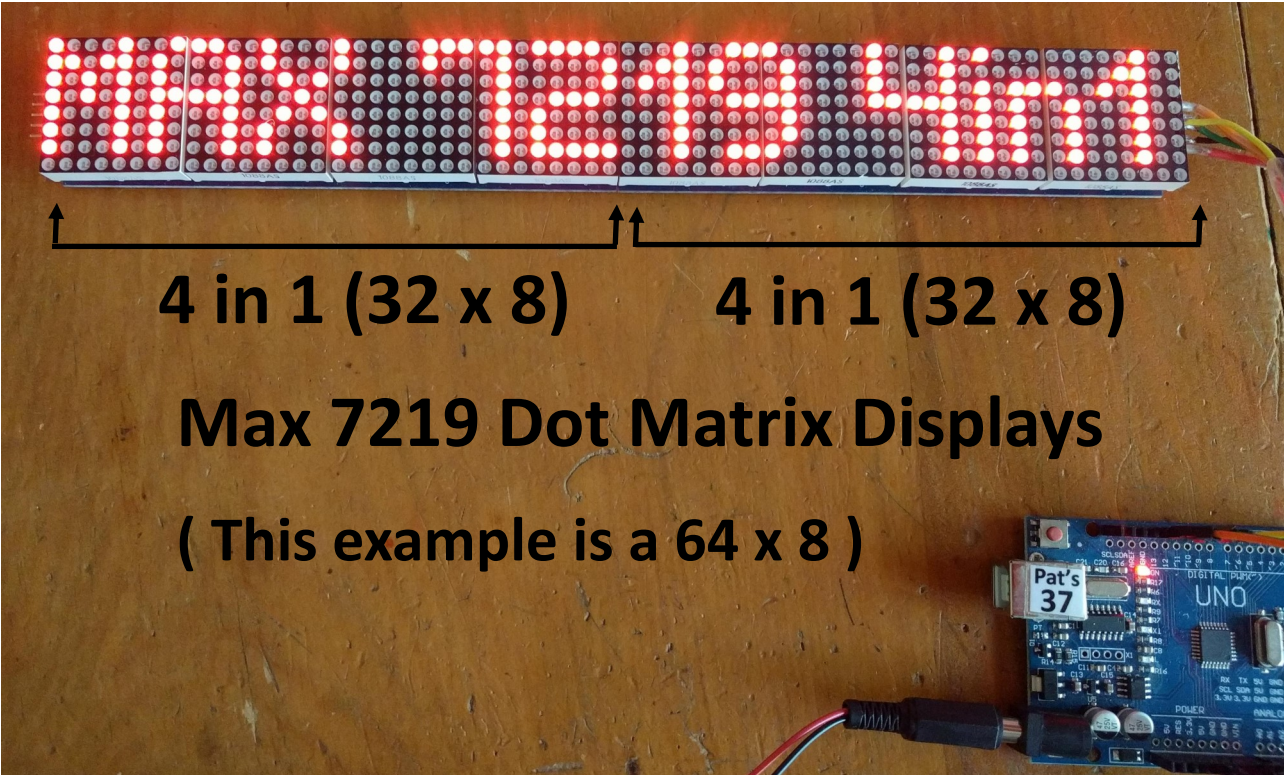


How to Build and adjust Code, using an Arduino R3 Uno , a “Max 7219, 4 in 1, 8 x 8 Dot Matrix Display”.

Pat McMahon- V1- 30/12/2020

Design Brief – You will Build and adjust the Example Code for multiple “Max 7219, 4 in 1, 8 x8 Dot Matrix Displays”, using an Arduino Uno R3 Microcontroller.

