GSM RELAY variant 2

1. Introduction

GSM RELAY was originally designed as a device for a remote control of one electrical appliance via SMS on GSM network, which is very easy to install and use. Just plug the GSM RELAY in the power outlet (230 V), connect your electrical appliance and send SMS to switch ON or OFF the output power outlet on the GSM RELAY. There is also only one input – magnetic reed contact on GSM RELAY.

GSM RELAY 2 is an advanced version of GSM RELAY with more outputs and inputs. The new features are remote temperature control, capability to control connected device just by ringing from a mobile phone, four inputs for event messages and alarms. GSM RELAY 2 has an analog input for external temperature sensor, 2 additional outputs besides main power output and an internal memory to keep parameters and status even after power failure. Inside of the GSM RELAY 2 is located a magnetic contact (reed contact) which act as a simple security device. Just connect GSM RELAY 2 into 230 V power socket before your electrical appliance which you need to control. Now it is possible to switch ON/OFF or interrupt the electric power supply into your appliance remotely via SMS. GSM RELAY 2 can automatically control your heating system on a requested temperature. The status of connected inputs is possible to readout using SMS. It is possible to set up GSM RELAY 2 to send SMS message whenever any input changes.

1) 230 V mains inlet
2) 230 V mains outlet (10 A, 2300 W)
3) Indication LEDs and "ON/OFF" pushbutton
4) Socket for an external temperature sensor
5) Socket for connection of three external inputs (no. 2, 3 and 4) and two external outputs (no. 5 and 6)
6) SIM card holder
7) Internal magnetic contact (reed contact) located inside of the GSM RELAY 2
8) External temperature sensor GSM-C-T2

*) External temperature sensor GSM-C-T2 is a part of a delivery

2. Package content

1 pc   GSM RELAY variant 2
1 pc   temperature senzor GSM-C-T2
1 pc   connector ETB4702G00
1 pc   connector ETB4706G00
1 pc   printed documention
SIM card may be too part of business package as BONUS

3. Installation

1. To operate the GSM RELAY 2 a SIM card of any GSM operator is necessary. SIM card must be functional, active and must have PIN code turned off. Also some credit is nescessary if SIM card is pre-paid. If you have SIM card supplied with device, continue to paragraph 3.

> **Before inserting the SIM card into the GSM RELAY 2 device, it is necessary to turn off setting of the "PIN code"!**
>
> Insert the active SIM card (= at least one call was made) to any mobile telephone and turn off the requirement of setting the PIN. On most mobile telephones, this option can be found in menu "Setting the telephone protection". or "Setup -> Security -> PIN control".

2. Insert this prepared SIM card into the GSM RELAY 2 device. The SIM card holder is located on the down side of the device. To slide out the SIM card holder, press on the yellow disc next to the SIM card holder.

3. Now you can plug the GSM RELAY 2 into a standard single-phase 230 V wall socket. If the power supply is correct, green LED diode **POWER SUPPLY** goes on. Simultaneously, GSM yellow LED flash several times and then after about **1 minute**, yellow LED diode **GSM** starts flashing with a period of 3 sec.

4. Now plug the 230 V electrical appliance, you want to control into the socket on GSM RELAY 2.

5. If you want to switch off the ourput locally, just press pushbutton **ON/OFF** button on the GSM RELAY 2. The output is switched off and the green LED diode **OUTPUT** goes off. You can switch the output again by another press on **ON/OFF** button.

6. To make the first test of the device, use your mobile telephone you want to use to control the appliance and send a SMS text message **1234 ON** to the telephone number of the SIM card inserted into the GSM RELAY 2. This will switch on the plugged appliance. The ON status is indicated by means of the green LED diode OUTPUT that is permanently on. Simultaneously, the device automatically sends a confirmation message on performing the operation. To change the password 1234, insert the SIM card into any mobile telephone and in the directory on the SIM card in field "Names" for name **xCode** change the telephone number 1234 to a number you select. The device reacts to the SMS text message from any telephone as long as the access password matches. The very first one (the sender of the message) will be remembered as master and will receive message about events on GSM RELAY 2. This user can also switch some output by „ringing" on the device.

7. Try "ringing" on device. You can make pulse on output 6 for approx. 2 seconds by calling to GSM RELAY 2 (with factory settings). The device hangs up the call and makes pulse on the output. This can be used for example for opening entrance gate. You have to use the same phone number as was in the very first SMS sent to the device. For more information see chapter List of All Parameters at the end of this document, parameter "xRemUser".

8. Try regulation. You can send SMS in form of **1234 TEMP25** to command device to maintain temperature to 25°C. Range of regulation is from 0°C to +55°C. Regulation is interrupted by SMS with command **1234 OFF**. For more information see chapter List of All Parameters at the end of this document, parameter "xReg".

