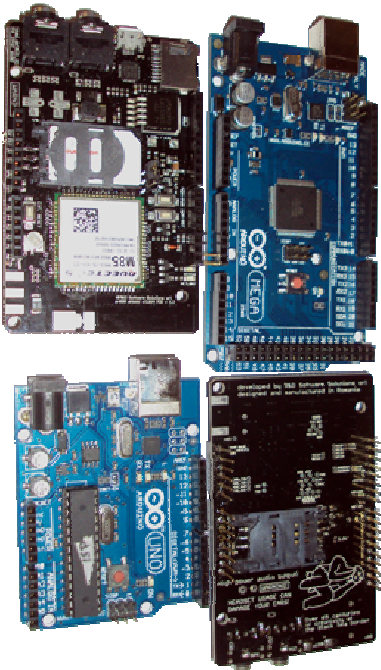


# a-gsm series

ARDUINO & RASPBERRY PI GSM / GPRS / DTMF / SMS shield



The new **a-gsm v2.064** revision 3 series - ARDUINO & RASPBERRY PI GSM / GPRS / SMS /DTMF shield – offers to best market performances for their product class, accompanied by reasonable cost.

Designed in EUROPE by **R&D Software Solutions** team -awarded in 2006 with the **GST SSC Bronze Award**, the a-gsm shield proudly represents the concept of porting of professional solutions to the hobby/DIY market.

The **a-gsm series** answers at your needs for a fully integrated, functional and affordable cellular modem shield / platform. Smart complete design of the a-gsm shield brings you the flexibility and easiness in integration, wherever your platform and application. Beyond ARDUINO / RASPBERRY PI / others hobby / DIY platforms integration, the a-gsm series can be easily and in a time manner incorporated into your equipment regardless your previous experience in modem technology. The a-gsm series represents your best choice for usage into a wide range of designs requiring robust and reliable performance.

Our range of products is available in following main versions: with or without ARDUINO headers soldered, combined with single or dual SIM sockets installed.

All versions offers as standard: high performance GSM/GPRS module (Quectel M85) with worldwide coverage- 850/950/1800/1900 MHz, integrated GSM antenna and u.FL socket for external antenna, USB (micro type B) and serial (3 up to 5V compliant) interfaces, POWER ON/POWER OF, MODEM STATUS and MODEM RESET controller interfaces, micro SD slot (supporting micro TF cards up to 32Gb), high performance switching power supply, 2 x standard 3.5mm stereo jacks for high power output (700mW RMS) audio and for capacitor microphone input and a lot of other electrical interfaces, including SERIAL2 and DIGITAL AUDIO interfaces, all in 84.00x53.34mm form factor.

Manufactured in EU.

- **Worldwide compatibility**
- **# quad band module**
- **GSM / GPRS / SMS / DTMF supported**
- **Two SIM sockets\***
- **Integrated GSM antenna and uFL connector for external antenna**
- **Integrated uSD(TF) socket**
- **Micro-USB interface**
- **3-5V serial interface**
- **5-38V wide voltage switching power supply**
- **ARDUINO & RASPBERRY PI direct compatibility**
- **Windows and Linux PC connectivity**
- **Audio jacks (out-700 mW RMS, in- capacitor MIC)**
- **Complex code examples**
- **Ideal for small-medium series gadget / project integration**

\* single SIM active

Part number	Description	Usage
AGSM2064#2S4AP	a-gsm 2.064 - 2 SIM sockets and Arduino headers	GLOBAL
AGSM2064#2S0AP	a-gsm 2.064 - 2 SIM sockets, no Arduino headers	GLOBAL
AGSM2064#1S4AP	a-gsm 2.064 - 1 SIM socket and Arduino headers	GLOBAL
AGSM2064#1S0AP	a-gsm 2.064 - 1 SIM socket and Arduino headers	GLOBAL
Part number	Accessories description	
AGSM-SMAF#085	u.FL to SMA female panel 85mm pigtail	
AGSM-SMAF#100	u.FL to SMA female panel 100mm pigtail	
AGSM-APHFS#01	Arduino pin headers set (1x6+2x8+1x10) 12mm high	
AGSM-RPiCFS#01	Raspberry PI cables set 7x 20cm long	
AGSM-BCKSIM#01	Second (bottom side) SIM card socket spare part	

