WiLARM®
GSM SECURITY

WiLARM-1 SECURITY GSM
Users Manual

Version: 1.2

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I. Basic description

The WiLARM device is a general purpose distant signal module based on GSM technology, which takes effect to the input signal (for example infrared moving sensor), which means it can send SMS and/or dial a phone number. The device is low profile and compact-designed, therefore it easily fits with a few investments to the most different typed alarm systems, home alarm as well as other security systems and tools wanted under control, which can be freshly or previously installed, operated systems. According to the construction of the device it includes a card-independent industrial GSM modem and an intelligent microprocessor, which complete the current task together. After the installation it's possible to set up the device with SMS messages and programming (for example phone number, options, testing), etc. The SMS programming is secured by an own 4 digits PIN-code, which can include numbers or letters. A basic rule is that the programming based on SMS needs to start with PIN-code. It has security reasons. Meantime writing the orders needs to pay attention to use small letters. Calling the module – if the system works – it responds busy (depending on the operator responds other) signal, then we can check it for free that the device is ready for working.

Important note:
Primarily the PIN-code is 1234, which is suggested to change after the first switching on using the 1234pinXXXX command (the new PIN-code to the location of XXXX).

II. Steps of Installation

1. Switch off the PIN code request on the SIM Card. You can make it with another mobile phone or using WilarmRead software.

2. Maybe the new SIM card needs activation on the Mobile Network. Usually it is just one regular phone call.

3. Put the SIM Card into the WiLARM-1 GSM device.

4. Switch on the WiLARM-1 GSM device connecting the external power supply (12 Volt / 2 Ampere)

5. After switching on the red LED will light. This means, the device operates. After the green lights, it means, the module verifies the GSM status.
In the normal working condition the green LED blinks. The number of blinking means the network power.

- 1-2 blink=weak network power
- 3 blinks =regular network power
- 4-5 blinks =good network power

In case of the red and the green LEDs blinking together mean, the module has a failure. number of blinking means the error code:

1 blink	Configuring modem
2 blinks	GSM module does not work
3 blinks	SIM card not inserted
4 blinks	SIM card protected with PIN code
10 blinks	Device is in Modem mode (needs restart to exit this mode)

In case of the green LED lights continuously, the module cannot register on the GSM network. (not enough network power or bad SIM card).

6. Programming of the module can be performed via SMS or using a PC. With SMS only the basic functions can be programmed. For the advanced functions, to connect the module to a PC, you need a Serial (RS232) or a USB cable, which you can buy as an option.

III. SMS programming

Parameters to set

In the examples the security code of the modules appears as 1234. If you change this code, please substitute 1234with the new code. The examples in the manual will appear in blue colour. You have to send it by SMS. Further settings can be programmed using a PC.

After SMS programming modules must be restarted. It can be performed with disconnecting power supply or with 1234reset SMS command

1. Changing the security code.

1234pin4321 where 4321 is the new SMS security code.
The SMS security code can be only four digits, but for higher security you can even use letters.

Important: The security code is case sensitive! Use letters only from the English alphabet!

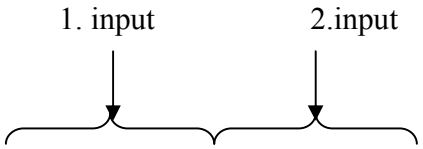
Start every SMS with this security code.

2. Setting phone numbers to alarm

1234swnumber1, number2, number3, number4
number1=phone number to alarm. When it its place is empty in the message, the number will stay intact in the settings. If you set “d” in the place of the number, it will delete it. Using this system, you can program four phone numbers sending only one SMS. Phone numbers must be separated with comma “,” mark.

Example:
Pl: number1, number2=phone numbers to set, number3=previously set phone number to leave intact, number4=phone numbers to delete.
1234sw0630888888,0620222222,,d

3. Installer settings



1234ossssvvvv,ssssvvvv,tt,k

ssss= Four letters „s" means, which previously set phone numbers must be notified by SMS. If „s"=1 SMS will be send to this phone number, if 0 the not. If you leave it blank, previous settings will stay valid.

vvvv= Four letters „v" means, which previously set phone numbers must be notified by VOICE calling. If „v"=1 the number must be dialled, if 0 then not. If you leave it blank, previous settings will stay valid.

tt= Type of the two inputs (IN1 and IN2). The value of „t" can be 0-5.

