



LAMPIRAN

FINGERPRINT SENSOR



Difference Between R305 (Old) and R307 (New)

	R305	R307
Storage Capacity (Fingerprints)	250	1000
3.3V Operation	No	Yes
USB Operation	No	Yes
Finger Detect Output	No	Yes

R307 Fingerprint Module consists of optical fingerprint sensor, high-speed DSP processor, high-performance fingerprint alignment algorithm, high-capacity FLASH chips and other hardware and software composition, stable performance, simple structure, with fingerprint entry, image processing, fingerprint matching, search and template storage and other functions.

Features

- Perfect function: independent fingerprint collection, fingerprint registration, fingerprint comparison (1: 1) and fingerprint search (1: N) function.
- Small size: small size, no external DSP chip algorithm, has been integrated, easy to install, less fault.

- Ultra-low power consumption: low power consumption of the product as a whole, suitable for low-power requirements of the occasion.
- Anti-static ability: a strong anti-static ability, anti-static index reached 15KV above.
- Application development is simple: developers can provide control instructions, self-fingerprint application product development, without the need for professional knowledge of fingerprinting.
- Adjustable security level: suitable for different applications, security levels can be set by the user to adjust.
- Finger touch sensing signal output, low effective, sensing circuit standby current is very low, less than 5uA.

Interface Description

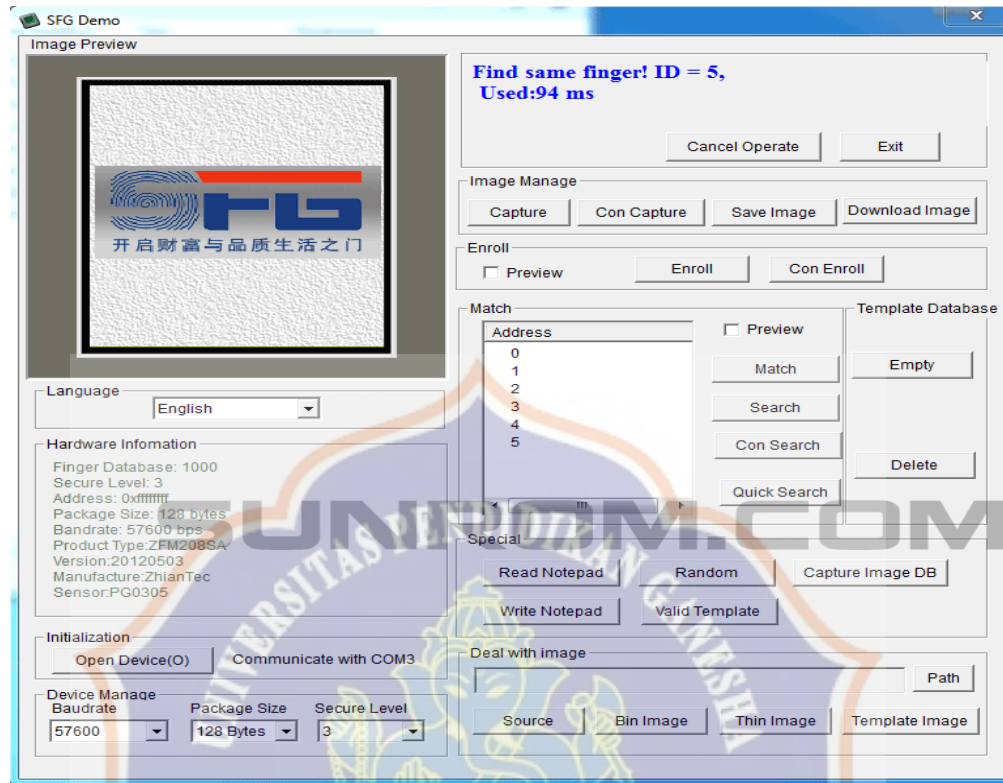
The R307 fingerprint module has two interface TTL UART and USB2.0, USB2.0 interface can be connected to the computer; RS232 interface is a TTL level, the default baud rate is 57600, can be changed, refer to a communication protocol; can And microcontroller, such as ARM, DSP and other serial devices with a connection, 3.3V 5V microcontroller can be connected directly. Needs to connect the computer level conversion, level conversion note, embodiments such as a MAX232 circuit.

