

GSM-R5-T, GSM-R5-TI, -TU

1. Introduction

GSM-R5-Tx is a device designed for **DIN rail mounting**. GSM-R5-Tx can control one independent electrical circuit in a building, e.g. one circuit of an accumulator stove or circuit for entry gate or garage gate opening. The control is made via SMS messages or by ringing. The device is ready to operate immediately after connection to power supply and inserting of a SIM card of any GSM operator. The GSM-R5-Tx has one relay output, which can control a coil of a contactor. An electrical appliance e.g. electric heating system can be connected to this contactor. The GSM-R5-Tx has also one logical input and one logical output. The logical input can be activated by external voltage 8 to 30V_{DC/AC}. The GSM-R5-Tx can react on input status change by ringing or sending and SMS on preset phone number. It is also possible to readout the status of this input via status SMS from the GSM-R5-Tx. Analog input is designed for measuring the temperature or current 0-20mA or voltage 0-10V. Analog input can be used for automatic regulation of output OUT and can control connected heating system to maintain the preset temperature. The temperature of a temperature sensor can be readout via SMS.



2. Package

- 1pc GSM-R5-T or GSM-R5-TI or GSM-R5-TU
- 1pc GSM antenna GSM-ANT11K
- 1pc 8 pin connector (3.5mm), 1pc 2 pin connector (3.5mm)
- 1pc screwdriver 2mm
- 1pc mini USB cable

3. Recommended accessories

GSM-C-T2 temperature sensor with cable 1m



4. Instalation

1. To operate the GSM RELAY 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 the SIM card is pre-paid.

Before inserting the SIM card into the GSM-R5-Tx 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 phone 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-R2-T device (cut corner first, contacts up – towards the inscription SIM). The correct insertion is indicated by mechanical click noise. Push gently and release to remove the SIM card.
3. Now it's possible to connect GSM antenna and power supply 12V or 24V to GSM-R5-Tx. If the power supply is OK, the green LED (right from PWR connector) will light on. Cca **1 minute** later the blue LED diode **GSM** will start flashing with a period of 4 sec.
4. To make the first test of the GSM-R5-Tx, press the button for local control of output Y2(OUT). The green LED (near Y2) will light on. Than use your mobile telephone which 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-R5-Tx. This will switch off the output Y2(OUT) and the green LED will light off. GSM-R5-Tx automatically sends a confirmation message on performing the operation. (You can change the password 1234 later in configuration)
5. Try "**ringing**" on device. You can make pulse on Y2(OUT) for ca. 4 seconds by calling on GSM-R5-Tx (with factory settings). The device hangs up the call and makes pulse on the output. This can be used for opening an entrance gate. You have to use the same phone number as was in the very first SMS sent to the device.
6. Try temperature regulation to 25°C. Output Y2(OUT) will be switched on and off depending on the temperature input A1(°C). Connect the temperature sensor into the temperature input A1(°C) and send SMS in form of 1234 TEMP25. Regulation can be canceled by SMS with command 1234 OFF or pressing the button BTN.
7. **GSM-R5-Tx** factory setting is possible to restore by sending SMS message 1234 IFACTORY. If you made a backup configuration of SeaConfigurator settings (Settings tab -> Files button -> File option), you can restore your settings from this backup (Settings tab -> Files button -> File option).
8. The names of the inputs, outputs (their states) and the command names can be modified according to your ideas using the **SeaConfigurator** configuration software. This configuration program can be downloaded free of charge from www.seapraha.cz (enter the word „Configurator“ in the search) and install it on your PC.

5. Technical specificatins

Parameter	Symbol	MIN.	TYP.	MAX.	Unit	
Dimensions	Width	W	54		mm	
	Height	H	24		mm	
	Depth	D	86		mm	
Supply	Voltage max. power supply	(during phone call, empty battery and relay ON)	8 V _{DC} 12 V _{AC}	12 V 3.3 W	30 V	V _{DC/AC} W
	Standby	(connected to GSM network)		12 V _{DC} 30 mA		
Digital output	"Y2(OUT)", signal relay					
	Voltage	U	3	12	60	V
Digital input	"X3 (IN)"					
	Voltage	U	3	4	30	V
Analog input	Temperature measuring	All variants	-30		+55	°C
	Current measuring	Only GSM-R5-TI	0 – 20 mA			V
	Voltage measuring	Only GSM-R5-TU	0 – 10 V			mA
Accumulator	Li-ION		3,7		V	
Temperature	Storage	tSTG	-40		+85	°C
	Operational	tA	-20		+65	°C

