

VM5
PSTN/GSM INTERFACE

Technical Documentation
HW version - V1.1

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1 INTRODUCTION

NOTE:

The basic functions on the VM5 are exactly the same like on the VM3. VM5 has additional Inputs and Outputs and programming of them is the same like with GSM-VAC+. The default values (diagnostic) of I/O are the same like VM3 had.

VM5 can be use for different applications in GSM network:

- Back-Up for standard PSTN telephone line
- Standalone telecommunication unit (instead off PSTN line)
- Money saver in offices; GSM to GSM calls from desk phone (FCT- Fixed Cellular Terminal)

VM5 can also be used in connection with different telephone equipment such a:

- Alarm panels with built in digital communicator
- Automatic voice, digital or signal telephone dialers
- Standard telephone sets
- PABX – private telephone exchanges

NOTE:

VM5 is an interface between analog telephone equipment and GSM network. It aloud to transmit exactly the same data which are programmed in Alarm Control Panel or other communication device (for instance: ID protocol, Voice messages...). It can also be used for voice communication between two users.

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2 CONNECTION

Insert SIM card into your personal GSM phone and program the parameters you need (see chap. [PROGRAMING](#)).

Insert SIM card into SIM holder on GSM module.

Connect Power Supply – (12 – 16V DC). Use the power from the Alarm Control Panel or wall adapter power supply.

Connect the Back-up battery – (12V/0.8 Ah).

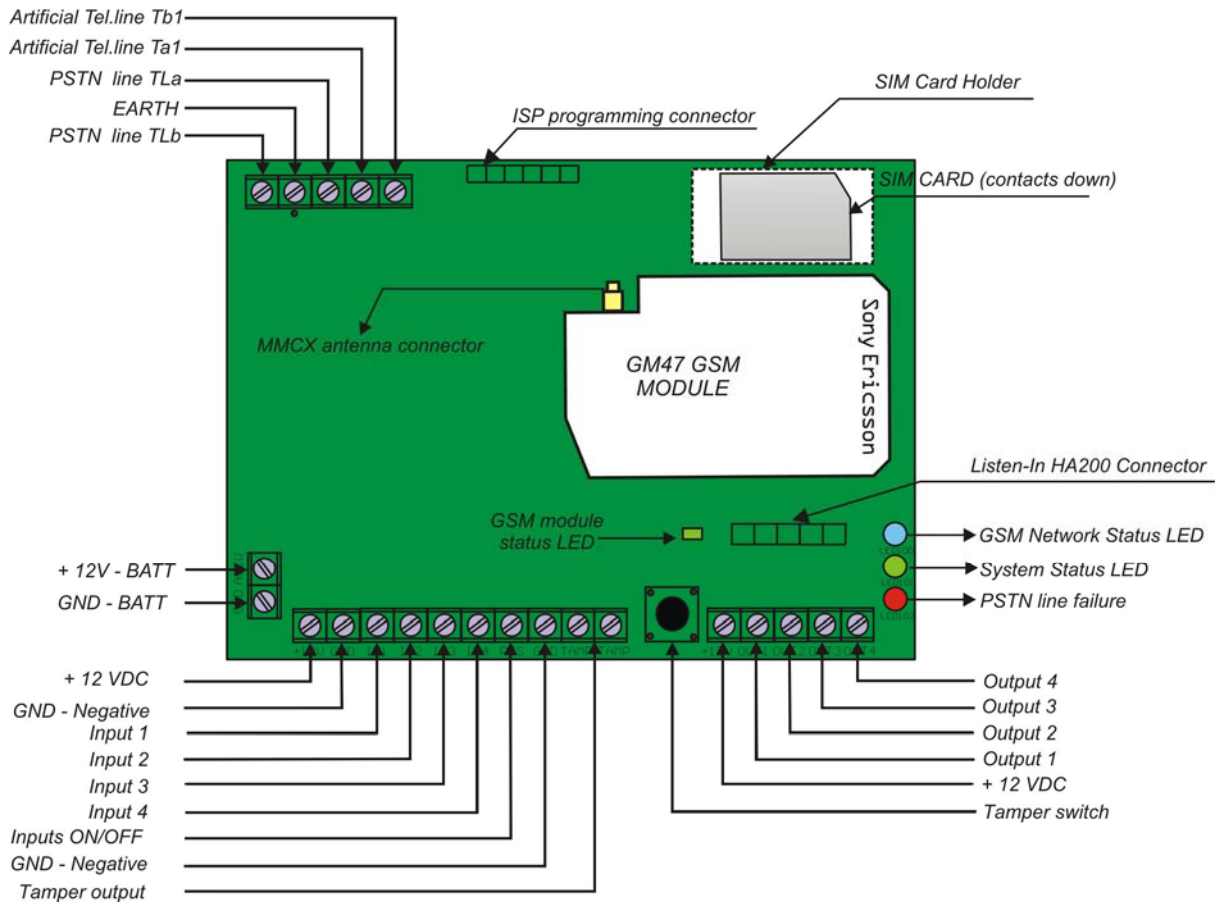
Connect the standard PSTN telephone line – (if present) on terminal blocks TLa1/TLb1.

Connect a telephone unit – (Control panel, telephone dialer, telephone set...) on terminal blocks Ta1/Tb1.

