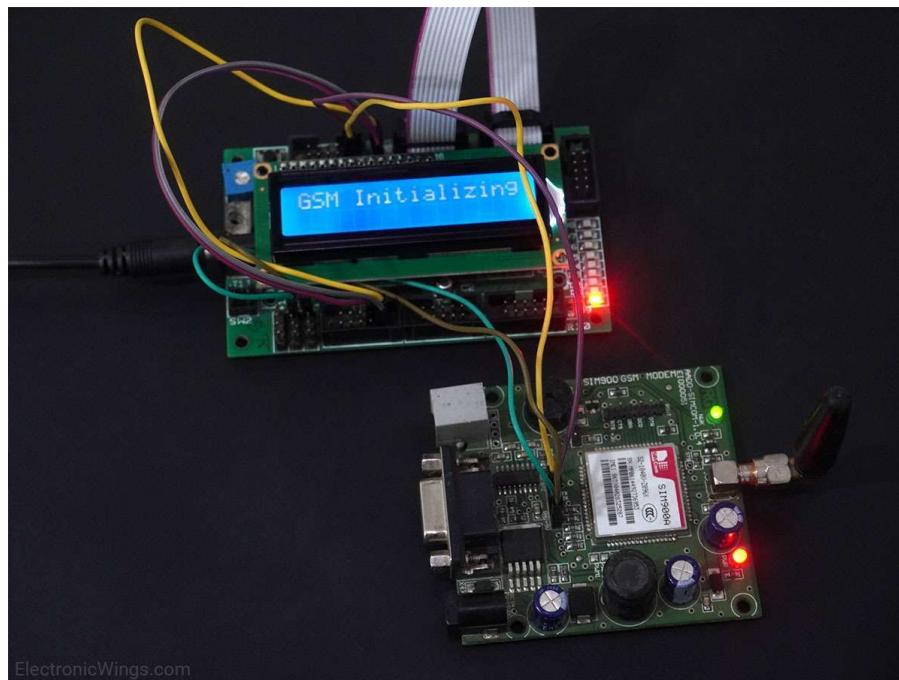




SIM900A GSM module Interfacing with AVR ATmega16/ATmega32



Introduction

Global System for Mobile communication (GSM) is a digital cellular system used for mobile devices. It is an international standard for mobile which is widely used for long-distance communication.

There are various GSM modules available in the market like SIM900, SIM700, SIM800, SIM808, SIM5320, etc.

SIM900A module allows users to send/receive data over GPRS, send/receive SMS, and make/receive voice calls.

It communicates serially with the devices like a microcontroller, PC using AT commands.

To interface the SIM900A module with the cellular network, it requires a SIM card provided by a network operator.

For more information about Sim900A and how to use it, refer to the topic **SIM900A GSM/GPRS Module** (<http://electronicwings.com/sensors-modules/sim900a-gsmgprs-module>) in the sensors and modules section.

The GSM/GPRS module uses USART communication to communicate with a microcontroller or PC terminal.

For information about USART in AVR ATmega16/ ATmega32 and how to use it, refer the topic **USART in AVR ATmega16/ATmega32** (<https://www.electronicwings.com/avr-atmega/atmega1632-usart>) in the ATmega inside section.