Fingerprint module board marked with 3.3V - 2 contacts short circuit, you can use DC3.3V .Technical Parameters

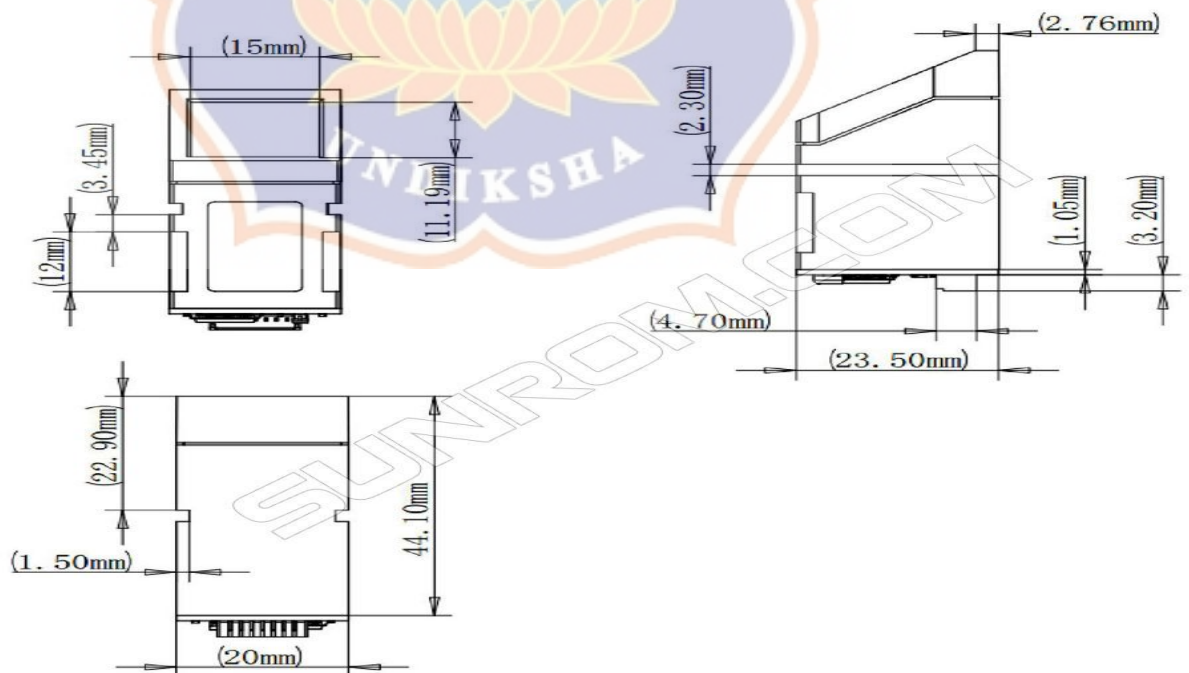
- Supply voltage: DC 4.2 ~ 6.0V
- Supply current: Working current: 50mA (typical) Peak current: 80mA
- Fingerprint image input time: <0.3 seconds
- Window area: 14x18 mm
- Matching method: Comparison method (1: 1)
- Search method (1: N)
- Characteristic file: 256 bytes
- Template file: 512 bytes
- Storage capacity: 1000 pieces
- Security Level: Five (from low to high: 1,2,3,4,5)
- Fake rate (FAR): <0.001%
- Refusal rate (FRR): <1.0%
- Search time: <1.0 seconds (1: 1000 hours, mean value)
- Host interface: UART \ USB1.1
- Communication baud rate (UART): (9600xN) bps Where N = 1 ~ 12 (default N = 6, ie 57600bps)
- Working environment: Temperature: -20 °C - +40 °C Relative humidity: 40% RH-85% RH (no condensation)
- Storage environment: Temperature: -40 °C - +85 °C Relative humidity: <85% H (no condensation)

Suitable for fingerprint lock, fingerprint safes and other purposes.