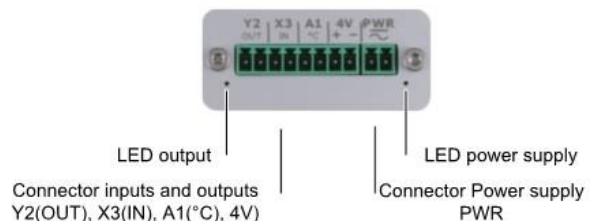
Use GSM-R5-Tx inside box with ingress protection at least IP44!

*) Temperature sensor GSM-C-T2 is not part of the package.

6. Hardware

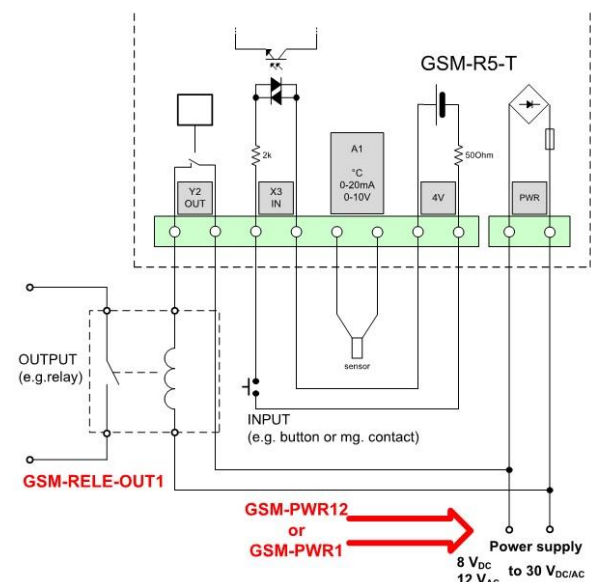
6.1 Power supply, Input and Output

Power supply connector has two pins. I/O connector has 8 pins: digital output (relay contact), digital input (optocoupler), analog input for temperature sensor and +4V accumulator. Power supply is in a range +8 V_{DC} (+12 V_{AC}) to 30 V_{DC/AC}. It means polarity of power supply is not important.



Connector	Description	Parameter
Y2(OUT)	Galvanically separated relay contacts	60 V / 2A
X3(IN)	Optocoupler with a resistor 2 kOhm	max 30V _{DC}
A1 (°C) A1 (°C/mA) A1 (°C/V)	version GSM-R5-T version GSM-R5-TI version GSM-R5-TU	KTY 81-210 KTY 81-210 or 0-20mA KTY 81-210 or 0-10V
4V	Internal Li-ION accumulator for input supply equipped by protective serial resistor 50 Ohm	4V, MAX 10 mA
PWR	Power supply	See Technical parameters

6.2 Recommended connection



6.3 LED Diodes

LED	COLOR	Meaning
GSM	blue	GSM-R5-Tx status: <i>blinking 1:1...</i> device is starting up <i>short blink 1 per 4 seconds ...</i> device is ready and in operational state
PWR (supply)	green	<i>Permanent light ...</i> supplied from an external supply. <i>Blinking...</i> supplied from an internal Li-ION accum.
Y2(OUT) (output)	green	<i>Permanent light ...</i> Output is ON. <i>Blinking ...</i> regulation function is active.

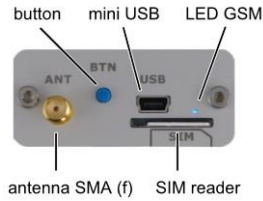
6.4 SIM card reader and pushbutton

Insert SIM card into GSM-R5-Tx (see the picture). Proper insertion is indicated by mechanical clicking noise. Push and release to remove the SIM card from GSM-R5-Tx.

Press shortly the button to change the output Y2(OUT) status. Press the button for 5 seconds (or longer) to switch the GSM-R5-Tx to sleep mode (this feature is available when supplied from battery only). Sleep mode is canceled when GSM-R5-Tx is again supplied from power supply. When the main power supply is connected, press the button for 5 seconds (or longer) and the unit will restart.

Mini USB connector is used for a configuration with SeaConfigurator.