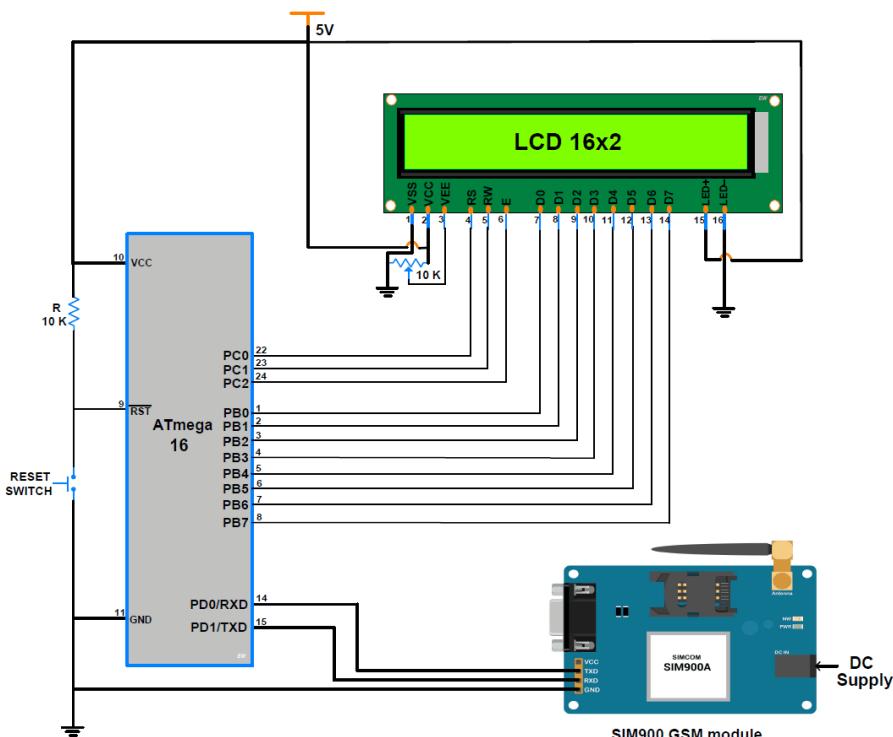


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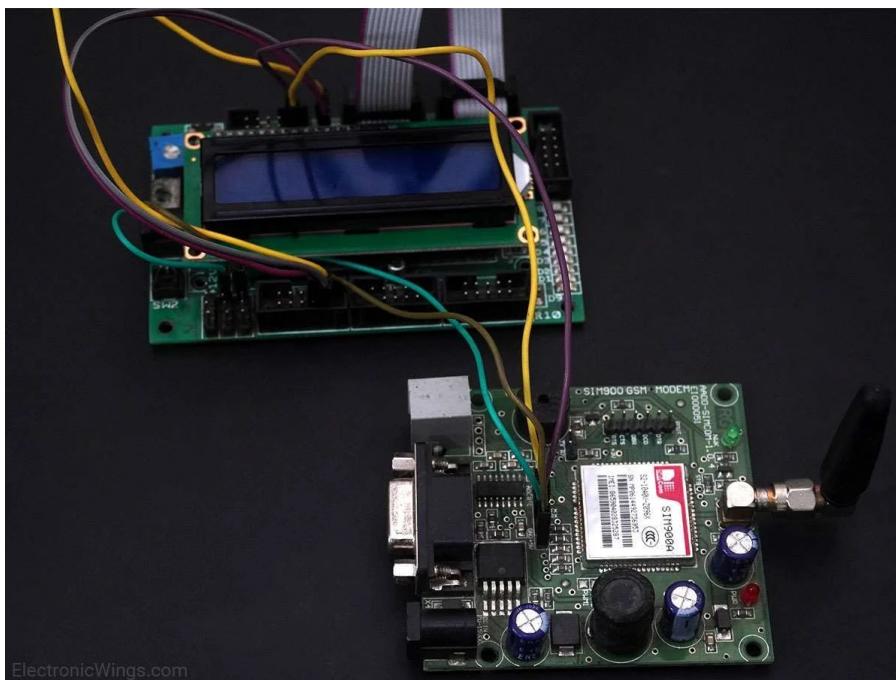
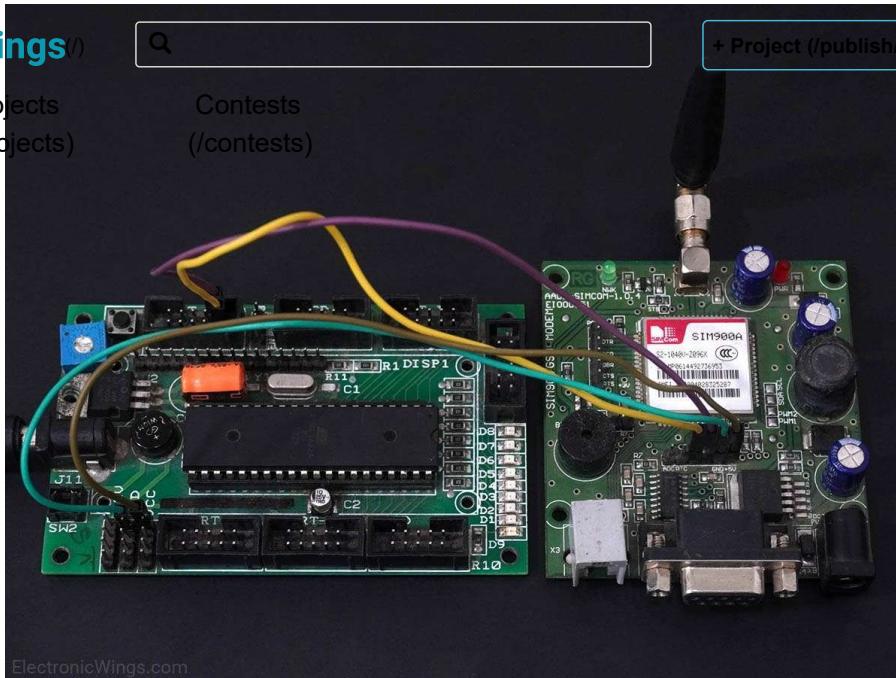


