Gravity: UART A6 GSM & GPRS Module SKU: TEL0113

Introduction

With the blooming development of IoT (Internet of Things), more and more people are dedicated to pursue their own IoT dreams. However traditional IoT technologies are mainly evolved on the basis of Wi-Fi features, which leads to a barrier of development related to Geo-limitations that IoT projects cannot be implemented in to outdoor. In light of the popularity of bike-shared system, GSM Data Communication has been reconsidered as the best choice for outdoor IoT solution.

The Gravity: A6 GSM & GPRS Module is a new GSM & GPRS communication module presented by DFRobot. Differ from traditional IoT developing modules, Gravity: A6 GSM & GPRS Module enables its functions depend on GSM instead of Wi-Fi. It can make a call and send text message with a small and portable GSM SIM card. This technological advantage expand the space of IoT application area, especially for the outdoor scene.

In addition, you can DIY a telephone with a 3.5mm headphone port; it also works well in different situations with onboard 1500uF electrolytic capacitor and without any external power supplies even in the instantaneous high current . The module Uart port level is only 2.8V, which means it is compatible with Arduino, Raspberry-Pi and other controllers.

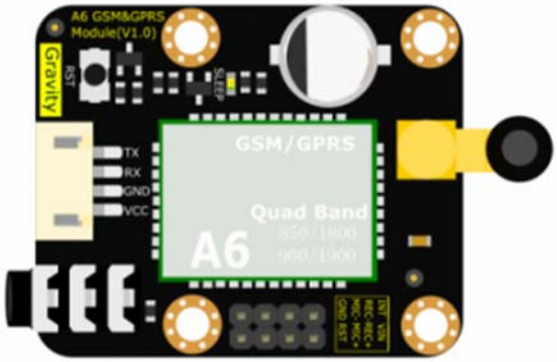
NOTE:

Please plug in a standard SIM card in this module. Users of Micro-SIM and Nano-SIM should use a card set.
Only support GSM Network.

Specification

- Operating Voltage: 5V
- Standby Current: <3mA
- Interface: UART (TTL)
- Working Temperature: -30 ℃ ~ +80 ℃
- GSM / GPRS band: 850/900/1800/1900 MHz
- Sensitivity: <- 105 dBm
- GPRS Class 10
- Support VoLTE
- Support SMS
- Support GPRS data communication, the maximum data transmit rate: download 85.6Kbps, upload 42.8Kbps
- Support AT commands
- Support for digital audio and analog audio, support HR, FR, EFR, AMR voice coding
- Dimension: 45x37 mm/1.78x1.46 inches
- Weight: 34g

Board Overview



Gravity: UART A6 GSM & GPRS Module Overview

Num	Label	Description
1	TX	TX (2.8V HIgh Level)
2	RX	RX
3	GND	GND
4	VCC	Power + (5V)

Arduino GSM & GPRS Tutorial

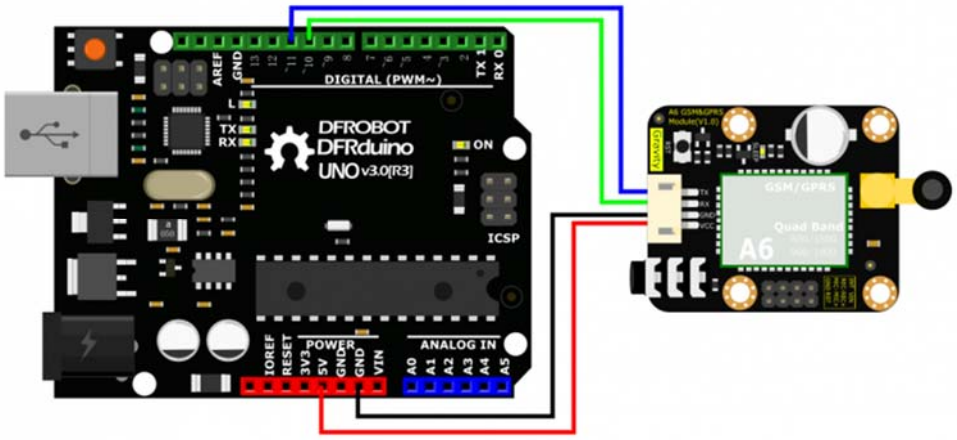
In this tutorial, we'll use Arduino UNO **Software Serial Port** to connect A6 GSM & GPRS module

Requirements

- **Hardware**
  DFRduino UNO R3 (or similar) x 1
  Gravity: UART A6 GSM & GPRS Module x1
  3.5mm earphone with MIC
  M-M/F-M/F-F Jumper wires

