

# GSM RELAY 2 – DIN

## 1. Introduction

The GSM RELAY 2 – DIN controls two independent electrical circuits in a building e.g. circuit of an accumulator stove and circuit for garage gate opening. The control is made by SMS messages or by ringing. It is necessary to make connections in an electrical box and insert a SIM card of any GSM operator and the device is ready to operate. There are two galvanically isolated outputs with a semiconductor switch, which can control directly low power circuits up to 250V AC/DC. It's possible to directly control e.g. a thermoregulator circuit of a gas boiler or a coil of one phase contactor 230V AC. The contact of this contactor can control either one phase high power appliance (e.g. electrical radiator) or a coil of three phase contactor of an accumulator stove. There are also two logical inputs which can be activated by a contact from 4V power provided by GSM RELAY 2 – DIN or by an external voltage 4 to 8V or 8 to 30V. Input voltage range can be selected by jumpers separately for each input. There is an internal lithium battery that enables to send an SMS in case of a power failure and to restore the output status after a power failure. It's also possible to monitor the status of inputs and temperatures via SMS during 230V power failure.

- 1) GSM RELAY 2 – DIN
- 2) INPUT1,2 connector & 4V power supply for inputs
- 3) t1, t2 temperature sensors connector
- 4) GSM LED diode (yellow)
- 5) Power LED diode (green)
- 6) Power supply connector
- 7) GSM antenna connector (option)
- 8) OUTPUT3,4 connector
- 9) 2x Temperature sensor GSM-C-T2



## 2. Package Content

- 1 pc **GSM-RELAY2-DIN** (1)
- 1 pc connector ETB4706G00 (2)
- 1 pc connector ETB4704G00 (3)
- 1 pc connector ETB8103G00 (6)
- 2 pc connector ETB4702G00 (8)
- 2 pcs temperature sensor GSM-C-T2 (9)
- 1 pc antenna ANT05S
- 2 pcs jumper
- 1 pc screwdriver BERNSTEIN
- 1 pc printed documentation

SIM card may be too part of business package as BONUS

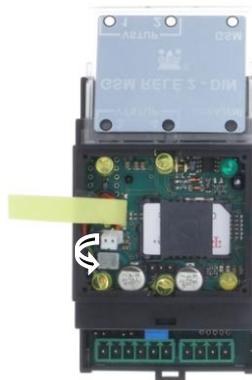
## 3. Installation

1. To operate the GSM RELAY2 – DIN 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 necessary 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 – 12V 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 RELAY2 – DIN device. The SIM card holder is located under the front panel.
3. New device has backup battery disconnected. It is necessary to plug connector marked with a piece of paper according to the image.
4. Now it's possible to connect the device on 230V AC power supply. If the power supply is correct, green LED diode **POWER SUPPLY** goes on. Simultaneously, GSM yellow LED flashes several times and then after about **1 minute**, yellow LED diode **GSM** starts flashing with a period of 3 sec.
5. For the first tests of GSM RELAY2 – DIN the connection of inputs and outputs is not important.
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 ON3** to the telephone number of the SIM card inserted into the GSM RELAY2 – DIN. This will switch on the plugged appliance. The ON status is indicated by means of the yellow LED diode OUTPUT3 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 RELAY2 – DIN. This user can also switch some output by „ringing“ on the device.

7. Try "ringing" on device. You can make pulse on output 3 for approx. 4 seconds by calling to GSM RELAY2 – DIN (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, change value of parameter **xRegOut** on SIM card to **4** (=output 4).