Antenna is connected using SMA connector. GSM-R2-T is equipped with SMA female connector. It means that antenna has to be equipped with SMA male connector. Impedance is 50 Ω.



6.5 Accumulator

GSM-R5-Tx is equipped with a 3.7 V stand-by Li-Ion accumulator. After power failure, the device is able to operate in normal mode for about a day (the duration depends on how much it is used). The accumulator can be used for supply of inputs – see Recommended connection.

7. Configuration

GSM-R5-Tx is configured with SeaConfigurator either via the USB connector (miniUSB cable) or through the GPRS connection. This configuration program can be downloaded for free from <http://www.seapraha.cz> (search for „Configurator“) and install it on your PC.

GSM-R5-Tx is shipped with a factory configuration that meets the most common requirements, so it is possible to use the device even without SeaConfigurator. Simply send the first SMS from the main user's phone number under the "First time startup" chapter.

Some parameters be changed via SMS, see chapter „Command List“.

8. GSM-R5-Tx Control

8.1 Control output by "ringing"

GSM-R5-Tx is set by the manufacturer to switch ON an output Y2(OUT) for 4 seconds based on ringing from any phone number. This pulse is useful e.g. for opening of an entry gate. Test this function by a call to GSM-R5-Tx from your mobile phone (it's important to send a valid command SMS to GSM-R5-Tx from your mobile phone if have inserted a "new" SIM card to GSM-R5-Tx first).

GSM-R5-Tx rejects a call and then immediately generates a pulse on an output Y2(OUT).

8.2 Remote control via SMS

GSM-R5-Tx is controlled via SMS of the GSM network. Text SMS are in form:

PASSWORD space COMMAND space COMMAND

Commands are separated by a space and are not case sensitive.

Password

Password is the main security element in control of **GSM relay⁵**. SMS with commands will be accepted from anyone who knows the password. The password is a string of digits (it can be any length from 1 to 20), Which the SMS message must contain, or else it's ignored. Because the text before the password is ignored, SMS messages can also be sent from the SMS gateways. We recommend changing the password to something different. Password can be changed either through SeaConfigurator or with SMS message.

Default password is:

1234

Command

This part of the message defines the desired action of the device. Multiple commands separated by a space can be inserted into one SMS message.

The command can consist of multiple parts. For example, when it comes to output, it consists of its name „Y2“ and an action (e.g. ON, OFF, etc.). If the naming of the output is not specified, the output with the lowest sequence number is used (for the **GSM relay⁵** it is the socket). The **ON** and **Y2 ON** commands are therefore equivalent.

In addition, a parameter (e.g. pulse length, required temperature, etc.) may be given behind the command. There must be space between the command and its parameter.

Most used commands (more in chapter "List of commands")

Command	Parameter	Meaning
Y2 ON	-	Turns ON the output Y2(OUT).
ON	-	If send without parameters, the output Y2(OUT) will be turned ON.
Y2 OFF	-	Turns OFF output Y2(OUT).
OFF	-	If send without parameters, the output Y2(OUT) will be turned OFF.
Y2 PULSE Y2 RESET	0 to 999999	Parameter is in seconds. Pulse command will switch ON the output for period of time. Reset will switch OFF the output for period of time
PULSE RESET		It will make a pulse or a reset for the same period as previous command. Factory default is 4 seconds.
TEMP	0 to 55	Sets the desired temperature for regulation. Value is in °C.
STATE	-	Request for message with information about state of outputs, inputs signal strength and remaining credit.

Examples:

1234 ON an appliance connected to output Y2(OUT) will be switched on
 1234 Y2 ON an appliance connected to output Y2(OUT) will be switched on
 1234 OFF an appliance connected to output Y2(OUT) will be switched off
 1234 TEMP 5 set and activate the temperature regulator function to +5 °C
 1234 PULSE 3600 output Y2(OUT) will be switched ON and than after 1 hour will be switched OFF (Note: if an output is already switched on, it will be just switched off after 1 hour)

Confirmation

If a *command message* contains a valid password (access code) the GSM-R5-Tx sends back a confirmation message which informs if a command was accepted. 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 Y2 ON NOBACK GSM-R5-Tx will switch on an appliance connected to output Y2(OUT) but no confirmation message will be sent back.