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3 THE VM5 PCB AND BLOCK TERMINALS

VM5 - CONNECTING DIAGRAM



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4 DISCRIPTIONS OF TERMINAL BLOCKS

ACCU/GND - Battery back up connector. In the original metal box it's possible to place a 0.8Ah/12V battery. Red fasten connector is for positive and black fasten connector is for negative voltage battery supply.

+12V/GND - Power Supply connector; on the left side is positive voltage (+ 12 VDC) and the right site is GND voltage.

Ta1/Tb2 - Terminal blocks for telephone connecting on the VM5 artificial telephone line. When the PSTN line is connected on the VM5 (Tla/Tlb) all communication will be carry out thought PSTN line. If telephone line is cut off, VM5 will automatically switch on the artificial telephone line and the communication will be carry out by GSM network. In case if standard telephone line is not present at all, it will work automatically thought GSM network.

Ta1 – (TIP)

Tb1 – (RING)

TLa/TLb - Terminal blocks for standard telephone line connecting. It is possible to connect telephone line from public telephone network (PSTN) or internal telephone line from office telephone exchange (PABX).

TLa – PSTN standard telephone - line a

4.1 TLB – PSTN STANDARD TELEPHONE - LINE B

GND - solid earth ground

TAMP/TAMP - Terminal blocks for connecting anti-tamper loop from tamper switches (upper and bottom) on PCB (N.C.).

IN1 – Alarm input 1. It can be N.O. (normal open) to GND or +12V DC, N.C. (normal close) to GND or +12V DC. Default is N.O. to GND.

IN2 – Alarm input 2. It can be N.O. (normal open) to GND or +12V DC, N.C. (normal close) to GND or +12V DC. Default is N.O. to GND.

IN3 – Alarm input 3. It can be N.O. (normal open) to GND or +12V DC, N.C. (normal close) to GND or +12V DC. Default is N.O. to GND.

IN4 – Alarm input 4. It can be N.O. (normal open) to GND or +12V DC, N.C. (normal close) to GND or +12V DC. Default is N.O. to GND.

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NOTE:

By default the Input 4 has “GSM NETWORK PRIORITY” function. When you put the right potential on the IN4 (look the IP parameters) the VM5 will automatically switch to the GSM network even if the PSTN line is present.

OUT1 – First diagnostic, remote control or alarm output. It is Open Collector output with maximum loading current of 220mA. By default this output is diagnostic for the PSTN line trouble.

OUT2 – Second diagnostic, remote control or alarm output. It is Open Collector output with maximum loading current of 220mA. By default this output is diagnostic for the GSM network trouble.

OUT3 – Third diagnostic, remote control or alarm output. It is Open Collector output with maximum loading current of 220mA. By default this output is diagnostic for the low level of the GSM signal.

OUT4 – Fourth diagnostic, remote control or alarm output. It is Open Collector output with maximum loading current of 220mA. By default this output is not use for diagnostic and it can be use like a remote control or alarm output.

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5 VM5 - PROGRAMMING MODE

IMPORTANT!!!

Before you insert the SIM card into holder of GSM module or external GSM phone, please disable the PIN CODE!!!!

To program the VM5 parameters put the SIM card into your personal GSM phone. Add programming parameters in SIM Card "Phone Book".

You can program the VM5 also remotely by SMS command

For the basic functionality of the VM5 you can program following parameters:

- **LANET** – standard telephone line (PSTN) local area prefix (max. 4 No.)
- **TLCHK** – PSTN line check period (in seconds from 1 – 250)
- **IDCON** – ID CONTACT format (1 = ON, 0 = OFF)
- **OUTPR** – Exit number from PABX (office exchange, usually 0 or 9)
- **GSMPR** – GSM network priority – Input 4

SIM CARD PHONE BOOK

Name	Number	Default	Comment
LANET	empty		
TLCHK*	empty	5 sec.	PSTN line check every 10 sec.
IDCON	empty or »0«		Normal Voice Channel
GSMPR	empty		
OUTPR	empty		

NOTE:

When you use new or empty SIM card or any parameters weren't programmed by you, VM5 will automatically accept the default values (see table).

How to program the parameters (example)

The local telephone number prefix for Bologna is 051.

The VM5 is connected on the local telephone exchange and outgoing number is »0«.

We'd like to check PSTN line every 30 second.

If the Input 4 goes active we want to switch on GSM network (even if the PSTN line is O.K.) after 15 seconds.

The protocol which we'd like to send to the Monitoring Station is ID contact. (See table)

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SIM CARD PHONE BOOK

NAME	NUMBER	Comment
LANET	051	Local area prefix
TLCHK	30	PSTN line check every 30 sec.
IDCON	1	ID contact protocol
GSMPR	15	GSM network after 15 s - IN4 default
OUTPR	0	Outgoing prefix from PABX

NOTE: If the value of the TLCHK is 0 then telephone line checking is disabling!

All this parameter you can also program remotely using the SMS command.

For example, for the upper case the SMS command is:

;LANET=051;TLCHK=30;IDCON=1;GSMPR=15;OUTPR=0;

If you want to get the confirmation SMS back then write “+” before SMS command:

++;LANET=051;TLCHK=30;IDCON=1;GSMPR=15;OUTPR=0;

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6 INDICATIONS

VM5 use three LED diodes for status indication:

- **LED 1 – blue**
Indicate the level of GSM signal. LED flashes from 1 pulse (very bad signal) up to 5 pulses (very good signal).
- **LED 2 – green**
The LED 2 indicates when the unit is ON or OFF state. When the LED is ON also the unit is ON and alarm inputs are active. When the LED is OFF the alarm inputs are not active.
- **LED 3 – red**
The LED 3 is turned ON when a PSTN line is off (not connected or cut). When the red LED is »ON« the VM5 automatically uses GSM network for transmitting.

