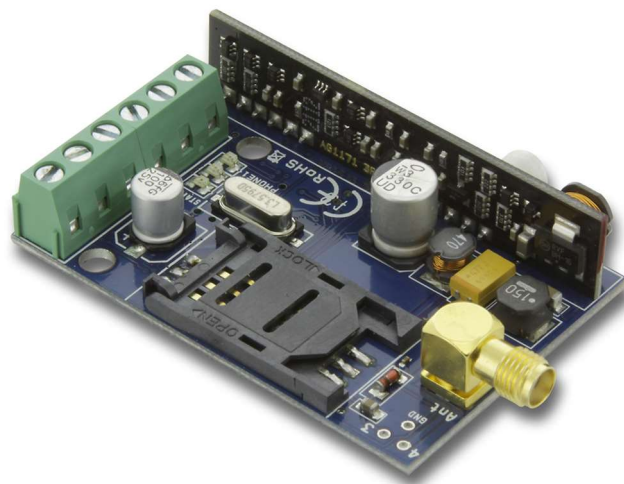




EasyLine GSM

MINIATURE PHONE LINE (PSTN) SIMULATOR



INSTALLATIONAL AND USER'S GUIDE

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Device description and operation

The GSM device is an analogue phone line simulator. Using it as an accessory to an alarm center can substitute existing but low quality or nonexistent but involving costly configuration phone lines. The module has the Plug&Play feature thus to use the line simulator function it needs only an active SIM card.

It can fully emulate a PSTN line by generating line voltage and ringing voltage additionally forwarding DTMF sounds. This standard DTMF phone line ensures you can attach the module to your system without experiencing any transition problems.

The module is capable of two-way communication. At incoming call device connected to the TIP/RING port can be remotely accessed and programmed (if the device is capable of and available network circumstances facilitates).

The module can be programmed with SMS command or with device buttons connected to TIP/RING port. By knowing the security code module settings can be changed at any time in SMS without having to establish a physical connection.

The device has 1 SMS input. This input is normally closed (NC) correlated to GND point. SMS notification can be triggered by cutting off the closed loop between the input and the GND point. The SMS text and the number for notification can be edited at any time by SMS command.

The device has 1 Open Collector output switched to GND when activated. If we correctly connect a relay to it one wire goes to the +12V and the other one to the Open Collector. At inductive load (ex. using the previously mentioned relay) a protection diode must be used!

The output can function in monostable mode so it will draw for a certain time than it will release. Output can be loaded with 300 mA maximum and it can handle a voltage of 30V maximum.

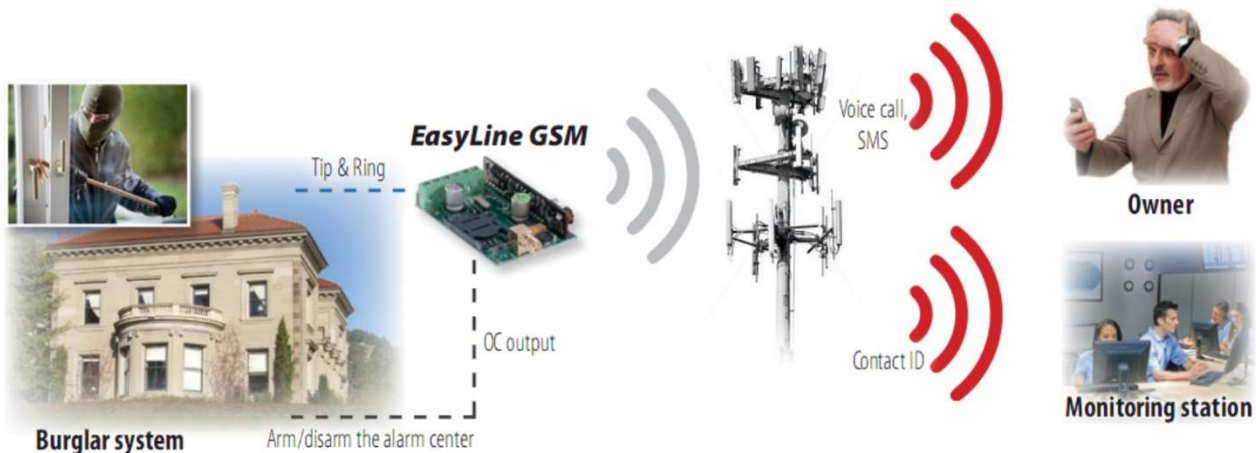


Figure 1: Device operation

The output can be controlled with call number identifying. In this situation module identifies the incoming call based on the stored numbers of the SIM card. The SIM card numbers can be edited when SIM is placed in a cell phone.