## FEATURES AT A GLANCE:

**Quad band GSM/GPRS** module (Quectel M85) with true worldwide coverage: 850MHz, 900MHz, 1800MHz and 1900MHz

**INTEGRATED GSM antenna** and **connector for external GSM antenna** thought **u.FL connector**;

**DUAL SIM, SINGLE STANDBY** - MAIN SIM card socket standard and,  
SECOND SIM card socket (depends on ordered code) - (SIM cards required not included)

**MicroSD card socket** standard (support uTF cards up to 32 Gb),

**USB adapter embedded** standard - SERIAL to USB bridge adapter with micro-USB type B socket (you can use the a-gsm board as wireless modem with your PC, connecting it directly thought USB to your PC - Windows and Linux compatible),

**SERIAL TTL interface, down to 3V compliant** (TX and RX) available in Arduino pin-out,

**SWITCH POWER Supply\*** with efficiency up to 95%; the shield can be powered using: Arduino Vin pin(5-12V), Arduino 5V pin and thought USB connector(\*).

**Audio in and out 3.5 stereo jacks** standard - HIGH power audio output (700mW RMS) and capacitor  
Microphone interfaces embedded,

**Embedded switches:** control for modem ON/OFF & modem RESET and Arduino Reset

**DIGITAL AUDIO interface and SERIAL2 (3V TXD and RXD) interfaces** available thought additional back PCB side pads.

**COMPACT FORMAT:** 84.00x53.34mm, around 35g.

\* 5V-38V input support, low consumption, 3 way powering profiles: USB, Vin pin or 5V pin with manually selector for users convenience

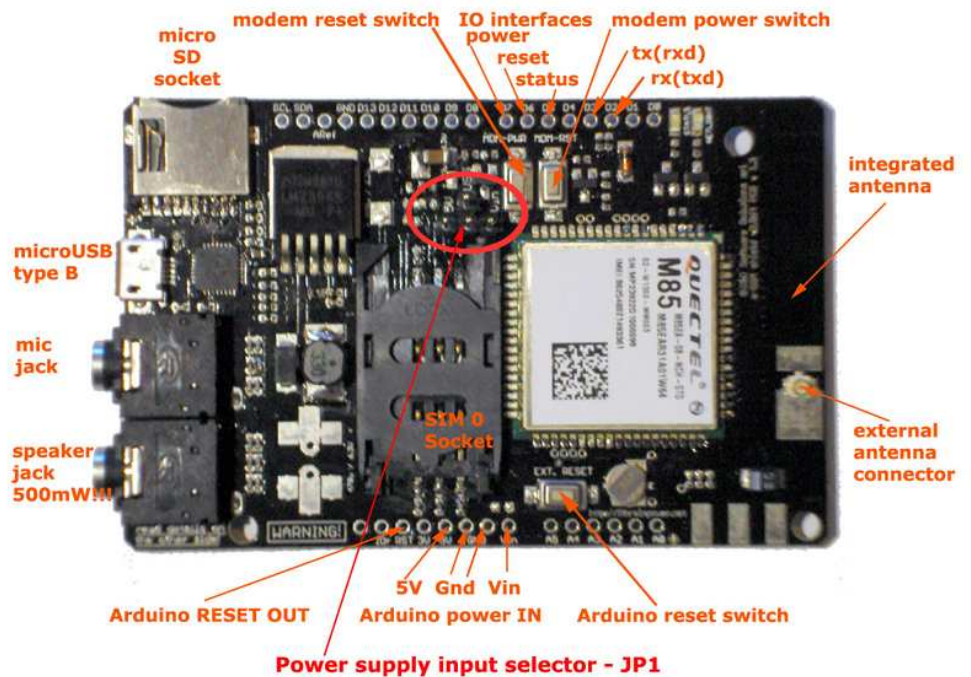
\*\* High Speed GPRS Multi-slot class 12 (configurable 1~12) Downlink and uplink speed - 85.6 kbps Max

**Extended Arduino and RaspberryPI support**, with code examples: - **GSM, TCP/UDP, HTTP over GPRS\*\***, **DTMF, SMS** and other features and utilities like **micro-TF CARD FILE SYSTEM STORAGE, DUAL SIM**, others.