0	input is switched off
1	24 hour regular input
2	Not used
3	Input, which can switched with Autonomous alarm mode
4	not used
5	Input to activate and deactivate the module externally

If you type „i" letter before the input it will be inverted.

k= Type of the output. Value of „k” can be 1-7.

(K)	MONO/BI stable	Control with alarm	Control with CallerID
1	BISTABLE	OFF	OFF
2	MONO	ON	OFF
3	BISTABLE	ON	OFF
4	MONO	OFF	ON
5	BISTABLE	OFF	ON
6	MONO	ON	ON
7	BISTABLE	ON	ON

Example: Send SMS to the 2nd and 3rd phone number of first input (IN1),
Voice call to the 1st number of second input (IN2)
First input is inverted 24 hour regular input
Second input is not inverted regular inpu
Both outputs are monostable (MONO), control with alarm.

1234o0110000000000000,0000000010000000, i1n1,2

4. RESET the GSM module

After SMS programming module must be restarted. In case of just phone number modification restart not mandatory.

1234reset

5. Test request

1234t

If you send this message to the module, it will respond with a simplified status SMS.
The response will be similar:

IN1: KI/BE (Status of 1st input)
IN2: KI/BE (Status of 2nd input)
Cover: OPEN/CLOSE (Status of the tamper button)
OUT1: KI/BE (Status of 1st output)
Alert mode: KI/BE (Is the switchable inputs of the module active?)
HOUR: MINUTE: GSM internal time (Important parameter using life signal)
Temperature: 020C (Internal temperature sensor measures 20 °C)

6. Switching the outputs:

The output remains active for the set time in monostable mode. In case, it is set to bistable mode, remains active until the next control (via SMS or voice call).
You can use it to open a garage door, switch light, heating on/off, start car heating, etc.

Idea: You can switch the output relay even with caller number identification (CallerID) function!

1234k1 activates the 1st output
1234k1be only in case of bistable mode, the output switches on
1234k1ki only in case of bistable mode, the output switches off

7. Alarm system mode – activating and deactivating:

This function works, if the inputs are set to Autonomous alarm mode!

The alarm system can be activated with the following command:

1234be The input will be active and will send alarm

The function can be activated with SMS or CallerID

To switch it off:

1234ki The input will be deactivated and will not send alarm

The function can be activated with SMS or CallerID

8. Setting the clock:

1234clkoopp

oo= Hour on two digits (e.g. 03)

pp = minute on two digits

Example: 1234clk0523 Sets the GSM clock to 5:23

IV. Functions

1. Voice calling in case of alarm

You can set up to four phone numbers to call. After alarm, the module first sends the SMS notifications, and then calls the preset phone numbers, until one of the notified persons answers the phone. If you are using circular call function, all of the persons must answer the phone.

2. SMS sending in case of alarm

You can set up to four phone numbers to send SMS after alarm to. An option can be set, to send SMS even if the alarm stops on the input. Then before the text of the message „Setback" will appear.

3. Life signal

With this function you can control, if the module works correctly. The practical set is 7 days, so the module will send one life signal SMS weekly. You can set it with a PC for the four preset phone numbers.

4. Caller number identification (CallerID)

The numbers, stored on the SIM card can be set to accept for caller number identification. You can edit these numbers with your mobile phone or with PC using WilarmRead software. With this function you can control the preset output of the module or activate/deactivate of the properly configured inputs. If you dial the module it will hang up the calling after first or third ring (depends on the GSM service provider). From this you will know, if the output switched on or off, or the modules input, - previously set to autonomous alarm mode- is activated or deactivated.
CallerID can be used for different functions, but the number of the ringing can show just for one function.

Priority of ringing signals:

1. Activate/deactivate
2. Relay control

5. Autonomous alarm mode

The module can act as an autonomous alarm system. In this case the preset input can be activated or deactivated. To control it you can use SMS, voice calling, or from an input configured as type “5” (for example using an external keypad)

6. SMS redirection

Using this function you can set a phone number and any SMS, which are not interpretable as a control command for the module will resend to. Very useful to have the messages from the GSM service provider about the prepaid SIM cards money balance.

7. Master reset

The module clears all phone numbers and restores factory settings.
How to reset externally:

- Remove the module from the external power supply
- Press Reset switch
- Connect the external power supply holding the switch
- Release the reset switch

8. Switching off the GSM device

Remove the module from the external power supply. If none of the LEDs light, the device is switched off.