9. If you want use regulation on another output than main outlet, change value of parameter **xRegOut** on SIM card to **5** (=output 5).

4. Technical specifications

Parameter		Symbol	MIN.	TYP.	MAX.	Unit
Dimensions	Width	W		65		mm
	Length	L		140		mm
	Depth	D		95		mm
Supply	Voltage	VCC	210	230	250	V AC
Digital inputs	Mag. contact – input no.1 (reed relay)					
	Input no. 2, 3, 4 (galvanically separated by optron)					
	Voltage	-	8	12	30	V DC
	Current	-		5		mA
Digital outputs	Mains socket – output no.0 (power relay)					
	Voltage	VOUT	210	230	250	V AC
	Current	IOUT		10		A
	Output no. 5, 6 (galvanically separated by optron)					
	Voltage	VOUT		12	60	V DC
	Current	IOUT			100	mA
Analog inputs	Internal and external temperature sensor GSM-C-T2					
	Accuracy in range 0 to 30°C..............1°C					
	Temperature		-30		+55	°C
Temperature	Storage	tSTG	-40		+85	°C
	Operational	tA	-20		+40	°C

Use GSM RELAY 2 inside of building only!

5. Hardware

The GSM RELAY 2 contains 230 V power inlet and outlet, SIM card reader, a set of status indicating LED diodes located on a front panel, a pushbutton for local switching ON and OFF and two connectors, one 6pin connector for 3 logical inputs and 2 logical outputs with one common terminal and another 2pin for connecting external temperature sensor GSM-C-T2. This sensor has temperature range from -50°C až +150°C.

5.1 LED diodes

The front panel of a GSM RELAY 2 contains status indication LEDs and a pushbutton for local switch ON/OFF of connected appliance

LED	COLOR	Meaning
POWER	green	The GSM RELAY 2 is under power
GSM	yellow	GSM RELAY 2 status: *Blinking 1:1* … GSM RELAY 2 is starting up *dim* … GSM RELAY 2 is starting up (reading phone book about 40 sec) *short blink once per 3 second* … GSM RELAY 2 is ready and in a operational state
MG. CONTACT	yellow	The magnetic reed contact is closed *Note:* LED diode indicate direct contact state, it does not indicate sent SMS.
OUTPUT	green	Power supply (230 V) for a connected electrical appliance is ON

An input "magnetic reed contact" (which is connected as an input 1) is connected directly to a LED „MAG. CONTACT". This LED lights immediately, it means it's not a signal that an SMS is sent.

5.2 Pushbutton ON/OFF for local power control

Press pushbutton for a short time to change a state of the output power relay, which supplies connected electrical appliance. Press pushbutton for a long time to switch off all of the outputs.

5.3 Connectors

GSM RELAY 2 enables to connect 3 external logical inputs, 2 external logical outputs and one external temperature sensor KTY 81-210.

The line length of a connected external temperature sensor is not limited but the wire has a certain resistance which influences the measured temperature (16 Ω means 1 °C).

Recommended type of electromagnet for the magnetic contact is sensor available like accessory item GSM-RELE-IN.

Recommended type of a window (door) sensor for connection to GSM RELAY 2 input is an item GSM-RELE-MAG.

Recommended type of power supply of inputs and outputs is an item GSM-35-PPOWR.

Recommended type of relay for control more appliances is accessory item GSM-RELE-OUT.

When using the GSM RELAY 2 for a gate control by a phone ring, it's possible to connect Output6 and COM directly with a pushbutton of the gate control. **Read the chapter Technical specifications before connecting external devices! Don't overload inputs and outputs**. (Input 8 … 30 V, outputs max 60 V 100 mA DC).
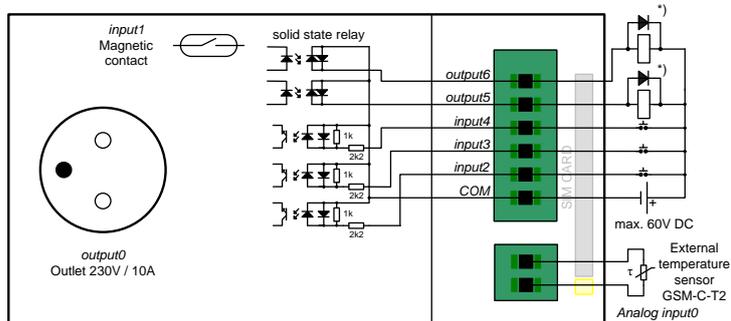
*) Use protection diode for each output. See the picture. Recommended type is 1N4007.

