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› DollaTek JM-101 Optical Blue Light Fingerprint Sensor Module User Manual

DollaTek JM-101

DollaTek JM-101 Optical Blue Light Fingerprint Sensor Module

Model: JM-101 | Brand: DollaTek

PRODUCT OVERVIEW

The DollaTek JM-101 Fingerprint Sensor Module is an integrated optical fingerprint processing unit designed for various applications, including security and access control systems. It combines optical path and fingerprint processing components into a compact and efficient module. This manual provides essential information for setting up, operating, and maintaining your JM-101 sensor module, particularly for use with platforms like Arduino Uno R3.

Key Features

- Integrated optical path and fingerprint processing for efficient operation.
- Compact size and low power consumption, suitable for embedded projects.
- Simple interface for ease of integration.
- High reliability and fast recognition speed for quick authentication.
- Good adaptability to both wet and dry fingers, enhancing usability.
- High-speed fingerprint search capability for large databases.
- Communication interface: USB and UART for versatile connectivity.
- Dimensions: 23.3 x 20.3 x 48.1 mm.

TECHNICAL SPECIFICATIONS

Specification	Value
Power Supply Voltage	DC 3.3V
Operating Current	<60 mA
Peak Current	<60mA
Fingerprint Image Entry Time	<1.0 seconds
Window Area	15.3 × 18.2 mm
Resolution	500 dpi
Communication Interface	USB, UART
Dimensions	23.3 x 20.3 x 48.1 mm
Weight	20 grams

SETUP AND CONNECTION

Pinout Description

The JM-101 module typically uses a 6-pin connector. The wires are color-coded for easier identification. Refer to the image below for common pin assignments.



Image: DollaTek JM-101 Fingerprint Sensor Module with multi-colored connecting wires.

- **Red wire:** Power (typically 5V, though the module operates at 3.3V logic).
- **Black wire:** Ground (GND).
- **Yellow wire:** RX (Receive data from the sensor, connect to Arduino TX).
- **White wire:** TX (Transmit data from the sensor, connect to Arduino RX).

Note: Some users report successful operation by connecting the yellow wire to Arduino digital pin 2 and the white wire to Arduino digital pin 3. Always verify with the module's specific datasheet or project requirements. If your Arduino operates at 5V, a logic level shifter may be required for reliable communication on the TX/RX lines.

Connecting to Arduino Uno R3

1. Connect the **Red** wire from the sensor to the **5V** pin on your Arduino Uno R3.
2. Connect the **Black** wire from the sensor to a **GND** pin on your Arduino Uno R3.
3. Connect the **Yellow** wire (sensor RX) to a digital pin on your Arduino (e.g., **Pin 2**). This pin will act as the Arduino's TX for software serial communication.
4. Connect the **White** wire (sensor TX) to another digital pin on your Arduino (e.g., **Pin 3**). This pin will act as the Arduino's RX for software serial communication.

Software Setup

To utilize the fingerprint sensor with your Arduino, you will need to install a compatible library. The Adafruit Fingerprint Sensor Library is a widely used option.

1. Open the Arduino IDE.

2. Go to Sketch > Include Library > Manage Libraries....
3. In the Library Manager, search for "Adafruit Fingerprint Sensor Library" and install it.
4. Once installed, explore the example sketches provided with the library (e.g., "enroll" and "fingerprint") to begin enrolling and matching fingerprints.

OPERATING INSTRUCTIONS

Fingerprint Enrollment

The enrollment process captures multiple images of a fingerprint to create a robust template for future recognition.

1. Upload the "enroll" example sketch from the Adafruit Fingerprint Sensor Library to your Arduino.
2. Open the Serial Monitor in the Arduino IDE (set to the correct baud rate, usually 9600 or 57600 as specified in the sketch).
3. Follow the on-screen prompts in the Serial Monitor to place your finger on the sensor multiple times. The module will capture and process the images to create a unique fingerprint template.
4. The enrolled fingerprint will be assigned an ID, which is crucial for later matching.

Fingerprint Matching (Verification - 1:1 Mode)

After enrollment, the module can verify a presented fingerprint against a specific stored template.

1. Upload the "fingerprint" example sketch (or a custom sketch for 1:1 matching) to your Arduino.
2. Open the Serial Monitor.
3. Place your finger on the sensor. The module will attempt to match the live scan against the stored templates.
4. The Serial Monitor will display whether a match was found and the corresponding fingerprint ID.

