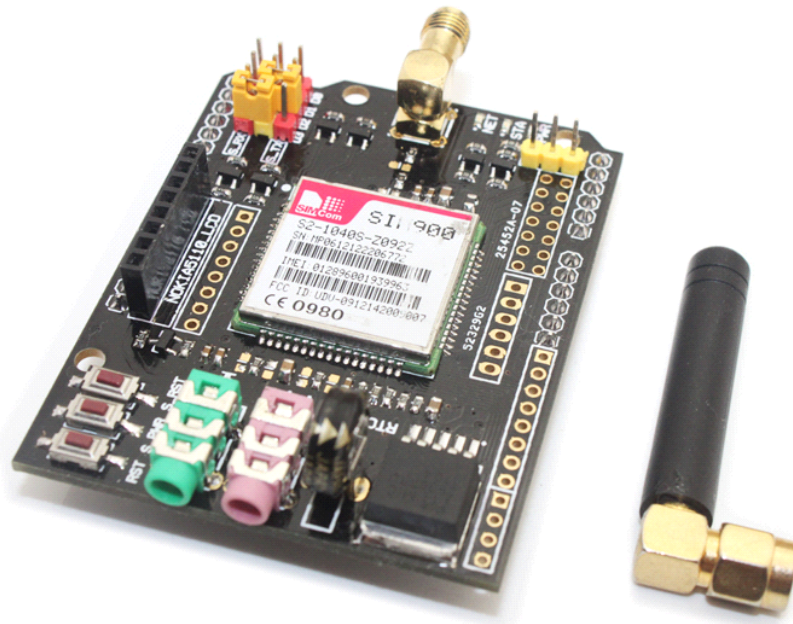


1. General description



GPRS Shield - EFCOM is an ultra compact and reliable wireless module. This GPRS Shield is compatible with all boards which have the same form factor (and pinout) as a standard Arduino Board.

EFCOM is based on SIM900 4 Frequency GPRS module. It is configured and controlled via its UART using simple AT commands. Just plug this shield on the Arduino/ Freaduino board, you could easily use AT command control EFCOM. You can use the 2 jumper block to connect the SIM900 UART port to any pins within D0-D3 (for Hardware/Software serial port). There is a switch on board, you can use it to select the connection of the UART port or Debug port, even be set on an Arduino, but by the switch and jumper block, the SIM900 can be connected to PC via FT232RL.

2. Features

- Quad-Band 850/ 900/ 1800/ 1900 MHz
- Fully compatible with Arduino / Freaduino and Mega.
- Free serial port connecting, you can select Hardware Serial

- port(D0/D1) control or Software Serial port(D2/D3) control it.
- SIM900 all pins breakout. Not just the UART port and debug port are layout, but also all pins on SIM900 are connected to the 2.54 standard pitch.
- Super capacitor for the power of RTC
- Two ways to power on and reset the EFCom. It can be controlled by the button on the board and can be controlled by the Arduino digital pins.
- GPRS multi-slot class 10/8
- GPRS mobile station class B
- Compliant to GSM phase 2/2+
 - Class 4 (2 W @850/ 900 MHz)
 - Class 1 (1 W @ 1800/1900MHz)
- Control via AT commands (GSM 07.07 ,07.05 and EFCOM enhanced AT Commands)
- Low power consumption: 1.5mA(sleep mode)
- Dimension:68.33x53.09mm(Same dimension of Arduino main board)

3. Applications

- Smart home.
- Robotic control
- GSM Communications

4. Electronic characteristics

PARAMETER	MIN	TYP	MAX	UNIT
Power supply voltage	6	-	12	V
Power supply current	1.5	100	2000	mA
HIGH level input voltage	3	3.3	3.6	V
LOW level input voltage	-0.3	0	0.5	V