PC Application



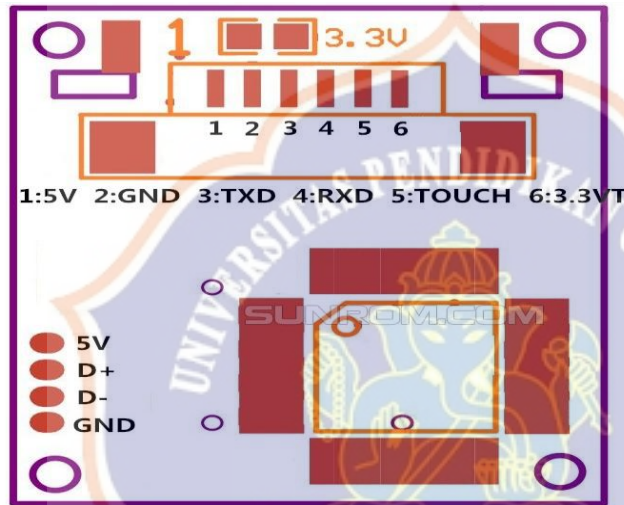
Dimensions



Pinouts

Pin#	Pin Name	Details
1	5V	Regulated 5V DC
2	GND	Common Ground
3	TXD	Data output - Connect to MCU RX
4	RXD	Data Input - Connect to MCU TX
5	TOUCH	Active Low output when there is touch on sensor by finger
6	3.3V	Use this wire to give 3.3V to sensor instead of 5V

USB Cable Connections are 5V/D+/D-/GND (Optional)



Note: We test the product before shipping. We do not provide help related to programming. All details and protocol are given in download. There is no warranty on the module. These can easily get damaged with wrong polarity or high voltage given to it. So be careful before power on. Internal LED does not come or stay on all the time, It only comes on when you give command to read fingerprint.