6. Configuration

Operating parameters of a GSM RELAY 2 are stored in a SIM card phone book. The phone book contains a pairs <name, number>. After Power On of GSM RELAY 2 this phone book is searched for the names in a following table: (Names are not case sensitive, xcode = xCODE)

If any parameter is not present, the default value for this parameter will be used. All phone numbers must be in an international form: + (Country code) (phone number) e.g. +420777777497.

Tip: Use your mobile phone to make changes in parameters of GSM RELAY 2: Insert the SIM card from the GSM RELAY 2 into your mobile phone. Make necessary changes of parameters in a phone book of a SIM card and put the SIM card into GSM RELAY 2 again.

The first person who sends valid SMS to GSM RELAY 2 with a "clear" SIM card inserted became a main user (master) of the device.

In all following examples we suppose the GSM RELAY 2 is already fully functioning with a SIM card. (See chapter **Installation**).

6.1 Remote heating control in a cottage (without temperature regulation)

The electrical heating system is connected to GSM RELAY2 230V socket; the function of a "temperature regulation" is suppressed

Example of parameters on a SIM card:

xCode	1234
xReg	0
xRegOut	0
xRemCall	0

The following SMS message will switch ON the el. power to a heating:

```
1234 ON
```

6.2 Remote heating control in a cottage (with temperature regulation)

Remote **setting of requested temperature of heating control.** The electrical heating system is connected via relay conected to an output5, the function of a "temperature regulation" is enabled.

Example of parameters on a SIM card:

xCode	1234
xReg	1
xRegHyst	1
xRegIn	0
xRegOut	5

The following SMS will set a requested temperature to + 25°C

```
1234 TEMP25
```

6.3 Entry gate opening by call from a mobile phone

The gate control is connected to OUTPUT6

Example of parameters on a SIM card:

xCode	1234
xRemDout	6
xRemCall	1
xRemConfirm	0
xMaster	+420777111111
xRUser1 *)	+420777222222
xRUserPeter *)	+420777333333
xRUserDaughter *)	+420777444444

GSM RELAY 2 will reject incoming call from those phone numbers and will generate pulse on ouput 6 (=open or close entrance gate)

6.4 Alarm via SMS for more users (an input2 is activated by voltage)

Example of parameters on a SIM card:

xeI2+LH+SMS	+420777111111
xeI2+LH+SMS1 *)	+420777222222

6.5 Call from GSM RELAY 2 when magnetic contact is activated

Example of parameters on a SIM card:

xeI1+LH+CALL	+420777111111

6.6 Limit the number of alarm SMS (max. 1 SMS every 3 days)

Example of parameters on a SIM card:

xLimit	1
xLimitCount	1
xLimitTime	3

6.7 Setup credit limit on 70 CZK

Example of parameters on a SIM card. When credit drop bellow 70 CZK, GSM RELAY2 send warning SMS message.

xCredit	1
xCreditLimit	70
xEvent8004 *)	+420777111111

(Notice about currencies: GSM RELAY 2 does not care about currency. It cares about the number itself. So this example will be the same for USD or Pounds.)

6.8 Advanced setup

See charter List of All Parameters.

*) These parameters must be with user in phone book on SIM card created.

7. Event SMS Messages

Whenever any event appears on the GSM RELAY 2 selected input or output for longer than minimum specified time, the GSM RELAY 2 sends an SMS about this event. To increase the probability the user will read the SMS it can be followed by a voice call from GSM RELAY 2. See the **xe[…+…+…..]** parameters.

If you answer the phone call you will listen a voice message in a form of DTMF signals. It's possible to order you own voice message e.g. "Attention please, GSM RELAY 2 alarm was activated." Your message should be in form of .wav file. There is only one voice message for all events in the GSM RELAY 2.

Note: An input "magnetic reed contact" (which is connected as an input 1) is connected directly to a LED „MAG. CONTACT". This LED lights immediately, it means it's not a signal that an SMS is sent.

8. Advanced functions

8.1 Automatic Voice Call

This function is useful when the GSM operator (e.g. O2 in the Czech Republic) requests to perform at least one paid voice call during certain time period to keep the SIM card active.

This function can be "Automatic voice call" setup by **xAutoCaLL** and **xAutoCaLLint** parameters (see charter "List of All Parameters").

The GSM RELAY 2 will call between 09:00 and 18:00 of a local time. It means you will not be wake up at night. If you will not answer the call, the GSM RELAY 2 will repeat the call after 2 minutes again.

Example

Set your phone number to a **xAutoCaLL** parameter (e.g. +420123456789) and 2 to **xAutoCaLLint** parameter. The GSM RELAY 2 will call you every 2 months.