## 4. Technical specifications

Parameter	Symbol	MIN.	TYP.	MAX.	Unit	
Dimensions	Width	W	53		mm	
	Height	H	90		mm	
	Depth	D	58		mm	
Power Supply	Voltage	V	180	230	250	V <sub>AC</sub>
Digital Inputs	INPUT1, INPUT2					
	Voltage	-	8	12	30	V <sub>DC</sub>
	Current	-		3,5		mA <sub>DC</sub>
	Voltage *)	-	4	5	8	V <sub>DC</sub>
	Current *)	-		11		mA <sub>DC</sub>
Digital Outputs	OUTPUT3, OUTPUT4 – Semiconductor switch OPTO-MOS					
	Voltage	-	5	230	260	V <sub>AC</sub>
	Current	-			90	mA <sub>AC</sub>
Analog Inputs	2 x temperature sensor GSM-C-T2, Accuracy in range 0 to 30°C ... 1°C					
	Temperature with GSM-C-T2	-	-30		+55	°C
Temperature	Storage	t <sub>STG</sub>	-40		+85	°C
	Operational	t <sub>a</sub>	-20		+40	°C

**Use GSM RELAY2 – DIN inside the rack with IP44 or better!**

## 5. Hardware

The GSM RELAY2 – DIN contains a set of status indicating LED diodes located on a front panel. There are several connectors located inside the box of the GSM RELAY2 – DIN for connecting power supply, two input signals, two output signals and two temperature sensors.

### 5.1 LED diodes

The front panel of a GSM RELAY2 – DIN contains status indication LEDs.

LED	COLOR	Meaning
POWER	green	Indicates that the GSM RELAY2 – DIN is under power.
GSM	yellow	GSM RELAY2 – DIN status: <i>Blinking 1:1 ...</i> GSM RELAY2 – DIN is starting up <i>dim ...</i> GSM RELAY2 – DIN is starting up (reading phone book about 40 sec) <i>short blink once per 3 second ...</i> GSM RELAY2 – DIN is ready and in a operational state
INPUT1 INPUT2	yellow	Indicates the status of the output.
OUTPUT3 OUTPUT4	yellow	Indicates the status of the input.

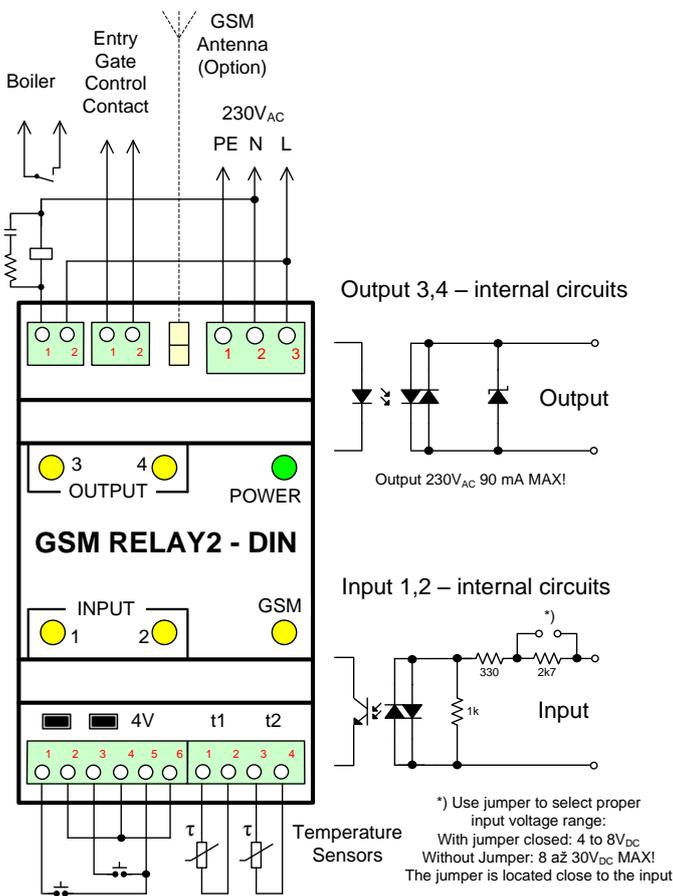
### 5.2 Conectors

GSM RELAY2 – DIN enables to connect 2 external logical inputs, 2 external logical outputs and 2 external temperature sensors GSM-C-T2 (KTY 81-210 inside with temperature range from -50°C to +150°C).

