

GSM/GPRS Modem

This GSM modem is a highly flexible plug and play quad band GSM modem for direct and easy integration to RS232. Supports features like Voice, Data/Fax, SMS,GPRS and integrated TCP/IP stack.

Features

- Quad Band GSM/GPRS
850/900/1800/1900 Mhz
- GPRS multi-slot class 10/8
- GPRS Mobile station class B
- Compliant to GSM Phase 2/2+
 - Class 4 (2W @850/900Mhz)
 - Class 1(1W @1800/1900Mhz)
- Control via AT commands(GSM 07.07, 07.05 and enhanced AT commands)
- Operation Temperature(-20 deg C to +55 deg C)

Specifications for Voice

- Tricodex
 - Half rate(HR)
 - Full rate(FR)
 - Enhanced Full rate(EFR)
- Hands-free operation(Echo suppression)

Specifications for Fax

- Group 3, class 1

Specifications for data

- GPRS class 10: max 85.6 kbps(downlink)
- PBCCH support
- Coding schemes CS 1,2,3,4
- CSD upto 14.4 kbps
- USSD
- Non transparent mode
- PPP-Stack



Specifications for SMS

- Point-to-point MO and MT
- SMS cell broadcast
- Text and PDU mode

Power Supply

- Use AC – DC Power Adaptor with following ratings
- DC Voltage : 12V
- DC Current : 1A
- Polarity : Centre +ve & Outside –ve
- Current Consumption in normal operation 250mA, can rise up to 1Amp while transmission.

Interfaces

- RS-232 through D-TYPE 9 pin connector, Serial port baud rate adjustable 1200 to 115200 bps (9600 default)
- Stereo connector for MIC & SPK
- Power supply through DC socket
- SMA antenna connector
- Push switch type SIM holder
- LED status of GSM / GPRS module

Getting Started

- **Insert SIM card:** Press the yellow pin to remove the tray from the SIM cardholder. After properly fixing the SIM card in the tray, insert the tray in the slot provided.
- **Connect Antenna:** Screw the RF antenna on the RF cable output provided.
- If voice call is needed, connect the mic and speaker to stereo sockets.
- **Connect RS232 Cable:** (Cable provided for RS232 communication) Default baud rate is 9600 with 8-N-1, no hardware handshaking. Cable provided has pins 7 and 8 shorted that will set to no hardware handshaking. In you need hardware handshaking the pins 7-8 can be taken for signaling.
 - Pin 2 is RS232 level TX out
 - Pin 3 is RS232 level RX in
 - Pin 5 is Ground
 - Pin 7 RTS in (shorted to pin 8 in cable for no hardware handshaking)
 - Pin 8 CTS out (shorted to pin 7 in cable for no hardware handshaking)
- **Connect the power Supply** (9-12V) to the power jack. Polarity should be Center +ve and outer –ve DC jack.
- **Network Led** indicating various status of GSM module eg. Power on, network registration & GPRS connectivity.
- After the Modem registers the network, led will blink in step of 3 seconds. At this stage you can start using Modem for your application.
- AT commands set section is covered in following document
<http://www.sunrom.com/files/1122-at.pdf>

Examples for send and receive SMS

For sending SMS in text Mode:

AT+CMGF=1 press enter

AT+CMGS="mobile number" press enter

Once The AT commands is given ' >' prompt will be displayed on the screen.

Type the message to sent via SMS. After this, press ctrl+Z to send the SMS.

If the SMS sending is successful, "ok" will be displayed along with the message number.

For reading SMS in the text mode:

AT+CMGF=1 Press enter

AT+CMGR= no.

Number (no.) is the message index number stored in the sim card. For new SMS, URC will be received on the screen as +CMTI: SM 'no'. Use this number in the AT+CMGR number to read the message.

Voice call

Initiating outgoing call:

ATD+ mobile number; press enter

For disconnecting the active call:

ATH press enter

For receiving incoming call:

ATA press enter

Sample Code for Interfacing with microcontroller for sending SMS

```
void main()
{
    initADC(); // setup ADC
    serialInit(); // setup 9600 serial communication

    while(1)
    {
        printf("AT\n");
        delayms(2000); // 2 sec delay

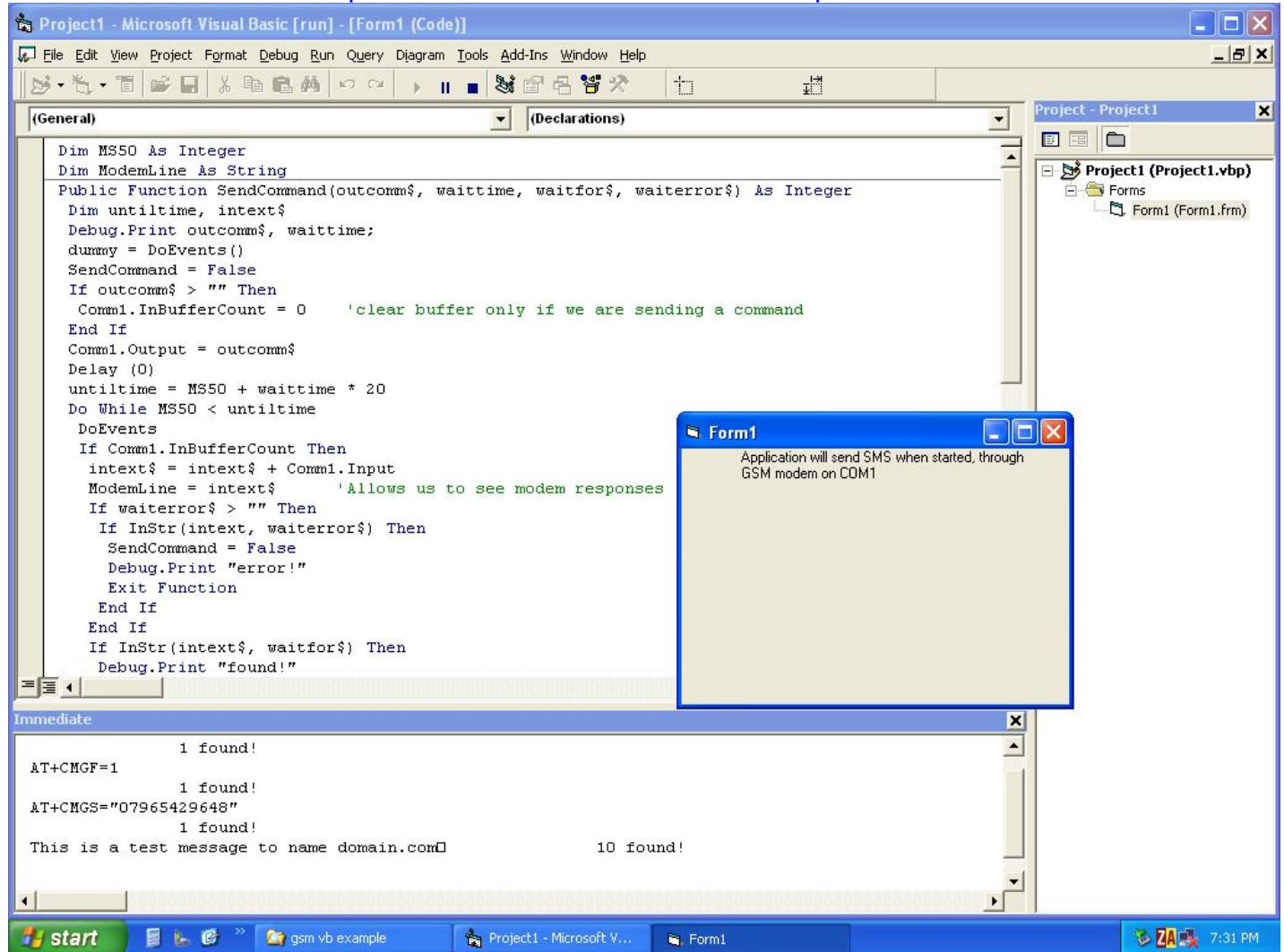
        printf("AT+CMGF=1\n");
        delayms(2000); // 2 sec delay

        printf("AT+CMGS=\"09825858509\"\n");
        delayms(2000); // 2 sec delay

        printf("CH#1=%bu ", getADC(1)); // sends ADC value as SMS
        putchar(26); // transmit message
        delayms(20000); // 20 sec delay
    }
}
```

Sample code of VB for sending SMS through PC

Download source code: <http://www.sunrom.com/files/1122-vb.zip>



The screenshot displays the Microsoft Visual Basic IDE with the following components:

- Code Editor:** Contains the following VB code:

```
Dim MS50 As Integer
Dim ModemLine As String
Public Function SendCommand(outcomm$, waittime, waitfor$, waiterror$) As Integer
    Dim untiltime, intext$
    Debug.Print outcomm$, waittime;
    dummy = DoEvents()
    SendCommand = False
    If outcomm$ > "" Then
        Comm1.InBufferCount = 0 'clear buffer only if we are sending a command
    End If
    Comm1.Output = outcomm$
    Delay (0)
    untiltime = MS50 + waittime * 20
    Do While MS50 < untiltime
        DoEvents
        If Comm1.InBufferCount Then
            intext$ = intext$ + Comm1.Input
            ModemLine = intext$ 'Allows us to see modem responses
            If waiterror$ > "" Then
                If InStr(intext, waiterror$) Then
                    SendCommand = False
                    Debug.Print "error!"
                    Exit Function
                End If
            End If
            If InStr(intext$, waitfor$) Then
                Debug.Print "found!"
            End If
        End If
    End Do
End Function
```
- Project Explorer:** Shows the project structure with 'Forms' containing 'Form1 (Form1.frm)'.
- Form1:** A modal dialog box with the text: "Application will send SMS when started, through GSM modem on COM1".
- Immediate Window:** Shows the execution output:

```
1 found!
AT+CMGF=1
1 found!
AT+CMGS="07965429648"
1 found!
This is a test message to name domain.com 10 found!
```
- Taskbar:** Shows the Windows Start button, taskbar icons for 'gsm vb example', 'Project1 - Microsoft V...', and 'Form1', and a system tray with the time '7:31 PM'.