Sim900A Module

SIM900A GSM Module Interfacing With Atmega16/32



Interfacing Sim900A GSM Module with ATmega 16

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Send SMS using SIM900 GSM Module and ATmega16/32

Let's design a little application in which the user will receive SMS "call me" and immediately user will call that message sender.

SIM900 GSM Module Code for Atmega16

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<http://www.electronicwings.com>

```
#define F_CPU 8000000UL      /* define Clock Frequency */  
#include <avr/io.h>  
#include <avr/interrupt.h>  
#include <stdio.h>  
#include <string.h>  
#include <stdlib.h>  
#include <stdbool.h>  
#include "LCD_16x2_H_file.h"  /* include 16x2 LCD Header file */  
#include "USART_Interrupt.h" /* include USART Header file */  
  
#define SREG _SFR_IO8(0x3F)  
  
void GSM_Begin();  
void GSM_Calling(char *);  
void GSM_HangCall();  
void GSM_Response();
```

Video of Send SMS using SIM900 using ATmega16/32



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MOUSER ELECTRONICS
(https://www.mouser.in?utm_source=electronicswing&utm_medium=display&utm_campaign=mouser-componentslisting&utm_content=0x0)

ATmega 16
ATmega 16

X 1

Buy (https://www.mouser.in/ProductDetail/Microchip-Technology-Atmel/ATMEGA16L-8PU?qs=%2Fha2pyFaduiGCJtTvs2wv8fVZbVAalLu7Iq%2FgITS0tALAx6fMenLvg%3D%3D&utm_source=electronicswings&utm_medium=display&utm_campaign=mouser-componentslisting&utm_content=0x0)

Datasheet (/components/atmega-16/1/datasheet)

Atmega32
Atmega32

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Buy (https://www.mouser.in/ProductDetail/Microchip-Technology-Atmel/ATMEGA32-16PU?qs=aqrBurbvGdpkmjg7RWmsQ%3D%3D&utm_source=electronicswings&utm_medium=display&utm_campaign=mouser-componentslisting&utm_content=0x0)

Datasheet (/components/atmega32/1/datasheet)



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(https://www.mouser.com/ProductDetail/M5Stack/M031-D?qs=%2Fha2pyFadugEKx3cUjc5DGB4hxkc1iwAkV7YxEmv6c%3D&utm_source=electronicswings&utm_medium=display&utm_campaign=mouser-componentslisting&utm_content=0x0)

Datasheet (</components/sim900a-gsm-gprs-module/1/datasheet>)

SIM900A GSM GPRS Module

SIM900A is dual band GSM/GPRS 900/1800MHz module...

X 1

(https://www.mouser.com/ProductDetail/Adafruit/1447?qs=XAKIUOoRPe6ACImsjw7y7g%3D%3D&utm_source=electronicswings&utm_medium=display&utm_campaign=mouser-componentslisting&utm_content=0x0)

LCD16x2 Display

LCD16x2 Display

X 1

Downloads



ATmega16 Interface with GSM Project File

Dow (</api/download/platform/attachment/228>)



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Dow (/api/download/platf
nloa orm-attachment/229)
d

Comments



Comment



prabueac

(/users/prabueac/profile)
2017-08-20 04:04:37

⋮

am looking for

```
#include "LCD_16x2_H_file.h" /* include 16x2 LCD Header file */
#include "USART Interrupt.h" /* include USART Header file */
```

Where can i find these files ?

Reply Like 1 ⌂



londheshardul

(/users/londheshardul/profile)
2017-08-20 06:49:40

⋮

@prabu Appu: I found these files on this same page in Supporting Files--> source code -->ATmega16 Interface with GSM Project File

Reply Like



ebenezeridiong

(/users/ebenezeridiong/profile)
2017-10-15 00:20:41

⋮

Tried the simulation with proteus, it works just fine. Thanks to you boss!

