# SIM300_SIM300C software application note V1.03

Excelpoint System

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Version 1.03

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Reference: SIM300_ATC_V1.03.pdf

Warning: This document is only for your reference,
and will be updated without your notice.

## 1. How to ready for a test of SIM300
## 1.1 Hardware
(a). computer with modem, & RS232 port,
  Or modem, & with USB port( need USB-to-RS232 converter line)

(b). phone line can dial 95700 or other number to access internet,

(c). SIM300EVB KIT, tool kit, including:
  SIM300 demo PCB board,        1pcs
  SIM300 module,                1pcs
  power adaptor, 220V to 5V,2.5A,   1pcs
  serial port line,             1pcs
  earphone,                     1pcs
  car antenna line,             1pcs
  antenna converter line,       1pcs
Note: SIM300 is SOT 60pin package, 40* 33mm
  SIM300C is DIP60 pin package, larger size, enhanced ESD, EMC

(d). Need one SIM card
  if GSM only, you can not test GPRS command,
  if GPRS only, can not test GSM command,
  for both, can support both command

## 1.2 Client software: computer hyper terminal

## 1.3 Server software: server.exe

## 2. How to test SIM300
## 1.1 computer adds a new modem
  Start, Setup, Control panel, Call and modem selection, modem, add, not select not_detecting_modem_choose_*from*_list, next, Generic, next Generic Pcmcia Modem,next, COM3: PCTEL 2304WT V.92 MDC modem, sure

## 1.2 computer's modem dials 95700 or 9,95700, and get a temporary fixed IP, like 211.157.78.167.
computer runs server.exe, TCP setup: 211.157.78.167, port: 2020

## 1.3 computer gets a new hyper terminal and its setup
Start, Program, Accessory, Communication, Hyper terminal, name: SIMCom COM1,
COM1( if USB-to-RS232 line, need choose COM5 or other),

Configuration,
baud rate: 115200,
data bit: 8,  odd/even: none,
stop bit: 1,  follow control: none
Hyper terminal call

## 1.4 Tool kit setup
Insert SIM card,
Link RS232 line with tool kit and computer serial port,
Link antenna
Turn on tool kit's power
Press PWRKEY for 3 seconds or more, SIM300 will work by hyper terminal.

## 3. How to turn on SIM300
PWRKEY pull low   // turn on module, MCU pulls PWRKEY low
delay 10 seconds    // or shorter time, then MCU pulls it to high
Or
Press PWRKEY for 3 seconds or more if module is turned off

## 4. When SIM300 is turned on, what happens?
RDY     // module responses RDY at least,
// etc information to serial port, insert SIM card

+CFUN: 1

+CPIN: READY

Or
RDY

+CPIN: NOT INSERTED // not insert SIM card

+CFUN: 1

## 5. How to turn off SIM300, then turn it on
There are four ways to turn off SIM300 as following.
// Now module is on
PWRKEY pull low    // turn off module, strongly suggestion first
delay 10 seconds    // or shorter time, then MCU pulls it to high

PWRKEY pull low     // turn on module, MCU pulls PWRKEY low,
    delay 10 seconds     // or shorter time, then MCU pulls it to high

If it does not work
    Switch off MIC29302 output 4.2V   // MCU controls MIC29302's
            // EN pin, and its big 2200uF-capacitor's output is high
    Delay 6 seconds or more   // big-capacitor dis-charge to <0.3V

    Enable MIC29302 output 4.2V   // MCU controls as above

    PWRKEY pull low   // turn on module, MCU pulls PWRKEY low,
        delay 10 seconds     // or shorter time, then MCU pulls it to high

If VBAT is lower 3.4V, module will be turned off automatically.