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7 USING THE VM5 LIKE PSTN/GSM INTERFACE WITH ADDITIONAL ALARM INPUTS AND OUTPUTS

The VM5 has full PSTN/GSM interface (VM3) functionality and it has also almost all features of a GSM alarm communicator with 4 alarm inputs and 4 remote control/alarm outputs. You can program Inputs and Outputs on the same way like the GSM-VAC+ unit.

7.1 HOW TO PROGRAM TELEPHONE NUMBERS

7.1.1 Programming table – direct programming on SIM

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Phone Number	Description
TL1		1 st telephone number
TL1		2 nd telephone number
TL2		3 rd telephone number
TL3		4 th telephone number
TL4		5 th telephone number
TL5		6 th telephone number
TL6		7 th telephone number
TL7		8 th telephone number
TL8		9 th telephone number
TL9		10 th telephone number

VM5 – GSM can send only the DTMF alarm sound (not a voice message), a 14 character–SMS message or both. If the corresponding name ends with the letter “C”, only an alarm sound voice will be send; and if the name ends with the letter “S”, only the SMS will be send.

By pressing the * we switch off the redial call for calling number. The remaining numbers will be called as usual.

By pressing the # we switch off all remaining calls.

Example: We wish to send a voice and an SMS message to the first telephone number, only a voice message to the second one and only an SMS message to the third one. (See the table below.)

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VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Phone Number	Description
TL0	042364800	1 st telephone number (voice & SMS message)
TL1C	040713470	2 nd telephone number (voice message only)
TL2S	040307395	3 rd telephone number (SMS message only)

7.1.2 TL remote programming by SMS

For the upper example send the following SMS from the host phone to the VM5:
;TL0=0402364800;TL1C=040713470;TL2S=040307395;

If you want to get the confirmation SMS back then write “+” before SMS command:
++;TL0=0402364800;TL1C=040713470;TL2S=040307395;

7.2 HOW TO PROGRAM INPUT STATUS

Alarm and reset input can be triggered in 4 different ways. The status of the input can either be normal closed (N.C) or normal open (N.O.) with positive (+ 12V) or negative (GND) voltage. When you need the input feed back information it is possible to get SMS back when input will return from alarm to normal position. (See cap.7.8 – SMS Messages organizer). To get return SMS use IP=4,5 or 6.

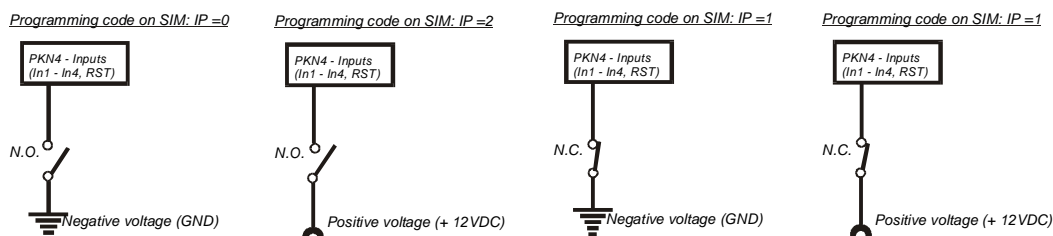
- IPx = 0 – Normal Open – triggered with negative voltage (GND)
- IPx = 1 – Normal Close – breaking negative or positive voltage loop
- IPx = 2 – Normal Open – triggered with positive voltage (+ 12VDC)
- IPx = 3 – Input disable
- IPx = 4 = IP = 0 + input reset SMS
- IPx = 5 = IP = 1 + input reset SMS
- IPx = 6 = IP = 2 + input reset SMS

Note:

For reset SMS use message #6 for Input 1, #7 for Input 2, #8 for input 3 and #9 for input 4

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7.2.1 Typical input connections



7.2.2 Programming table for input status

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number (Default)	Description
IP0	0	Input status for system ON/OFF
IP1	0	Input status for alarm input 1
IP2	0	Input status for alarm input 2
IP3	0	Input status for alarm input 3
IP4	0	Input status for alarm input 4

Example:

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number	Description
IP0	0	OFF – when connecting GND on RST input
IP1	0	Alarm activated by connecting to GND
IP2	1	Alarm activated by disconnecting GND or +12V
IP3	2	Alarm activated by connecting +12V
IP4	4	Alarm activated by connecting to GND + RST SMS #6

7.2.3 IP remote programming by SMS

For the upper example send the following SMS from the host phone to the VM5:

;IP0=0;IP1=0;IP2=1;IP3=2;IP4=4;

If you want to get the confirmation SMS back then write “+” before SMS command:

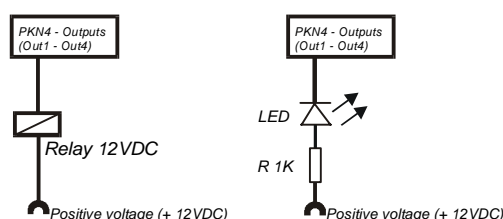
++;IP0=0;IP1=0;IP2=1;IP3=2;IP4=4;

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7.3 HOW TO PROGRAM OUTPUT STATUS

The VM5 – GSM device has four open collector outputs and each of them can be programmed through network in a different way: as a bi-stable or mono-stable output. Any of them can be programmed also to signal certain failure on the main device or to notify us about the expiring validity of the SIM card.

