

SIM900 GSM Modem Starter Guide



1. Features

- Uses the extremely popular SIM900 GSM module
- Provides the industry standard serial RS232 interface for easy connection to computers and other devices
- Provides serial TTL interface for easy and direct interface to microcontrollers
- Optionally available USB interface for easy interface to laptops, computers, etc

- Onboard MIC and Speaker circuits and 3.5mm audio connectors for direct connection to mics and speakers
- All pins of the SIM900 module can be tapped into for expansion using onboard expansion holes. GPIO pins, Serial communication pins, 2 PWM pins, I2C pins and ADC pins are broken out to standard 0.1" spaced holes for easy expansion
- Power, Status and Network LEDs for easy debugging
- Can be used for GSM based Voice communications, Data/Fax, SMS,GPRS and TCP/IP stack
- Can be controlled through standard AT commands
- Module's operation mode can be controlled through the PWR Key connected to the PWRKEY pin (refer the SIM900 datasheet for more information)
- Comes with an onboard wire antenna for better reception. Board provides an option for adding an external antenna through an SMA connector
- The SIM900 allows an adjustable serial baudrate from 1200 to 115200 bps (autobaud by default)
- Modem a low power consumption of 0.25 A during normal operations and around 1 A during transmission
- Operating Voltage: 7 – 15V AC or DC (board has onboard rectifier)

2. Testing the board

- Insert a SIM card into the SIM tray on the board
- Connect the board to a computer's serial port using a RS232 cable
- To read the text being sent by the modem, you will need a serial monitoring software. Windows has a built in serial monitoring software called Hyperterminal. Run it at Start -> Programs -> Accessories -> Communications -> Hyperterminal
- Enter connection name,

- Select the serial port to which the modem is connected under the “Connect Using” option(usually COM1)
- Select Baudrate of 9600 and Flow control as none. The board works on a serial communication that can work within a wide range of speeds from 1200 bps to 1152000 bps,
- You will have to send character ‘A’ (uppercase A) initially before you send any other command to the modem
- Enter “AT” in the Hyperterminal, the board will echo “OK” if everything is properly setup
- The onboard Net LED(yellow) is used to display the network status
 - a) LED Off – SIM900 not running
 - b) 64ms On 0.8 Sec Off - SIM900 unable to find network
 - c) 64ms On 3 Sec Off - SIM900 found network
 - d) 64ms On/ 300ms Off GPRS communication

3. Using the board

You will have to use standard AT commands to interface with the modem. Here are some of the common GSM operations that can be achieved using the board -

a) To Dial a Number

- To dial a number you will have to send the command -> **ATD NUM;** where NUM is the number you want to dial.
For instance to dial 9008620582, send the command ATD 9008620582;
- To disconnect the number use the command – **ATH**
- To redial a number use the command – **ATDL**

b) To Send a SMS

- To send SMS send the command -> **AT+CMGF=1**
Modem will then send the text -> **OK**
Then send -> **AT+CMGS="NUM"**
where NUM is the number you want to send the SMS to.

Modem will then send the text - **TYPE THE MESSAGE>**
Enter the message and then press ctrl+z to send SMS

Here are a few useful AT commands for changing the settings –

- To change the baudrate – **AT+IPR=BAUDRATE(Ex 9600)**
- For more details refer AT commands Document page 33
- To save the settings – **AT&W**
- To restore factory defaults type **AT&F** then save it by sending **AT&W**

Using the PWR Key

The Power Key (labeled PWR KEY on the modem) can be used to power on and off the module just by a holding it down for a second. Putting the module in power down mode will drastically reduce the modems power consumption. Pressing the Power Key when the module is off, will power on the module and vice-versa. Please refer the SIM900 datasheet for more information.

When the modem is powered on the module will be in power off mode by default. You will have to press and hold the PWR Key for a second to put it in power on mode to start using the modem to make calls, send messages, etc. If you want to put the module in power on mode automatically every time the modem is powered on, you will have to put the jumper named Power Key Disable next to the PWR Key.

Things to keep in mind when using the GSM Modem

- The GSM Modem consumes a lot of current during transmission, make sure your power supply can handle large currents without giving substantial voltage drops at the output
- If the GSM Modem is unable to connect to the network, try coming to a place with clear surroundings for best reception
- The SIM Card holder used on the Modem is quite delicate and can easily break upon rough use. Use it with care and caution

Using the board through USB

Like most of our USB based products the GSM Modem uses the CP2102 for USB to Serial Conversion. When connected to a USB port, the modem shows up as a COM Serial Port and hence can be easily controlled through most popular programming languages by sending simple text commands. To use the USB feature of the board, the VCP Drivers for the CP2102 should be installed. For instructions on how to do this, you may refer our USB Drivers Installation guide.

Once the drivers are installed, you may send commands to the modem through the virtual serial com port.

Note: You will have to provide an external power supply even when you connect the board through USB