Module buildup

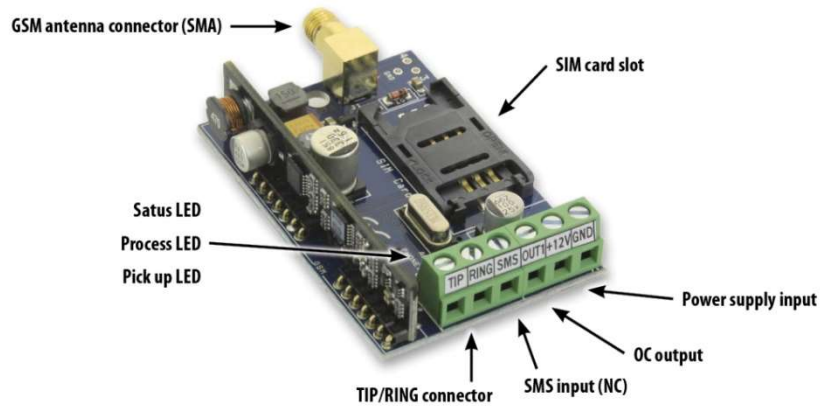


Figure 2: the buildup of the module

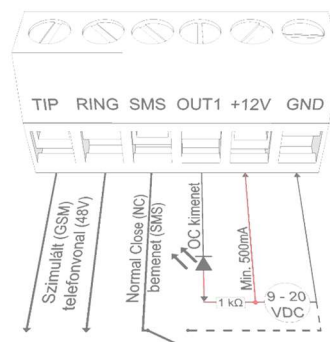


Figure 3: wiring diagram

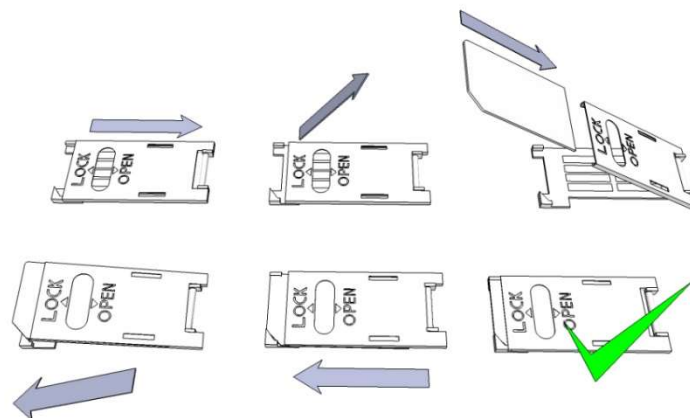


Figure 4: Inserting the SIM card

Installation guide

Technical parameters

- Power voltage: 9-20 VDC
- Simulated voltage: 48V (line), 72V (ringing)
- Standby power drain: 80 mA
- Maximum power drain: 1000 mA
- Open Collector output load: max. 30V/300 mA
- GSM module type: SIMCOM 800
- GSM frequency: GSM 850 / EGSM 900 / DCS 1800 / PCS 1900 (Multi- Band)
- SIM card usage: brand free GSM module
- GSM antenna type: SMA connector (comes with package)
- Dimensions: 62 x 42 x 16 mm, packed: 132 x 128 x 32 mm
- Operation temperature: -20°C - +50°C

Installation steps

1. Carry out a signal strength check with your mobile phone. Sometimes occurs there is no sufficient signal strength at the commissioning site. In this case it is recommended to change module position prior to installation.
Do not install the device to places where strong electromagnetic waves might occur, ex. next to electric motors or alarm transformers!
Do not install in watery places or in places with great humidity!
2. Connecting the antenna: antenna can be secured with an SMA connector. If you are reading low signal strength use antenna with higher gain. Signal strength grow can also be achieved by repositioning the antenna.
Do not position the antenna under various metal covers as those might significantly ruin the signal strength!
3. **You should opt out the SIM card PIN number request, voicemail and call notification!**
Sometimes new SIM cards must be activated (usually an outgoing call has to be made). Check the validity of the card. If you have a prepaid card check its balance and its usage possibilities (ex. calls only)
4. It is practical to check the satisfying operation of a SIM card in a cell phone prior of insertion into a module.
At this step it is practical to also save controlling telephone numbers on the SIM card.
Number identifying at the caller and the called has to be checked. At certain service providers this function must be enabled formerly.
5. Insert the SIM card in the SIM card slot of the module.
6. Connectors have to be connected according to the wiring diagram. If you are dealing with OC output mind the correct wiring of the relay protecting diode.
7. If you are working with OC relay be cautious especially in avoiding electric shocking. A proper contact protection must be established. If you are not qualified ask for professional help.
8. Check if the power supply performance will be sufficient for the module. Mind the polarity. If wiring is reversed the module will not operate or might get damaged.
9. Now the device can be powered.
10. After connecting the voltage supply the red LED is lighted indicating the device establishing connection with the GSM system (this can be 1 minute utmost).
11. If red LED goes off and green LED is blinking module is online and connected to network. The blinking number(s) indicates GSM signal strength.