8.3 Status message

The status message is send whenever the command message contains a valid password. Example: 1234 Y2 ZAP

If it is not disabled the STATE message will be appended to the message about execution. State message contains following information:

Status message example	Explanation
GSM-R5-Tx: Y2 ON SUCCESS	Command confirmation: to switch ON Y2(OUT)
Power=Powered	State of power(from battery or from source).
Temp=28°C	Actual temperature on a temp. sensor T1 is 28°C.
OUT=on	State of output Y2(OUT) is ON.
IN=on	State of input X3(IN) is ON.
Sig=58%	GSM signal level is 58%.

Note: If any input or output is disabled (by SMS or by SeaConfigurator), it won't be mentioned in STATE message.

8.4 Macros

Built-in macros with variables

You can use macros listed in the macro list in the event text. These macros are used when you want to create your own status message. In this case, be sure to cancel the „state message reply“ option in the „General Settings“ section.

Examples:

SMS with text: „Temperature is low, [Y2].“ Will be sent as „Temperature is low, Y2=ZAP.“

SMS with text „output is ON([A1N] is [A1V]).“ Will be sent as „output is ON (TEMPERATURE is 18,1 °C).“, where „input name“ A1 is TEMPERATURE and „units“ are in °C.

Macros in incoming SMS

If you need to simplify a regular repeating command or a summary of commands (including even the parameters), create a macro. For example, create a macro: „FIRE“ with text „Y2 TEMP 25“. If you then send an SMS with the text „FIRE“, output Y2 (OUT) will be regulated by the temp. Sensors at 25 ° C.

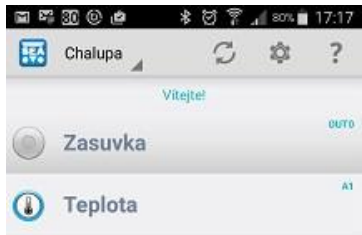
Macros in sent SMS

For example, you can define the macro „N1“ with the text „My Station is Best in the World“ to help you work on creating text in sent SMS. Then just use the text „[N1]“ in the outgoing SMS.

Note.: Macros must always be in square brackets

8.5 Control via application SeaControl for OS android

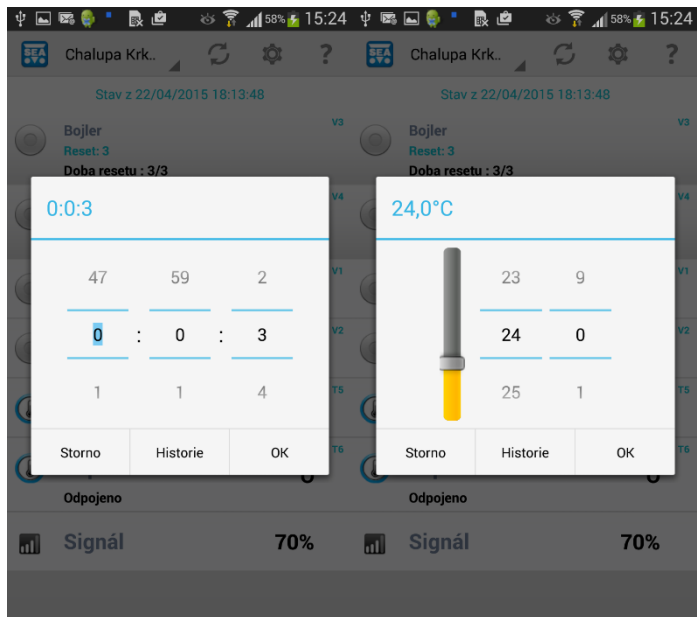
For control and monitoring of **GSM-R5-Tx** it's possible to use application for device with OS Android, which is available for FREE. In your smartphone start Google Play and search for „**SeaControl**“. Application communicates to **GSM-R5-Tx** with SMS messages. Application control is intuitive - see enclosed pictures.



Switch between each device by swiping left or right.
Pulse settings.
Reset settings
Temperature control setting, for some time interval
In history, there are always stored two previous values.

pulse length settings:

setting temperature to control:



9. Data logger

GSM-R5-Tx provides saving(logging) of detailed information about activity of the device. Interval of saving is changed through **SeaConfigurator**. Saved log provides reverse analysis of device activity. Type of logged information are set by user during configuration of **GSM-R5-Tx**. It's possible to save information about state changes of each inputs and outputs, incoming outgoing SMS. Format of log file is .csv (= Comma Separated Values). Name of the file is same as the day it was created(datum.csv).