If over temperature, module will be automatically shut down.
    -40$^o$C or lower, 90$^o$C or higher, module shuts down.
    85$^o$C or higher: module responses CMTE:1,
    -35$^o$C or lower: module responses CMTE:-1,
    90$^o$C or higher: module responses CMTE:2,
    -40$^o$C or lower: module responses CMTE:-2,
    AT+CMTE can check temperature status

## 6. How to re-start SIM300
                    // module is on,
    PWRKEY pull low     // turn off module, strongly suggestion first
        delay 10 seconds     // or shorter time, then MCU pulls it to high

    PWRKEY pull low     // turn on module, MCU pulls PWRKEY low
        delay 10 seconds     // or shorter time, then MCU pulls it to high

## 7. How to go to Minimum function mode
    AT+CFUN=0,1   // Minimum function, RF & SIM card closed, but
        // serial port is available
    AT+CFUN=1,1   // default setup, and serial port is available
    AT+CFUN=4,1   // disable RF, but serial port is available

## 8. How to go to sleep mode
    Go to sleep mode
        AT+CSCLK=1,

Then, MCU let DTR be high level, module goes to sleep mode, serial port is not accessible

## 9. How to go to normal mode from sleep mode
MCU let DTR to low level for at least 20mS, module goes to normal mode automatically

OR
Receive a call

OR
Receive a SMS

OR
RTC alarm expired

## 10. How to go to alarm mode
AT+CALARM   // need check

## 11. How to send TCP data
PWRKEY pull low   // turn on module, MCU pulls PWRKEY low
  delay 10 seconds    // or shorter time, then MCU pulls it to high

RDY

AT+CREG?        // check if registration network in 2 seconds interval
              // per time
  +CREG: 0,1   // module responses
  OK            // yes, OK
Delay 120 seconds   // or shorter time

AT+CGATT?          // check if attach PDU for 2 seconds interval
  +CGATT: 1          // module responses
  OK                  // yes, OK
Delay 120 seconds   // or shorter time

AT+CIPSTART="TCP","211.145.35.45","2020"
  OK
  CONNECT OK   // it responses in about 30 seconds or shorter time

AT+CIPSEND    // input return key
  > I am Charley Yang  // then, input Control and Z keys
   SEND OK
Server.exe can get these data that client sent


## 12. How to send UDP data
like TCP, only change TCP to UDP for AT+CIPSTART
Pay attention, any UDP address will work
If customer's market is large, like 1kpcs or more, suggest use UDP.
Its management cost is lower than TCP, and its efficiency is higher
than TCP.


## 13. How to use APN
For CMNET, public APN, you not need use CSTT, CIICR, CIFSR, only
  use AT+CIPSTART and AT+CIPSEND will be OK

   AT+CSTT="CMNET","","" //APN name, user name, password
      OK

   AT+CIICR
      OK
   AT+CIFSR
      129.1.2.45  //or other IP address

   AT+CIPSTART="TCP","211.136.42.12","2020"
      OK
   CONNECT OK

   AT+CIPSEND
     > this is a test  Control+Z
      SEND OK


For special APN, need use all like above, but APN name, user name,
  password, and IP address are all special, and SIM card is special.

   AT+CSTT="Charley-bj.ddn","",""
      //APN name, user name, password
      OK

   AT+CIICR

OK

AT+CIFSR
    129.1.2.35  //or other IP address
AT+CIPSTART="TCP","10.136.42.12","2020"
    OK
CONNECT OK

AT+CIPSEND
  > this is a test  // input Control, Z keys
  SEND OK

## 14. How to use DNS
AT+CDNSCFG="211.136.17.107"   //you can use other cities'
  // address when you are in Beijing
OK
AT+CDNSORIP=1
OK
AT+CIPSTART="TCP","www.263.net","80"
OK

CONNECT OK
AT+CIPSEND
> This is by DNS
SEND OK

AT+CDNSGIP="www.sina.com.cn"
218.201.44.9
221.130.6.84

218.206.86.88

## 15. How to use CSD
1391 222 3333 dial, on module 1,
1391 333 4444 dialed, on module 2,

## For two SIM cards communication
Module 1
  AT+CSNS=4
  ATD13913334444  // not use ;

CONNECT 9600

CSD data transmit and receive
Module 2
AT+CSNS=4
RING
ATA
CONNECT 9600

CSD data transmit and receive

For phone line dial, and 1391 333 4444 dialed, module 2
Phone line
ATD13913334444

CONNECT 9600

CSD data transceive

Module 2
AT+CSNS=4
RING
ATA

CONNECT 9600

CSD data transferring
Note: if CSD dial, need SIM card open this business,
If CSD dialed, need SIM card this business support.