7.3.1 Typical connection of the output



7.3.2 Programming table for output status

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number (Default)	Description
OP1	245	Default for PSTN line failure
OP2	241	Default for GSM network failure
OP3	247	Default for low GSM signal antenna
OP4	243	Default refill report

OP (x) = 1 bi-stable ON/OFF mode

OP (x) = 2 – 240 mono-stable (pulse length in seconds)

OP (x) = 241 – GSM network failure default on the Output 2(H/L)

OP (x) = 242 – GSM network failure default on the Output 2 (L/H)

OP (x) = 243 – warning notice on the expiring validity of the SIM card (H/L)

OP (x) = 244 – warning notice on the expiring validity of the SIM card (L/H)

OP (x) = 245 – PSTN line failure (default on the Output 1) (H/L)

OP (x) = 246 – PSTN line failure (default on the Output 1) (L/H)

OP (x) = 247 – low GSM signal antenna default on the Output 3(H/L)

OP (x) = 248 – low GSM signal antenna default on the Output 3(L/H)

Example:

VM5 PROGRAMMING TABLE
SIM CARD PHONE BOOK

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Name	Number	Description
OP1	1	ON/OFF mode output
OP2	245	PSTN line failure
OP3	20	20 second pulse output
OP4	241	GSM network trouble output

7.3.3 OP remote programming by SMS

For the upper example send the following SMS from the host phone to the VM5:
;OP1=1;OP2=245;OP3=20;OP4=241;

If you want to get the confirmation SMS back then write “+” before SMS command:
++;OP1=1;OP2=245;OP3=20;OP4=241;

7.4 DIRECT ALARM OUTPUT – OA

If you want to activate a local alarm (siren) you can program any VM5 output for this function. Type of the Output (ON/OFF or pulse time) is determinate with parameter **OP**. In the same time you can control the outputs also remotely. Default value of **OA** parameters is:

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number Default	Description
OA1	9	No link between INx and OUTx
OA2	9	No link between INx and OUTx
OA3	9	No link between INx and OUTx
OA4	240	Input 4 will force the VM5 on GSM network

Possible programming parameters:

Value	Description
9	Input used as normal alarm input
10	Output 1 OFF
11	Output 1 ON
12	Check Output 1 status (1 beeps – ON, 3 beeps – OFF)
20	Output 2 OFF
21	Output 2 ON
22	Check Output 2 status (1 beep – ON, 3 beeps – OFF)
30	Output 3 OFF
31	Output 3 ON
32	Check Output 3 status (1 beep – ON, 3 beeps – OFF)
40	Output 4 OFF

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41	Output 4 ON
42	Check Output 4 status (1 beep – ON, 3 beeps – OFF)
240	GSM priority – VM5 forced to work on GSM network

7.4.1 Programming table for OA – direct alarm output

Example:

Input 1 (IN1) and Input2 (IN2) will activate the first Output (OUT1), Input 3 (IN3) will activate the second Output (OUT2) and Input 4 (IN4) will activate the third output (OUT3).

It is possible to choose different combinations between outputs and inputs

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number*	Description
OA1	240	Input 1 will force the VM5 on GSM network
OA2	11	Input 2 will trigger the Output 1
OA3	21	Input 3 will trigger the Output 2
OA4	31	Input 4 will trigger the Output 3

***NOTE: The first digit is output number and the second must be always 1**

7.4.2 OA remote programming by SMS

For the upper example send the following SMS from the host phone to the VM5:

;OA1=240;OA2=11;OA3=21;OA4=31;

If you want to get the confirmation SMS back then write “+” before SMS command:

++; OA1=240;OA2=11;OA3=21;OA4=31;

7.5 INPUTS AND TELEPHONE NUMBERS LINKING

It is possible to link each number or any combination of numbers to any of the four corresponding inputs. The link LK0 is specially designed for SIM card refill SMS warning message.

7.5.1 Programming table for linking the inputs and telephone numbers

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number (Default)	Description
LK0		Refill SIM – SMS (#0) & telephone No. link (TL0 - TL9)
LK1		Input & telephone No. link for 1 st alarm input (TL0 - TL9)
LK2		Input & telephone No. link for 2 nd alarm input (TL0 - TL9)

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LK3		Input & telephone No. link for 3 rd alarm input (TL0 - TL9)
LK4		Input & telephone No. link for 4 th alarm input (TL0 - TL9)
LK5		Test SMS and telephone No. link – SMS (#5) (TL0 - TL9)

Example:

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number	Description
LK0	01	Refill SIM – SMS (#0) will be send to TL0 & TL1
LK1	02	Input1 will call/send SMS to TL0 & TL2
LK2	023	Input2 will call/send SMS to TL0, TL2 & TL3
LK3	5	Input3 will call/send SMS to TL5
LK4	45	Input4 will call/send SMS to send to TL4 & TL5
LK5	01	Periodic Test SMS will be send to TL0 & TL1

7.5.2 LK remote programming by SMS

For the upper example send the following SMS from the host phone to the VM5:
;LK0=01;LK1=02;LK2=023;LK3=5;LK4=45;LK5=01;

If you want to get the confirmation SMS back then write “+” before SMS command:
;+ LK0=01;LK1=02;LK2=023;LK3=5;LK4=45;LK5=01;

7.6 INPUT DELAY BEFORE DIALLING

The activation of the dialling procedure can be for a defined period of time (maximum of 240 seconds) delayed on each alarm input. The default value is set to "10" – having 10s delay before starting of the dialling procedure on all alarm inputs because calling of the Monitoring Station has a priority.