Saved logs are of two types: periodic and state-change.



Type	Description	Example
Time Local	Local date and time	2015-04-01 15:32:14
type^{*1)}	Type of saved log (number)	1
type2	Type of saved log (word)	period
phone/event	Telephone number / Event	+420123456789
text/ action	Text of SMS message / Action	GSM-R5-Tx: Input turned ON.
A1[°C]^{*3)}	State of analog input A1	22,6
Y2	State of output Y2	0
Y2.cmd^{*2)}	Output Y2 is regulated to value 28,0 (current value is 22,6)	,R22.6/28.0
X3	State of input X3	1
AP	Analog input "power" [V]	14,4
PWW	Digital input "power"	1
GSM.cell	Information about BTS	23002F,0404,047A_006E
GSM.sig	GSM signal strenght [%]	35

*1) type (type2) - Types of records
1 (period) - regular period write
2 (event) - record caused by digital input or output state change

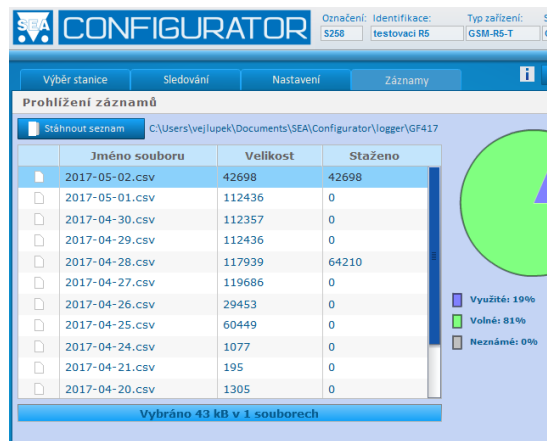
- 3 (insms) - received SMS
- 4 (outsms) - sent SMS
- 5 (incall) - incoming telephone call
- 6 (outcall) - outgoing telephone call
- 7 (debug) - debug information
- 8 (talk) - sound playback (not used)
- 9 (fault) - error
- 32(fw) - firmware upload

*3) A1:

- O ... disconnected;
- Z ... Short circuit;
- ? ... unknown;
- [°C] ...

*2) Y.cmd:

- ,R22.6/28.0 - R means regulation; current temperature is 22,6°C / regulated temperature is 28,0°C
- P is pulse
- Q is reset



10. Warranty

General **warranty period is 24 months** after purchase, when eventual malfunction device will be repaired free of charge in SEA spol. s r.o. while shipping to SEA is paid by customer and SEA pays for shipping back to customer.

The warranty does not cover any damage caused by wrong use which does not comply the technical specifications and user instructions and any accidental damage (e.g. by water, lightning etc.).

SEA spol. s r.o. has **NO RESPONSIBILITY** for any damage, lost, costs and any other problems direct or inducted, caused by device malfunction from any reason.

In case of incompleteness or any damage in the packaging it is necessary to inform SEA spol. s r.o. immediately (within five days).



CE Declaration of conformity

in accordance with the Radio and Telecommunications Terminal Equipment Directive 1999/5/EC (R&TTE) and Directive 2011/65/EU (ROHS).

We SEA, spol. s r.o., Dolnoměcholupská 21, CZ 102 00 Praha 10, Czech Republic, ID: 47117931 (manufacturer) declare under our sole responsibility, that product GSM RELES TEMP type GSM-R5-T is in conformity with the following standards:
health and safety: EN 60 950-1:2005+A1:2009 EN 60 950-1:2006+A11:2009+A1:2010+A12:2011
EMC: ETSI EN 301 489-1 ETSI EN 301 489-7 v1.3.1
radio frequency: EN 301 511 v 9.0.2

The last two digits of year in which the CE marking was affixed: 17



Place of issue: Praha
Date of issue: 9.1.2017
Name: Ing. Vladimír Rosšleř
Grade: director

SEA s.r.o. (2)
 Společnost pro elektronické aplikace
 Dolnoměcholupská 21/99
 CZ - 102 00 PRAHA 10 - Hostivař
 IČO: 2 727 996 58
 DIČ: CZ 47117931

11. Examples

The following examples describe the most widely used methods of using the GSM-R2-T. All examples are based on the "default" parameter settings on the SIM card (see Chapter 6)

11.1 Remote control of heating on a cottage

The electrical appliance is connected to output OUT of GSM-R2-T using a contactor. Following SMS message will **switch ON** the electric power to a heating:

```
1234 ON
```

Following SMS message will **switch OFF** the electric power to a heating:

```
1234 OFF
```

The proper function depends on the following parameters on a SIM card:

```
xCode      1234
xRegOut    0
```

Note: If the password was changed from the „default“ factory 1234 to another (e.g. 6543), the SMS has to be 6543 on (6543 off).

