

## Arduino: displej 20x4 s I2C

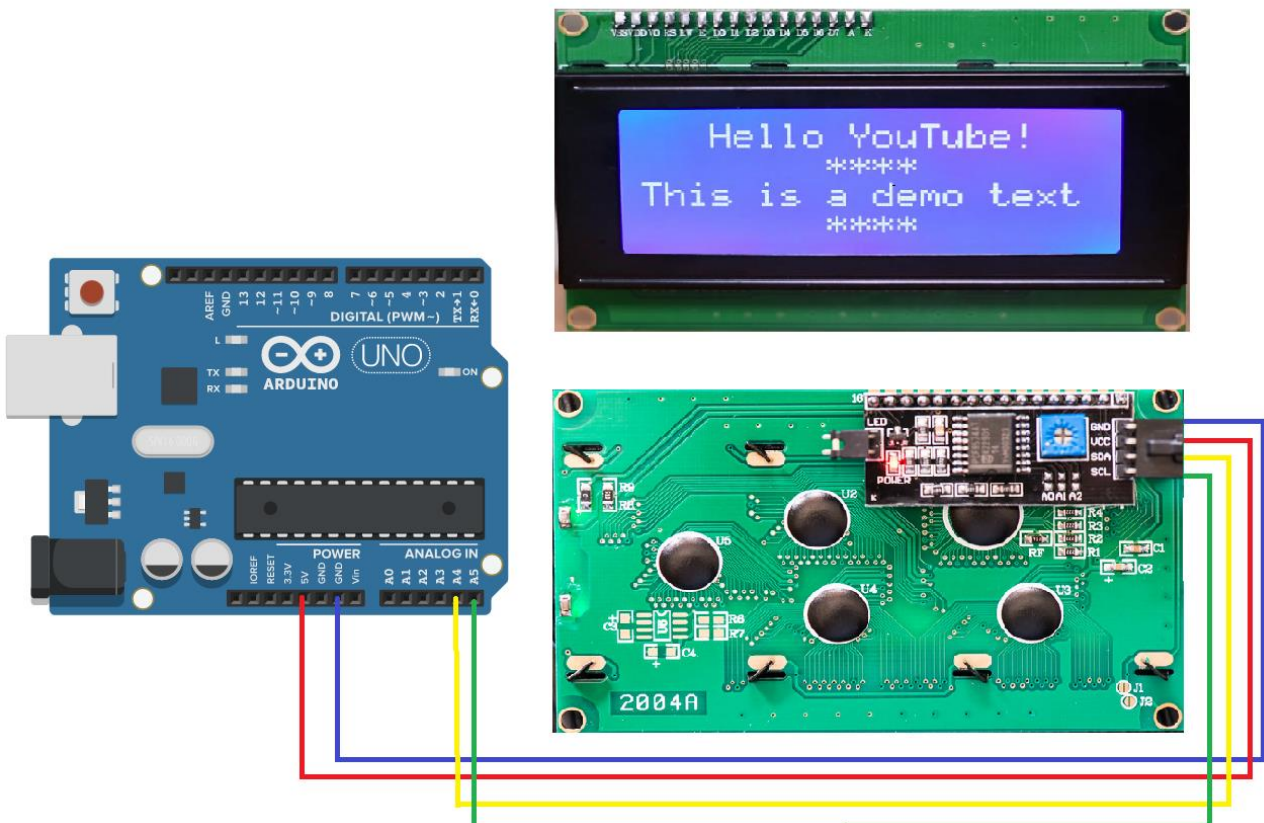
**LCD displej 20x4 s I2C** je podobný displeju 16x2. Taktiež sa ovláda cez zbernicu I2C, čiže na komunikáciu s displejom sú potrebné iba 2 dátové kolíky SDA (pin A4) a SCL (pin A5). Okrem toho sa samozrejme pripája GND a +5V.

Podsvietenie LED môže byť vypnuté vytiahnutím prepajky, adresa môže byť nastavená pomocou jumperu adresy odpojením alebo skrátením spájkových plôch. Z výroby je adresa nastavená na hodnotu 0x27 alebo 0x3F. Kontrast je nastaviteľný pomocou potenciometra.