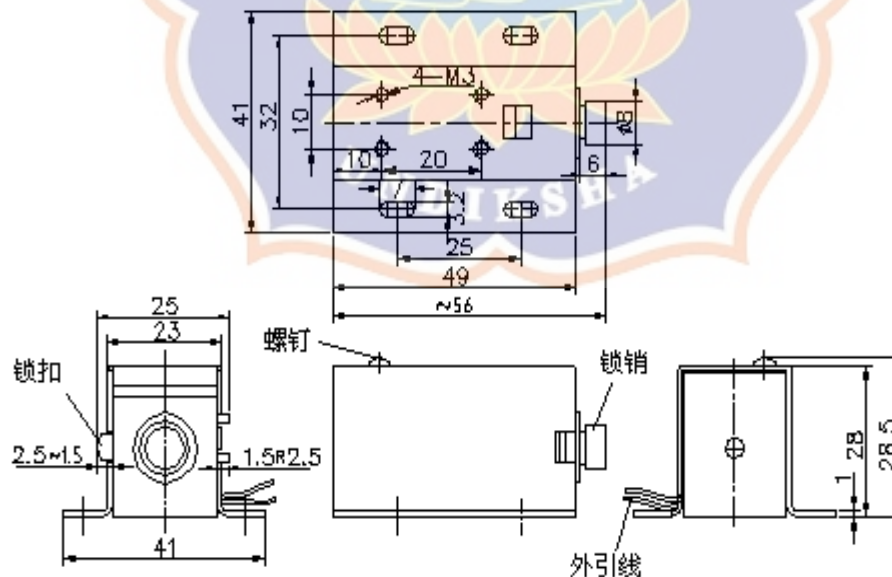
SELENOID DOOR LOCK 12V DC



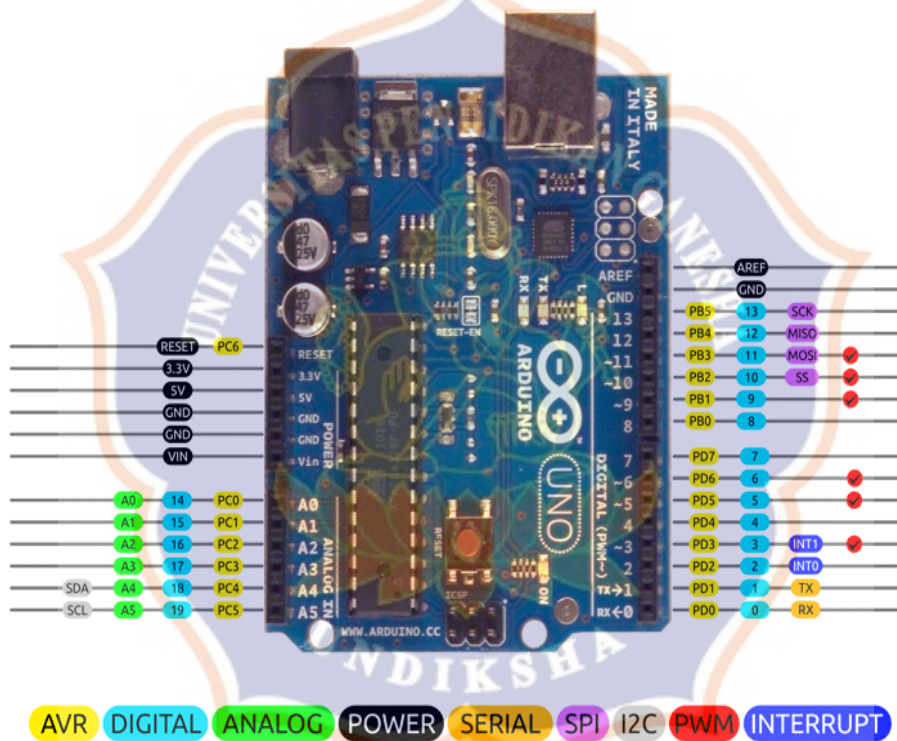
Specification:

- Voltage: 12VDC
- Current: 0.6A
- Size: 53 x 26 x 23mm
- Weight: 142g
- Latch telescopic length: 10mm
- Energized forms: intermittent;
- Unlocking time: 1S
- Continuously energized <10S;
- Temperature: -40 ~ +50
- Applications: Cabinet lock,locker locks,file cabinet locks ,luggage locks,electric locks,door locks,solenoid locks,drawer,newspaper boxes lock ,sauna lock,locker electromagnetic locks,electric locks,newspaper boxes,sauna electronics lock.

Diagram:



ARDUINO UNO



2014 by Bouni
Photo by Arduino.cc

Pin Description

Pin Category	Pin Name	Details
Power	Vin, 3.3V, 5V, GND	Vin: Input voltage to Arduino when using an external power source.
		5V: Regulated power supply used to power microcontroller

		<p>other components on the board.</p> <p>3.3V: 3.3V supply generated by on-board voltage regulator. Maximum current draw is 50mA.</p> <p>GND: ground pins.</p>
Reset	Reset	Resets the microcontroller.
Analog Pins	A0 – A5	Used to provide analog input in the range of 0-5V
Input/Output Pins	Digital Pins 0 – 13	Can be used as input or output pins.
Serial	0(Rx), 1(Tx)	Used to receive and transmit TTL serial data.
External Interrupts	2, 3	To trigger an interrupt.
PWM	3, 5, 6, 9, 11	Provides 8-bit PWM output.
SPI	10 (SS), 11 (MOSI), 12 (MISO) and 13 (SCK)	Used for SPI communication.
Inbuilt LED	13	To turn on the inbuilt LED.
TWI	A4 (SDA), A5 (SCA)	Used for TWI communication.
AREF	AREF	To provide reference voltage for input voltage.