- **Software**
- Arduino IDE, Click to Download Arduino IDE from Arduino®
  https://www.arduino.cc/en/Main/Software%7C

Connection Diagram



Arduino A6 GSM & GPRS Module Connection

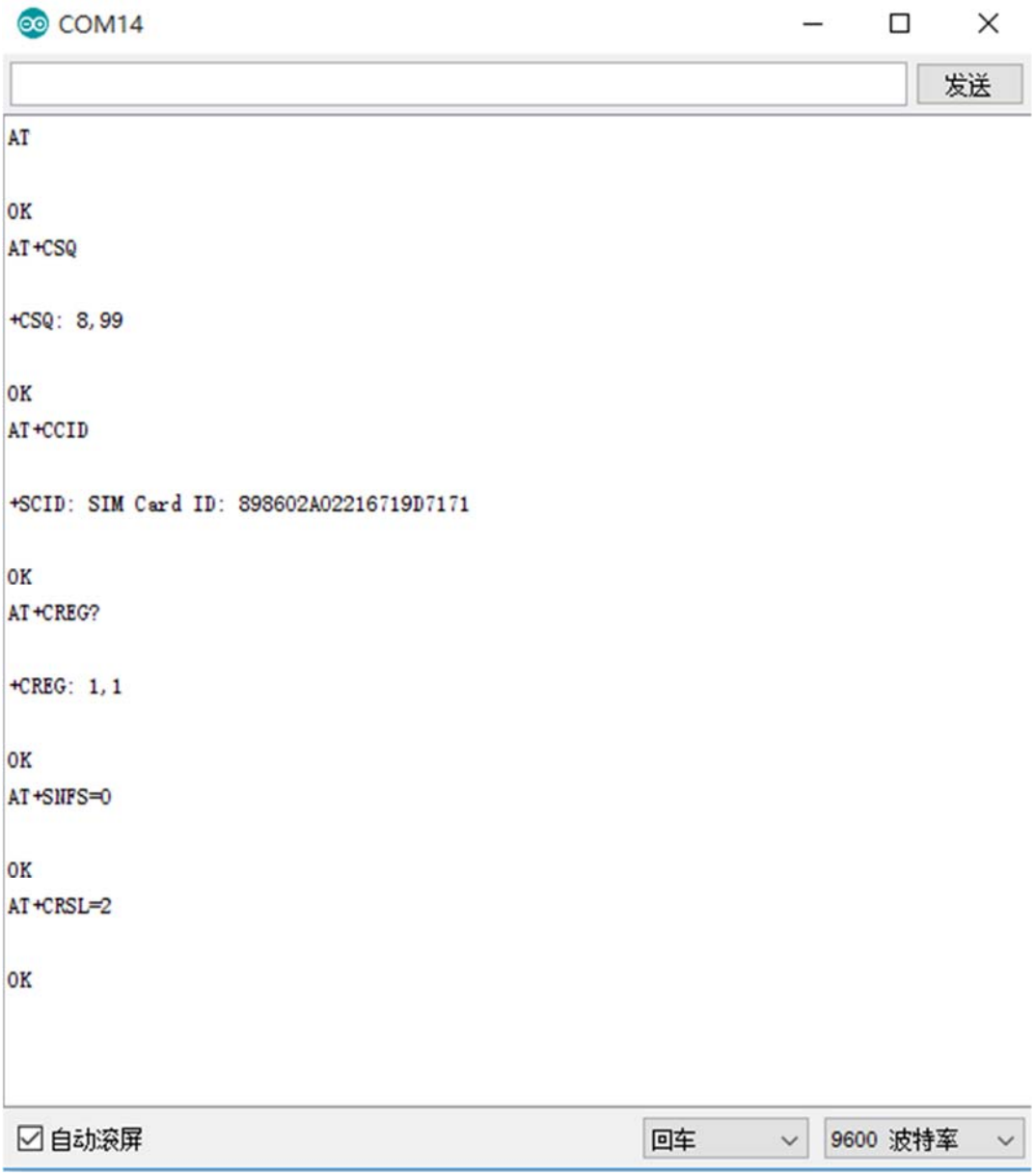
- TX-Pin10, RX-Pin11
- Please plug the earphone in the earphone jack, if you want to make a phone call.