8.2 Redirect of SMS without valid password

Master (parameter xMaster) can get messages sent to the GSM RELAY 2 without valid password, for example credit warning message from provider. Every message without valid password is forwarded to phone number according to parameter xMaster, if this function is switched on.

For switch on or off this function use parameter **xRedirect** (value 1 = function on, value 0 = function off).

9. GSM RELAY 2 Control

9.1 Pushbutton ON/OFF on the front panel

Press shortly the pushbutton "ON/OFF" on the front panel of a GSM RELAY 2. It will change the state of a relay inside of a device. An appliance in a 230V socket will be switch on or off. (By pressing the pushbutton for more than 4 seconds you will switch off all GSM RELAY 2 outputs). It works only after more than one minute after power on.

9.2 Output control by ringing

GSM RELAY 2 is set by the manufacturer to switch ON an output6 for 2 seconds when any user from a list calls to GSM RELAY 2 phone number. This pulse is useful for an opening of an entry gate. Test this function by a call to GSM RELAY 2 from your mobile phone (it's important to send a valid command SMS to GSM RELAY 2 from your mobile phone if have inserted a "new" SIM card to GSM RELAY 2 before).

GSM RELAY 2 rejects a call and at the same time generates a pulse on an Output6. (No LED signalization, terminals are switched ON and OFF).

9.3 Remote control of GSM RELAY 2 via SMS

GSM RELAY 2 is controlled via SMS of the GMS network. Text SMS are in form:

`<PASSWORD> <COMMAND> [<RETURN COMMAND>]`

Example:

`1234 ON`	...GSM RELAY 2 will switch on an appliance connected to the mains socket (230V) and returns a confirmation SMS
`1234 OFF NOBACK`	...GSM RELAY 2 will switch of an appliance connected to the mains socket (230V) and but returns no confirmation SMS.

Password (access code)

Password is a main security item for GSM RELAY 2 control. Command SMS are accepted from any phone number. It means anybody who knows the password and the phone number can control the GSM RELAY 2. The password is a string of digits (1 to cca 20) which must be on the beginning of any command SMS. Otherwise the SMS will be ignored. A text before the password is automatically ignored. It is useful when command SMS are sent from Internet GSM gates.

Factory setting of a password (see chapter List of All Parameters, parameter **xCode**) is:

<div style="border:1px solid black; text-align:center;">

1234

</div>

Command

This part of a message specifies a requested action. See the following table for available commands. GSM RELAY 2 is not a case sensitive. It's possible to use more commands in one SMS. Commands are separated by a space.

Command	Parameter	Factory	Meaning
ON EIN	- 	- 	The connected appliance will be switched on (both NO and NC version)
OFF AUS	- 	- 	The connected appliance will be switched off (both NO and NC version)
PULSE RESET	- -	- -	The connected appliance will be switched on for 4 second and then switched off (NO version). The connected appliance will be switched off for 4 seconds and then switched on (NC version).
ON	5 or 6	0	An output (number depends on parameter) will be switched on.
OFF	5 or 6	0	An output (number depends on parameter) will be switched off.
PULSE RESET	5 or 6 5 or 6	- -	The connected appliance will be switched on for 4 second and then switched off.
TEMP	0 to 55	20	Setting of a requested temperature for a temperature regulation function. Is regulated output with parameter xRegOut setup. The value is in °C.
STATUS ZUSTAND	- 	- 	Request of status SMS (state of inputs, outputs, temperatures, signal quality and credit).

Tip: It's possible to use more commands in one SMS. Commands are separated by a space (see an example).

Example:

`1234 ON`	... an appliance connected to the 230V outlet socket will be switched on
`1234 OFF`	... an appliance connected to the 230V outlet socket will be switched off
`1234 RESET`	... an appliance will be shortly switched on and then off (NO version)
`1234 OFF5`	... an output5 will be switch off
`1234 PULSE6`	... an output6 will be switched on and then after 4 seconds will be switched off (Notes: if an output is already switched on, it will be just switched off after 4 seconds)
`1234 TEMP5`	... requested temperature for the function "temperature regulation" will be set to + 5°C
`1234 OFF5 TEMP25`	... an example of more commands in one SMS. An output5 will be switched off and the requested temperature will be set to 25°C

Confirmation SMS

If a *command message* contains a valid password (access code) the GSM RELAY 2 returns a confirmation message which informs if a command was accepted (see chapter Status SMS). If you don't want a confirmation message (e. g. when sending a command SMS from the Internet GSM gates) add a command "NOBACK".

