

Autor: Rafael Guimarães / 12-Out-2016 / São Paulo / Nublado / 25°C / 40%UR

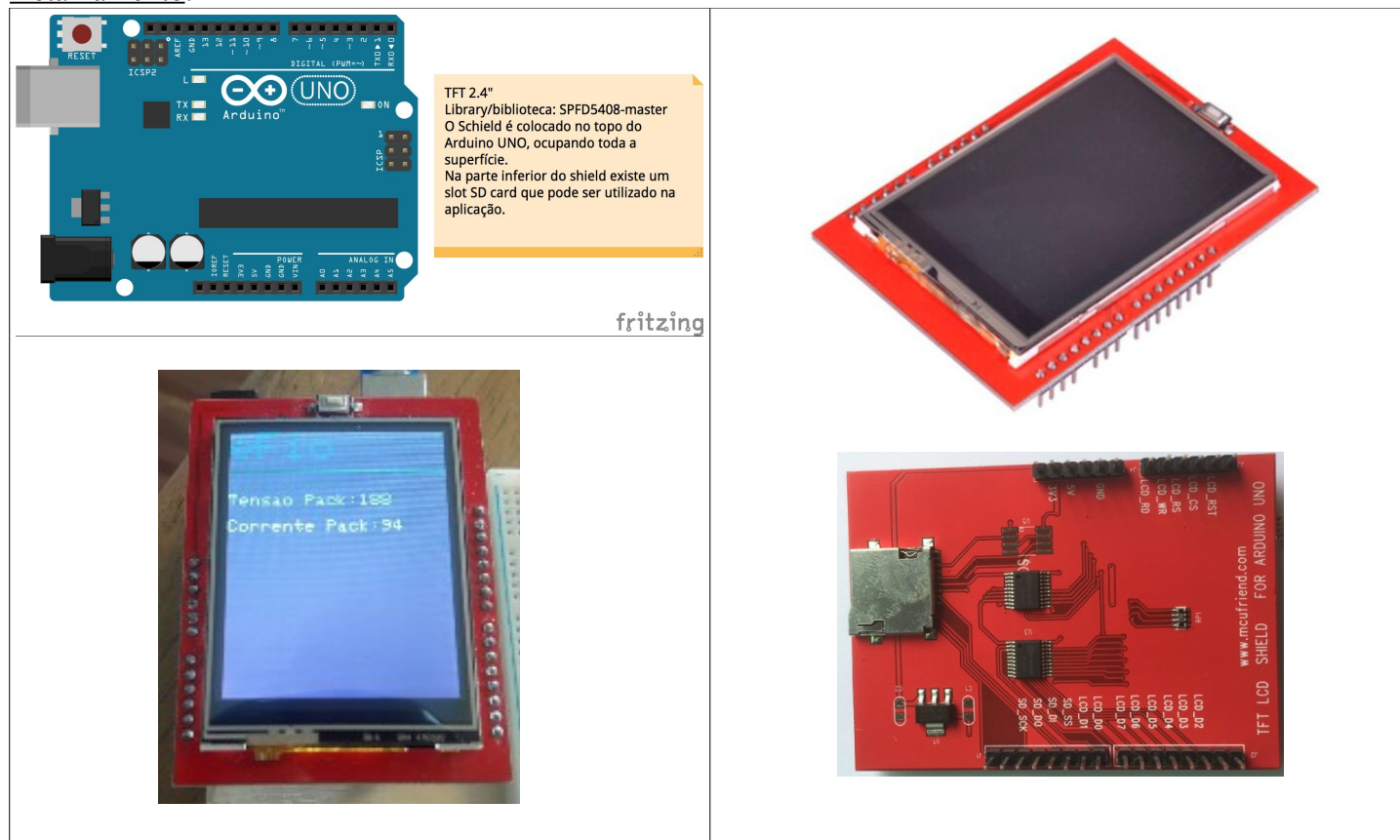
Nome do Projeto: “TFT 2.4” / (Direitos autorais: Creative Commons)

Megafoco: (X) educação () ecologia () auto-organização

VAMOS: Realizar a configuração básica do display colorido TFT de 2.4 polegadas e mostrar o valor de uma variável analógica na tela. Algumas informações iremos imprimir na serial para ir acompanhando.

NÃO VAMOS: configurar o toque na tela e nem a funcionalidade SD card

Detalhamento:



Custos: Vamos precisar da seguinte lista de componentes

Peça	Custo total de aquisição	Fornecedor
Arduino Uno R3 (ou clone)	R\$ 33,00	Mercado Livre
TFT 2.4”	R\$ 11,38	AliExpress
Total	R\$ 44,38	-

Detalhamento dos Sensores:

TFT LCD: A sigla é “Thin Film Transistor Liquid-Crystal Display” que em tradução livre para o português seria “Mostrador de Cristal Líquido” e “Transistor de Camada Fina”

Para maiores informações técnicas veja em https://en.wikipedia.org/wiki/Thin-film-transistor_liquid-crystal_display

Nossa montagem: 12.Out.2016

Observações do uso / Foto:

Youtube: Canal <https://www.youtube.com/channel/UCmEgOeo6UQiMmfNwMCK8g8Q>

Folha de Projeto (Versão 1 – 22.09.2016)