Reply Like 1 ⌂

AhmedIbrahim

(/users/AhmedIbrahim/profile)
2018-10-10 02:01:52

⋮

how , can you send me the simulation

Reply Like

riy

(/users/riy/profile)
2018-03-10 23:44:10

⋮

I have used the files given above, but i cant get anything on the LCD. Can someone please help me as it is urgent.

Reply Like

authorized

(/users/authorized/profile)
2018-03-11 02:52:20

⋮

i think you need to check hardware connection again, since most of the time it solves the matters. and when you confirm with your hardware connection then it can be solved with program check/debug.



go step by step, after hardware connection check for only lcd working and the remaining

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Andre3000
(/users/Andre3000/profile)
2018-03-26 23:39:12 • Edited

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When we are calling the GSM_Calling () function in main, do we need to hard code the mobile number here like:

GSM_Calling("90xxxxxxxx")

Or do we need to only use the variable GSM_Calling(Mobile_no)?

I figured that the mobile number is supposed to be extracted when a message is sent to the module. However, the call function does not work unless I actually hard code the mobile number. I just need a little further clarification.

Reply Like

⋮

lokeshc

(/users/lokeshc/profile)

2018-03-27 00:09:05

In above program, controller waits for message to receive from user. When call me message received from user then above program extract the Mobile no. from received message and dial a call. So, if you want to use calling function without rely on message then you need to provide mobile no. Otherwise it will extract mobile no. from message.

Reply Like 2 ⌂

⋮

abhalerao0123

(/users/abhalerao0123/profile)

2018-03-27 01:23:10

earlier when I was referring this program I had same doubt but after reading program I cleared my doubt. you can see

GSM_Msg_Display()

⋮

In this function mobile no. is extracted from received message.

Reply Like

⋮

Andre3000

(/users/Andre3000/profile)

2018-03-27 19:52:30 • Edited

Thank you for your help. The number extraction was not working for me until in the for loop

```
for(int i=0;i<=12;i++)
{
    Mobile_no[i] = buff[buffer_pointer];
    buffer_pointer++;
}
```

I changed i<=12 to 11. I think it may have something to do with Indian mobile numbers and US mobile numbers being of different lengths.

Reply Like 1 ⌂

⋮

lokeshc

(/users/lokeshc/profile)

2018-03-27 23:04:56

Yes, it may be.

Reply Like

⋮

brijeshpratap716

(/users/brijeshpratap716/profile)

2018-04-24 04:56:09



Bro it's not showing anything on LCD. i have checked my connections many time but it still not showing anything

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Ans should i have to make any change if i use indian mobile number??
and i am making notice board i don't need of calling..i only wanna that message should display on LCD. so for this purpos will i need to write mobile number in programming???

Reply Like

lokeshc

(/users/lokeshc/profile)

2018-04-24 22:34:31

⋮

But I used the above program for my customized application and it works.

Bro if anything is not working for you then you should go step by step. 1st try to implement LCD only. if it is working then test the USART in this code and if everything is working then go for GSM programming.

Reply Like

oozecom11

(/users/oozecom11/profile)

2018-05-09 12:02:37

⋮

Hello.

How to sms sending. Can you see me writing source :))

Reply Like

lokeshc

(/users/lokeshc/profile)

2018-05-09 23:12:26

⋮

hello,

you can use the following function for sending SMS,

```
void GSM_Send_Msg(char *num,char *sms)
```

In this function you need to provide mobile no. and sms which you want to send.

This function is given in above program. you can have a try. all the best!!!

Reply Like

oozecom11

(/users/oozecom11/profile)

2018-05-13 00:15:01

⋮

Please provide your email address

Reply Like

raoraoprajwalprajwal

(/users/raoraoprajwalprajwal/profile)

2018-06-09 21:30:03

⋮

I'm using atmega16a with 8mhz external osci. In beginusart OK is not being returned.

The module works with arduino uno. Is it due to baud rate what could be the possible errors?

Reply Like

AhmedIbrahim

(/users/AhmedIbrahim/profile)

2018-10-08 02:42:06

⋮

ATMEGA32 , I have the same problem In GSM_begin OK is not being returned , i try it by simulation in proteus .

Reply Like

lokeshc

(/users/lokeshc/profile)

2018-10-10 02:30:04

⋮

check for the connection first. while building project verify your atmega used in IDE is same as atmega used on hardware.