16. How to use transparent mode for large data transferring
// this function is testing now, not recommendation for using
AT+CREG?
+CREG: 0,1
OK

AT+CGATT?
+CGATT: 1

OK

AT+CIPMODE=1
  OK

AT+CIPCCFG=5,2,256,1
   // 5, re-send times
   // 2, 2*200mS delay
   // 256, 256kbytes each time, buffer size is about 15kbytes
   // 1, +++ can quit from data mode to AT command mode

AT&D1 // DTR pin38 can quit from data mode to AT command
        // mode, also can by MCU's IO control DTR to low
  OK

AT+CIPSTART="TCP","211.10.23.34","2020"
  OK
CONNECT // enter data mode

+++ // 200ms delay
      // + delay 20mS + delay 20mS +
      // 200ms delay, enter from data mode to AT
      // command mode
      // usually, computer hypter terminal can not do it
      ATO   // enter from AT command mode to data mode if
      // data mode is ready before
AT+CIPSHUT
  SHUT OK


17. How to send data by 6 different kinds
a. AT+CIPSEND
   >_Charley     Cltr+Z(0x1A)   // _ stands empty space string

b. AT+CIPSEND=4   // not exceed 512 bytes
   >_

c. CIPHEAD( when receive, package add:+IPDn,n is bytes)
  AT+CIPHEAD=1
  at+IPD3:adf   // module receive data "adf" from server

d. CIPATS(delay N mS)
  AT+CIPATS=1(0~ 999,after run it, it start to open timer)
  AT+CIPSEND
  >_

e. CIPSPRT(not empty space string)
  AT+CIPSPRT=0
  AT+CIPSEND(not return, it goes to the first place of this line, not > )

f. CIPSRIP( when receive data, client display sender's IP & Port)
  AT+CIPSRIP=1
  AT+CIPSEND
  >_

## 18. How to dial GPRS to access internet by computer
  Add a new modem: Start, Setup, Control panel, Call and modem
    selection, modem, add, not detecting modem, choose from list,
    next, 19200bps modem, next, COM1, next, finish
  Setup this modem: Property, Normal: 115200,
    Advanced: at+cgdcont=1,"IP","cmnet" or other APN,
  Add new connect: Control panel, Networks & Dial connect, dial to
    special networks, next,
    select modem: standard 19200bps modem( COM1), next,
    *99#, not select use dialed rules, next,
    select all user use this connect, next,
    name: GPRS, finish
  Run this connect, user name and password are empty.
    Property: networks, TCP/IP, property, DNS: auto, sure,
    Normal: configuration: 115200, sure, dial

## 19. How to dial GPRS
    AT+CGDCONT=1,"IP","cmnet"
      OK

    ATD*99***1#
      CONNECT
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  NO CARRIER

## 20. How to check firmware version
ATI
  SIMCOM_Ltd
  SIMCOM_SIM300
  Revision:SIM300M32(ATMEL)_V10.0.8_BUILD04SIMCOM_Ltd
Note: 1008BUILD04SIM300M32(ATMEL).mot is target firmware.

## 21. How to change baud rate
              // default baud rate is 115200.
AT+IPR=9600   //change from 115200, and you need change your
   // software's baud rate from 115200 to 9600, you can run new AT
AT&W   // if you need save 9600 baud rate
        // if you don't need save it, only use AT+IPR=9600.
Note: some version firmware support auto baud rate.