Fingerprint Search (Identification - 1:N Mode)

In 1:N mode, the module searches its entire database of stored fingerprints to find a match for the presented finger.

1. Ensure multiple fingerprints are enrolled and stored in the module's memory.
2. Use the appropriate library functions or example sketches designed for 1:N search.
3. Place a finger on the sensor. The module will scan its entire database to identify the user.
4. The result will indicate if a match was found and the ID of the matched fingerprint.

MAINTENANCE

- **Cleaning the Sensor:** Keep the optical sensor surface clean and free from dust, dirt, oils, or moisture. Use a soft, dry, lint-free cloth (e.g., a microfiber cloth) to gently wipe the surface. Avoid abrasive materials or harsh chemicals.
- **Handling:** Avoid touching the optical sensor surface directly with bare hands to prevent smudges and residue buildup, which can affect performance.
- **Environment:** Ensure the module is used in a clean, dry environment. If enclosed, provide adequate ventilation to prevent overheating.
- **Connections:** Periodically check all wiring connections for looseness or damage. Secure any loose connections to ensure stable operation.

TROUBLESHOOTING

Common Issues and Solutions

- **Module not responding:**

- Verify the power supply. The module requires DC 3.3V, but can often be powered by 5V from Arduino.
- Check all wiring connections, especially the TX/RX lines. Ensure the sensor's RX connects to the Arduino's TX, and the sensor's TX connects to the Arduino's RX.
- Confirm the correct serial port and baud rate are selected in the Arduino IDE's Serial Monitor and in your sketch.

- **Poor recognition rate:**

- Ensure the finger is placed flat and centered on the sensor window.
- Try enrolling the same finger multiple times (e.g., 2-3 times) to create a more robust template.
- Clean the sensor surface as described in the Maintenance section.
- Ensure the finger is not excessively wet or dry during both enrollment and verification.

- **LED not lighting up:**

- Check power connections to the module.
- Verify that your code is correctly initializing and interacting with the sensor, including commands to activate the LED.

- **"No finger detected" error:**

- Ensure the finger is firmly pressed against the sensor surface.
- Check for any physical obstructions on the sensor window.
- Verify the sensor is properly powered and connected.

- **Communication errors:**

- If using a 5V Arduino, consider using a logic level shifter for the TX/RX lines if experiencing intermittent communication issues, as the sensor operates at 3.3V logic.
- Double-check baud rate settings in your code and the Serial Monitor to ensure they match.

PRODUCT IMAGES AND VIDEOS

Product Images



Image: DollaTek JM-101 Optical Blue Light Fingerprint Sensor Module, front view.



Image: DollaTek JM-101 Fingerprint Sensor Module with its multi-colored connecting wires.

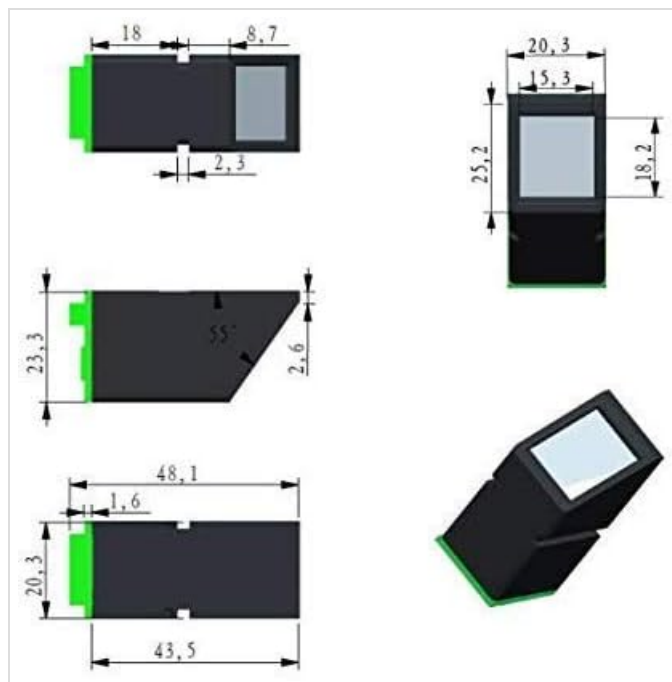


Image: Dimensional drawing of the DollaTek JM-101 Fingerprint Sensor Module, showing various measurements.

