

# Send and Receive Messages using SIM800L with Arduino

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You can **send & receive messages using SIM800L** with Arduino, even can you this GSM module with Arduino to **make calls** as well. In this way you can use this module in locations where you have no internet connection and far away from your spot.

## SIM800L HARDWARE

Most important part of the module is the  **Chip** made by **SIMCom**. Its operating voltage in which it works fine ranges from **3.7 V to 4.4 V** (recommended), but you can use 5 V with some nominal current.

*Note: don't forget to connect ground first then other connection with your Arduino to avoid module damage or make all connections first then power-up the circuit.*

## GSM MODULE SIM800L PINOUT

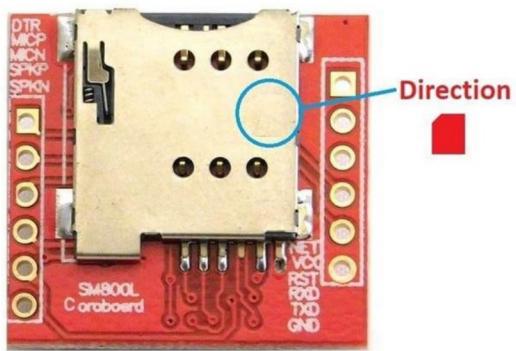
### SIM800L PINOUT

1. U.FL Connector
2. NET
3. VCC
4. RST
5. RXD
6. TXD
7. GND



8. LED
9. RING
10. DTR
11. MIC+
12. MIC-
13. SPK+
14. SPK-

#### 15. Insert Micro SIM in Socket



#### 1. U.FL Connector

An **antenna is required** to transmit and receive signals wirelessly. In this module SIM800L we have a choice to choose **between two** antennas, First one is **IPX Antenna** and other is the **helical antenna**.

Here we can connect any 3dBi GSM antenna using U.HL to SMA connector if we want wired antenna to other locations.



**U.FL**

**SMA**



**IPX/IPEX Antenna**

#### 2. NET

Here we can connect helical antenna come along with the module.

**Helical GSM Antenna**  
**Spring coil type – 900 to 1800 Mhz**

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### 3. **VCC**

Voltage supply pin, the voltage at which it works fine ranges from 3.7 V to 4.4 V (recommended), but you can use 5 V with some nominal current.

### 4. **RST**

Reset pin, pulling this pin low for 100 ms will hard reset the module.

### 5. **RxD**

This is the receiver pin used in Serial communication

### 6. **TxD**

This is the transmitter pin used in Serial communication

### 7. **GND**

Ground pin, connect it to the Ground pin of Arduino

### 8. **LED**

There is an LED which tells you about the status of your module.

1. If it blinks once **every second**: Module is running but not yet connected to the cellular network.
2. If it blinks once **every two seconds**: The GPRS data connection request is **activated**.
3. If it blinks once **every three seconds**: The module got connected to the cellular network and now it can **send or receive SMS & calls**

### 9. **RING**

It is used in detecting calls and/or SMS, it remains by-default HIGH but if a call is received it gives LOW pulse for 120ms.

### 10. **DTR**

This pin is used to activate/deactivate sleep mode. Where high means sleep mode activated, disables serial communication while low means sleep mode deactivated.

### 11. **MIC +**

### 12. **MIC -**

Pins 11, 12 MIC +/- is used for microphone pins

## 15. Micro SIM socket

Sim **support 2G** will work perfectly fine. See the diagram to see how to insert a sim. It supports 4 Bands namely GSM850, EGSM900, DCS1800 and PCS1900.