## 22. How to check signal strength
AT+CSQ
  +CSQ: 29,0
  OK

## 23. How to check registration
AT+CREG?
  +CREG: 0,1
  OK

OR
  Check LED   // if SIM card is used, and GSM GPRS service LED will
   // be flash on every 3 seconds

## 24. How to check PDU
AT+CGATT?
  +CGATT: 1
  OK

## 25. How to active PDU

```
AT+CGATT?
  +CGATT: 0   //if 0, PDU de-active

  OK
AT+CGATT=1
  OK
AT+CGATT?
  +CGATT: 1

  OK
```

## 26. How to check GPRS status

```
AT+CIPSTATUS
  STATE: CONNECT OK
```

OR
```
AT+CIPDPDP=1,10,3   // if antenna is turn off
  OK
+PDP: DEACT   // after about 3 minutes,
```

OR
```
Check LED   // flash as GPRS status
```

## 27. How to close GPRS

```
AT+CIPSHUT
```

OR
```
AT+CGATT=0
```

OR
```
AT+CFUN=0,1
```

OR
```
AT+CPOWD=1
NORMAL POWER DOWN,
```
But module is turned off, need PWRKEY to low for about 10 seconds, then to high, module will be turned on.

## 28. How to use Buzzer
  Buzzer // need check


## 29. How to initiate SIM300
If SIM300 communicates with Server software
  AT+CIPFLP=0   // it will faster

If two modules communicates each other, no special need


## 30. How to use ADC0
  AT+CADC?


## 31. How to check battery's voltage
  AT+CBC?


## 32. How to use GPIO
  AT+CGPIO   // not support now


## 33. How to check SIM card
  AT+CPIN?
  +CPIN: READY

  RDY
  +SCKS:0    // when turn on SIM300, serial port list
             // means: SIM card is not inserted

  Need AT+CSDT to set SIM_Presence pin


## 34. How to call 65802116-115
on our tool kit, call with earphone,
  AT+CHFA=1
  ATD01065802116;   // dial 65802116-115
  AT+VTS="1,1,5"
  ATH   // stop to call

## 35. How to send English text SMS

AT+CMGF=1
  OK
AT+CSCS="GSM"
  OK
AT+CMGS="13912223333"
  > Good, this is test   // input Control & Z keys
  +CMGS: 158


## 36. How to send PDU mode Chinese text SMS

AT+CMGF=0
  OK
AT+CSCS="UCS2"
AT+CMGS=019   // 15+4
  > 0011000D91683119325476f8000801044f60597d
    // Control+Z
    // 1391 234 5678   您好
  +CMGS: 159


## 37. How to send Chinese text SMS

AT+CMGF=1
  OK
AT+CSCS="UCS2"
  OK
AT+CSMP=17,167,0,24
  OK
AT+CMGS=
  "003100330039003100310037003900330039003900300039"
  > 67688559660e  // 杨蕙明
+CMGS: 150


## 38. How to read SMS

AT+CMGF=1
  OK
AT+CMGL="REC UNREAD"
  +CMGL: 3,"REC UNREAD",
    "+8613912223333",,"05/02/28,14:07:05+32"
  €A€D

OR
  AT+CMGR=3
    +CMGL: 3,"REC UNREAD",
      "+8613912223333",,"05/02/28,14:07:05+32"
    €A€D

## 39. How to display incoming calling number
  AT+CLIP=1　// check dialed SIM card open this function
    OK
  RING
  +CLIP: "01065802116",129
    OK
  ATH

## 40. How to start a timer when answering a call
  AT+COLP=1　// start to open timer when receive call
    OK
  ATD01065802116;
    // waiting, but not receive call, not start to open timer
  OK　// receive this call, it start to open timer
  ATH

## 41. How to change voice setup
  AT+CHFA=1　// change handset to earphone, default is handset
    Switched aux audio
    OK

  AT+CLVL?　// Handset volume
    +CLVL:90
    OK

  AT+CMIC?　//　Microphone volume
    +CMIC:2,2
    OK

  AT+CRSL?　// Ring volume
    +CRSL: 100
    OK

  AT+SIDET?　// Side volume?

```
  +SIDET: 4096
  OK
AT+ECHO?   // Echo volume?
  +ECHO(Normal_Audio):0,0,0
  +ECHO(Aux_Audio):0,0,0
  OK
```