5. Pining information

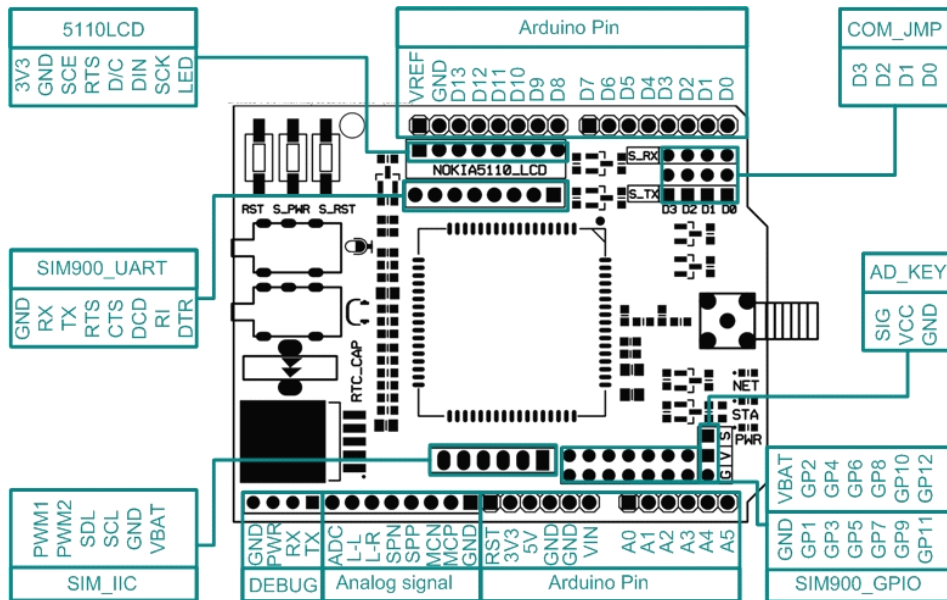


Figure 1 Top Map

TYPE	SYMBOL	DESCRIPTION
Arduino Pin	D0	Selectable communication pin, it can be selected as RX or TX
	D1	Selectable communication pin, it can be set as RX or TX
	D2	Selectable communication pin, it can be selected as RX or TX
	D3	Selectable communication pin, it can be selected as RX or TX
	D4	Connect to SIM900 UART Bus RI
	D5	Soft controlled Reset SIM900
	D6	Soft controlled Power on/off SIM900
	D7	-
	D8	-
	D9	Connect to 5110LCD Clock
	D10	Connect to 5110LCD Data
	D11	Connect to 5110LCD Data or Command selection
	D12	Connect to 5110LCD Reset
	D13	Connect to 5110LCD SCE
	A0	-
	A1	-
A2	-	

	A3	-
	A4	-
	A5	AD_KEY Signal
5110LCD	3V3	5110LCD Power Supply
	GND	5110LCD Power Ground
	SCE	5110LCD Chip enable (Active Low)
	RTS	5110LCD Reset (Active Low)
	D/C	Data or Command selection(Low-Write Command, High Write data)
	DIN	5110LCD Serial data input
	SCK	5110LCD Colock input
	LED	5110LCD Back Light (3.3V)
SIM900_UART	GND	Power Ground
	RX	SIM900 Serial Port Receive
	TX	SIM900 Serial Port Transmit
	RTS	SIM900 Request To Send
	CTS	SIM900 Clear To Send
	DCD	SIM900 Data Carrier Detect
	RI	Ring Indicator
	DTR	SIM900 Data Terminal Ready
SIM_IIC	PWM1	SIM900 PWM output
	PWM2	SIM900 PWM output
	SDL	SIM900 IIC Bus Data
	SCL	SIM900 IIC Bus Clock
DEBUG	GND	Power Ground
	PWR	Power Supply
	RX	SIM900 Debug Port Recevie. For debugging and uploading firmware
	TX	SIM900 Debug Port Transmit. For debugging and uploading firmware
Analog signal	ADC	Analog signal input
	L-L	Line-in input Left Channel
	L-R	Line-in input Right Channel
	SPN	Differential audio output
	SPP	Differential audio output
	MCN	Differential audio input
	MCP	Differential audio input
	GND	Power Ground

SIM900_GPIO	GND	Power Ground
	VBAT	Power Supply
	GP1	GPIO1
	GP2	GPIO2
	GP3	GPIO3
	GP4	GPIO4
	GP5	GPIO5
	GP6	GPIO6
	GP7	GPIO7
	GP8	GPIO8
	GP9	GPIO9
	GP10	GPIO10
	GP11	GPIO11
GP12	GPIO12	
AD_KEY	SIG	External AD Keypad signal input
	VCC	Power supply for AD Keypad
	GND	Power Ground
COM_JMP	D0	Can be set as TX(Short to S_RX) or RX(Short to S_TX)
	D1	Can be set as TX(Short to S_RX) or RX(Short to S_TX)
	D2	Can be set as TX(Short to S_RX) or RX(Short to S_TX)
	D3	Can be set as TX(Short to S_RX) or RX(Short to S_TX)

Table 1 Pinning information

6. Hardware configuration

Uart jumper setting

You can use the jumper to connect the TXD and RXD pins on SIM900 to any pins of Arduino D0-D3.