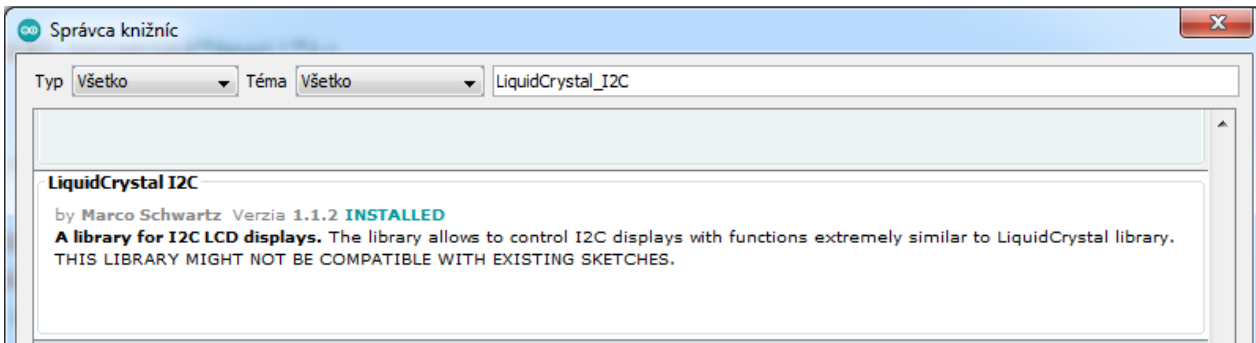


### 1. Schéma zapojenia

|        |             |
|--------|-------------|
| UNO R3 | LCD2004_IIC |
| GND    | GND         |
| +5V    | VCC         |
| A4     | SDA         |
| A5     | SCL         |



