Fingerprint reader R503

Reference: AM1203
EAN13: -
HS code: 85364190

Product attributes:

Length: 15 mm, 19 mm, 32 mm

Product features:

Waterproof grade: IP65

Product description:

The R503 module is a compact, high-precision fingerprint sensor that combines an optical sensor and a powerful fingerprint processing algorithm. Thanks to its fast recognition, large memory capacity, and support for UART (TTL 3.3V) communication, it is suitable for integration into access control systems, control boards (e.g. K202) and other security applications.

Technical specifications

- Power supply: DC 3.3V (main power supply); touch detection: 3-5V
- Scanning current: approx. 20 mA
- Standby current: 2 μA average
- Scanning speed: 0.2 s
- Comparison speed: 1:N 10 ms/fingerprint
- Sensor resolution: 508 dpi
- Sensing area: Ø 15 mm
- Sensor matrix: 192 × 192 px
- Memory capacity: up to 200 fingerprints
- Template size: 1536 bytes
- FAR error rate: 0.001%; FRR: 1%
- Communication: UART (3.3V TTL), default baudrate 57,600 bps
- Working environment: -20 to +60 °C
- Dimensions: diameter 28 mm (inner 25 mm), height 19 mm (also 15 mm/32 mm variants)
- Housing material: zinc alloy (optional black aluminum)

Functions and features

- Support for 1:1 (authentication) and 1:N (database lookup) modes
- Saving fingerprints to the module's internal memory
- Automatic fingerprint learning – six images to create a template
- LED status indication (red, green, blue, white, yellow, purple, turquoise)
- Possibility to change security level (1-5)
- Support for commands for uploading/downloading templates, verifying, and deleting the database
- Handshake, reset and sensor diagnostics functions
- Low consumption – suitable for energy-saving systems

Ideal for

- Control boards (e.g. K202) and access systems
- Electronic locks and security devices
- Attendance and identification systems
- IoT projects and embedded devices

Package contents

- Fingerprint sensor R503
- Cable with SH connector 1.0 mm (6 pins)
- User manual

Why choose this product?

- Compact and robust design (zinc alloy)
- Fast and reliable fingerprint recognition
- Easy integration via UART (3.3V TTL)
- Possibility to customize the LED indication
- Supports up to 200 stored fingerprints

Instructions for use

- **1. Connection:** The module is connected via a 1.0 mm SH connector (6 pins).
    - Pin 1: VCC (3.3V)
    - Pin 2: GND
    - Pin 3: TXD (data output, connect to RX of host)
    - Pin 4: RXD (data input, connect to TX of host)
    - Pin 5: WAKEUP (signal output when finger is detected)
    - Pin 6: 3.3-5V (touch detection power)
- **2. Fingerprint registration (AutoEnroll):** Place your finger six times to create a template. The LED indicates the progress (blue - scanning, yellow - image captured successfully, green - template created, red - error).
- **3. Fingerprint verification (AutoIdentify):** The module captures the fingerprint and compares it with the stored database. The result (success/error) is signaled by the LED and sent via UART.
- **4. Database Management:** You can add, delete or completely erase the fingerprint database using commands (Store, Delete, Empty).
- **5. LED indication (AuraLedConfig):** Ability to set the color (red, blue, green, yellow, purple, white, turquoise) and effect (flashing, breathing, constant light).
- **6. Power saving mode:** The module supports low-power mode, where only touch detection is powered (average 2 μA). When a finger touches, it will generate a signal to wake up the host.

Note: When connecting, it is necessary to ensure a stable power supply with low noise (ripple 50 mV). When first starting, the module automatically sends byte 0x55 as a handshake.