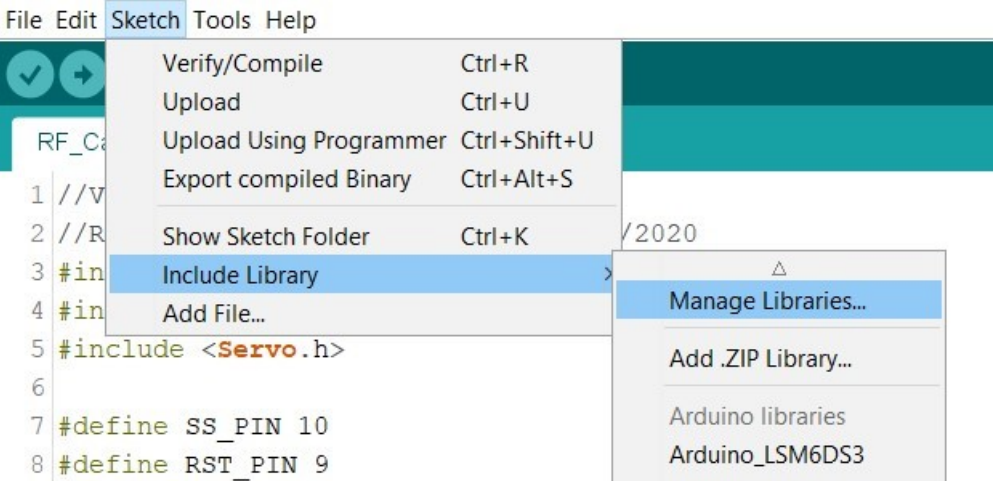
Note—You can purchase a small single 8 x 8 (64) LED Dot matrix Display or a 4 in 1 linked (32 x 8) Display. In this build, as in the photo below, we are using two MAX 7219, 4 in 1 (64 x 8) to visually Display Text . I have been able to link four, 4 in 1’s together (128 x 8) to successfully scroll Text, over 70 characters long, using an Arduino Uno R3 Microcontroller.



Parts Required

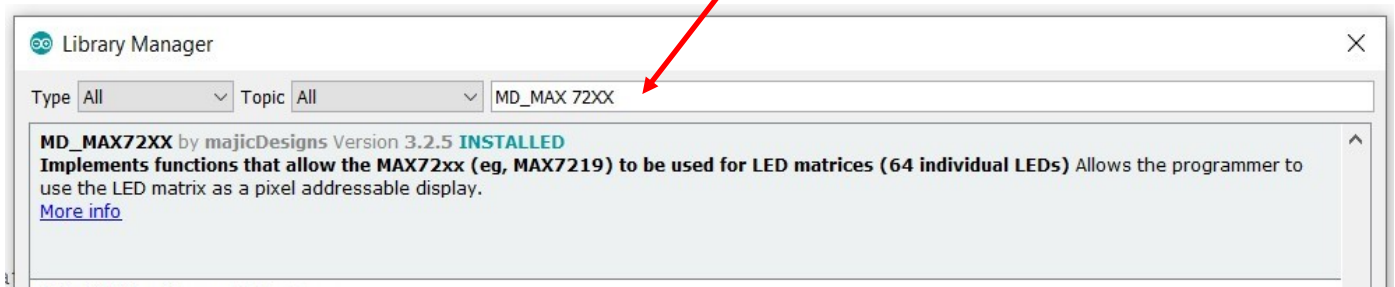
- A Max 7219, 4 in 1, Dot Matrix Display or multiple 4 in 1’s linked together.
- An Arduino R3 Uno Microcontroller with the Arduino IDE installed on your Computer & upload Cable.
- 5 Dupont Male connecting leads & a 5 right angle Male header Pins that come with each of the 4 in 1 Displays.