Arduino Uno Technical Specifications

Microcontroller	<u>ATmega328P</u> – 8 bit AVR family microcontroller
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Operating Voltage	5V
Recommended Input Voltage	7-12V
Input Voltage Limits	6-20V
Analog Input Pins	6 (A0 – A5)
Digital I/O Pins	14 (Out of which 6 provide PWM output)
DC Current on I/O Pins	40 mA
DC Current on 3.3V Pin	50 mA
Flash Memory	32 KB (0.5 KB is used for Bootloader)
SRAM	2 KB
EEPROM	1 KB
Frequency (Clock Speed)	16 MHz

Overview

Arduino Uno is a microcontroller board based on 8-bit ATmega328P microcontroller. Along with ATmega328P, it consists other components such as crystal oscillator, serial communication, voltage regulator, etc. to support the microcontroller. Arduino Uno has 14 digital input/output pins (out of which 6 can be used as PWM outputs), 6 analog input pins, a USB connection, A Power barrel jack, an ICSP header and a reset button.

How to use Arduino Board

The 14 digital input/output pins can be used as input or output pins by using pinMode(), digitalRead() and digitalWrite() functions in arduino programming. Each pin operate at 5V and can provide or receive a maximum of 40mA current, and has an internal pull-up resistor of 20-50 KOhms which are disconnected by default. Out of these 14 pins, some pins have specific functions as listed below:

- **Serial Pins 0 (Rx) and 1 (Tx):** Rx and Tx pins are used to receive and transmit TTL serial data. They are connected with the corresponding ATmega328P USB to TTL serial chip.

- **External Interrupt Pins 2 and 3:** These pins can be configured to trigger an interrupt on a low value, a rising or falling edge, or a change in value.
- **PWM Pins 3, 5, 6, 9 and 11:** These pins provide an 8-bit PWM output by using `analogWrite()` function.
- **SPI Pins 10 (SS), 11 (MOSI), 12 (MISO) and 13 (SCK):** These pins are used for SPI communication.
- **In-built LED Pin 13:** This pin is connected with an built-in LED, when pin 13 is HIGH – LED is on and when pin 13 is LOW, its off.

Along with 14 Digital pins, there are 6 analog input pins, each of which provide 10 bits of resolution, i.e. 1024 different values. They measure from 0 to 5 volts but this limit can be increased by using AREF pin with `analogReference()` function.

- Analog pin 4 (SDA) and pin 5 (SCA) also used for TWI communication using Wire library.

Arduino Uno has a couple of other pins as explained below:

- **AREF:** Used to provide reference voltage for analog inputs with `analogReference()` function.
- **Reset Pin:** Making this pin LOW, resets the microcontroller.

Communication

Arduino can be used to communicate with a computer, another Arduino board or other microcontrollers. The ATmega328P microcontroller provides UART TTL (5V) serial communication which can be done using digital pin 0 (Rx) and digital pin 1 (Tx). An ATmega16U2 on the board channels this serial communication over USB and appears as a virtual com port to software on the computer. The ATmega16U2 firmware uses the standard USB COM drivers, and no external driver is needed. However, on Windows, a .inf file is required. The Arduino software includes a serial monitor which allows simple textual data to be sent to and from the Arduino board. There are two RX and TX LEDs on the arduino board which will flash when data is being transmitted via the USB-to-serial chip and USB connection to the computer (not for serial communication on pins 0 and 1). A SoftwareSerial library allows for serial communication on any of the Uno's digital pins. The ATmega328P also supports I2C (TWI) and SPI communication. The Arduino software includes a Wire library to simplify use of the I2C bus.

