
OPEN YOUR FIRST SKETCH Open the LED blink example sketch: File > Examples > 01.Basics > Blink.



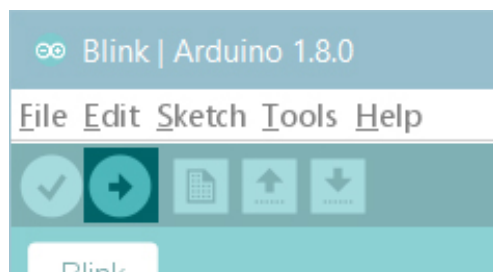
SELECT YOUR BOARD TYPE AND PORT You'll need to select the entry in the Tools > Board menu that corresponds to your Arduino or Genuino board.



Select the serial device of the board from the Tools | Serial Port menu. This is likely to be COM3 or higher (COM1 and COM2 are usually reserved for hardware serial ports). To find out, you can disconnect your board and re-open the menu; the entry that disappears should be the Arduino or Genuino board. Reconnect the board and select that serial port.



UPLOAD THE PROGRAM Now, simply click the "Upload" button in the environment. Wait a few seconds - you should see the RX and TX leds on the board flashing. If the upload is successful, the message "Done uploading." will appear in the status bar.



A few seconds after the upload finishes, you should see the pin 13 (L) LED on the board start to blink (in orange). If it does, congratulations! You've gotten Arduino or Genuino up-and-running. If you have problems, please see the [troubleshooting suggestions](#).

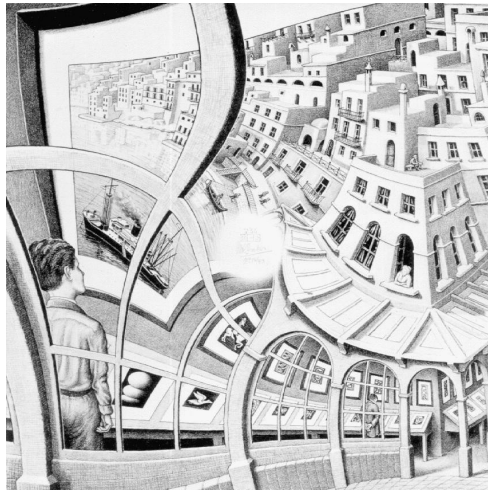


Figure 2: An example of a floating figure (a reproduction from the *Gallery of prints*, M. Escher, from <http://www.mcescher.com/>).

4.2 Upload our program

- Open *tftpaint.ino* in Arduino by double clicking the file
- Click the upload button (looks like *forward arrow* symbol)

4.3 Upload bmp in memory card

- Copy files *screen.bmp*, *screen2.bmp*, *screen3.bmp* to the memory card (less than or equal to 4 GB)
- Insert the memory card to slot in LCD

5 SETUP REQUIRED

Reference to Figure 2.

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WORD Definition

CONCEPT Explanation

IDEA Text

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- First item in a list
- Second item in a list
- Third item in a list

5.1.2 Table

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Table 1: Table of Grades

Name		
First name	Last Name	Grade
John	Doe	7.5
Richard	Miles	2

Reference to Table [1](#).

5.2 Figure Composed of Subfigures

Reference the figure composed of multiple subfigures as Figure [3 on the following page](#). Reference one of the subfigures as Figure [3b on the next page](#).

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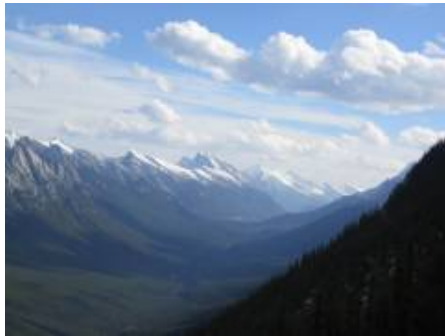
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(a) A city market.



(b) Forest landscape.



(c) Mountain landscape.



(d) A tile decoration.

Figure 3: A number of pictures with no common theme.

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6 SETUP FILES (SOFTWARE)

A statement requiring citation [1].

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Some mathematics in the text: $\cos \pi = -1$ and α .

REFERENCES

- [1] A. J. Figueredo and P. S. A. Wolf. Assortative pairing and life
history strategy - a cross-cultural study. *Human Nature*,
20:317–330, 2009.