First you need to instal the MD_MAX 72XX Library to your Arduino IDE as below.
Go to Sketch > Include Library > Manage Libraries > install MD_MAX 72XX by majicDesigns

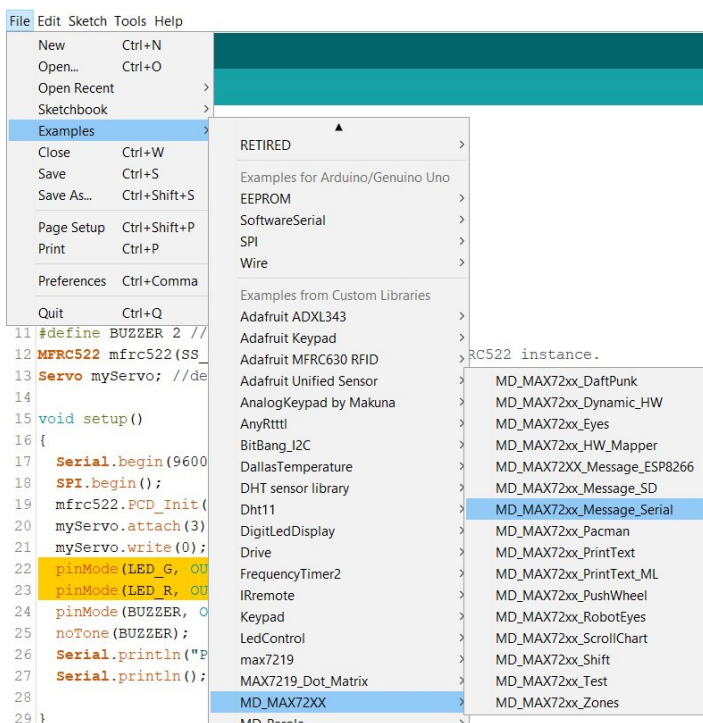


(Continued page 2)

Type in MD_MAX 72XX and push INSTALL button



- Once the MD_MAX72XX library is installed in your IDE, go to File > Examples > MD_MAX 72XX > MD_MAX72XX_Message_Serial to open the Sketch to display Scrolling Text.
- Selecting "MD_MAX72XX_PrintText" will display static Text, try the Pacman sketch or some of the other sketches.



To display your text you need to change 6 things in the Example sketches above ie (Message_Serial)

- Note some line numbers may be different to the examples below, seek the text as described in screenshots.

- 1-line 22,the #define HARDWARE_TYPE MD_MAX72XX::PAROLA_HW to ::DR1CR0RR0_HW (Note 0 are zero's)

```
22 #define HARDWARE_TYPE MD_MAX72XX::PAROLA_HW
to 22 #define HARDWARE_TYPE MD_MAX72XX::DR1CR0RR0_HW
```

- 2 -line 23, #define MAX_DEVICES 11 to 4, 8, 12, 16 etc. (ie the number of individual 8 x 8 displays you have)

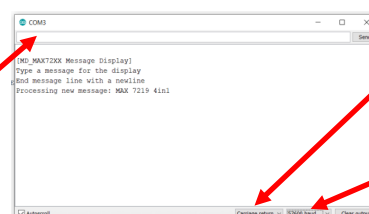
```
23 #define MAX_DEVICES 11
to 23 #define MAX_DEVICES 4
```

- 3 - line 45, change the " Hello! " message to your own message ie " Hi, hope you have found this info easy to follow" then save. If you don't save this new message, your message will revert to Hello! each time you open the sketch.

```
45 uint8_t curMessage[BUF_SIZE] = { "Hello! " };
```

- 4 - Ensure your Uno is connected & powered up.

go to Tools > Serial Monitor > change the Baud rate to 57,600 & Carriage Return to Newline. This enables you to write your new message directly in the serial monitor dialogue box, then push the Send button, to display it on your 4 in 1 Display.



Change Carriage Return to Newline

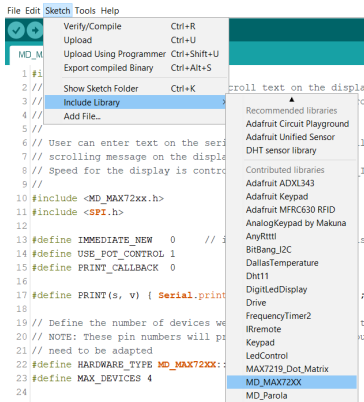
Change Baud Rate 9,600 to 57,600

- 5 - Ensure the Code in the sketch has CLK_PIN 13, DATA_PIN 11 (DIN), CS_PIN 10, the Uno connecting pins.