Example:

`1234 ON NOBACK`	...connected appliance will be switched on, but no confirmation message will be send back

9.4 Status message

The status message is send whenever the command message contains a valid password. The status message typical example:

Status message example	Explanation
GSM RELAY 2: OUTPUT2 'ON' SUCCESS	Command confirmation
Relay=on	Main relay status (230V socket)
Mg. contact=off	Mg. contact status
in2=on	Input no.2 status
in3=on	Input no.3 status
in4=off	Input no.4 status
out5=off	Output no.5 status
out6=off	Output no.6 status
Sig=58%	GSM signal level
TempExt=21°C	External temperature
Credit=380.85	Credit on a prepaid SIM card

Note: Status message has maximum length of 160 characters. (Characters over the length of 160 will be lost.)

10. Versions NO and NC

GSM RELAY 2 is delivered with the output power relay normally open (NO). NO (normally open). The output power relay is normally open and the electrical appliance is not supplied. This version is suite when the output power relay is usually open, e.g. gate opening or cottage heating.

NC (normally closed). The output power relay is normally closed and the electrical appliance is supplied. This version is suite for the opposite situation e. g. when the GSM RELAY 2 is used for a remote server restart via power supply.

Warning

GSM RELAY 2 can be modified from NO to NC, but sufficient qualification in electronic is requested! **For an experienced person only!**

10.1 Modification procedure

- Unplug GSM RELAY 2 from electric power.
- Unscrew the corner screws and lift off the upper part of a box.
- Switch over the brown cable (see the picture).
- Switch over the jumpers J5 (LED "OUTPUT") and J17 (NO/NC).
- Assemble the GMS RELAY 2 again and screw the box together.

NO version (e.g. for heating)

Jumper J17 close the left most pins **Jumper J5 close upper pins** **The brown cable is located on the right from the black cable**
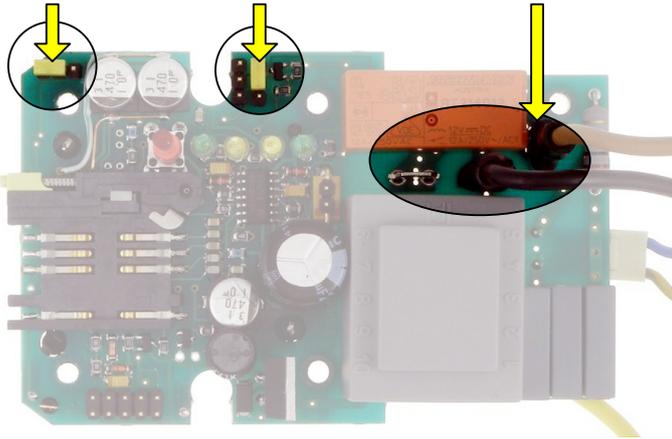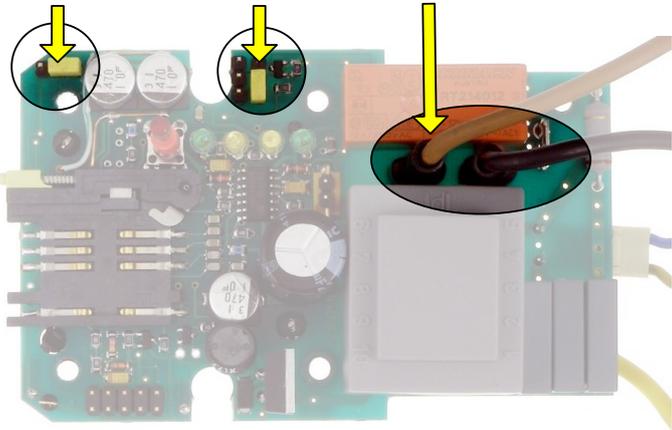

NC version (e. g. for a PC server reset)

**Jumper J17 close the right most pins** **Jumper J5 close lower pins** **The brown cable is located on the left from the black cable**

11. External antenna connector

GSM RELAY variant 2 has an internal antenna as a standard. If GSM RELAY 2 is used in area with a low GSM signal, it's possible to order for a small payment GSM RELAY 2 with an external antenna connector. The external antenna has to be ordered extra (e. g. type GSM-ANT01S).

GSM RELAY 2 With an external antenna connector
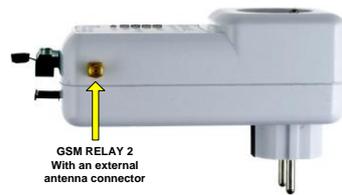
12. Warranty

General warranty period is 12 months after purchase, when eventual malfunction device will be repaired free of charge in SEA company while shipping to SEA is paid by customer and SEA pays for shipping back to customer. For SW there is 24 months warranty under following conditions:

Both CPU and PC software is sold "as is". The software was created by the best software engineers in SEA and was carefully tested both in SEA and also by SEA customers using GSM applications products made in SEA. In spite of making all possible to get error free software it can happen, that the software in CPU or PC programming SW or their mutual interaction has some error under some specific conditions. If such error is found and the description of the problem including configuration file is sent by E-mail to SEA ltd., the error is removed free of charge and SEA will send new SW by E-mail to customer.