Figure 2 Uart Jumper setting

When using the jumper connection as Figure 3, the SIM900 connect to the ATmega328 chip on board(Arduino Pin D0 RX is and D1 is TX).

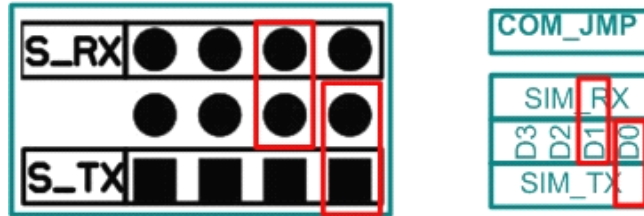


Figure 3 Uart Jumper setting

When using the jumper connection as Figure 4, the SIM900 connected with the FT232RL chip, so you can use the serial software on PC to control or configure the SIM900 module.

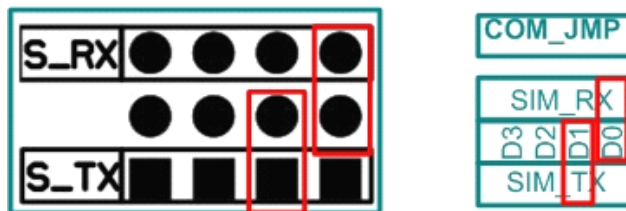


Figure 4 Uart Jumper setting

We suggest using the jumper connection as Figure 5. In this connection, you can use software-serial library to control the SIM900 and use Arduino native serial port(D0,D1) to communicate with PC . It is a good way to show debug information on PC serial port terminal.

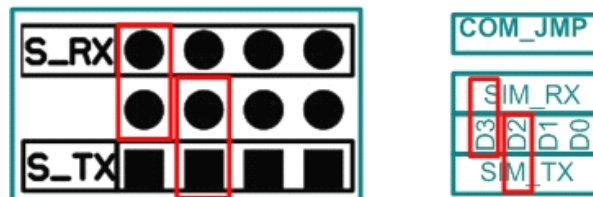


Figure 5 Uart Jumper setting

Indicator LED and Butons description

BUTTONS	DESCRIPTION
RST	Reset Arduino
S_PWR	Power on/off SIM900 (It also can be controlled by D5)
S_RST	Reset SIM900 (It also can be controlled by D6)

Table 2 Butons function description

LED	STATUS	DESCRIPTION
PWR	ON	Power on the EFcom
	OFF	Power off the EFcom
STA	ON	Power on the SIM900
	OFF	Power Off the SIM900
NET	OFF	SIM900 is not running
	64ms ON/800ms OFF	SIM900 not register the Network
	64ms ON/3000ms OFF	SIM900 registered to the network
	64ms ON/300ms OFF	GPRS communication is established

Table 3 Butons function description

7. Dimension outline

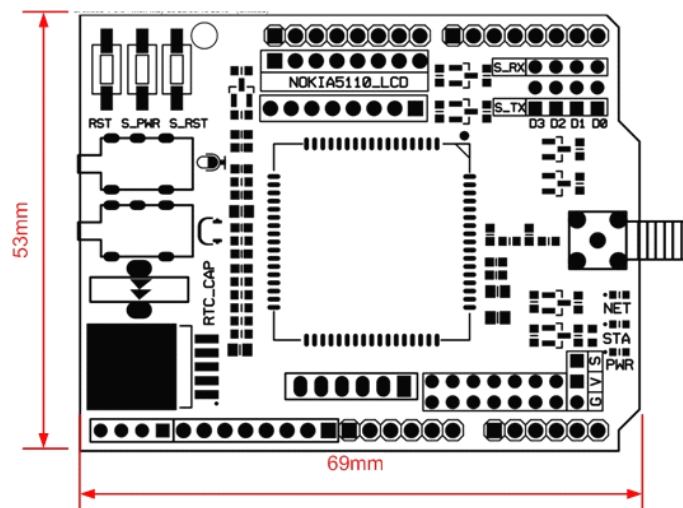


Figure 6 Dimension

8. Revision history

REVISION	DESCRIPTION	RELEASE DATE
V1.0	Initial version	5/7/2013

9. Contact information

For more information, please visit: <http://www.electfreaks.com>

For sales office addresses, please send an email to: service@electfreaks.com