GSM initialization

- GSM Initialization

```
#include <SoftwareSerial.h>
SoftwareSerial mySerial(11, 10);  // TX-Pin10, RX-Pin11
void updateSerial()
{
  delay(2000);
  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
  }

}

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

void loop()
{
  mySerial.println("AT");          //Once the handshake test is successful, it will back to OK
```

```
  updateSerial();


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


  mySerial.println("AT+CCID");    //Read SIM information to confirm whether t
he SIM is plugged
  updateSerial();


  mySerial.println("AT+CREG?");    //Check whether it has registered in the n
etwork
  updateSerial();


  mySerial.println("AT+SNFS=0");  //Adjust to earphone mode(AT+SNFS=1 is micr
ophone mode)
  updateSerial();


  mySerial.println("AT+CRSL=2");  //Adjust volume, volume range is 0-15, maxi
mum:15
  updateSerial();


  while(1)
  {
    if(mySerial.available())
    {
      Serial.write(mySerial.read());   //Forward what Software Serial receive
d to Serial Port
    if(Serial.available())
    {
      mySerial.write(Serial.read());  //Forward what Serial received to Softw
are Serial Port
    }
  }
}
```

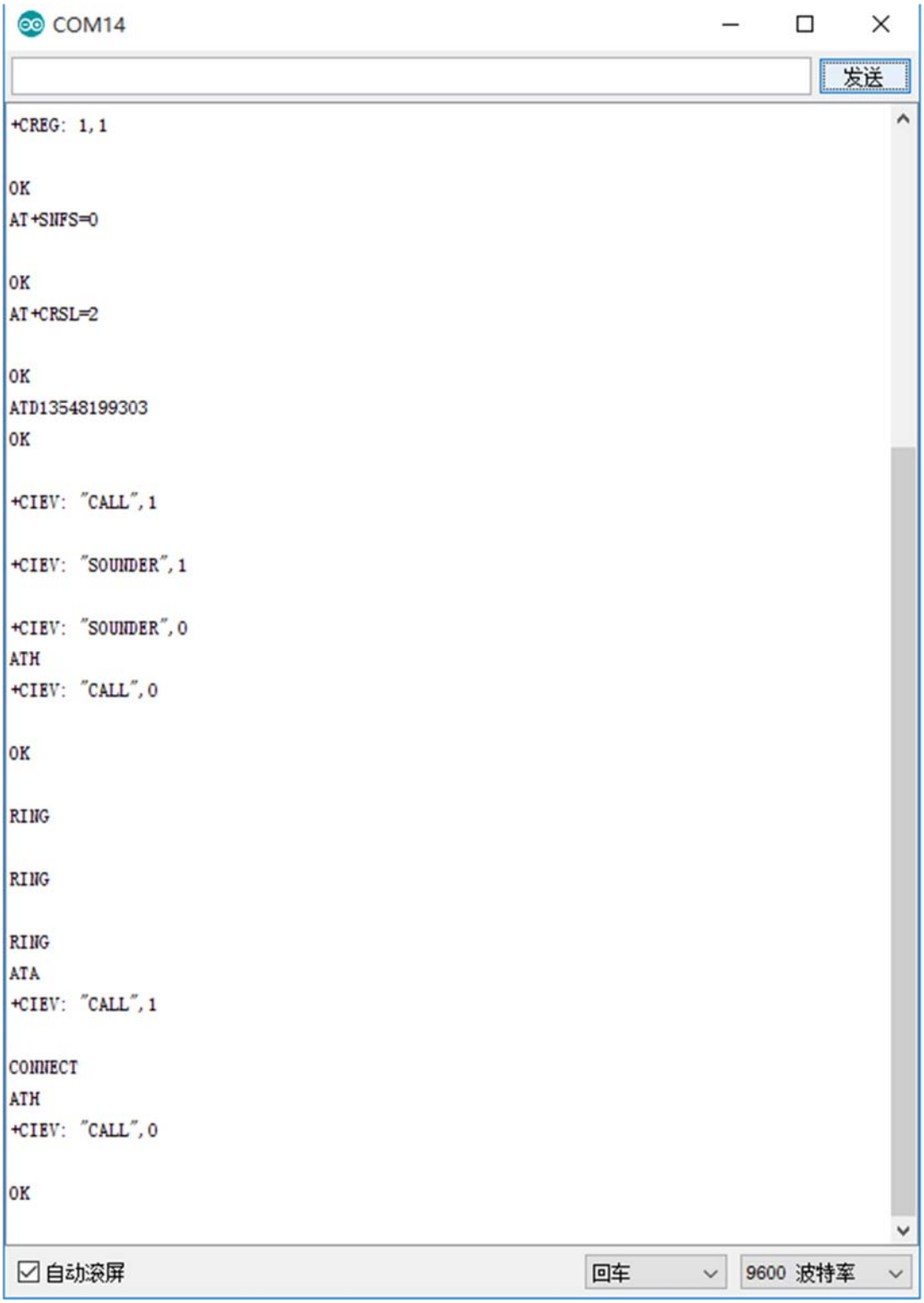


Aduino A6 GSM & GPRS Module Initialization

Make a Phone Call

- Make/answer a phone call by sending AT command in the Arduino serial interface. (Carriage Return; 9600bps)
- ATD+ phone number: Call the phone number
  e.g. ATD12345678
  Ring: A calling
  ATA: Answer