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 power supply of inputs and outputs is an item GSM-35-PPOWER. 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.



## 6. Configuration

Operating parameters of a GSM RELAY2 – DIN are stored in a SIM card phone book. The phone book contains a pairs <name, number>. After Power On of GSM RELAY2 – DIN 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. +42077777497.

*Tip:* Use your mobile phone to make changes in parameters of GSM RELAY2 – DIN: Insert the SIM card from the GSM RELAY2 – DIN into your mobile phone. Make necessary changes of parameters in a phone book of a SIM card and put the SIM card into GSM RELAY2 – DIN again.

The first person who sends valid SMS to GSM RELAY2 – DIN with a “clear” SIM card inserted became a main user (master) of the device.

In all following examples we suppose the GSM RELAY2 – DIN is already fully functioning with a SIM card. (See chapter **Installation**).

### 6.1 Remote heating control in a cottage (*temperature regulation is suppressed*)

The contactor of electrical heating system is connected to the OUTPUT3.

Example of parameters on a SIM card:

```
xCode      1234
xReg       0
xRegOut    3
xRemCall   0
```

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

1234 ON3

### 6.2 Remote heating control in a cottage (*temperature regulation is enabled*)

Remote **setting of requested temperature of heating control**. The electrical heating system is connected via relay connected to an output3, the function of a “temperature regulation” is enabled.

Example of parameters on a SIM card:

```
xCode      1234
xReg       1
xRegHyst   1
xRegIn     0
xRegOut    3
```

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 OUTPUT4

Example of parameters on a SIM card:

```
xCode      1234
xRemDout   4
xRemCall   1
xRemConfirm 0
xMaster    +420777111111
xRUser1 *) +420777222222
xRUserPeter *) +420777333333
xRUserDaughter *) +420777444444
```

The first call will be rejected by a GSM RELAY2 – DIN and the entry gate will be opened. The next call will close the 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 Alarm via SMS (an input1 drop out voltage)

Example of parameters on a SIM card:

```
xeI1+HL+CALL +420777111111
```

### 6.6 Alarm via SMS about low temperature (below 5°C on sensor t1)

Example of parameters on a SIM card:

```
xeA1+HL+SMS +420777111111
xAIn1Level   5
xAIn1Hyst    1
```

### 6.7 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
```

### 6.8 Setup credit limit on 70 CZK

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

```
xCredit      1
xCreditLimit 70
xEvent8004 *) +420777111111
```

(Notice about currencies: GSM RELAY2 – DIN does not care about currency. It cares about the number itself. So this example will be the same for USD or Pounds.)

### 6.9 Notice about loss of main power 230 V by SMS

In case of loss of main power 230 V is GSM RELAY2 DIN powered from internal backup battery an is able to send SMS.

Example of parameters on a SIM card:

```
xeI5+HL+SMS *) +420777111111
```

### 6.10 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 RELAY2 – DIN selected input or output for longer than minimum specified time, the GSM RELAY2 – DIN 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 RELAY2 – DIN. 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 RELAY2 – DIN alarm was activated." Your message should be in form of .wav file. There is only one voice message for all events in the GSM RELAY2 – DIN.

GSM RELAY2 DIN watches state of main power and can generate SMS or voice call in case of loss of main power (or restore of main power). This is accomplished by special digital input no. 5. Settings for this input are the same as for any other input.

## 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 RELAY2 – DIN 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 RELAY2 – DIN 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 RELAY2 – DIN will call you every 2 months.

### 8.2 Redirect of SMS without valid password

Master (parameter xMaster) can get messages sent to the GSM RELAY2 - DIN 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 RELAY2 - DIN Control

### 9.1 Output control by ringing

GSM RELAY2 – DIN is set by the manufacturer to switch ON an output3 for 2 seconds when any user from a list calls to GSM RELAY2 – DIN phone number. This pulse is useful for an opening of an entry gate. Test this function by a call to GSM RELAY2 – DIN from your mobile phone (it's important to send a valid command SMS to GSM RELAY2 – DIN from your mobile phone if have inserted a "new" SIM card to GSM RELAY2 – DIN before).

GSM RELAY2 – DIN rejects a call and at the same time generates a pulse on an Output3. (No LED signalization, terminals are switched ON and OFF).

### 9.2 Remote control of GSM RELAY2 - DIN via SMS

GSM RELAY2 – DIN is controlled via SMS of the GSM network. Text SMS are in form: <PASSWORD> <COMMAND> [<RETURN COMMAND>]

Example:

1234 ON ...GSM RELAY2 – DIN will switch on an appliance connected to the mains socket (230V) and returns a confirmation SMS

1234 OFF NOBACK ...GSM RELAY2 – DIN 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 RELAY2 – DIN control. Command SMS are accepted from any phone number. It means anybody who knows the password and the phone number can control the GSM RELAY2 – DIN. 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:

1234

#### Command

This part of a message specifies a requested action. See the following table for available commands. GSM RELAY2 – DIN is not a case sensitive. It's possible to use more commands in one SMS. Commands are separated by a space.

Command	Parameter	Meaning
<b>ON</b>	3 or 4	An output (number depends on parameter) will be switched on.
<b>ON</b>	-	This command acts in exactly the same way as command ON3.
<b>OFF</b>	3 or 4	An output (number depends on parameter) will be switched off.
<b>OFF</b>	-	This command acts in exactly the same way as command OFF3.
<b>PULSE RESET</b>	3 or 4 3 or 4	The connected appliance will be switched on for 4 second and then switched off.
<b>PULSE RESET</b>	-	These commands act in exactly the same way as command PULSE3.
<b>TEMP</b>	0 to 55	Setting of a requested temperature for a temperature regulation function. Is regulated output with parameter xRegOut setup. The value is in °C.
<b>STATUS ZUSTAND</b>	-	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).

Examples:

1234 ON ... an appliance connected to OUTPUT3 will be switched on  
 1234 ON3 ... an appliance connected to OUTPUT3 will be switched on  
 1234 OFF4 ... an OUTPUT4 will be switch off  
 1234 PULSE4 ... an OUTPUT4 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 OFF4 TEMP25 ... an example of more commands in one SMS. An output4 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 RELAY2 – DIN 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 ON3 NOBACK ... connected appliance will be switched on, but no confirmation message will be send back

### 9.3 Status message

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

Status message example	Explanation
<b>GSM RELAY 2 DIN: ON3 SUCCESS</b>	Command confirmation
<b>in1=off</b>	Input no.1 status
<b>in2=on</b>	Input no.2 status