7.6.1 Programming table to define the delay before dialling procedure

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number (Default)	Description

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DL1	10	10s delay before dialing for the 1 st alarm input
DL2	10	10s delay before dialing for the 2 nd alarm input
DL3	10	10s delay before dialing for the 3 rd alarm input
DL4	10	10s delay before dialing for the 4 th alarm input

The period of time for the delay of each input varies from 0 to 240 seconds.

Example:

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number	Description
DL1	30	30 seconds delay before dialling for the 1 st alarm input
DL2	20	20 seconds delay before dialling for the 2 nd alarm input
DL3	20	20 seconds delay before dialling for the 3 rd alarm input
DL4	30	30 seconds delay before dialling for the 4 th alarm input

7.6.2 DL parameter remote programming by SMS

For the upper example send the following SMS from the host phone to the VM5:

;DL1=30;DL2=20;DL3=20;DL4=30;

If you want to get the confirmation SMS back then write “+” before SMS command:

;+ DL1=30;DL2=20;DL3=20;DL4=30;

7.7 INPUT FILTER PARAMETR

The IF parameter determine the time period of the pulse to trigger the input. The pulse time can be from 1 second up to 240 seconds. The default value is 0,5 second.

7.7.1 Programming table to define the value of the input filter

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number (Default)	Description
IF0		Default IF filter is 0,5 seconds – ON/OFF input - RST
IF1		Default IF filter is 0,5 seconds – input 1
IF2		Default IF filter is 0,5 seconds – input 2
IF3		Default IF filter is 0,5 seconds – input 3
IF4		Default IF filter is 0,5 seconds – input 4

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Example:

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number (Default)	Description
IF0		Default IF filter is 0,5 seconds – ON/OFF input - RST
IF1	5	IF filter is 5 seconds for input 1
IF2	30	IF filter is 30 seconds for input 2
IF3	2	IF filter is 2 seconds for input 3
IF4	0	Input 4 is disable

7.7.2 IF parameter remote programming by SMS

For the upper example send the following SMS from the host phone to the VM5:

;IF1=5;IF2=30;IF3=2;IF4=0;

If you want to get the confirmation SMS back then write “+” before SMS command:

:+IF1=5;IF2=30;IF3=2;IF4=0;

7.8 CLIP TELEPHONE NUMBERS – TO

Ten telephone numbers which are stored into the phone book from TO0 to TO9 can manage following functions using CLIP (Calling Line Identification Presentation) without making any cost on the user GSM invoice.

- Trigger one of the VM5 Output (parameter 1-4)
- Switch the system ON/OFF (parameter 0)
- System control with “Call-back” function (parameter 5)

7.8.1 Programming table to define the clip telephone numbers – TO

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number	Description
TO0:X		1 st CLIP telephone number
TO1:X		2 nd CLIP telephone number
TO2:X		3 rd CLIP telephone number
TO3:X		4 th CLIP telephone number
TO4:X		5 th CLIP telephone number
TO5:X		6 th CLIP telephone number
TO6:X		7 th CLIP telephone number
TO7:X		8 th CLIP telephone number

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TO8:X		9 th CLIP telephone number
TO9:X		10 th CLIP telephone number

- X=1-4 OUT1 to OUT4
X=0 System ON/OFF
X=5 Call back function

Example:

TO0 will trigger OUT3, TO1 will switch the system ON/OFF and TO2 will make a call back to the user phone.

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number	Description
TO0:3	040713470	1 st CLIP will make the Output 3 activate
TO1:0	236545664	2 nd CLIP will make system OFF/ON
TO2:5	042364801	3 rd CLIP will make a call back from device to user

7.8.2 TO parameter remote programming by SMS

For the upper example send the following SMS from the host phone to the VM5 :

;TO0:3=040713470;TO1:0=236545664;TO2:5=042364801;

If you want to get the confirmation SMS back then write “+” before SMS command:

;+ TO0:3=040713470;TO1:0=236545664;TO2:5=042364801;

7.9 SECURITY TELEPHONE NUMBERS - TK

Only telephone numbers, which are stored into the phone book from TK0 – TK9 can enter into programming and remote control unit of the VM5 dialling the VM5 No. or sending the SMS).

Telephone numbers are divided in two groups:

- TK0 – TK4.....Owners of those telephone numbers have full access into programming and remote control mode;
- TK5 –TK9.....Owners of those telephone numbers can not access into programming mode but they can use other remote control functions;

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NOTE:

Before TK numbers are programmed the VM 5 can accept ALL CALLS. Remote SMS programming and remote control is possible from any phone!

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number	Description
TK0		1 st security telephone number
TK1		2 nd security telephone number
TK2		3 rd security telephone number
TK3		4 th security telephone number
TK4		5 th security telephone number
TK5		6 th security telephone number
TK6		7 th security telephone number
TK7		8 th security telephone number
TK8		9 th security telephone number
TK9		10 th security telephone number

Example:

You'd like to have 2 telephone numbers for full access and 2 telephone numbers for partly access:

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number	Description
TK0	040713470	1 st security telephone number – full access
TK1	040232221	2 nd security telephone number – full access
TK5	040340400	5 th security telephone number – partly access
TK6	040771700	6 th security telephone number – partly access

NOTE: Telephone numbers stored under TK0 and TK1 will have full access to the VM5 and telephone numbers stored under TK5 and TK6 will have only partly access to the VM5.