9. Programming the module from a PC:

Power the module from the external power supply and connect to the PC using serial or USB cable. Start WilarmRead software.
If the communication works, the PC recognizes the type of the module and starts its programming sheet.
For further information, please read the documentation of our WilarmRead software. You can save and restore the configurations.

10. Saving the state of the output to memory

It is possible to save the state of the output relay to memory. In this case the software reminds it and in case of restart or power failure output will be in its last saved state.
Works only in Bistable configuration.

11. Activate/deactivate with CallerID

Using this function, in case of incoming call, module will accept the preset phone number and arm/disarm the preset inputs. Calling the module will hang up after one ring, this means disarming. After four rings the module hangs up in case of arming the system. It is not mandatory to wait for the four rings, user can disconnect before.

V. Technical parameters:

1. Inputs

Two inputs can be configured separately. Each can have different configurations. You can set up to four phone numbers for them. Inputs must be connected as Normal Close (NC) default, during alarm must be released. This operation can be reversed setting “inverting input” function (only with PC programming).

2. Outputs

One relay output, which gives you a Normal Close (NC) default. This can be inverted using the jumper (NC/NO select) on the panel to have a Normal Open (NO) output. The relay can be loaded maximum 30Volts DC / 1 Ampere. To switch a mains network (230 Volts) an external relay must be connected.

3. Power supply

The device has an internal power supply to generate the internal low voltages. The input power supply on the contacts can be: 8 Volts – 15 Volts DC (2Ampere).

Never operate the module using an alternating current (AC) power supply!

4. GSM modem

GSM/GPRS Radio Performance Multi-Band: 850 MHz, 900 MHz, 1800 MHz, and 1900 MHz
Sensitivity: <-106 dBm (Typical GPRS CS1)
850 & 900 MHz Transmit Power Class 4 (2 W)
1800 & 1900 MHz Transmit Power Class 1 (1 W)
(33 dBm ± 2 dB @ antenna connection)
SIM Interface: Remote SIM Option 1.8/3-Volt SIM Capability
Emissions: FCC Parts 15,22 & 24, Class B 3GPP TS 51010-1,
Section 12.2 EN 55022 Class B

5. Mechanical data

Width: 59mm
Height: 54mm

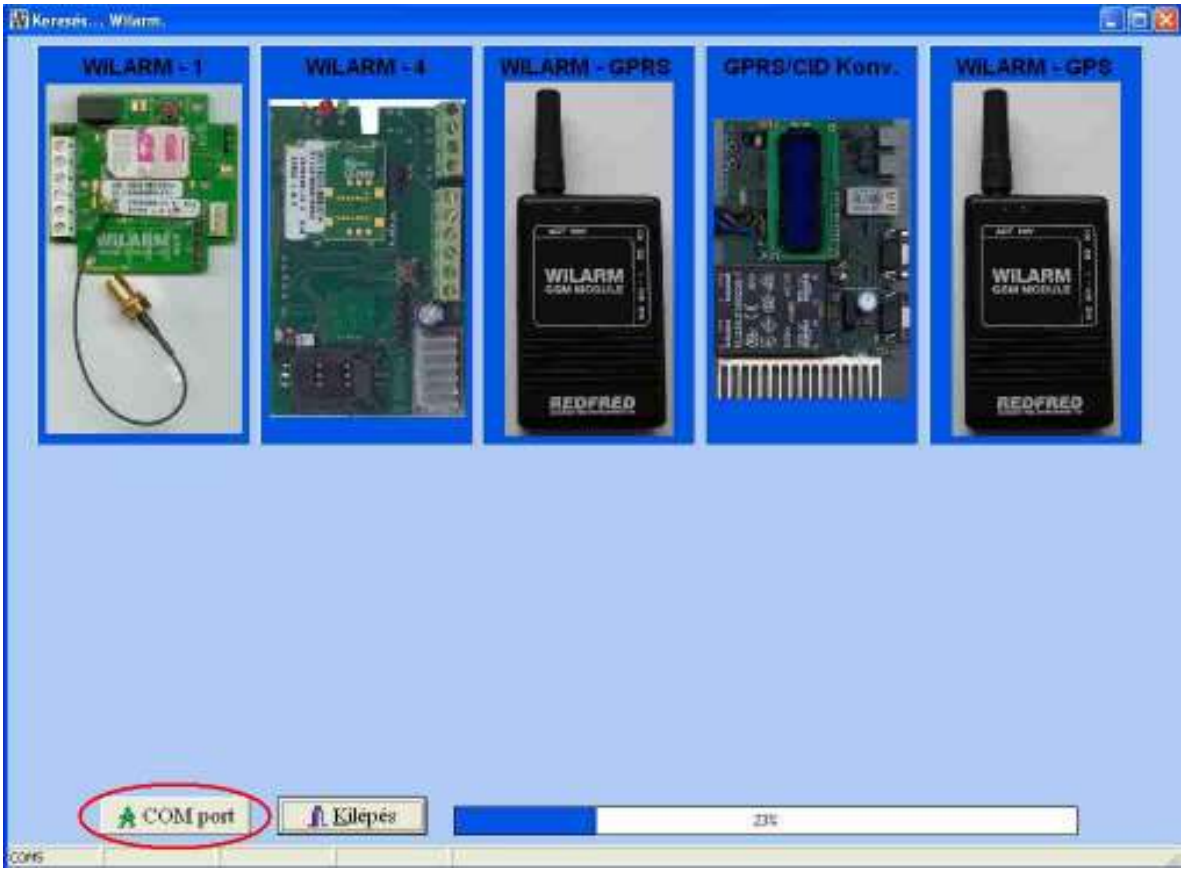
6. How to mount the device in the alarm systems box:

- After mounting be sure, that no metal object can touch the panel. Please mount it onto the plastic spacers. Maybe put some insulating material under the panel.
- Place the panel far from the transformer of the alarm system. Otherwise the electromagnetic radiation can disturb the GSM device.
- In case of insufficient GSM network power, please mount a high gain external antenna onto the device. The antenna must have a SMA male connector. We also can supply much kind of antennas for the GSM module upon request.

VI. Programming table

1234pin4321	Changing the security code
1234swnumber1, number2, number3, number4	Setting phone numbers to alarm
1234ossssvvvv,ssssvvvv,tt,k	Configuring the inputs
1234reset	RESET the GSM module
1234t	Test request
Switching the outputs	
1234k1	activates the 1st output
1234k1be	only in case of bistable mode, the output switches on
1234k1ki	only in case of bistable mode, the output switches off
Alarm system mode – activating and deactivating	
1234be	The input will be active and will send alarm
1234ki	The input will be deactivated and will not send alarm
1234clk0523	Setting the clock

VII. Programming using a PC



For detailed information, please refer WilarmRead documentation, "**WiLARMread Users Manual.pdf**".

VIII. Troubleshooting

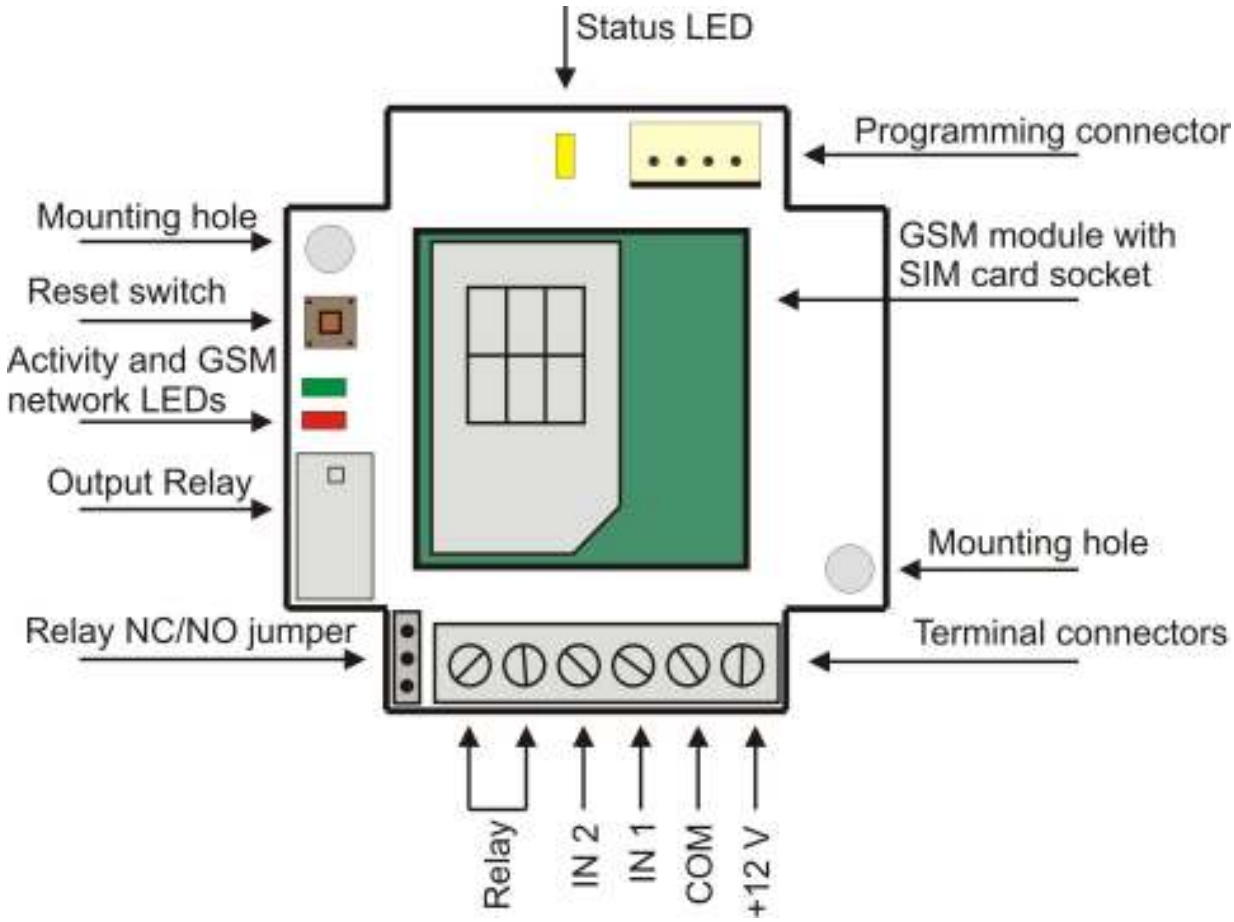
Failure:	**Possible solution:**
After power on the red LED still lights	1. Switch off the PIN of the SIM card 2. The SIM card must be activated by the GSM Service provider 3. Check the balance of the SIM card, if you have enough credit. 4. Place the SIM card into a regular cell phone and try to send an SMS.