<b>out3=on</b>	Output no.3 status
<b>out4=off</b>	Output no.4 status
<b>pwr=BAT</b>	BAT = batterie, ok = main power
<b>Sig=58%</b>	GSM signal level
<b>AIn1=21°C</b>	Temperature of sensor no.1
<b>AIn2=28°C</b>	Temperature of sensor no.2
<b>Credit=380.85</b>	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. External antenna connector

GSM RELAY2 – DIN is supplied with an external antenna GSM-ANT05S. It is not recommender to put this type of antenne on metal surface (the signal quality will degrade).

If a GSM RELAY2 – DIN is used in area with a low GSM signal, it's possible other type of the antenna with higher gain.

# 11. 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.



# 12. Frequently Asked Questions (FAQ)

What is necessary to use the GSM RELAY2 – DIN?

- Good quality GSM signal in a place where GSM RELAY2 – DIN 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 mason	Solution
<b>Yellow LED diode GSM, is not blinking once per 3 seconds (1 minutes after power on of GSM RELAY2 – DIN)</b>	No SIM card inserted SIM card is not functional New SIM card is not activated yet Low credit on a prepaid SIM card Poor GSM signal	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 has to be activated. (Ask your mobile operator for help if necessary) 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) Test the GSM signal level with your mobile phone in the same location where you will use the GSM RELAY2 – DIN. For a test use a SIM card from GSM RELAY2 – DIN (it's important to test GSM signal of the same GSM operator). The mobile phone should show the signal level at least 2 bars.
<b>The pulse on an output is not generated based on a incoming ring signal (e. g. for a gate opening)</b>	The incoming phone calls for a SIM card are redirected	Cancel all phone call redirections.
<b>The temperature from an external temperature sensor is wrong</b>	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.
<b>There are not all parameters on SIM card</b>	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)

## 13. List of All Parameters

Item	Name Explanation	Number	
		Example (Range)	Factory
<b>xCode</b>	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 <b>xCode</b> in a phonebook of a SIM card GSM RELAY2 - DIN will create this item <b>xCode</b> with a value (=password) <b>1234</b> . It's recommended to change this default password! In case there are more users of GSM RELAY2 - DIN it's possible to create more <b>xCode</b> items. For better readability it possible to distinguish users by adding their name behind obligatory part <b>xCode</b> . E.g <b>xCodeGeorge</b> .	84655647  (The range from 1 digit up to a count accepted by a SIM card)	1234
<b>xCodeJane *)</b> <b>xCodeGeorge *)</b>		456456 4321	
<b>xMaster</b>	The main (most important) user phone number. If there is no <b>xMaster</b> 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	-
<b>xSca *)</b>	GSM operator's SCA service center for outgoing SMS text messages. If <b>xSca</b> parameter is not set up, GSM RELAY2 - DIN will use standard SCA phone number on SIM card which is usually setup by GSM operator before selling the SIM card (recommended).	+420603052000	-
<b>xAutoCaLL</b>	Some GSM operators request at least one paid call to be done from a SIM card in a specified time period – see chap. <b>Automatic voice call</b> . Insert proper phone number (your mobile phone number is recommended) and GSM RELAY2 - DIN will make phone call in requested time periods.	+420777777497	-
<b>xAutoCaLLint</b>	The time period (in moths) between two calls to a phone number in the <b>xAutoCaLL</b> parameter. E. g. for <b>xAutoCaLLint</b> = 3 the GSM RELAY2 - DIN will make a phone call to a phone number in a <b>xAutoCaLL</b> parameter every 3 months.	3 (1 to 9)	2
<b>xReg</b>	Enables a function called "temperature regulation". For <b>xReg</b> parameter value 1, GSM RELAY2 - DIN 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 <b>xRegLevel</b> ), the output is switched off. For the parameter <b>xReg</b> = 0, the function "temperature regulation" is disabled	0 or 1	0
<b>xRegOut</b>	The output number for the function "temperature regulation".	3 or 4	3
<b>xRegIn</b>	Parameter is always set to value of 0.	0	0