ATH: Hang up



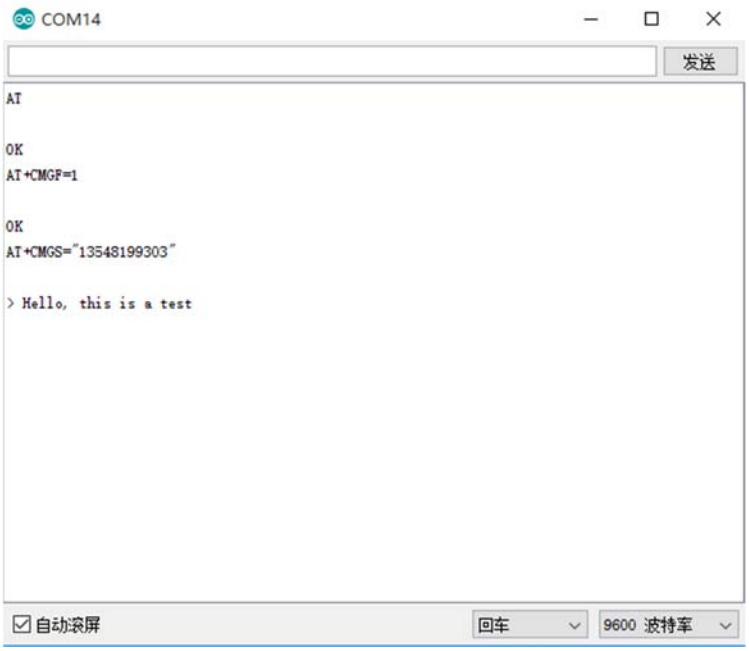
Aduino A6 GSM & GPRS Module Make a Phone Call

Send SMS

- Send SMS with Arduino UNO

```
#include <SoftwareSerial.h>

SoftwareSerial mySerial(11, 10);  // TX-Pin10, RX-Pin11

void updateSerial()

{

  delay(2000);

  while (Serial.available()) {

    mySerial.write(Serial.read());//Data received by Serial will be outputted
by mySerial }

  while(mySerial.available()) {

    Serial.write(mySerial.read());//Data received by mySerial will be outputt
ed by Serial }


}


void setup()

{

  Serial.begin(9600);

  mySerial.begin(9600);

}


void loop()

{

  mySerial.println("AT");          // Once the handshake test is successful,
it will back to OK


  updateSerial();

  mySerial.println("AT+CMGF=1");   // Configuring mode is TEST, only English
texts are available
```

```
  updateSerial();
  mySerial.println("AT+CMGS=\"xxxxxxxxxxx\"");//xxxxxxxxxxx is the phone numb
er
  updateSerial();
  mySerial.print("Hello, this is a test"); //text content
  updateSerial();
  mySerial.write(26);
  while(1)
  {
    if(mySerial.available())
    {
      Serial.write(mySerial.read());//Data received by mySerial will be outpu
tted by Serial }
    if(Serial.available())
    {
      mySerial.write(Serial.read());//Data received by Serial will be outputt
ed by mySerial }
  }
}
```