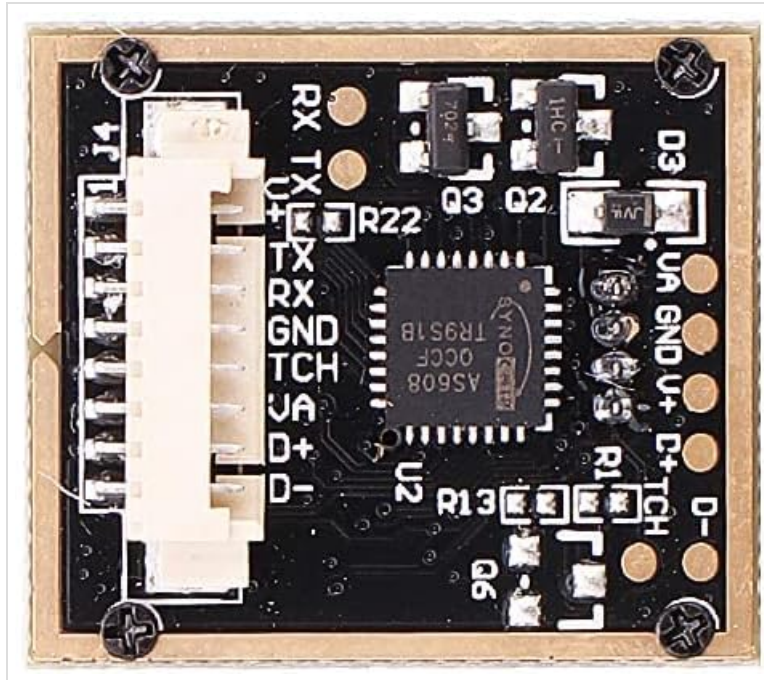


Image: Rear view of the DollaTek JM-101 Fingerprint Sensor Module, exposing the printed circuit board (PCB) and connector.

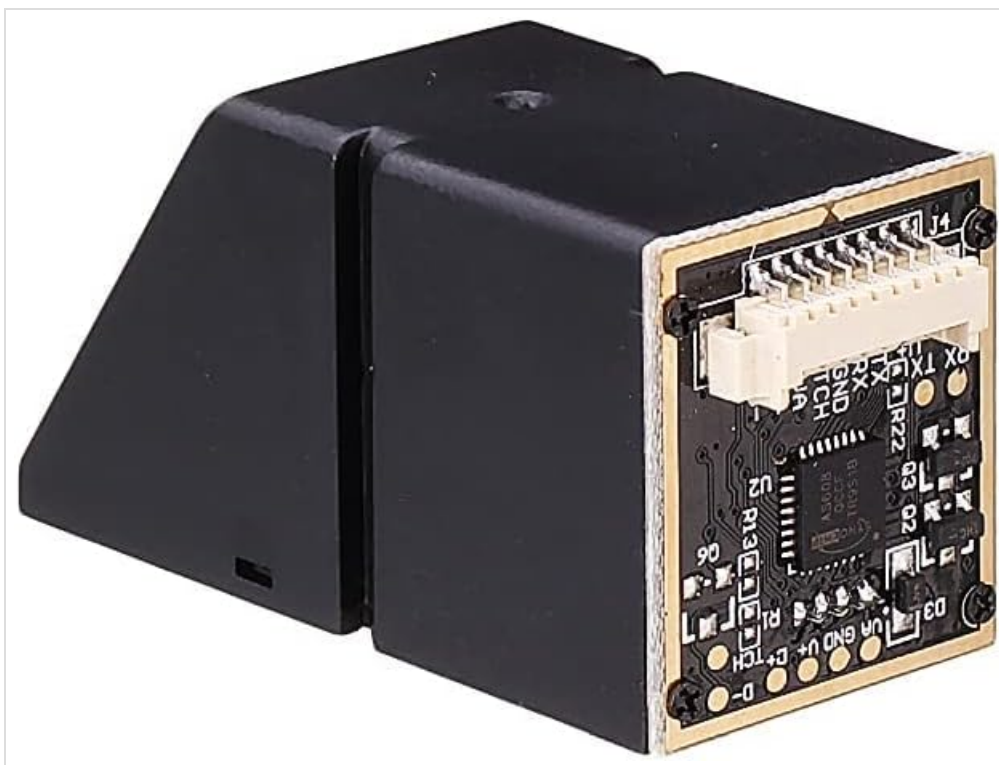


Image: Side view of the DollaTek JM-101 Fingerprint Sensor Module, highlighting its profile.



Image: Another side view of the DollaTek JM-101 Fingerprint Sensor Module, showing the casing details.