<b>xRegLevel</b>	This parameter means a requested temperature in °C for the function "temperature regulation" (E. g: For a value 25 of the <b>xRegLevel</b> parameter the GSM RELAY2 - DIN 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
<b>xRegHyst</b>	This parameter called "hysteresis" prevents the GSM RELAY2 - DIN to switch on and off the heating system too often when the function "temperature regulation" is enabled. (E. g. For the parameter <b>xRegHyst</b> = 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
<b>xRemCall</b>	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 <b>xRemDout</b> (the factory setting is output 4). This function is useful for a gate opening using a mobile phone. If a parameter <b>xRUser</b> is specified the pulse is generated only when the ringing is from the phone number which is set in the <b>xRUser</b> parameter. It's possible to set up more parameters of <b>xRUser</b> type which can be distinguished by adding a name e.g. <b>xRUserJane</b> .	0	1
<b>xRemConfirm</b>	This parameter is intended for later use. Keep this parameter <b>xRemConfirm</b> = 0.	0	0
<b>xRemDout</b>	This parameter specifies an output on which the pulse will be generated by ringing. E. g. For a parameter <b>xRemDout</b> = 4 than the pulse will be generated on an output no 4 (factory setting).	3 or 4	4
<b>xRUser</b>	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 <b>xRemDout</b> parameter. The first phone number from which comes the first valid SMS to GSM RELAY2 - DIN with a "new" SIM card will be written as a <b>xRUser</b> . More parameters of <b>xRUser</b> 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 <b>xRUser</b> (e. g. <b>xRUserPeter</b> ). If there is no parameter of <b>xRUser</b> type on the SIM card, any incoming call will generate a pulse on an output4 (in the factory configuration). This is useful for an entry gate with many users and low level of security. Anybody who knows the proper phone number can open the gate.	+420777777497	-
<b>xRUserPetr *)</b>		+420777111111	
<b>xe[.....+.....+.....]</b> (general form)	It's possible to set events for GSM RELAY2 - DIN inputs and outputs which will send so called "event SMS" or make a voice call. (It's useful to set GSM RELAY2 - DIN 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.		
<b>xeI1+LH+SMS</b>	SMS is sent when the input 1 changes level L->H. SMS format is: GSM RELAY2 DIN: INOUT1 L->H	+420777777497	-
<b>xeI2+LH+SMS</b>	SMS is sent when the input 1 changes level L->H. SMS format is: GSM RELAY2 DIN: INOUT1 L->H	+420777777497	-
<b>xAIn1Level *)</b>	This parameter means temperature level in °C for sending SMS or ring to user.	0	5
<b>xAIn1Hyst *)</b>	This parameter prevents the GSM RELAY2 - DIN to send warning SMS too often. Example: if <b>xAIn1Hyst</b> = 2 and <b>xAIn1Level</b> = 5, event SMS is generated if temperature is below 3°C (5°C-2°C), and next SMS is generated if temperature is above 7°C (5°C+2°C).	2	1
<b>xAIn1State *)</b>	This parameter specifies if the value of this analog input will be in the state message.	0	1
<b>xAIn1Delay *)</b>	This parameter specifies how many seconds has to be the value of analog input lower of higher than the level specified in <b>xAIn1Level</b> parameter.	10	1
<b>xIO[i]state</b>	This parameter specifies if a status of <b>i</b> input/output will be mentioned in a GSM RELAY2 - DIN status SMS (e. g. for <b>xIO2state</b> = 1 the status SMS will contain: "input2=on"). Value 0 means no status information of <b>i</b> input/output will be mentioned in the status SMS.	0 or 1	1
<b>xIO[i]delayLH</b>	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 <b>i</b> must not change before it is considered to be valid for a change level L->H. Value 0 means immediate reaction.	3	1
<b>xIO[i]delayHL</b>	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 <b>i</b> must not change before it is considered to be valid for a change level H->L. Value 0 means immediate reaction.	2	1
<b>xIO[i]pulseLen</b>	This parameter specifies the length of a pulse on an output no <b>i</b> in seconds.	10	4

Item	Name Explanation	Number	
		Example (Range)	Factory