Arduino Uno to ATmega328 Pin Mapping

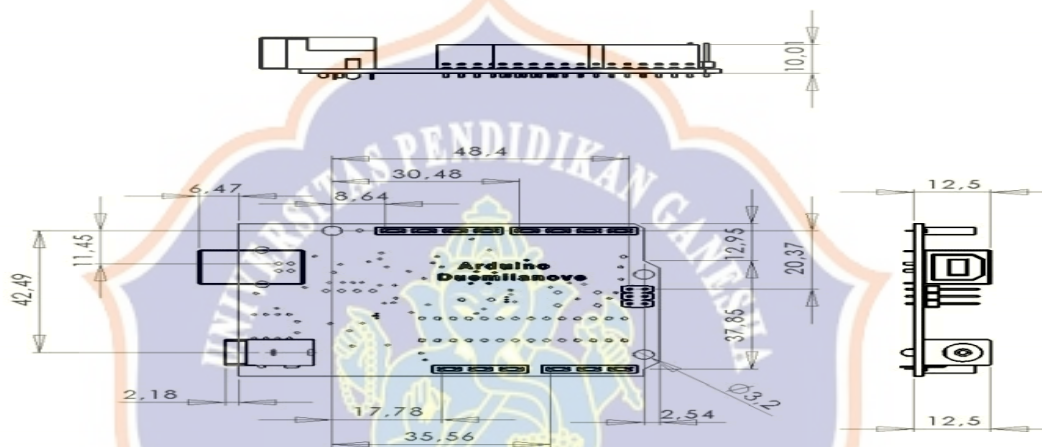
When ATmega328 chip is used in place of Arduino Uno, or vice versa, the image below shows the pin mapping between the two.


```

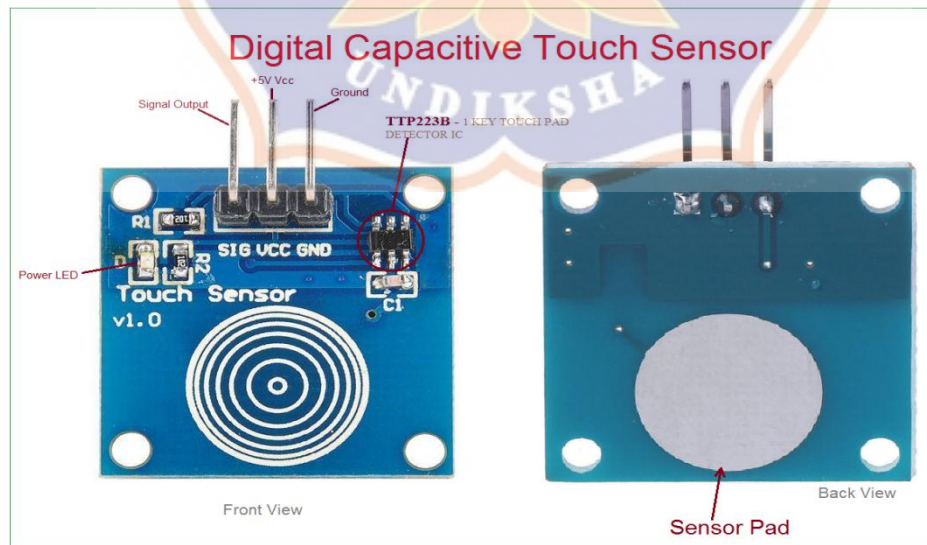
void loop() {
    digitalWrite(LED_BUILTIN, HIGH); // turn the LED on (HIGH is the voltage level)
    delay(1000);                      // wait for a second
    digitalWrite(LED_BUILTIN, LOW);   // turn the LED off by making the voltage LOW
    delay(1000);                      // wait for a second
}

```

Arduino Uno 2D Model



DIGITAL TOUCH SENSOR



- Operating voltage: DC 2.0V ~ 5.5V

- V_{OH} : VCC 0.8V
- V_{OL} : VCC 0.3V
- Sink current: 8mA @ VCC = 3V, V_{OL} = 0.6V
- Source current: -4mA @ VCC = 3V, V_{OH} = 2.4V
- Response time: 220ms (at mode of low power consumption) and 60ms (at quick speed mode)
- Size: 24 x 24 x 7.2mm