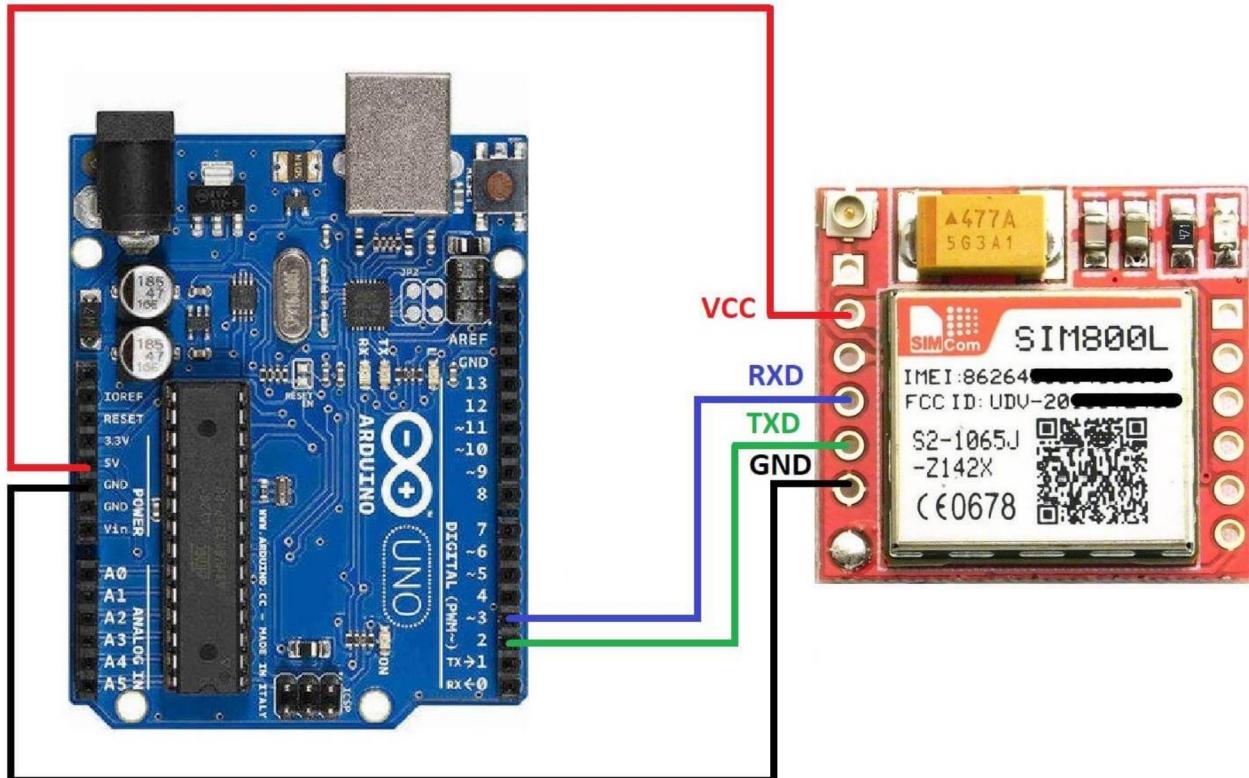
# ARDUINO INTERFACING WITH SIM800L

## CONNECTION TABLE

S.N.	ARDUINO	SIM800L
1.	+5 V	VCC
2.	GND	GND
3.	2 (RX)	TXD
4.	3 (TX)	RXD

## CIRCUIT DIAGRAM INTERFACING SIM800L WITH ARDUINO

## INTERFACING SIM800L WITH ARDUINO



*Note: don't forget to connect ground first then other connection with your Arduino to avoid module damage or make all connections first then power-up the circuit.*

## SEND & RECEIVE MESSAGES USING SIM800L ARDUINO CODE

Arduino code for SIM800L has been done into 3 parts

1. Testing AT commands
2. Receive message using sim800l
3. Send a message using sim800l

### 1. TESTING AT COMMANDS

```
#include <SoftwareSerial.h>
/* Tutorial link: https://pijaeducation.com/arduino/gsm/send-receive-messages-usi
 Create software serial pins: pin 2 as RX & 3 as TX
 Connect SIM800L module Rx to Pin 3 (Tx) of Arduino & Tx to Pin 2 (Rx) of Arduino
*/
SoftwareSerial mySerial(2, 3);

void setup() {
  Serial.begin(9600);
  mySerial.begin(9600);
  Serial.println("Initializing...");
  delay(1000);

  // Send attention command to check if all fine, it returns OK
  mySerial.println("AT");
  updateSerial();

  // Signal quality test, value range is 0 - 31 , 31 is the Excellent
  mySerial.println("AT+CSQ");
  updateSerial();

  // Used to read the ICCID from the SIM, if returns means SIM is plugged
  mySerial.println("AT+CCID");
  updateSerial();

  // Check whether it has registered on the network
  mySerial.println("AT+CREG?");
```