Código fonte:

```
//Projeto de Rafael Guimaraes
//12-Out-2016
//Dados da biblioteca e do código fonte original abaixo (original em ingles)

// IMPORTANT: Adafruit_TFTLCD LIBRARY MUST BE SPECIFICALLY
// CONFIGURED FOR EITHER THE TFT SHIELD OR THE BREAKOUT BOARD.
// SEE RELEVANT COMMENTS IN Adafruit_TFTLCD.h FOR SETUP.
// Modified for SPFD5408 Library by Joao Lopes
// Version 0.9.2 - Rotation for Mega and screen initial

#define VERSAO "Versao 12-Out-2016"
#define AUTOR "Rafael Guimaraes"

// *** SPFD5408 change -- Begin
#include <SPFD5408_Adafruit_GFX.h> // Core graphics library
#include <SPFD5408_Adafruit_TFTLCD.h> // Hardware-specific library
#include <SPFD5408_TouchScreen.h>
// *** SPFD5408 change -- End

// The control pins for the LCD can be assigned to any digital or
// analog pins...but we'll use the analog pins as this allows us to
// double up the pins with the touch screen (see the TFT paint example).

#define LCD_CS A3 // Chip Select goes to Analog 3
#define LCD_CD A2 // Command/Data goes to Analog 2
#define LCD_WR A1 // LCD Write goes to Analog 1
#define LCD_RD A0 // LCD Read goes to Analog 0
#define LCD_RESET A4 // Can alternately just connect to Arduino's reset pin

// When using the BREAKOUT BOARD only, use these 8 data lines to the LCD:
// For the Arduino Uno, Duemilanove, Diecimila, etc.:
// D0 connects to digital pin 8 (Notice these are
// D1 connects to digital pin 9 NOT in order!)
// D2 connects to digital pin 2
// D3 connects to digital pin 3
// D4 connects to digital pin 4
// D5 connects to digital pin 5
// D6 connects to digital pin 6
// D7 connects to digital pin 7
// For the Arduino Mega, use digital pins 22 through 29
// (on the 2-row header at the end of the board).

// Assign human-readable names to some common 16-bit color values:
#define BLACK 0x0000
#define BLUE 0x001F
#define RED 0xF800
#define GREEN 0x07E0
#define CYAN 0x07FF
#define MAGENTA 0xF81F
#define YELLOW 0xFFE0
#define WHITE 0xFFFF

Adafruit_TFTLCD tft(LCD_CS, LCD_CD, LCD_WR, LCD_RD, LCD_RESET);
// If using the shield, all control and data lines are fixed, and
// a simpler declaration can optionally be used:
// Adafruit_TFTLCD tft;

// -- Setup

//Cartao SD
// pin definition for the Uno
// #define sd_cs 4
// #include <SD.h>
```

```

void setup(void) {

  Serial.begin(9600);

  //Cartao SD
  // try to access the SD card. If that fails (e.g.
  // no card present), the setup process will stop.
  /*Serial.print(F("Initializing SD card..."));
  if (!SD.begin(sd_cs)) {
    Serial.println(F("failed!"));
    return;
  }
  Serial.println(F("OK!"));
  */

  //tela
  progmemPrintln(PSTR("Teste do TFT"));
  tft.reset();
  tft.begin(0x9341); // SDFP5408
  tft.setRotation(2); // Need for the Mega, please changed for your choice or rotation initial
  progmemPrint(PSTR("Screen fill          "));
  Serial.println(testFillScreen());
  //mensagem com versao atual
  tft.setCursor(0, 0);
  tft.setTextColor(WHITE); tft.setTextSize(1);
  tft.println(VERSAO);
  tft.println(AUTOR);
  delay(5000);
}

void loop() {
  // put your main code here, to run repeatedly:
  Serial.println(imprimeTFT());
  delay(5000);
}

unsigned long testFillScreen() {
  unsigned long start = micros();
  tft.fillScreen(BLACK);
  tft.fillScreen(WHITE);
  tft.fillScreen(BLUE);
  tft.fillScreen(WHITE);
  tft.fillScreen(BLACK);
  return micros() - start;
}

unsigned long imprimeTFT() {
  int sensor = analogRead(A5);

  tft.fillScreen(BLACK);
  unsigned long start = micros();
  tft.setCursor(0, 0);
  tft.setTextColor(BLUE); tft.setTextSize(5);
  tft.println("eFio");
  tft.drawFastHLine(0, 50 , tft.width(), GREEN);
  tft.println();

  if (sensor>400){
    tft.setTextColor(RED);
  }
  else tft.setTextColor(WHITE);

  tft.setTextSize(2);
  tft.print("Tensao Pack:");
  tft.println(sensor);
  tft.println();
  tft.print("Corrente Pack:");
}

```

```
tft.println(sensor/2);
tft.println();
//return micros() - start;
return sensor;
}

// Copy string from flash to serial port
// Source string MUST be inside a PSTR() declaration!
void progmemPrint(const char *str) {
  char c;
  while(c = pgm_read_byte(str++)) Serial.print(c);
}

// Same as above, with trailing newline
void progmemPrintln(const char *str) {
  progmemPrint(str);
  Serial.println();
}
```