LED signals

Signals give essential information of the module, of GSM signal strength and of possible errors. By blinking we mean flash numbers between two longer pauses.

- A Phone LED (red) lit indicates the device connected to the module "picked up the phone". Blinking of the LED indicates DTMF sound reception and dialing process.

- A STATUS LED (green) gives feedback of signal strength based on the chart below:

Flashes	Signal quality
1	Bad
2	
3	Decent
4	Good
5	Excellent
LED lighted	GSM connection rejected

An ACT LED (red) lit means the initiation process at startup. At this phase module performs the initial checkings. In any other case an event sending is proceeded (SMS or voice call).

Flashes	Error code
1	Initializing
2	Bad GSM module
3	SIM card not inserted
4	SIM card locked with PIN code

- A STATUS LED (green) gives feedback of signal strength based on the chart below:

Programming using SMS commands

Module can be even programmed with 1 SMS command. SMS must start always with the security code. Commands can be stacked separated by comma so multiple parameters can be altered at once.

SMS length can contain maximum 160 characters.

Command list is as follows:

SMS security code 1234 default	smstel=	which telephone number will receive notification if loop between SMS input and GND is interrupted 1234smstel=+36701234567 (Uppercase and lowercase commands are accepted)
	telbe=	the telephone number to which it will forward incoming SMSs. Never set the phone number of the module! 1234telbe=+36701234567 (Uppercase and lowercase commands are accepted)
	ksms=	SMS text (mark its end with *) 1234ksms=SMS Test* (Uppercase and lowercase commands are accepted)
	out=	controlling time of the open collector output in seconds (ex. 030, maximum 200) 1234out=003 (Uppercase and lowercase commands are accepted)
	smspin=	new security code of SMS command (4 characters) 1234smspin=4321 (Uppercase and lowercase commands are accepted)
	info	State check 1234info (Uppercase and lowercase commands are accepted)
	ADD=<SIM position number>=<phone number>*	Save control phone number to SIM 1234ADD=011=+36701234567* (ONLY uppercase commands are accepted)
	DEL=< SIM position number >	Delete control phone number 1234DEL=011 (ONLY uppercase commands are accepted)
	RESTART	Module restart 1234RESTART (ONLY uppercase commands are accepted)

Example for programming with SMS:

1234SMSTEL=+36301111111,TELBE=+36302222222,KSMS=alarm*,OUT=003,SMSPIN=1234,1234ADD=011=+36301234567*

If possible, save control phone numbers from position 11 on the SIM card due to the settings of the service provider. After successful programming, the module returns an SMS with the following text:

"Stored: 1 Error: 0 V3.7"

If there was an error in the programmer SMS, the following text will be returned:

"Stored: 0 Error: 1 V3.7"

Programming with telephone

The GSM module can be programmed with a telephone using DTMF sounds. By picking up the telephone connected to TIP/RING ports the programming can be commenced:

The following codes can be used for programming:

Code	Value	Description
***1	Telephone number	SMS input phone number for notification
***2	Telephone number	SMS forwarding phone number. <i>Never set here the phone number of the module!</i>
***3	Receiving: 1 to 9 Sending: 1 to 9 ex. 47 → receiving: 4, sending: 7	amplifying line simulation sending and receiving
***4	3 digits, maximum 200	controlling time interval of monostable output in seconds

Examples for commands above:

*****106305551234** → alarm from SMS input send the SMS to +36 30/555-1234

*****206301119876** → messages arriving to the module forwards to +36 30/111-9876

*****356** → line simulation amplifying modifier value to: receiver: 5, sending: 6.

*****4030** → controlling time of Open Collector output set to 30 seconds.