## 2. Potrebne kniznice



Najprv zistíme adresu displeja pomocou programu I2C scanner:

```
#include <Wire.h> //include Wire.h library

void setup()
{
  Wire.begin(); // Wire communication begin
  Serial.begin(9600); // The baudrate of Serial monitor is set in 9600
  while (!Serial); // Waiting for Serial Monitor
  Serial.println("\nI2C Scanner");
}

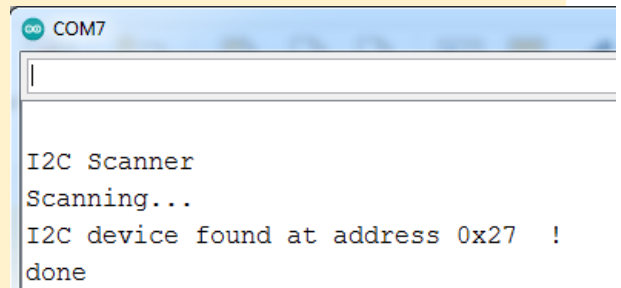
void loop()
{
  byte error, address; //variable for error and I2C address
  int nDevices;

  Serial.println("Scanning...");

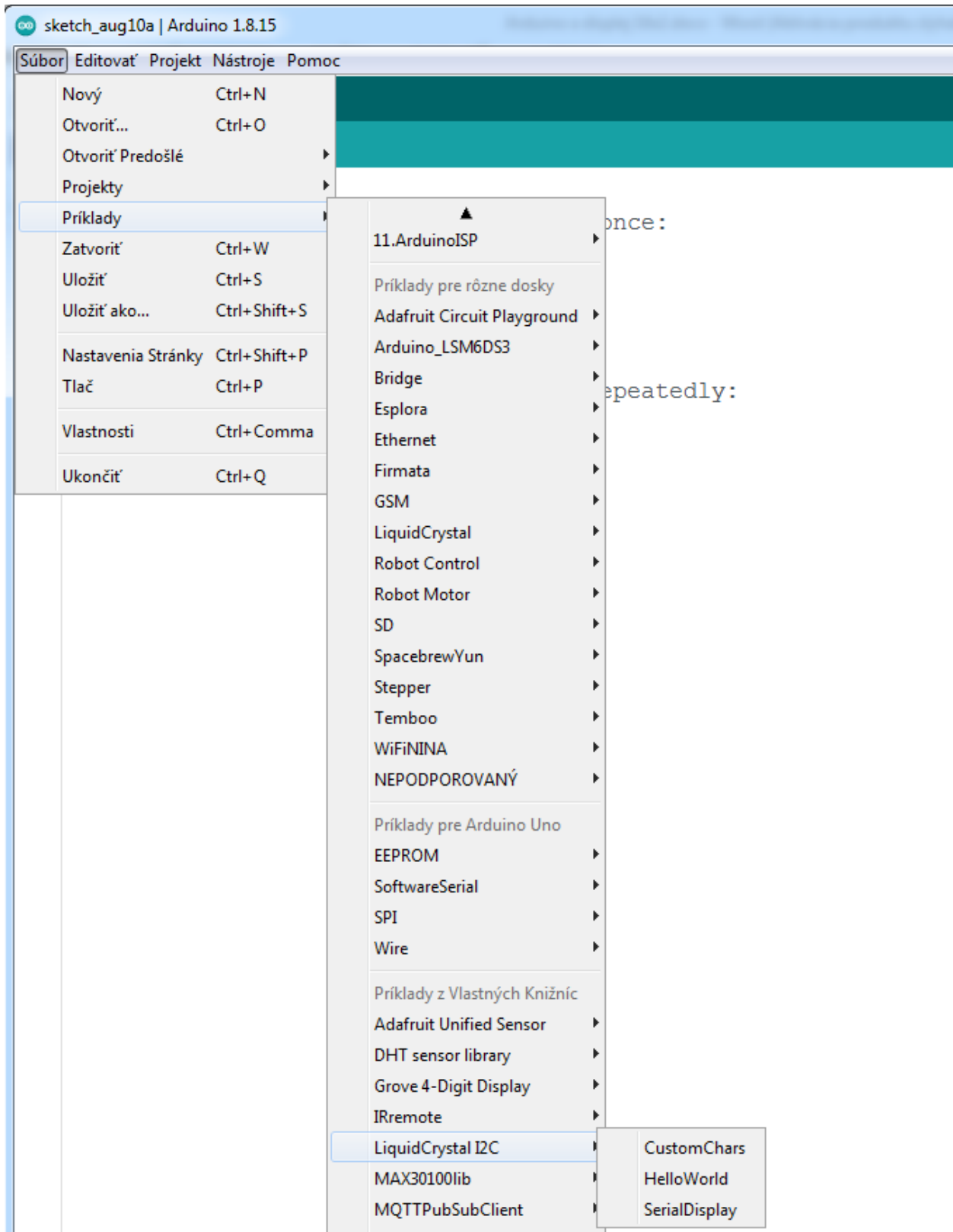
  nDevices = 0;
  for (address = 1; address < 127; address++ )
  {
    // The i2c_scanner uses the return value of
    // the Write.endTransmission to see if
    // a device did acknowledge to the address.
    Wire.beginTransmission(address);
    error = Wire.endTransmission();

    if (error == 0)
    {
      Serial.print("I2C device found at address 0x");
      if (address < 16)
        Serial.print("0");
      Serial.print(address, HEX);
      Serial.println(" !");
      nDevices++;
    }
    else if (error == 4)
    {
      Serial.print("Unknown error at address 0x");
      if (address < 16)
        Serial.print("0");
      Serial.println(address, HEX);
    }
  }
  if (nDevices == 0)
    Serial.println("No I2C devices found\n");
  else
    Serial.println("done\n");

  delay(5000); // wait 5 seconds for the next I2C scan
}
```



Po nainštalovaní knižnice LiquidCrystal\_I2C.h sú v sekcii Príklady k dispozícii 3 vzorové programy:

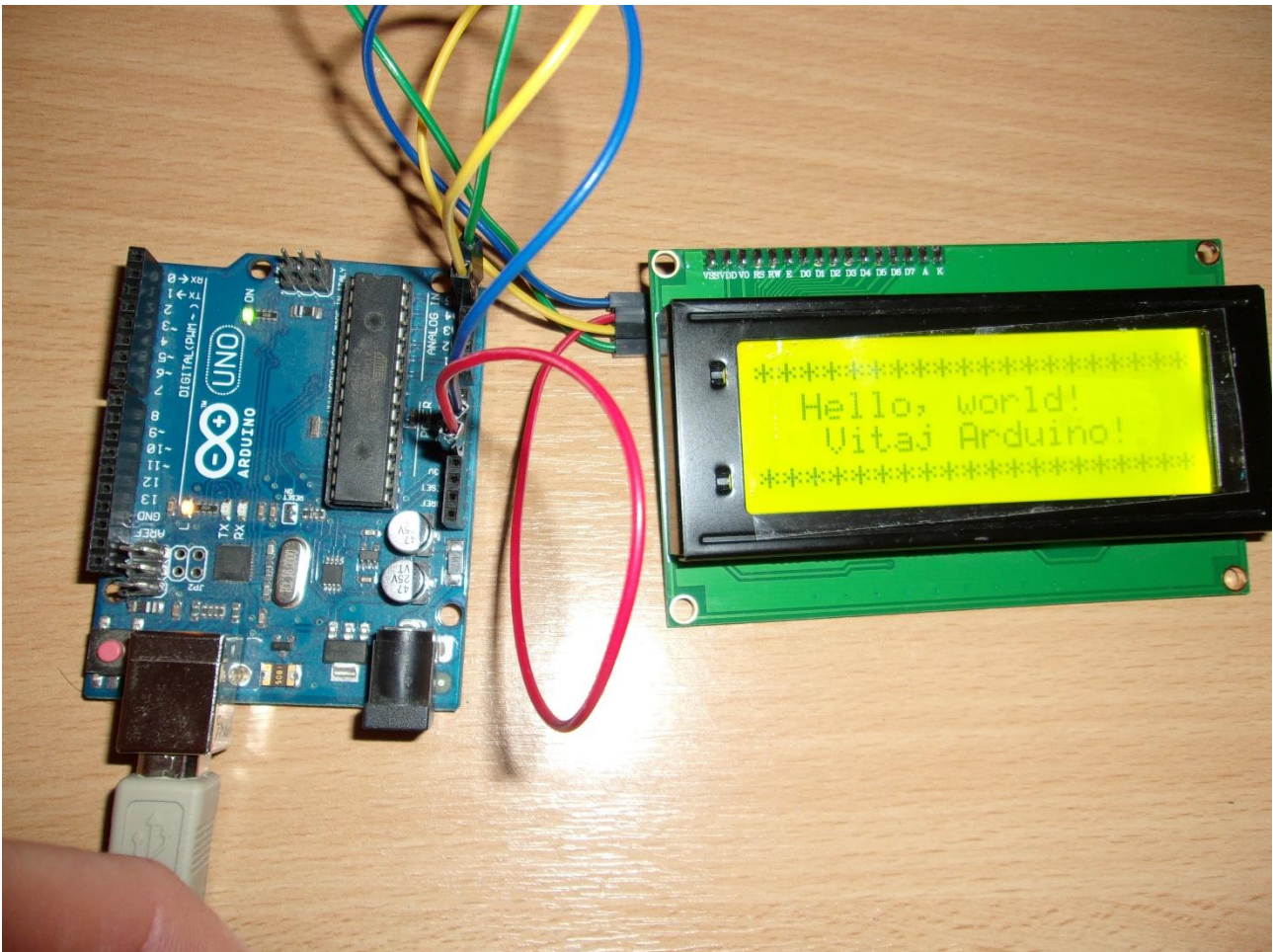


### 3. Upravený program Hello world

```
#include <Wire.h>
#include <LiquidCrystal_I2C.h>
// set the LCD address to 0x27 for a 16 chars and 2 line display
LiquidCrystal_I2C lcd(0x27,16,2);

void setup()
{
  lcd.init();                // initialize the lcd
  lcd.backlight();
  lcd.setCursor(0,0);
  lcd.print("*****");
  lcd.setCursor(2,1);
  lcd.print("Hello, world!");
  lcd.setCursor(3,2);
  lcd.print("Vitaj Arduino!");
  lcd.setCursor(0,3);
  lcd.print("*****");
}

void loop()
{
}
```



Programovanie displeja 20x4 je analogicke programovaniu displejov 16x2, 20x2 s I2C busom.