**RaspberryPI PPP and TCPIP routing support (RaspbianOS)** trough easy installation and usage scripts.

## PIN definition:

Pin D2 = GSM TXD(RX),  
Pin D3 = GSM RXD(TX),  
Pin D7 = PWRKEY - POWER-CONTROL-MODEM(ON/OFF),  
Pin D5 = MODEM-STATUS,  
Pin D6 = RESET-MODEM,  
PinRST = Arduino RESET OUT,  
Pin5V = Arduino 5V,  
PinVin = Arduino Vin,  
Pin GND(1&2) = GND



## Standard Arduino Pin-out

ONE to ONE connection without additional cables for Arduino UNO/LEONARDO and Arduino MEGA ADK/MEGA 2560\*

\* Arduino LEONARDO & Arduino MEGA ADK/MEGA 2560, additional strap / 1k resistor may be needed

use 5V pin



use Vin pin



use USB as power



## **Easy RaspberryPI B+ wiring**

<b>Connection name</b>	<b>RPi pin</b>	<b>a-gsm shield pin</b>
POWER a-gsm	<b>16</b>	D7 - power(UP/DOWN)
RESET a-gsm	18	D6 - reset *
a-gsm STATUS	<b>12</b>	D5 - status
serial TXD0	<b>08</b>	D3 - RX(TXD)
serial RXD0	<b>10</b>	D2 - TX(RXD)
GND	<b>06/14</b>	GND - on Arduino power IN connector
5V power supply	<b>02/04</b>	5V - on Arduino power IN connector **

\* connection not mandatory

\*\* mandatory only for a-gsm powered from RPi; not mandatory for a-gsm powered separately: via USB connector or Vin.

## **CODE EXAMPLES and UTILITIES:**

### **Arduino examples list (C code):**

- SD\_SS.ino - a-gsm shield 2.064 microSD files list/read/write/delete example >> GSM SHIELD micro SD USAGE tutorial code
- SMS\_SS.ino - a-gsm shield 2.064 send/read/list SMS example >> GSM SHIELD SEND/RECEIVE SMS tutorial code
- GPRS\_HTTP.ino - a-gsm shield 2.064 HTTP client over GPRS example>> GSM SHIELD GPRS over HTTP tutorial code
- SIM\_UTILITIES.ino - a-gsm shield 2.064 SIM/MODEM/NETWORK/POWER ON/POWER OFF utilities >> GSM SHIELD UTILITIES tutorial code
- DTMF\_SEND.ino - a-gsm shield 2.064 send DTMF example >> GSM SHIELD DTMF SEND tutorial code
- DTMF\_RECEIVE.ino - a-gsm shield 2.064 receive/decode DTMF example >> GSM SHIELD DTMF RECEIVE tutorial code

### **Raspberry PI examples list (python):**

- powerOnOff.py - a-gsm 2.064 power on / power off / modem communication example >> GSM SHIELD POWER ON/OFF tutorial code
- setSerial.py - a-gsm 2.064 set serial communication speed example >> GSM SHIELD SET SERIAL SPEED tutorial code
- readSMS.py - a-gsm 2.064 list/read SMS example >> GSM SHIELD READ/LIST SMS tutorial code
- sendSMS.py - a-gsm 2.064 send SMS example >> GSM SHIELD SEND SMS tutorial code
- GprsHttp.py - a-gsm 2.064 HTTP client over GPRS example >> GSM SHIELD GPRS over HTTP tutorial code
- fileHandling.py - a-gsm 2.064 list/read/write/delete files on uSD example >> GSM SHIELD FILE SYSTEM HANDLING tutorial code
- a-gsmUtilities.py - a-gsm 2.064 SIM/MODEM/MISCELLANEOUS (including DTMF) usage example utility >> GSM SHIELD UTILITIES tutorial code

### **UTILITIES:**

- a-gsm-raspian-ppp-1.0.tar.gz - **Raspian PPP and routing utility**
- setSerial.py - change and save a-gsm serial communication speed Python utility (included in a-gsm-raspian-ppp.tar.gz and in a-gsm-series-RaspberryPI-code-examples-1.0.tar.gz)

### **Additional documentation:** (available on <http://itbrainpower.net/a-gsm/>)

- a-gsm v 2.064 audio wiring
- a-gsm v 2.064 rev 1.3 ARDUINO and RASPERRY PI compatible shield block schematics
- a-gsm series GSM / GPRS / DTMF / SMS ARDUINO and RASPERRY PI compatible shield
- a-gsm shield series - TOP description
- a-gsm shield series - ARDUINO wiring using software serial (used in Arduino code examples)
- a-gsm shield series - Arduino wiring for hardware serial
- a-gsm shield series - Raspberry PI B+ wiring schema
- QUECTEL M85 AT command manual