

ReCT-3S

User's Manual

1. Installation

1.1 SIM card insertion

Using a normal mobile phone, we disable the PIN from the SIM card. At the bottom of the ReCT-3S, we slide the transparent lid, in order to reveal the socket of the SIM card. Then we slide the black cover of the socket a bit (arrow: OPEN), we open it, we put the SIM in its position, we close the black cover, we slide it a bit (arrow: LOCK), and finally we slide the lid at its original position.

1.2 Connections

The telephone set, trunk port of a PBX or the alarm dialer are connected on the 'PHONE' connector. On 'LINE' connector, we optionally connect a PTT line.

ReCT-3S has 3 additional inputs and outputs. The outputs can be activated/deactivated by SMS. The activation of the inputs can cause the respective sending of SMS (to up to 4 numbers) with user defined texts. Input 1 can be also used as an Override input.

The outputs give grounding and they can sink up to 50mA in order to drive either logical inputs or small relays. In case we use relays we must use the diodes as shown in figure 1.

The power supply is also connected to the given terminal block. The way to connect the power supply, connect a switch to an input and connect a relay to an output can be also seen in figure 1.

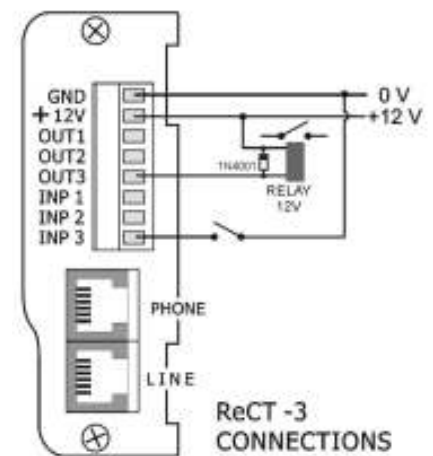


Figure 1: ReCT-3S Connections

2. Programming

Depending on the use, ReCT-3S might need the appropriate programming. The programming can be done as follows:

- From a tone telephone set connected to 'PHONE' input.
- By sending SMS.
- From a PC through the RS232 connector and the dedicated cable.

In all cases the programming is done by sending commands in the form of:

#XX*YYYYYY#, where XX is the command code and YYYYYYYY the data, which can be letters and numbers.

First we will describe the programming commands, grouped according to function, and then we will show how the programming is done by using the above methods.

2.1 Locking / unlocking of the programming

The programming by telephone or SMS is password protected and the relative commands are:

- #10*1111#** To unlock the programming. 1111 is the default password, which we can change with the next command.
- #09*3456#** To define a new password. The new password in the example is 3456.
- #08*#** To lock the programming.

2.2 Call operation settings

The following 4 operation modes define how the ReCT-3S sends the phone calls to the telephone networks.

1. When connected to a telephone set or an analog trunk slot of a PBX all the outgoing and incoming calls are driven through GSM network.
2. If a PTT line is connected (to line connector), calls to numbers starting by 6 (default) are driven out through the GSM network. All calls to other numbers are driven out by PTT network. If the PTT line is disconnected all calls are driven out through GSM network.
3. If the PTT line is connected all the calls are driven out through PTT line. If there is no PTT line connected or the line is disconnected (voltage less than 5 V) all the calls are driven out through the GSM networks. This mode is the one that is used in the majority of the alarm industry applications.
4. As mode "3", with the addition that if the input 1 is grounded (0V), then the LINE connection is ignored and all the calls are driven out through the GSM network. In addition, the OUT1 output is going to 0V when the PTT line is disconnected (voltage on AB less than 5V). In this case, if we don't want an SMS sending with the grounding of input 3, we have to define it, by putting "0" at the "A" position of the commands 11 to 14. (see par 2.3.1)

Important Note : When the connected phone is OFF HOOK (doing either a GSM or PTT line call) any incoming call from the other network will be not signaled to the phone user and the call will be lost.

2.2.1 Operation mode setting

For the setting of the 4 above modes, the command is:

#01*X# where X is 1 to 4

2.2.2 Defining first digits for mobile phones (mode-2)

In mode 2, the calls to GSM numbers (mobile phones) go out through GSM network while the rest of the calls are driven through the PTT line. Numbers starting by 6 are by default mobile phones. More in detail, we can define up to 4 "first digits", so that the call numbers starting with any of these 4 digits are driven out directly from the GSM network. The relative command is:

#02*XXXX# where X,X,X,X are the "first digits"

For example, with the command: **#02*64*6#** all the numbers starting from 6, 4 or * will be called through the GSM network. Please note that all 4 digit positions in command must be filled. So if you have to choose only e.g. one first digit, then you have to write in the command, this first digit 4 times.

2.2.3 Changing the dial tone

With the following command we can change the dial tone we hear when we pick up the receiver and the connection is to GSM network.

#07*X# X=1 for normal dial tone.
 X=2 for continuous dial tone.
 X=3 for fast dial tone.

2.3 SMS remote control of inputs - outputs

ReCT-3S has the capability of remote controlling and supervising by SMS. To activate this capability we must set the following parameters.