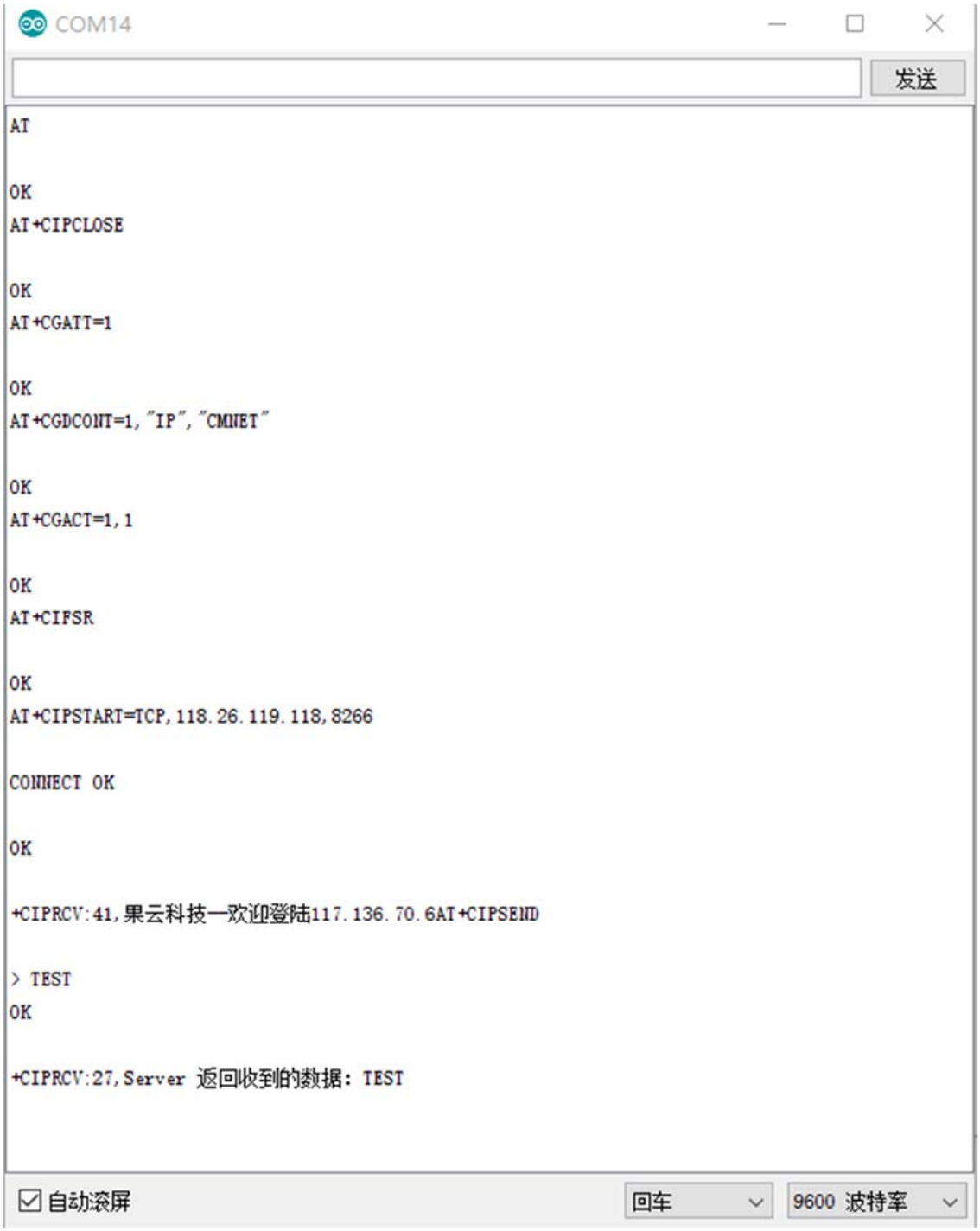
Aduino A6 GSM & GPRS Sending SMS

GPRS Application

- Visit a web server

```
#include <SoftwareSerial.h>

SoftwareSerial mySerial(11, 10);  // TX-Pin10, RX-Pin11

void updateSerial()

{

  delay(2000);

  while (Serial.available()) {

    mySerial.write(Serial.read());//Data received by Serial will be outputted
by mySerial

  }

  while(mySerial.available()) {

    Serial.write(mySerial.read());//Data received by mySerial will be outputt
ed by Serial}

}


void setup()

{

  Serial.begin(9600);

  mySerial.begin(9600);

}


void loop()

{

  mySerial.println("AT");          // Once the handshake test is successful,
it will back to OK

 updateSerial();

  mySerial.println("AT+CIPCLOSE");          //Disconnect the former connectio
n

  updateSerial();

  mySerial.println("AT+CGATT=1 "); //The basic adhere network command of Inte
rnet connection
```

```
  updateSerial();
  mySerial.println("AT+CGDCONT=1,\"IP\",\"CMNET\"");//Set PDP parameter
  updateSerial();
  mySerial.println("AT+CGACT=1,1");//Activate PDP; Internet connection is ava
ilable after successful PDP activation
  updateSerial();
  mySerial.println("AT+CIFSR");//Get local IP address
  updateSerial();
  mySerial.println("AT+CIPSTART=TCP,118.26.119.118,8266");// Connect to the s
erver then the server will send back former data
  updateSerial();
  updateSerial();
  delay(2000);
  updateSerial();
  mySerial.println("AT+CIPSEND");// Send data request to the server
  updateSerial();
  mySerial.print("TEST");// Send data to the server
  updateSerial();
  mySerial.write(26);// Terminator
  while(1)
    {
    if(mySerial.available())
    {
      Serial.write(mySerial.read());//Data received by mySerial will be outpu
tted by Serial
    }
    if(Serial.available())
    {
      mySerial.write(Serial.read());//Data received by Serial will be outputt
ed by mySerial
    }
  }
}
```