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7.9.1 TK PARAMETER REMOTE PROGRAMMING BY SMS

For the upper example send the following SMS from the host phone to the VM5:

;TK0=040713470;TK1=040232221;TK5=040340400;TK6=040771700;

If you want to get the confirmation SMS back then write “+” before SMS command:

++;TK0=040713470;TK1=040232221;TK5=040340400;TK6=040771700;

7.10 PRE-PAY CARD CREDIT AND VALIDITY INFORMATION

If we use the pre-pay SIM card into the VM5 it is very useful if we can get the information about remain credit.

The GSM providers have different ways to get the credit information. At the moment we can hold up 3 different strings.

7.10.1 Programming pre pay card credit and validity string

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number	Description
V1	*XXX#	* + Number +#
V2PRE CRE SIN	4916	Send the SMS to provider number
V3	404	Simply call a provider number

V1=*448# for SIMOBIL; *123# for MOBITEL, *777# for VEGA

This method can use all users that get the credit message on this way by GSM phone (press *+provider number+” & call button).

V2 method can use all users that should create the SMS command (**PRE CRE SIN**) to the provider number (4916). This is example for TIM.

V3 method can use all users that simply call a provider number (404). This is example for Vodafone Italy.

7.10.2 V parameter remote programming

For the upper example send the following SMS to VM5:

1. V1 (Simobil) ;**V1=*448#;**
2. V2 (TIM) ;**V2PRE CRE SIN=4916;**
3. V3 (Vodafone) ;**V3=404;**

How to get the credit information from GSM provider using V1, V2 or V3 command you can see in chapter “SMS COMMAND DESCRIPTION” (page No.)

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7.11 VM5 – GSM SET-UP PARAMERTERS

- ❑ **RED** – repetition of calling sequences. With the number from 1 to 99 we define how often the sequence is repeated in case the number is busy or not answered. The default value is set to number “3”.
- ❑ **CLP** – hidden telephone number. This function (“0” value) is used in order to conceal the telephone number of the VM5 device. The default value is set to “1” which means that the number is displayed.
- ❑ **RFL** – SIM card validity. The period of valid operating time varies with different GSM network providers. The value can be programmed from 1 to 36, whereas days represent multiplication of the mentioned value by 10. The default value does not presume any kind of expiry warning.

Example: If we want to get an expiry warning message after 90 days, we should enter the number “9”.

- ❑ **RFT** – Temporary validity of the SIM card. This function is pre-defined on the SIM card memory automatically from the micro controller on the **SIM card location “98”**. The user can only change it when the RFL time is not regular (due to power failure or some other constant operating mode brake of the VM5). The reset of the RFT is necessary after VM5 start (RFT value should be the same like its RFL).
- ❑ **PTM** – A test SMS is sent periodically. The VM5 can send the test message in the interval ranging from 1hour up to 240 hours.

Example:

if the PTM value is set to 12, the numbers linked to “LK5” get a test message every 12 hours.

- ❑ **NET** - When is necessary to fix the GSM network to one provider we can use the NET parameter. The NET parameter will switch automatic network searching to manual.

For example:

MCC/MNC code for SiMobil is 29340, Mobitel is 29341, TIM is 22201, and Vodafone Italy is 22210

More information about MCC/MNC code you can get here:

<http://www.ringrex.net/codes/provider4.php>

- ❑ **MIC** - when we use the external Listen-In microphone or Duplex voice module HA200 we can adjust the sensitivity of the microphone from the level 0 (minimum) to the level 5 (maximum). The default value is 1.

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7.11.1 PROGRAMMING TABLE FOR VM5 – GSM SET-UP PARAMETERS

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number (Default)	Description
RED	3	Number of dialling attempts (1 – 99)
CLP	1	Hidden telephone number (1= displayed, 0 = hidden)
RFL	(for prepaid SIM only)	SIM card time validity (1 – 36) 1 = 10days, 36 = 360days
RFT		Temporary validity of the SIM card
NET		Automatic network searching (default)
MIC	1	External MIC level adjustment (0 -5) default level is 1
PTM		Periodic test SMS - disabled

Example: We'd like to change set-up parameters with following values:

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number (Default)	Description
RED	2	Number of dialling attempts 2
CLP	0	Hidden telephone number of the VM5 +
RFL	36	Refill time is 360 days
RFT	36	Temporary validity of the SIM is 360 days (same like RFL)
NET	29340	Manual fixing of the GSM provider (Simobil)
MIC	2	External MIC adjustment on level 2
PTM	24	24 hours periodic test SMS

7.11.2 Set-up parameters programming by SMS

For the upper example send the following SMS from the host phone to the VM5:

;RED=2;CLP=0;RFL=36;RFT=36;NET=29340;MIC=2;PTM=24;

If you want to get the confirmation SMS back then write "+" before SMS command:

;++RED=2;CLP=0;RFL=36;RFT=36;NET=29340;MIC=2;PTM=24;

7.12 SMS MESSAGES ORGANISER

The VM5 – GSM can send a very short SMS message via each alarm input. The default message is English, but it is possible to formulate the notice in any other language. Different messages, being no longer than 14 characters, can be defined for each alarm input.