2.3.1 Input parameters

The ReCT-3S outputs can be activated with the appropriate SMS. The activation of inputs causes the sending of respective SMS to up to 4 telephone numbers. This function is set with the following commands:

#21*X...X#	X...X = the first phone number to which an SMS will be sent (up to 15 digits).
#22*X...X#	X...X = the second phone number to which an SMS will be sent.
#23*X...X#	X...X = the third phone number to which an SMS will be sent.
#24*X...X#	X...X = the fourth phone number to which an SMS will be sent.
#11*ABC#	When an SMS will be sent to phone number 1.
#12*ABC#	When an SMS will be sent to phone number 2.
#13*ABC#	When an SMS will be sent to phone number 3.
#14*ABC#	When an SMS will be sent to phone number 4.
#15*XYZ#	Input response times.

The digits A, B, C, correspond to the operation condition of inputs 1,2,3 respectively, for each phone number. The relative values are:

- 0 The input doesn't cause SMS sending.
- 1 The input will cause SMS sending, if the voltage from positive goes to 0.
- 2 The input will cause SMS sending, if the voltage from 0 goes to positive.
- 3 The input will cause SMS sending, in case of any change of the voltage.

The above way is very flexible. For example, the commands:

- #21*011# Means that the phone number 1 will receive an SMS when the inputs 2 and 3 will be activated.
- #22*022# Means that the phone number 2 will receive an SMS when the inputs 2 and 3 will deactivate.
- #23*300# Means that the phone number 3 will receive an SMS when the input 1 activates or deactivates.

The default value for the four ABC is 111. In other words, all the phone numbers will receive SMS when any input is activated.

The digits X, Y, Z, adjust the minimum response time of the inputs 1, 2, and 3 respectively, as follows:

1=0.5 sec, 2=1 sec, 3=2 sec, 4=5 sec, 5=10 sec, 6=18 sec and 7=25 sec.

The default value for XYZ is 222. In other words, any input has to be active for at least 1 sec, in order to cause an SMS sending.

2.3.2 SMS texts

Table 1: Default SMS texts

In table 1 we see the texts of the informing (outgoing) and commanding (incoming) SMS.

The first column shows the command code for replacing the default texts with texts more consistent to our application. In case we change them, the texts must be in English, up to 8 characters long and without space between them.

Command	Default SMS text	Operation
25	ALARM1	Received with the activation of input 1
26	NOALARM1	Received with the deactivation of input 1
27	ALARM2	Received with the activation of input 2
28	NOALARM2	Received with the deactivation of input 2
29	ALARM3	Received with the activation of input 3
30	NOALARM3	Received with the deactivation of input 3
31	OUT1 ON	Send to activate the output 1
32	OUT1 OFF	Send to deactivate the output 1
33	OUT2 ON	Send to activate the output 2
34	OUT2 OFF	Send to deactivate the output 2
35	OUT3 ON	Send to activate the output 3
36	OUT3 OFF	Send to deactivate the output 3

For example:

When sending the command #25*DOOROPEN#, we define the SMS text which we will receive when the input 1 is activated.

If we send #31*MOTORON# and #31*MOTOROFF#, then we can, by sending the SMS 'MOTORON' and 'MOTOROFF' to turn on and off the motor we may have connect to output 1.

2.4 Remote autotesting

ReCT-3S has the capability to make unanswered calls to a programmable phone number every H hours. This way the reception center verifies that ReCT-3S functions properly and it's ready to make an alarm call when it is needed.

#20*X...X# X...X = The phone number (up to 15 digits) to which the autotesting calls will be sent.

#16*SSHHTDD# SS = max duration of ringing of each call in secs (must be more than 30).
HH = Every how many hours (01 - 99) the autotesting calls will be done.
T = How many times each autotesting call will be repeated when the line is busy κατειλημμένη.
DD = Time duration between the trials in each call, in secs.

If you program HH =00, then this feature will be not activated.

2.5 Programming verification

We can check the device programming by receiving SMS with set text and parameters in our mobile phone, to do that we must give the following 3 commands.

#17*# to receive SMS with numerical parameters, defined by command codes 01 to 15

#18*# to receive SMS with telephone numbers, defined by command codes 20 to 24

#19*# to receive SMS with input output names, defined by command codes 01 to 15

If we issue the above commands from the phone connected to ReCT-3S, we will receive the verification SMS at the phone number defined with the command #21*X...X#. If we issue the commands with SMS from our mobile, then we receive the SMS to our mobile

2.6 Programming by tone telephone set connected to the 'phone' jack

We go OFF HOOK, wait for dial tone.

We unlock programming by dialing **# 10* 4-digit password #**. The default password is: 1111.

We hear a continuous tone (confirmation that the command has been accepted). If we hear a fast cutting tone (beep-beep-beep...), it means that there is a mistake in the programming and the command is not accepted (maybe the password is not the right one). We have to repeat the procedure.

We go ON HOOK and we are ready to start the programming, following the relative instructions (par. 2).