Aduino A6 GPRS Application

AT Commands

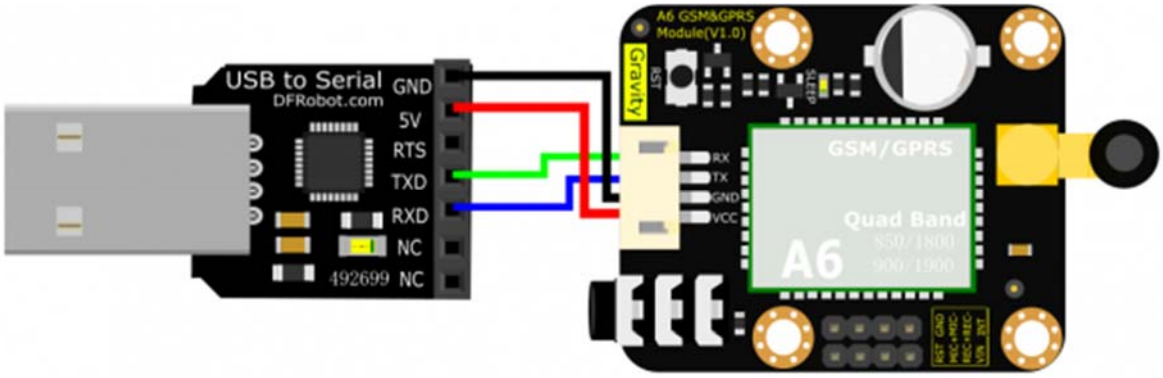
- In this section, we'll show you how to use AT Command to debug the GSM function.

Requirements

- **Hardware**
  USB to TTL Converter (CP210) (or similar) x 1
  Gravity: UART A6 GSM & GPRS Module x1
  3.5mm earphone with MIC
  M-M/F-M/F-F Jumper wires

- **Software**
  Any Serial Assistant Software.You can use our Serial debugging assistant, Coolterm or **DF Serial Debugger** by Lisper.

Connection Diagram



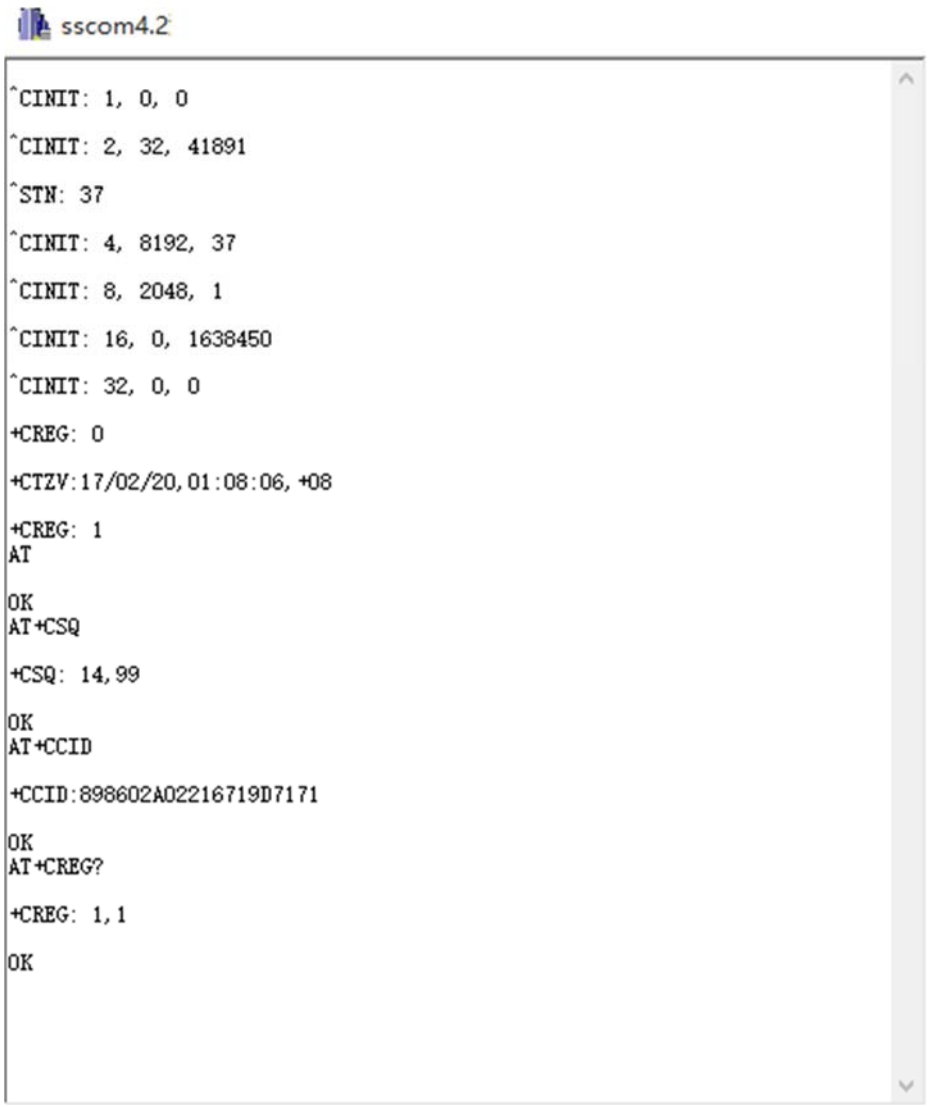
AT Command A6 GSM & GPRS Module Connection