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7.12.1 SMS MESSAGES PROGRAMMING TABLE

PHONE BOOK – NAME

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
#	0	R	E	F	I	L	L		S	I	M		C	A	R
#	1	A	L	A	R	M		I	N		P	R	O	G	R
#	2	F	I	R	E		I	N		P	R	O	G	R	E
#	3	A	L	A	R	M		I	N		3				
#	4	A	L	A	R	M		I	N		4				
#	5	P	E	R	I	O	D	I	C		T	E	S	T	
#	6	A	L	A	R	M		O	F	F					
#	7	A	L	A	R	M		O	F	F					
#	8	A	L	A	R	M		O	F	F					
#	9	A	L	A	R	M		O	F	F					

Note: Messages from #6 to #9 you can use like an Input reset message (see capture 7.3.2)

Normally, when we want to store the SMS text, the telephone **number needs to be entered**. Since the latter is required only because of the basic design of the phone book memory, it is not important what kind of a number we enter.

When we enter the number which is not equal to “0” this number will be paste together with text message.

Example:

We’ll put following text message: IN ALARM CALL (Phone Book –name)

040713470 (Phone Book –number)

The alarm SMS you’ll receive will be IN ALARM CALL 040713470

Each text starts with a two-character command: # and number:

- #0 – text for SIM card refill – default = refill SIM in days
- #1 – text for 1st alarm input – default = alarm on input
- #2 – text for 2nd alarm input – default = alarm on input
- #3 – text for 3rd alarm input – default = alarm on input
- #4 – text for 4th alarm input – default = alarm on input
- #5 – text for periodic VM5 test – default = VM5 periodic test
- #6 – text for input alarm reset – default = alarm off
- #7 – text for input alarm reset – default = alarm off
- #8 – text for input alarm reset – default = alarm off
- #9 – text for input alarm reset – default = alarm off

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8 VM5 SMS REMOTE COMMANDS

NOTE: For using the SMS command you must use semicolon “;” on the beginning and on the end of the SMS command. Use the **CAPITAL** letters for the SMS command.

8.1 PRINT-OUT OF THE PARAMETERS

8.1.1 Receive all parameters (PRALL)

Command ;**PRALL**;

Sending this command to the VM5 you will get 15 SMS back from it with all parameters that are currently programmed on the SIM.

8.1.2 Receive telephone numbers (PRTL)

Command ;**PRTL**;

Sending this command to the VM5 you will get back the SMS with all currently programmed telephone numbers (TL0 – TL9).

8.1.3 Receive links (PRLK)

Command ;**PRLK**;

Sending this command to the VM5 you will get back the SMS with all currently programmed links (LK0 –LK5).

8.1.4 Receive input parameters (PRIP)

Command ;**PRIP**;

Sending this command to the VM5 you will get back the SMS with all currently programmed Input parameters (IP0 – IP5).

8.1.5 Receive input filter value (PRIF)

Command ;**PRIF**;

Sending this command to the VM5 you will get back the SMS with all currently programmed Input filters (IF0 – IF5).

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8.1.6 Receive clip identification telephone numbers (PRTO)

Command ;**PRTO**;

Sending this command to the VM5 you will get back the SMS with all currently programmed telephone numbers which are use for CLIP identification (TO0 – TO9).

8.1.7 Receive access telephone numbers (PRTK)

Command ;**PRTK**;

Sending this command to the VM5 you will get back the SMS with all currently programmed telephone numbers which are use to enter into programming and remote control mode (TK0 – TK9).

8.1.8 Receive output parameters (PROP)

Command ;**PROP**;

Sending this command to the VM5 you will get back the SMS with all currently programmed Outputs parameters (OP1 – OP4).

8.1.9 Receive link for local alarm output (PROA)

Command ;**PROA**;

Sending this command to the VM5 you will get back the SMS with all currently programmed Output Alarm links (OA1 – OA4).

8.1.10 Receive delay before dial (PRDL)

Command ;**PRDL**;

Sending this command to the VM5 you will get back the SMS with all currently programmed Delays before dial (DL1 – DL4).

8.1.11 Receive all programmed SMS messages (PR#)

Command ;**PR#**;

Sending this command to the VM5 you will get back the SMS with all currently programmed Alarm SMS (#0 - #9)

8.1.12 Receive set up parameters value (PRP)

Command ;**PRP**;

Sending this command to the VM5 you will get back the SMS with all currently programmed Set-up parameters (RFL, RFT, PTM, RED, CLP, NET, and MIC).

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8.1.13 State of the credit for the pre-pay card

V1

Command ;**PRV1**;

Sending this command to the VM5 you will get back the SMS with Credit amount on your Pre-pay SIM card (for Simobil, Mobitel and Vega GSM provider).

V2

Command ;**PRV2**;

Sending this command to the VM5 you will get back the SMS with Credit amount on your Pre-pay SIM card (for TIM GSM Italian provider)

V3

Command ;**PRV3**;

Sending this command to the VM5 you will get back the SMS with Credit amount on your Pre-pay SIM card (for Omnitel Vodafone GSM Italian provider).

NOTE:

From V1, V2 and V3 examples you can see if you can use the same command with your local GSM provider. In case if any of this method is not good for you, please contact producer.

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9 CHECKING AND CHANGING THE SYSTEM STATUS (ON/OFF)

9.1.1 Checking system status by SMS command

Sending this command to the VM5 you will get back the SMS with state of the system.