We go OFF HOOK. We don't dial the password again, but we program directly the command we want (par 2). We hear the continuous confirmation tone, we go ON HOOK, we go OFF HOOK for the next command etc etc.

In the end we dial: **#08*#** in order to lock the programming procedure.

In case of power failure during the programming, the programming locking is activated automatically. So, in order to continue, we have to dial the password command again.

By telephone, we cannot program commands which have letters in their data, like commands 25 to 36.

2.7 Programming with SMS

We can do programming by sending one or more SMS from a mobile phone. The SMS can include more than one command, but not more than 60 numbers and symbols (in English). We can send the SMS:

1. From any mobile phone number, if NO phone number1 is programmed in the memory of the unit (see par. 2.3, command 21).
2. Only from any mobile phone number from the memory of the unit, if there are such phone numbers programmed.

If we follow the above 1. We must include the **#21*X...X#** command (this stores phone number1) in the last programming SMS. Because programming from any mobile is not accepted when phone number1 is stored.

Programming example, send an SMS with the following text:

#10*1111#21*6981234567#33*MOTORON #34*MOTOROFF #

We give the password to unlock the programming procedure, give the phone number 6981234567 as No 1, and change the SMS texts to MOTORON and MOTOROFF, which activate and deactivate the output 2.

2.8 Programming and checking using a PC

It is done with the program RECT3.EXE or with a terminal program (e.g. TERATERM). The following commands are for a terminal program.

The connection RS232 must be:

19200 baud, 8 bit, no parity. Transmit delay = 40msec/char.

In both cases, see cable construction in figure 2.



Figure 2: RS232 cable

2.8.1 Programming and checking using RECT3.EXE.

This is the easiest way to program the device. It's self documented and we don't need to remember any command codes.

2.8.2 Programming and checking using a terminal program.

We prepare in a text processing program, e.g. Notepad, a text file with as much commands as we want and in the end we put the character '@'. For example:

```
#10*1111#  
#21*6981234567#  
#33*MOTORON #  
#34*MOTOROFF #  
@
```

We press on the computer keyboard, the key [\$] and we are waiting the answer: 'READY'. Then, we are sending the file with the text we have prepared, in order to do the programming.

Then by pressing the key [Q], we can see all the stored text and parameters.

We can do more (technical) tests and checks by pressing the following keys:

- [Q] We see the existing programming.
- [D] We go to the default programming.
- [R] We see the unit condition (report).
- [V] We see the firmware version number.
- [I] We see the inputs' status.
- [1] Turn on / off (toggle) output 1. Keys [2] and [3] for outputs 2 and 3.
- [T] Ringing check start.
- [O] Ringing check stop.

3. Operation

3.1 Operation test

With the SIM in its position (disabled PIN), the antenna connected, and a tone telephone set connected on the PHONE connector, we do not connect PTT line. We connect the power to the unit.

After about 30 sec, the green LED "CONNECT" must flash shortly every 2 secs (it means that the module is in standby mode) and the red LED shows the strength of the GSM signal (max 6 flashings in a row and again and again).

We go OFF HOOK on the telephone. We hear the dial tone and make a trial call.

3.2 LED indications

The 3 existing LEDs, shows the following :

The GREEN LED (CONNECT)

It is flashing shortly every 2 secs. It shows that the GSM module is connected with the GSM network.

The YELLOW LED (ACTIVITY)

It is ON if the unit is stand by and PTT line is connected.

It is OFF if the unit is stand by and PTT line is not connected.

It is flashing slowly when an outgoing GSM dialing is in progress.

It is flashing fast, when an SMS sending is in progress.

It is flashing "beep – beep" when a SMS is receiving.

It is flashing "beeeeeep – beep" when an autotest call is in progress.

The RED LED (STATUS)

It is flashing slowly when the operation begins (after power ON).

It is flashing "Beeeeeeep – beep" when a problem in SIM card is found.

It shows the GSM signal strength, flashing from 1 to up 6 times every 4 secs. (6 flashings = strongest signal).

The flashings are:

Slow 1 pulse every 4 secs.

Fast 1 pulse every 1 sec.

Beep - beep 2 short close pulse every 4 secs.

Beeeeep - beep 1 long and 1 short pulse every 4 secs.

3.3 Report SMS

ReCT-3S sends a report SMS in the following cases:

- Input activation or deactivation.
- Reception of an SMS with text 'REPORT',
- Addition of the character '#' at the end of any output control SMS.

```
ALARM2
=====
NOALARM1
ALARM2
NOALARM3
OUT1 OFF
OUT2 OFF
OUT3 ON
```

For example, the SMS 'OUT1 ON' turns on output 1 but the SMS 'OUT1 ON#' turns on output 1 and also sends us back a verification report SMS.

Report description

At the first line of report we see the cause of the SMS sending. At the other lines we see the status of all inputs and outputs (including the cause input).

On the left we see how a report is with the default names of input and outputs.

On the right we see how a report can be if we replace the names of inputs and outputs.

```
DOOROPEN
=====
ZONE2 OK
DOOROPEN
SIRENOFF
NO LIGHTS
LOCKED
CAMERAON
```