- Please plug the earphone in the earphone jack, if you want to make a phone call.

GSM Initialization

- The module will connect to the telecomm base station automatically and read data from the basement, it will output the GSM information via the Serial port, when you connect it to PC.
- Check the module initializationsState with 3 commands

AT + CCID: to check SIM and CCID of SIM
e.g. AT+CCID +CCID:898602A02216719D7171
AT + CSQ: Check signal quality
e.g. AT+CSQ=? +CSQ: (0-31, 99), (0-7, 99) (31 is the best)
AT + CREG? : Check Internet register stats
e.g. AT+CREG? +CREG: 1,1 //Registered network, local mode

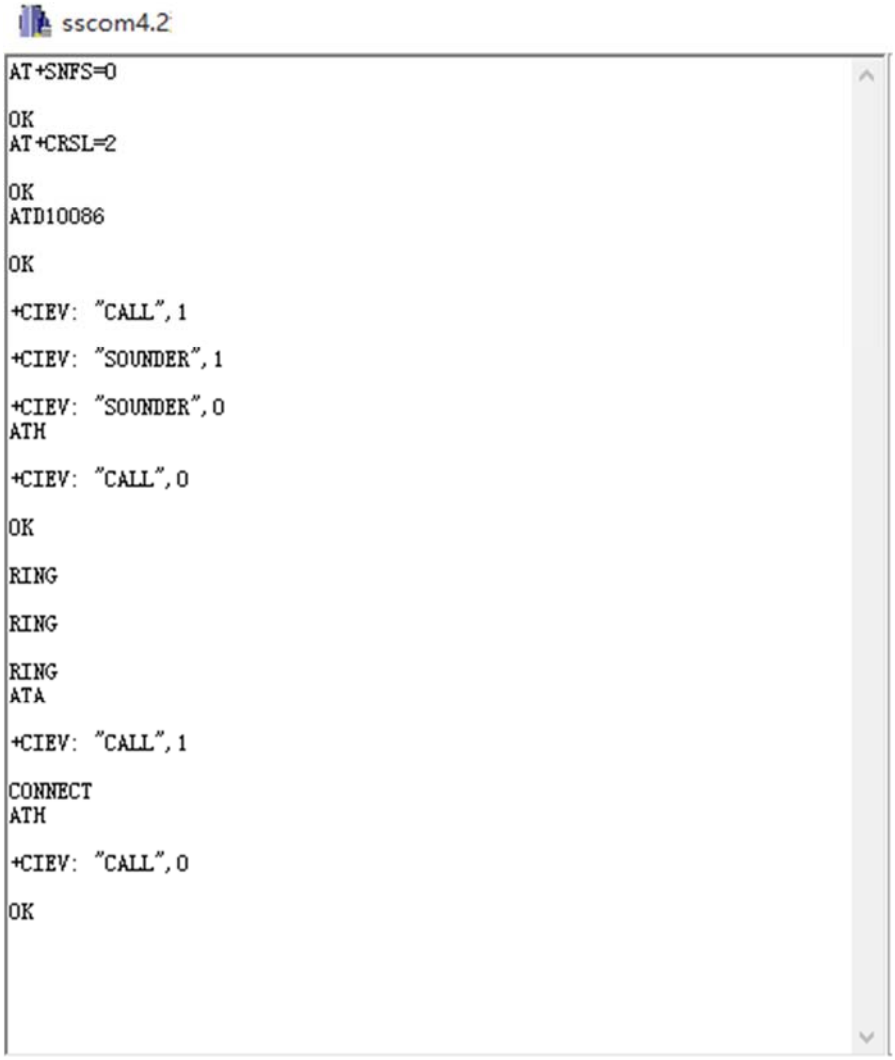


AT GSM Initialization

Make a Phone Call

- Switch to earphone mode with 2 commands
  AT+ SNFS = 0: Switch to earphone mode (AT+SNFS=1 is microphone mode)
  AT + CRSL =2: Adjust volume (volume range is 0-15, maximum:15)
- Make/answer a phone call
  ATD+ phone number: Call the phone number
  e.g. ATD12345