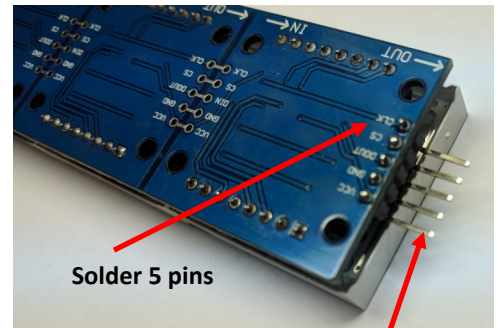
```
25 #define CLK_PIN 13 // or CLK
26 #define DATA_PIN 11 // or DIN
27 #define CS_PIN 10 // or CS
```

- 6 - Add the previously installed Library to your adjusted sketch. Note the previous line numbers will increase with this addition.

Go to Sketch > include Library > MD_MAX72XX



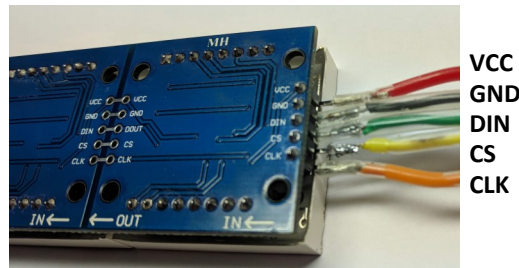
- Now that you have adjusted the software sketch Code, you need to complete the Hardware Build of the Uno & the 4 in 1 Display. Insert the right angled male header pin that comes with the 4 in 1 Display, to the right hand end (IN) of the 4 in 1, as below and solder. **NOTE—Only if using multiple 4 in 1's, on the other end (OUT), once a second 5 pin angled header pin is installed & soldered, you will need to get a pair of pointy nose pliers and carefully up turn the pins vertically to attach to the next 4 in 1, and then solder.**



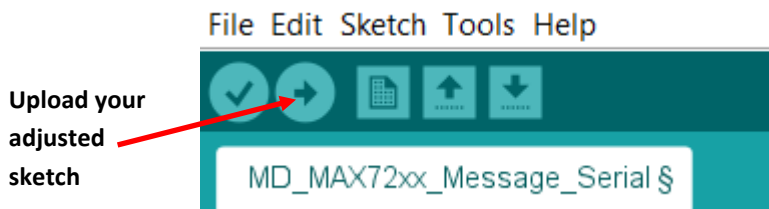
Note - Only if using multiple 4 in 1 Displays.

Insert then bend 5 pins up vertically on the other end (OUT) to insert in the next 4 in 1, if using multiple 4 in 1's, then solder.

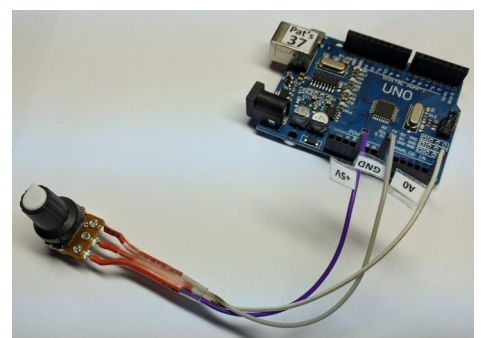
- Attach 5 Dupont male headers to VCC(+5V), GND (0V), DIN to pin D11, CS to pin D10, CLK to pin D13 from the 4 in 1 to the Arduino Uno.



- Once attached to your Arduino Uno, upload your adjusted sketch and test to see if you successfully get your scrolling text.



- Extension Work** - Using the same scrolling sketch Code and by adding a 10 K potentiometer as shown, your can fasten up or slow down the travel of your scrolling Text, by the turn of the Potentiometer Knob.



- CONGRATULATIONS for Coding and Building your 4 in 1, MAX7219 Display. Go back and upload other Examples listed ie Print Text, Pacman etc.**