SEA ltd. has NO RESPONSIBILITY for any damage, lost, costs and any other problems direct or inducted, caused by such SW error, by eventual device malfunction from any reason or by undelivered SMS from the device.

13. Frequently Asked Questions (FAQ)

What is necessary to use the GSM RELAY 2?

- Good quality GSM signal in place where GSM RELAY 2 will be used (at least 2 bars on your mobile phone)
- Sufficient credit on a prepaid SIM card
- No phone call redirection
- The user has to know to operate his mobile phone (PIN usage deactivation, Phonebook contact changing)

Problem description	Possible reason	Solution
Yellow LED diode GSM, is not blinking once per 3 seconds (1 minutes after power on of GSM RELAY 2)	No SIM card inserted SIM card is not functional	Test the SIM card in your mobile phone. Try to make a call and receive a call from another mobile phone. Try to send a receive SMS message. Switch off using PIN on a SIM card. Cancel all call redirection for a SIM card. (Ask your mobile operator for help if necessary)
	New SIM card is not activated yet	New SIM card has to be activated. (Ask your mobile operator for help if necessary)
	Low credit on a prepaid SIM card	Check credit on a prepaid SIM card Tip: in the Czech Republic the codes are: *22# Vodafone (Oskarta) *101# T-Mobile (Twist) *104*# O2 (GO)
	Poor GSM signal	Test the GSM signal level with your mobile phone in the same location where you will use the GSM RELAY 2. For a test use a SIM card from GSM RELAY 2 (it's important to test GSM signal of the same GSM operator). The mobile phone should show the signal level at least 2 bars.
The pulse on an output is not generated based on a incoming ring signal (e. g. for a gate opening)	The incoming phone calls for a SIM card are redirected	Cancel all phone call redirections.
The temperature from an external temperature sensor is wrong	Too long lines to an external temperature sensor	The accuracy of temperature depends on a line length to an external temperature sensor (16 Ohms means 1°C). Use thicker wires to temperature sensor.
There are not all parameters on SIM card	The phone book on a SIM card is full. (There is no place on a SIM card for parameters)	Delete some of contacts in a phone book on a SIM card (minimum 60 free places)