Ring: A calling
ATA: Answer
ATH: Hang up



Make a Phone Call

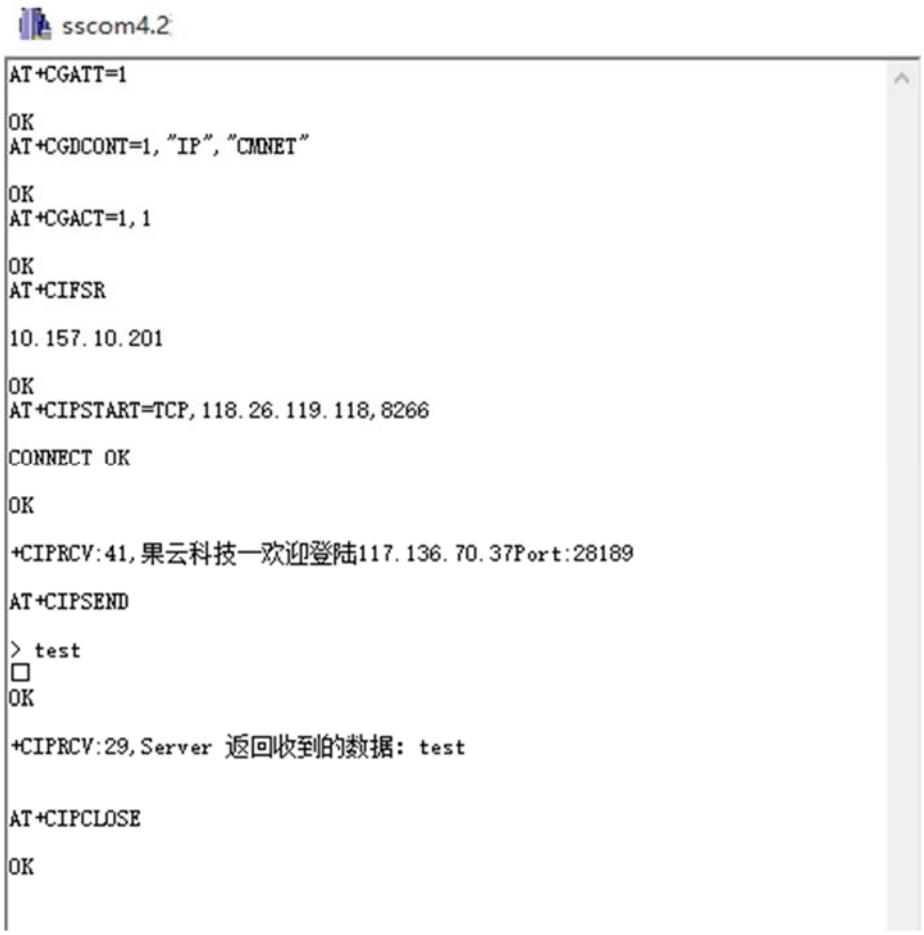
Send SMS

- TEXT Mode
  AT+CMGF=1: Config TEXT mode, only English texts are available
  AT+CMGS=13548199303: Configuring the receiving object
  It will display input indicator ">", and now you can enter the your SMS content, end with **0X1A** or you can use "Ctrl+Z" to send SMS. It should return: OK

Send SMS

GPRS Application

- AT+CGATT=1: The basic adhere network command of Internet connection
- AT+CGDCONT=1,"IP","CMNET": Set PDP parameter
- AT+CGACT=1: Activate PDP; Internet connection is available after successful PDP activation
- AT+CIFSR: Get local IP address
- AT+CIPSTART=TCP,118.26.119.118,8266"): Connect to the server then the server will send back former data
- AT+CIPSEND: Send data request to the server, input command and indicator “>” shows, input content and end with 0X1A or input Ctrl+Z, return OK then send the text.
- AT+CIPCLOSE: Disconnect the connection



AT Command GPRS

FAQ

For any questions, advice or cool ideas to share, please visit the **DFRobot Forum**.