None of the LEDs light after switch on	1. Check the auxiliary power supply. It must be 9-14 Volts at 1 Ampere.
After switching on the green LED lights continuously	1. Bad network power. Change the Antenna to an external one with SMA connector cable, or place the antenna higher. 2. Not a valid SIM card, check it in a regular mobile phone if it can connect to the network.
After switching on the green LED blinks only one	1. Small network power. Place the module or the antenna higher.
Only the first input (IN1) works. Even the red LED does not blink	1. Disable the autonomous alarm function
IN1 or IN2 does not work. Even the red LED does not blink.	Check the input by the contacts 1. Must be sort circuit (or 0V) by default, floating in case of alarm (if not inverted). 2. Check if the connection is on the right contact.
IN1 or IN2 does not work. After activation of the input red LED lights continuously	In this case the inputs are working, it can be a programming mistake. 1. Send the phone number to position1 (1234sw…) 2. At least one function – SMS or dialing – must be set 3. Check the set parameters using 1234t command.

IN1 or IN2 does not work. Red LED blinks for 2 seconds.	No phone number set. Send the phone number using 1234sw…. format.
IN1 or IN2 does not work. Red LED blinks for longer than 5 seconds.	The module is working and sent an SMS. Probably the set phone number is not correct. For example not a mobile phone number.
Panel is warm	Normal operation, possibly, GSM modem transmits.