11.2 Remote control of heating regulation on a cottage

The electrical appliance is connected to output OUT of GSM-R2-T using a contactor. SMS message in the following format sets the requested temperature to 25 ° C for temperature regulator and activates the function "regulator":

```
1234 temp25
```

The proper function depends on the following parameters on a SIM card:

The default factory setting is not necessary to change:

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

11.3 Entry gate opening by phone call from a mobile phone (without confirmation)

The gate control is connected to output OUT of GSM-R2-T. After the first ringing from the phone number from which was sent the first valid SMS command GSM-R2-T rejects a call and the entrance gate will open. The next call will close the entrance gate.

Correct function is affected by following parameters on the SIM card (items in the phone book); default parameters need not to be changed:

```
xIo0pulseLen 4          (note.: o0 = "ó" and "zero")
xRemDout      0
xRemCall      1
xRemConfirm   0
xMaster       +420777111111
```

If you need to control the entry gate using different phone numbers, add these numbers on SIM card:

```
xRUser1       +420777222222
xRUserPeter   +420777333333
```

Note. It's possible to append characters to „xRUser“ for better identification of a user's phone number.

11.4 Entry gate opening by call from a mobile phone (with confirmation)

After the first ringing from the phone number which is in the list of users (xRUser. ...) of the GSM-R2-T, it rejects a call and calls back. When the calling user rejects the call within 29 seconds, the entrance gate will open.

The setting of parameters on a SIM card is the same as it the previous chapter (8.3), except xRemConfirm parameter which must be set to "1":

```
xRemConfirm 1
```

12. Event SMS Messages

Whenever any event appears on the GSM-R2-T input or output for longer than minimum specified time, the GSM-R2-T 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-R2-T. See the xe[...+...+...] parameters.

If you answer the phone call you will hear a voice message in a form of DTMF signals.

13. Examples of event messages

The following examples describe the most common examples of what can GSM-R2-T to send to you. All the examples are based on the "default" parameter settings on the SIM card (see Chapter 6).

13.1 SMS message based on input event (an input IN1 is activated by voltage)

By applying a voltage to the input IN1 (= input is activated) is sent the following SMS text:

```
GSM R2 T: In1 ALARM!
```

```
out=on
```

```
in1=on
```

```
Sig=64%
```

```
Temp=ERROR
```

As a phone number is used the phone number from which was sent the first valid SMS (in this example is used phone number +420777111111).

Correct function is affected by following parameters on the SIM card (items in the phone book); default parameters, which need not to be changed:

```
xMaster       +420777111111
```

If you need to send the SMS message to other phone numbers, you must add them to the SIM card phone book:

```
xRUser1       +420777222222
xRUserPetr    +420777333333
```

13.2 Call when the voltage disappears from input IN1

By disconnecting the voltage from the input IN1 (= input is deactivated) the phone number from which was sent the first valid SMS (+420777111111 in this example) is called.

Correct function is affected by following parameters on the SIM card (items in the phone book); default parameters, which need not to be changed:

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

13.3 SMS when the temperature drops

If you want to receive SMS when the temperature drops below +5 ° C, it is necessary to set these parameters on the SIM card:

```
xeA1+HL+SMS  +420777111111
xAIn1Level   10
xAIn1Hyst     5
```

Level (Level) is set to 10 ° C, the hysteresis (Hyst) at 5 ° C. SMS is sent when the temperature drops below +5 ° C (+10 ° C - 5 ° C). The SMS is re-sent after the temperature rose above +15 ° C (10 ° C + 5 ° C) and then falls below +5 ° C again.

14. Advanced functions

14.1 Automatic Voice Call

Automatic voice call enables to verify the ability of the GSM-R2-T to make a voice call in case of any event (i.e., functionality, the credit, the GSM signal etc.).

