

Arduino Fingerprint Scanner with FPM10A Module

The FPM10A is a fingerprint scanner module that can be interfaced with Arduino for biometric applications. Here's a guide to get you started:

Hardware Setup

Components Needed:

- Arduino board (Uno, Nano, Mega, etc.)
- FPM10A fingerprint module
- Jumper wires
- Breadboard (optional)

Wiring Connections:

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FPM10A Pin -> Arduino Pin

VCC -> 5V

GND -> GND

TX -> RX (Digital Pin 0 - but see note below)

RX -> TX (Digital Pin 1 - but see note below)

Important Note: Using Arduino's hardware serial (pins 0 and 1) will conflict with USB communication. For better results:

1. Use SoftwareSerial with other pins (recommended)
2. Or disconnect RX/TX while uploading code

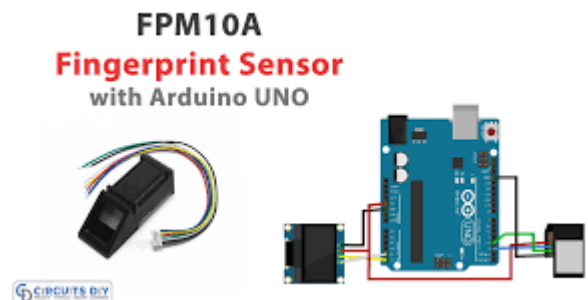
Software Implementation

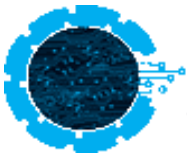
Required Libraries:

- Adafruit Fingerprint Sensor Library (install via Arduino Library Manager)

Basic Example Code:

cpp





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```
#include <SoftwareSerial.h>

#include <Adafruit_Fingerprint.h>

// Set up software serial

SoftwareSerial mySerial(2, 3); // RX, TX

Adafruit_Fingerprint finger = Adafruit_Fingerprint(&mySerial);

void setup() {

  Serial.begin(9600);

  while (!Serial); // For Leonardo/Micro/Zero

  Serial.println("\n\nAdafruit Fingerprint sensor enrollment");

  // Set the data rate for the sensor serial port

  finger.begin(57600);

  if (finger.verifyPassword()) {

    Serial.println("Found fingerprint sensor!");

  } else {

    Serial.println("Did not find fingerprint sensor :(");

    while (1) { delay(1); }

  }

}
```



```
void loop() {

    Serial.println("Ready to enroll a fingerprint!");

    Serial.println("Please type in the ID # (from 1 to 127) you want to save  
this finger as...");

    int id = 0;

    while (true) {

        while (!Serial.available());

        char c = Serial.read();

        if (!isdigit(c)) break;

        id *= 10;

        id += c - '0';

    }

    Serial.print("Enrolling ID #");

    Serial.println(id);

    while (!getFingerprintEnroll(id));

}

uint8_t getFingerprintEnroll(int id) {

    int p = -1;

    Serial.print("Waiting for valid finger to enroll as #");
    Serial.println(id);

    while (p != FINGERPRINT_OK) {

        p = finger.getImage();

    }

}
```



ARDUINO FINGER SCANNER FPM10A

```
switch (p) {

    case FINGERPRINT_OK:

        Serial.println("Image taken");

        break;

    case FINGERPRINT_NOFINGER:

        Serial.println(".");

        break;

    case FINGERPRINT_PACKETRECEIVEERR:

        Serial.println("Communication error");

        break;

    case FINGERPRINT_IMAGEFAIL:

        Serial.println("Imaging error");

        break;

    default:

        Serial.println("Unknown error");

        break;

}

}

// Other enrollment steps would follow here...

// (image conversion, feature extraction, template storage)

}
```

Common Functions

1. **Enroll Fingerprint:** Store a new fingerprint template
2. **Search Database:** Check if a fingerprint matches stored templates
3. **Delete Fingerprint:** Remove a stored template

4. **Empty Database:** Clear all stored fingerprints

Troubleshooting

1. **No Communication:**

- Check wiring connections
- Verify baud rate settings
- Ensure you're not using hardware serial while uploading code

2. **Poor Image Quality:**

- Clean the sensor surface
- Ensure finger is placed flat on the sensor
- Try different finger pressure

3. **Library Issues:**

- Make sure you have the latest version of the Adafruit library
- Check for Arduino board compatibility