}

```
// For data transmission from Serial to Software Serial port & vice versa
void updateSerial() {
    delay(500);
    while (Serial.available()) {
        mySerial.write(Serial.read());//Forward what Serial received to Software Serial Port
    }

    while (mySerial.available()) {
        Serial.write(mySerial.read());//Forward what Software Serial received to Serial Port
    }
}
```

## 2. RECEIVE MESSAGE USING SIM800L

```
#include <SoftwareSerial.h>
/* Tutorial link: https://pijaeducation.com/arduino/gsm/send-receive-messages-usir
   Create software serial pins: pin 2 as RX & 3 as TX
   Connect SIM800L module Rx to Pin 3 (Tx) of Arduino & Tx to Pin 2 (Rx) of Arduino
*/
SoftwareSerial mySerial(2, 3);

void setup() {
    Serial.begin(9600);
    mySerial.begin(9600);
```

2

```
updateSerial();
// Configuring module in TEXT mode
mySerial.println("AT+CMGF=1");
updateSerial();

// Decides how newly arrived SMS messages should be handled
mySerial.println("AT+CNMI=1,2,0,0,0");
updateSerial();
}

void loop() {
    updateSerial();
}

// For data transmission from Serial to Software Serial port & vice versa
void updateSerial() {
    delay(500);
    while (Serial.available()) {
        mySerial.write(Serial.read());//Forward what Serial received to Software Serial Port
    }

    while (mySerial.available()) {
        Serial.write(mySerial.read());//Forward what Software Serial received to Serial Port
    }
}
```

Connect SIM800L module Rx to Pin 3 (Tx) of Arduino & Tx to Pin 2 (Rx) of Arduino

\*/

**SoftwareSerial** mySerial(2, 3);

**void** setup() {

**Serial.begin**(9600);

    mySerial.**begin**(9600);

**Serial.println**("Initializing...");

**delay**(1000);

// Send attention command to check if all fine, it returns OK

    mySerial.**println**("AT");

    updateSerial();

// Configuring module in TEXT mode

    mySerial.**println**("AT+CMGF=1");

    updateSerial();

// to send message use these 3 statements, upto write(26)

// change ZZ with country code and xxxxxxxxxxxx with phone number to sms

    mySerial.**println**("AT+CMGS=\\"+ZZxxxxxxxxxx\\\""); // 1)

    updateSerial();

    mySerial.**print**("https://Shoolinlabs.com/tutorial"); // 2) text content

    updateSerial();

    mySerial.**write**(26); // 3)

}

**void** loop() {

    updateSerial();

}

// For data transmission from Serial to Software Serial port & vice versa

**void** updateSerial() {

**delay**(500);

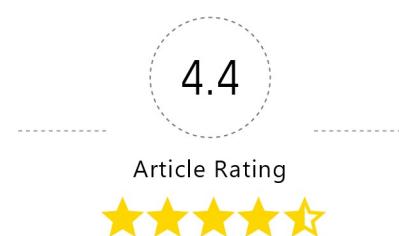
**while** (**Serial.available**()) {

        mySerial.**write**(**Serial.read**());//Forward what Serial received to Software Serial Port

}

**while** (mySerial.**available**()) {

**Serial.write**(mySerial.**read**());//Forward what Software Serial received to Serial Port

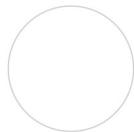


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▼ [Display Data on LCD 16×2 on an input by a switch using Arduino](#)

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▼ IDR – I FD on as I light Falls

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