14. List of All Parameters

Item	Name — Explanation	Number — Example (Range)	Number — Factory
xCode **xCodeJane *)** **xCodeGeorge *)**	**Access code = Password** String of digits (4 digits recommended). Every SMS has to contain a valid password, otherwise it will be ignored. If there is no item called **xCode** in a phonebook of a SIM card GSM RELAY 2 will create this item **xCode** with a value (=password) **1234**. It's recommended to change this default password! In case there are more users of GSM RELAY 2 it's possible to create more **xCode** items. For better readability it possible to distinguish users by adding their name behind obligatory part **xCode**. E.g **xCodeGeorge.**	84655647 (The range from 1 digit up to a count accepted by a SIM card) 456456 4321	1234
xMaster	The main (most important) user phone number. If there is no **xMaster** item present in a phonebook of a SIM card it will be created at the moment when the first valid SMS is received and will be written with the sender's phone number.	+420777777497	-
xSca *)	GSM operator's SCA service center for outgoing SMS text messages. If **xSca** parameter is not set up, GSM RELAY 2 will use standard SCA phone number on SIM card which is usually setup by GSM operator before selling the SIM card (recommended).	+420603052000	-
xAutoCaLL	Some GSM operators request at least one paid call to be done from a SIM card in a specified time period – see chap. **Automatic voice call.** Insert proper phone number (your mobile phone number is recommended) and GSM RELAY 2 will make phone call in requested time periods.	+420777777497	-
xAutoCaLLint	The time period (in moths) between two calls to a phone number in the **xAutoCaLL** parameter. E. g. for **xAutoCaLLint** = 3 the GSM RELAY 2 will make a phone call to a phone number in a **xAutoCaLL** parameter evey 3 months.	3 (1 to 9)	2
xReg	Enables a function called "temperature regulation". For **xReg** parameter value 1, GSM RELAY 2 switches on and off selected output (Power output in the factory setting) depending on requested and actual temperatures. For an actual temperature lower than requested the output is switched on. For an actual temperature higher than requested (parameter **xRegLevel**), the output is switched off. For the parameter **xReg** = 0, the function "temperature regulation" is disabled	0 or 1	0
xRegOut	The output number for the function "temperature regulation". Usually the parameter has value 0 which means the 230V socket.	0 or 5 or 6	0
xRegIn	Parameter is always set to value of 0.	0	0
xRegLevel	This parameter means a requested temperature in °C for the function "temperature regulation" (E. g: For a value 25 of the **xRegLevel** parameter the GSM RELAY 2 will switch on and off the connected heating system to reach 25°C on a temperature sensor). This parameter can be changed by an SMS in form: 1234 TEMP25	0 to 55	20
xRegHyst	This parameter called "hysteresis" prevents the GSM RELAY 2 to switch on and off the heating system too often when the function "temperature regulation" is enabled. (E. g. For the parameter **xRegHyst =** 1 and requested temperature 25 °C, the heating system is switched off when the temperature reaches 26°C and switch on when the temperature decrease to 24°C.)	2	1
xRemCall	This parameter enables to generate a pulse on an output just by ringing from a phone. This pulse is generated on an output specified by the parameter **xRemDout** (the factory setting is output 6). This function is useful for a gate opening using a mobile phone. If a parameter **xRUser** is specified the pulse is generated only when the ringing is from the phone number which is set in the **xRUser** parameter. It's possible to set up more parameters of **xRUser** type which can be distinguished by adding a name e.g. **xRUserJane**.	0	1
xRemConfirm	This parameter is intended for later use. Keep this parameter **xRemConfirm** = 0.	0	0
xRemDout	This parameter specifies an output on which the pulse will be generated by ringing. E. g. For a parameter **xRemDout** = 6 than the pulse will be generated on an output no 6 (factory setting).	0 or 5 or 6	6
xRUser **xRUserPetr *)**	This parameter specifies a phone number. Whenever a call comes from this phone number pulse 4 seconds long is generated on an output given by **xRemDout** parameter. The first phone number from which comes the first valid SMS to GSM RELAY 2 with a "new" SIM card will be written as a **xRUser**. More parameters of xRUser type can be in a phone book of the SIM card. This is useful in case when an entry gate should be opened by more users. The users can be distinguished by a text (usually a name) after an obligatory text **xRUser** (e. g. xRUserPeter). If there is no parameter of **xRUser** type on the SIM card, any incoming call will generate a pulse on a output6 (in the factory configuration). This is useful for a entry gate with many users and low level of security. Anybody who knows the proper phone number can open the gate.	+420777777497 +420777111111	-
xe[….+….+…..] **(general form)**	It's possible to set events for GSM RELAY 2 inputs and outputs which will send so called "event SMS" or make a voice call. (It's useful to set GSM RELAY 2 to make a voice call after an SMS. It's a higher probability you will read the SMS than). This SMS is sent to a phone number which is in a SIM card phone book under the name of an event. See the examples how to create an event name below.		
xeI1+LH+SMS	SMS is sent when the input 1 changes level L->H. SMS format is: `GSM RELAY2: INOUT1 L->H`	+420777777497	-
xeI2+LH+SMS	SMS is sent when the input 1 changes level L->H. SMS format is: `GSM RELAY2: INOUT1 L->H`	+420777777497	-
xAIn1Level *)	This parameter means temperature level in °C for sending SMS or ring to user.	0	5
xAIn1Hyst *)	This parameter prevents the GSM RELAY 2 to send warning SMS too often. Example: if **xAIn1Hyst** = 2 and **xAIn1Level** = 5, event SMS is generated if temperature is below 3°C (5°C-2°C), and next SMS is generated if temperatur is above 7°C (5°C+2°C).	2	1
xAIn1State *)	This parameter specifies if the value of this analog input will be in the state message.	0	1
xAIn1Delay *)	This parameter specifies how many seconds has to be the value of analog input lower of higher than the level specified in **xAIn1Level** parameter.	10	1
xIO[i]state	This parameter specifies if a status of **i** input/output will be mentioned in a GSM RELAY 2 status SMS (e. g. for **xIO2state** = 1 the status SMS will contain: "input2=on"). Value 0 means no status information of **i** input/output will be mention in the status SMS.	0 or 1	1
xIO[i]delayLH	This parameter helps to limit the count of event SMS in case of an input signal changes its level too often. This parameter specifies how many seconds the inputs signal **i** must not change before it is considered to be valid for a change level L->H. Value 0 means immediate reaction.	3	1
xIO[i]delayHL	This parameter helps to limit the count of event SMS in case of an input signal changes its level too often. This parameter specifies how many seconds the inputs signal **i** must not change before it is considered to be valid for a change level H->L. Value 0 means immediate reaction.	2	1
xIO[i]pulseLen	This parameter specifies the length of a pulse on an output no **i** in seconds.	10	4

Name		Number	
Item	**Explanation**	**Example (Range)**	**Factory**

	Examples of events from inputs:
	 Inputs: xeI**a**+**b**+**c**
	   a … number of input **1** to **4**
	   b … **LH** – change level L->H , **HL** – change level L->H
	   c … **SMS** – send SMS, **CALL** – ring
	 Example:
	 xeI1+LH+CALL *) - Voice call is made when the input 1 changes level L->H. You can accept or reject the call on your mobile phone.
	