Reply Like 116

suwasbohara

⋮



(/users/suwashbohra/profile)

2018-11-21 04:40:40



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I am wanting if someone call on the number (missed call) then that number should

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omedulislaminfo

(/users/omedulislaminfo/profile)

2019-05-01 14:12:50

⋮

Code is not works !!!!!!!1

Reply Like 1 ⌂

lokeshc

(/users/lokeshc/profile)

2019-05-01 15:48:40

⋮

What happened? Which atmega you are using & what is your oscillator

frequency

Reply Like

anandukrishnane27

(/users/anandukrishnane27/profile)

2019-05-06 21:49:26

⋮

What is the code for just sending sms

Reply Like

lokeshc

(/users/lokeshc/profile)

2019-05-07 12:10:23

⋮

Use following function for sending message by just passing number and message
string to the following function

GSM_SEND_MSG()

Reply Like

vophunghienhan1997

(/users/vophunghienhan1997/profile)

2019-06-03 12:04:53

⋮

hi, i have some problem:

#define SREG_SFR_IO8(0x3F)

what does it do?

and if i use F_CPU 16Mhz , do code have change?

i use atmel studio 6 to compile

tks

Reply Like

lokeshc

(/users/lokeshc/profile)

2019-06-03 16:56:52

⋮

This macro is for SREG (Status Register) which is used while dealing with an
interrupt routine. whereas 0x3F is an I/O address of SREG.sometimes it is necessary to check the status register before and after interrupt
service routine is getting affected or not.If you change the F_CPU 16MHz, then your delay functions need to be changed
for the proper 1ms delay.

Reply Like

vophunghienhan1997

(/users/vophunghienhan1997/profile)

2019-06-07 19:26:14

⋮

thank you. if i dont use (#define SREG_SFR_IO8(0x3F)), will this code have logic
error ?

Reply Like

lokeshc

(/users/lokeshc/profile)

2019-06-07 19:52:54

⋮



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(/projects)(/users/vophungthien)
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(/contests)(/users/vophungthien)
2019-06-09 18:49:47

⋮

thank you
Reply Like

⋮

chandrasekhar3841
(/users/chandrasekhar3841/profile)
2019-09-18 11:22:38

how can I send sms at a fixed time using GPS

I am using this GPS module.
<http://bigbelectronics.in/product.php?product=sim800l-gprs-gsm-module-microsim-card-core-boardquad-band-ttl-serial-port-pcbantenna>
Reply Like

christianekwunife95
(/users/christianekwunife95/profile)
2019-11-21 14:48:24

Good morning, pls i dont understand what this line of code is doing:

if(CRLF_Found++==2).....in gsmresponse function
Reply Like 1 ⌂

teswar159
(/users/teswar159/profile)
2020-03-06 07:05:06

Hi sir
I got a funny issue
Im using atmega 16a and gsm module sim 900a when I connect gsm module to USB to TTL and send commands it works fine
But when I connect gsm module to the atmega 16a MCU im unable to control it with code
Please help me, sir
Check the below pics for clarity
https://1drv.ms/u/s!AgeRUh26in4nlUHE5ksF2P_NYIk?e=BwIdXu
Reply Like 1 ⌂

suwasbohora
(/users/suwasbohora/profile)
2020-10-03 16:29:53

the code is working fine but when the whole system is power off and then on for the first time, lcd display GSM Initializing Error and if i again reset the microcontroller then it works fine, can anybody help me that if the gsm module is not ready for communication after power on then the lcd module again check that the gsm module is ready or not?in this code it does not working. I know gsm module takes little time to initializing but the lcd is not checking if the module is ready or not so how to solve it?
please!!!

Reply Like

dz1345ddd
(/users/dz1345ddd/profile)
2021-03-26 17:18:11

hi
code not work.
Reply Like

Amanpratapsingh
(/users/Amanpratapsingh/profile)
2021-06-15 15:49:00

Hi, I checked the code on Atmega16, it is working... But when I dump the same code on Atmega1284P... It is not working... Kindly help



Reply Like



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I am also using Osc freq 8MHz with 9600 baudrate

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⋮



ClaretesNishoban

(/users/ClaretesNishoban/profile)
2021-12-04 21:00:33

⋮

will it work for atmega32?

I am getting message undeclared USART..... and LCD.....

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