Image: Close-up of the multi-colored connector wires, showing the white connector end.

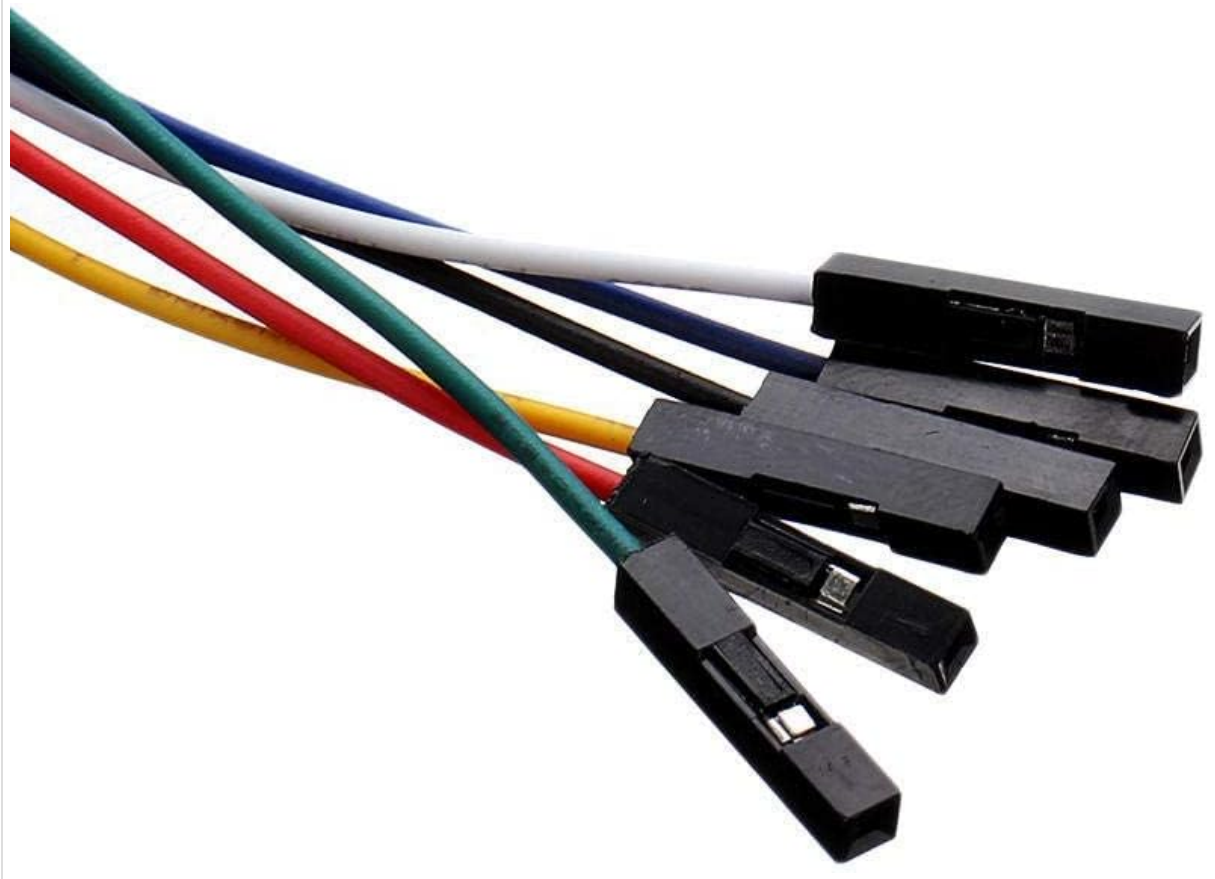


Image: Close-up of the female jumper ends of the connecting wires, ready for connection to a breadboard or microcontroller pins.

Official Product Videos

Video: Product Display Video. This video demonstrates the general functionality of a fingerprint sensor, showing a similar but not identical model. It illustrates the process of placing a finger and the sensor's response.

WARRANTY INFORMATION

Please refer to the manufacturer's official website or your purchase documentation for detailed warranty information regarding the DollaTek JM-101 Optical Blue Light Fingerprint Sensor Module. Warranty terms and conditions may vary based on region and retailer.

TECHNICAL SUPPORT

For technical assistance, troubleshooting, or further inquiries regarding the DollaTek JM-101 Optical Blue Light Fingerprint Sensor Module, please contact DollaTek customer support. You may also visit their official website for additional resources, FAQs, and community forums.