	 Outputs: xeO**a**+**b**+**c**
	   a … number of output **0** or **5** or **6**
	   b … **LH** – change level L->H, **HL** – change level H->L
	   c … **SMS** – send SMS, **CALL** – ring
	 Example:
	 xeO5+HL+SMS *) – SMS is sent when the output 5 changes level H->L. SMS format is: `GSM RELE2:` `INOUT5 H->L`
	 xeO6+LH+CALL *) – Voice call is made when the output 6 changes level L->H (GSM RELAY 2 will call you whenever anybody is opening the gate).
	
	 Temperature: xeA**a**+**b**+**c**
	   a … number of input for temperature sensor **1**
	   b … **LH** – temperature is above limit, **HL** – temperature is below limit (see example)
	   c … **SMS** – send SMS, **CALL** – ring
	 Example:
	 xeA1+HL+SMS *) – SMS is sent when the temperature goes below the requested level (see the xAIn1Level, xAIn1State, xAIn1Delay parameters)
	 xeA1+LH+CALL *) – A voice call is made when temperature raise above requested level (see the xAIn1Level, xAIn1State, xAIn1Delay parameters).
	
	 Is is possible to send more SMS or make more CALLS from one event. Just create another parameter in phone book with the same name (or add some name at the end for better readability, e.g. xeI1+LH+SMSGeorge).
		+420777777497	-

xCredit	This parameter enables a function "Read Credit" for a prepaid SIM card. The credit level is a part of GSM RELAY 2 status SMS, e. g. Credit=250.48. It's possible to set the **xEvent8004** parameter and GSM RELAY 2 will send an SMS when the credit is lower than **xCreditLimit** parameter. For **xCredit=1** the function "Read Credit" is active. For **xCredit=0** the function "Read Credit" is not active.	0 or 1	1
xCreditCode	A code for the credit reading. This code depends on a GSM operator. (Contact your GSM operator for details). GSM RELAY 2 tries to determine this code automatically, but it works only for Czech Republic. In other countries manual correction of this parameter is needed.	*22# OSKARTA Vodafone *101# TWIST T-Mobile *104*# GO O2	-
xCreditFreq	This parameter specifies how often the credit will be read. It means how many minutes will GSM RELAY 2 wait between reading the credit again.	300	60
xCreditLimit	Whenever credit goes below **xCreditLimit** parameter in CZK, an SMS can be send. (The **xEvent8004** parameter has to be set for this).	100	50
xEvent8004 *)	The phone number where the GSM RELAY 2 will send an SMS to inform that a credit on a prepaid SIM card is below limit specified in **xCreditLimit** parameter.	+420777777497	-
xLimit	**xLimit** parameter activates a function which limits the number of SMS/voice calls per time period specified by a **xLimitTime** parameter. For **xLimit=1** the function is active. For **xLimit=0** the function is not active.	0 or 1	1
xLimitCount	This parameter specifies the count of SMS/voice calls per a time period (see **xLimitTime**).	10	30
xLimitTime	Time period in days for the function of count of SMS/voice call limit. (See parameter **xLimit**).	1	7
xEvent8003 *)	The phone number where the GSM RELAY 2 will send an SMS to inform that the "SMS count limit per specified time period" was reached. (See parameters **xLimitCount** and **xLimitTime)**	+420777777497	-
xLanguage	This parameter specifies the language of the device. Value 1 = Czech (CZE), value 3 = english (ENG)	1 or 3	Depends on operator
xRedirect	Switch on or off redirection on messages without valid password: 0=off, 1=on	1	0

*) These parameters are not created on phonebook automatically. The user has to insert them manually if change of the default value of the parameter is needed.

Factory setting after the first valid command SMS (an empty SIM card used)

After first power no with an empty SIM card, basic parameters are written on the SIM card with default values. You can edit them or add other parameters moving the SIM card in a mobile phone (**the phone number of a sender will be used**):

Name in a phonebook on the SIM card	Description	Event SMS Message
xeI1+LH+SMS	An SMS in sent when magnetic relay is closed	GSM RELAY2: INOUT1 L->H
xeI2+LH+SMS	An SMS is sent when input 2 changes from L->H	GSM RELAY2: INOUT2 L->H
xMaster	Setup main user xMaster	
xRUserMaster	Setup user for control by ringing	

(Verze 1.20; 2008-08-28)