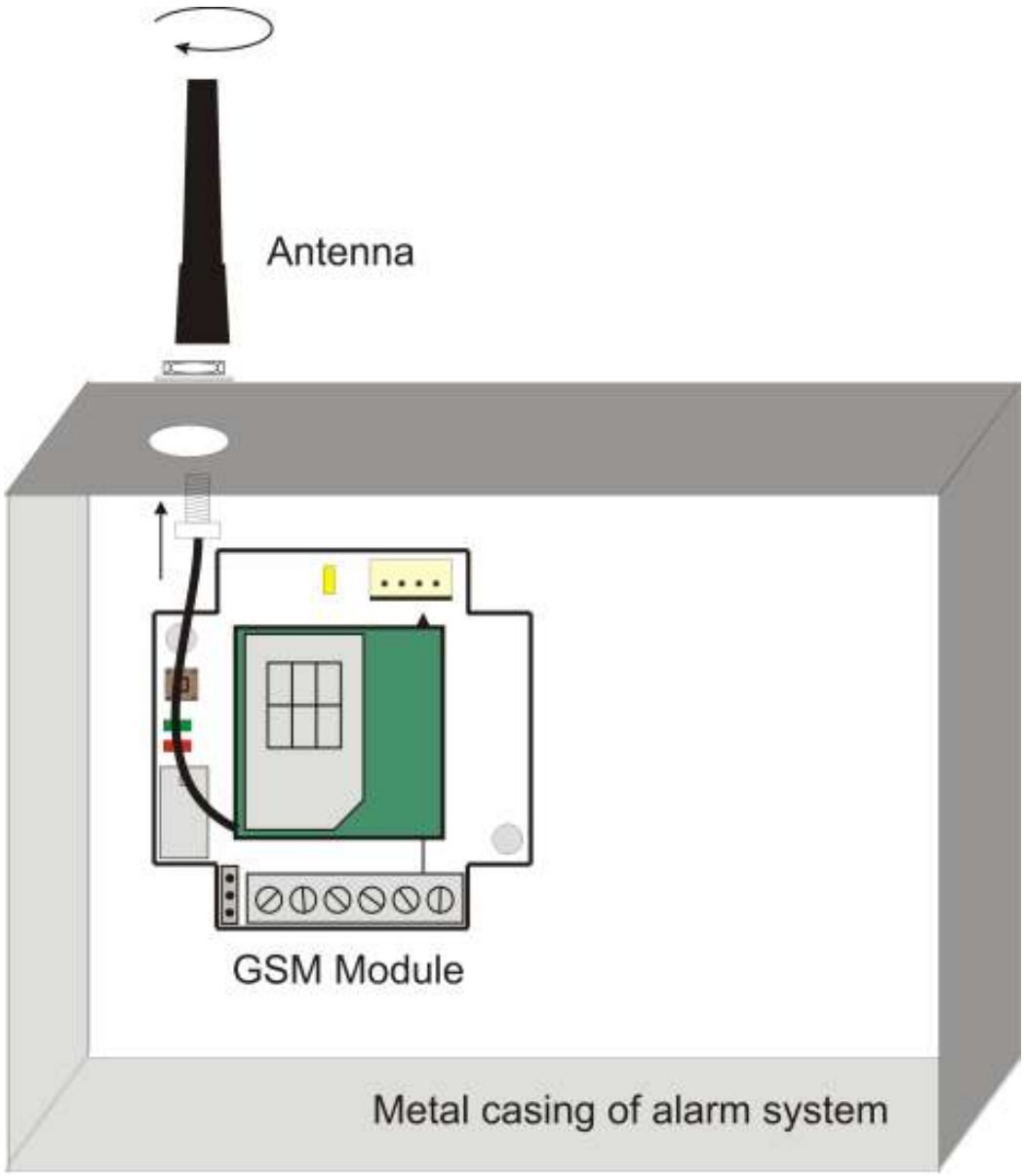
IX. Function table of WiLARM-1 module

Functions	Wilarm-1
SMS sending	Yes
Dial calling	Yes
Programmable phone numbers	4 numbers
Number of inputs	2 NC
Circular calling	No
Li-ion battery	No
Power supply requirement	12 Volts / 2 Amperes
External antenna	Yes
LED status	Yes
External serial programmer	Yes
Alive signal in SMS	Yes
Tamper switch	No
Power failure SMS	N/A
SMS redirection	Yes
Network signal monitoring and SMS sending	Yes
Relay output	1 relay / 1 Ampere
Caller number identification	Yes
Autonomous alarm mode	No
Test function with SMS	Yes
PIN protected programming	Yes
ContactID DTMF	No
Status request with SMS	Yes
SMS messages modification	Yes
Master Reset	Yes
Housing	Optional

X. Connection diagram



XI. Mounting diagram



XII. Connecting to alarm system