In the following example the GSM-R2-T will call you between 9:00 and 18:00 of a local time. It means you will not be woken up in the middle of night. If you will not answer the call, the GSM-R2-T will repeat the call after 2 minutes again.

Example of parameters on a SIM card:

```
xAutoCall = +420123456789 ... (= call the phone number +420123456789)
```

```
xAutoCallInt = 1 ... (= call every month)
```

```
xAutoCallIntFrom = 9 ... (= call between 9 am
```

```
xAutoCallIntTo = 18          and 6 pm)
```

Format of **xAutoCallInt** parameter is: 1 = 1 month, #2 = 2 days, *3 = hours, 1#2*3 = 1 month 2 days 3 hours. The time period between calls starts whenever new value of the parameter is set (it happens when the SIM card is inserted into GSM-R2-T and the power supply is set on).

14.2 Automatic SMS message

This function is useful for reporting "I am alive" and inputs and outputs status via SMS messages. You can set a phone number to send automatic SMS message (xAutoSms), time period between two SMS messages (xAutoSmsInt), begin (xAutoSmsIntFrom) and end (xAutoSmsIntTo) time, when automatic SMS message is allowed to be sent.

Example of parameters on a SIM card:

GSM-R2-T sends SMS message every day between 18:00 and 21:00.

xAutoSms = +420123456789 ... (= send SMS to phone number +420123456789)

xAutoSmsInt = #1 ... (= send an SMS every day)

xAutoSmsIntFrom = 18 ... (= send an SMS between 6 pm

xAutoSmsIntTo = 21 and 9 pm)

Format of **xAutoSmsInt** parameter is: 1 = 1 month, #2 = 2 days, *3 = hours, 1#2*3 = 1 month 2 days 3 hours. The time period between SMS starts whenever new value of the parameter is set (it happens when the SIM card is inserted into GSM-R2-T and the power supply is set on).

After saving parameters on the SIM card the GSM-R2-T sends an SMS with the following text:

GSM R2 T: Device OK. followed by status information.

14.3 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

14.4 Setup credit limit to 70 CZK

When credit drops below 70 CZK, GSM-R2-T will send warning SMS message.

Example of parameters on a SIM card:

xCredit	1
xCreditLimit	70
xEvent8004 *)	+420777777497

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

14.5 Redirection of SMS without valid password

Master (parameter xMaster) can get all messages sent to the GSM-R2-T without valid password. This function helps to watch all unauthorized attempts to control the GSM-R2-T. Every SMS message without valid password is forwarded to phone number depending on the xMaster parameter, in case this function is switched on. For example credit warning message from provider.

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

15. Frequently Asked Questions (FAQ)

What is necessary to use the GSM-R2-T:

- Good quality GSM signal in the place where GSM-R2-T is used (at least 2 bars on your mobile phone)
- Sufficient credit (in case a pre-paid SIM card is used)
- No phone call redirection
- The user has to know to operate his mobile phone (PIN usage deactivation, Phonebook contact changing)

Problem description	Possible cause	Solution
Blue LED diode GSM does not start blinking once per 3 seconds during 3 minutes after power on of GSM-R2-T	No SIM card inserted or 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 has to be activated. (Ask your mobile operator for help if necessary)
	New SIM card which was not activated yet	Check credit on a prepaid SIM card
	Low credit on a pre-paid SIM card	Tip: in the Czech Republic the codes are: *22# Vodafone (Vodafone card) *101# T-Mobile (Twist) *104*# O2 (GO)
	Low quality 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 an incoming call (e. g. for a gate opening)	Phone calls are redirected for the SIM card which is inserted in GSM-R2-T	Cancel all phone calls redirection for the SIM card which is inserted into GSM RELAY.
The "temperature regulation" function of GSM-R2-T was deactivated	GSM-R2-T was deactivated by incoming phone call by master	Change the parameter xRemCall = 0 on SIM card to deactivate the function "pulse by ringing". Then activate the "temperature regulation" function again by SMS. E.g. "1234 TEMP25".
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.
Some parameters are missing on the 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 the phone book on a SIM card (minimum is 60 free contacts).

16. A list of the most frequently used parameters

See www.seapraha.cz, find the device's website and download the file "Complete list of commands".