	<p>Examples of events from inputs:</p> <p><b>Inputs: xeIa+b+c</b></p> <p><b>a</b> ... number of input <b>1</b> to <b>4</b>, input <b>5</b> watches main power</p> <p><b>b</b> ... <b>LH</b> – change level L-&gt;H, <b>HL</b> – change level L-&gt;H</p> <p><b>c</b> ... <b>SMS</b> – send SMS, <b>CALL</b> – ring</p> <p>Example:</p> <p><b>xeI1+LH+CALL *</b> – Voice call is made, when the input 1 changes level L-&gt;H. You can accept or reject the call on your mobile phone.</p> <p><b>xeI5+HL+SMS *</b> – SMS is sent, in case of loss of main power (<b>HL</b> = loss, <b>LH</b> = restore).</p> <p><b>Outputs: xeOa+b+c</b></p> <p><b>a</b> ... number of output <b>3</b> or <b>4</b></p> <p><b>b</b> ... <b>LH</b> – change level L-&gt;H, <b>HL</b> – change level H-&gt;L</p> <p><b>c</b> ... <b>SMS</b> – send SMS, <b>CALL</b> – ring</p> <p>Example:</p> <p><b>xeO4+HL+SMS *</b> – SMS is sent, when the output 4 changes level H-&gt;L. SMS format is: GSM RELAY2 DIN: INOUT4 H-&gt;L</p> <p><b>xeO4+LH+CALL *</b> – Voice call is made, when the output 4 changes level L-&gt;H (GSM RELAY2 - DIN will call you whenever anybody is opening the gate).</p> <p>Temperature: xeAa+b+c</p> <p><b>a</b> ... number of input for temperature sensor <b>1</b> or <b>2</b></p> <p><b>b</b> ... <b>LH</b> – temperature is above limit, <b>HL</b> – temperature is below limit (see example)</p> <p><b>c</b> ... <b>SMS</b> – send SMS, <b>CALL</b> – ring</p> <p>Example:</p> <p><b>xeA1+HL+SMS *</b> – SMS is sent, when the temperature goes below the requested level (see the xAIn1Level, xAIn1State, xAIn1Delay parameters).</p> <p><b>xeA1+LH+CALL *</b> – A voice call is made, when temperature raise above requested level (see the xAIn1Level, xAIn1State, xAIn1Delay parameters).</p> <p>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).</p>	+42077777497	-
<b>xCredit</b>	This parameter enables a function "Read Credit" for a prepaid SIM card. The credit level is a part of GSM RELAY2 - DIN status SMS, e. g. Credit=250.48. It's possible to set the <b>xEvent8004</b> parameter and GSM RELAY2 - DIN will send an SMS when the credit is lower than <b>xCreditLimit</b> parameter. For <b>xCredit=1</b> the function "Read Credit" is active. For <b>xCredit=0</b> the function "Read Credit" is not active.	0 or 1	1
<b>xCreditCode</b>	A code for the credit reading. This code depends on a GSM operator. (Contact your GSM operator for details).  GSM RELAY2 - DIN 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	-
<b>xCreditFreq</b>	This parameter specifies how often the credit will be read. It means how many minutes will GSM RELAY2 - DIN wait between reading the credit again.	300	60
<b>xCreditLimit</b>	Whenever credit goes below <b>xCreditLimit</b> parameter in CZK, an SMS can be send. (The <b>xEvent8004</b> parameter has to be set for this).	100	50
<b>xEvent8004 *)</b>	The phone number where the GSM RELAY2 - DIN will send an SMS to inform that a credit on a prepaid SIM card is below limit specified in <b>xCreditLimit</b> parameter.	+42077777497	-
<b>xLimit</b>	<b>xLimit</b> parameter activates a function which limits the number of SMS/voice calls per time period specified by a <b>xLimitTime</b> parameter. For <b>xLimit=1</b> the function is active. For <b>xLimit=0</b> the function is not active.	0 or 1	1
<b>xLimitCount</b>	This parameter specifies the count of SMS/voice calls per a time period (see <b>xLimitTime</b> ).	10	30
<b>xLimitTime</b>	Time period in days for the function of count of SMS/voice call limit (see parameter <b>xLimit</b> ).	1	7
<b>xEvent8003 *)</b>	The phone number where the GSM RELAY2 - DIN will send an SMS to inform that the "SMS count limit per specified time period" was reached (see parameters <b>xLimitCount</b> and <b>xLimitTime</b> ).	+42077777497	-
<b>xLanguage</b>	This parameter specifies the language of the device. Value 1 = Czech (CZE), value 3 = english (ENG)	1 or 3	Depends on operator
<b>xRedirect</b>	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
<b>xeI1+LH+SMS</b>	An SMS is sent when magnetic relay is closed	GSM RELAY2 DIN: INOUT1 L->H
<b>xeI2+LH+SMS</b>	An SMS is sent when input 2 changes from L->H	GSM RELAY2 DIN: INOUT2 L->H
<b>xMaster</b>	Setup main user xMaster	
<b>xUserMaster</b>	Setup user for control by ringing	

(Version 1.30; 2008-08-28)