Command **;SYS;**

The replay SMS can be:

- ;SYS= ON;** System is ON (active inputs)
- ;SYS= OFF;** System is OFF (inputs are not active)

9.1.2 Changing system status OFF to ON (system ON)

Sending this command to the VM5 you will switch the system ON.

Command **;SYS=ON;**

If you want to get the confirmation SMS back then write “+” before SMS command:

Command **;**+**SYS=ON;**

9.1.3 Changing system status ON to OFF (system OFF)

Sending this command to the VM5 you will switch the system OFF.

Command **;SYS=OFF**

If you want to get the confirmation SMS back then write “+” before SMS command:

Command **;**+**SYS=OFF;**

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10 CHECKING THE INPUT STATUS

You can get the information's about inputs status to send the SMS command and get back the SMS with inputs status

10.1 CHECKING THE INPUT STATUS BY SMS (INP)

Command **;INP;**

Sending this command to the VM5 you will get the replay SMS with all Inputs status. The replay can be:

;INP(1-4)=(OPEN-ON) – alarm loop is open and the input is in the alarm state

;INP(1-4)=(OPEN-OFF) – alarm loop is open and the alarm input is in the idle state

;INP(1-4)=(LOW-ON) – alarm loop is close on GND and the input is in the alarm state

;INP(1-4)=(LOW-OFF) – alarm loop is close on the GND and the alarm input is in the idle state

;INP(1-4)=(HGH-ON) – alarm loop is close on +12VDC and the input is in the alarm state

;INP(1-4)=(HIGH-OFF) – alarm loop is close on the +12V and the alarm input is in the idle state

;SYS= ON;

;SYS= ON;

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11 OUTPUTS REMOTE CONTROL

You can use outputs remote control to send the SMS command and get back the SMS with output status

11.1 OUTPUTS REMOTE CONTROL BY SMS COMMAND

Command ;**OUTX=1**;

Sending this command to the VM5 the output X is going ON.

X = output 1-4

Command ;**OUTX=0**;

Sending this command to the VM5 the output X is going OFF.

X = output 1-4

When you want to get the return message with the Output status you must press + before the command. For example:

Command ;**+OUTX=1**;

The return message will be:

OUTX=(ON)

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12 CLEAR ALL PROGRAMMED DATA FROM SIM

Command ;**SIMCLR**;

Sending this SMS to the VM5 will clear all before programmed parameters and numbers. This is highly recommended when the SIM you'll use for the VM5 is not new and it already has some data stored into the phone book memory.

WARNING!!! Sending this command to the VM5 you will erase all programmed data!

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13 HOW TO CHANGE PARAMETERS USING THE SMS COMMAND

For the first time programming we suggest to send the command **;PRALL;** to the VM5 . On your mobile phone you'll get back 12 SMS with all parameters. You can simply re-write the parameters and resend the SMS back to VM5.

For Example:

The first SMS will be SMS with telephone numbers (TL0 –TL9). If the SIM card is empty you'll get following SMS:

;TL 0=0;TL1=0;TL2=0;TL3=0;TL 4=0;TL5=0;TL6=0;TL7=0;TL 8=0;TL9=0;

You'd like to change the TL0 (040 713 470), TL1 (+38642364800) and TL2 (041255630)

;TL0=040713470;TL1=+38642364800;TL2=041255630;TL3=0;TL4=0;TL5=0;TL6=0;TL7=0;TL 8=0;TL9=0;

When you put the "+" before SMS command than you'll automatically get the return message with just programming values.

Example:

SMS to VM5:

;+TL0=040713470;TL1=+38642364800;TL2=041255630;TL3=0;TL4=0;TL5=0;TL6=0;TL7=0;TL8=0;TL9=0;

Return SMS from VM5 if you use +:

;TL0=040713470;TL1=+38642364800;TL2=041255630;TL3=0;TL4=0;TL5=0;TL6=0;TL7=0;TL 8=0;TL9=0;

NOTE: You can use the same programming procedure for all parameters.

It is also possible to change just a few different parameters with one SMS. Consider that the SMS should not be longer than 160 characters (included space bar).

For example, you want to change the following parameters and you want to get the confirmation SMS back:

TL1, IP1, IP2, OP3, OP4; IF1, LK1 and RED

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You will create the following SMS:

;++TL1=+38640713470;IP1=1;IP2=1;OP3=15;IF1=120;LK1=1;RED=4;

Send the SMS to the VM5 telephone number and in a few seconds you will get the replay SMS. The sentence of the SMS must be the same like original you sent to the VM5 before.

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14 START UP

When the SIM card is programmed with desired parameters put it into SIM card holder which is under the GM47 GSM module.

Connect the antenna cable into antenna plug on the GSM module.

Connect the power supply and back-up battery.

Connect the Ta1 / Tb1 directly to control panel (TIP/RING) or other communication device.

If VM5 is used for the PSTN line back-up than it is necessary to connect the standard line (PSTN line) on T1a/T1b terminal blocks.

Switch on power supply and wait for a few second until the LED1 (blue LED) will start pulsing. The VM5 is now ready to operate.

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15 APPENDIX A - ADDITIONAL VM5 FEATURES

15.1 “MAIN POWER LOST” AND TELEPHONE NUMBERS LINKING - LK6, LK7

The VM5 will send an SMS message in case when the main power is lost (too low or off). In this case the PK4+ will send an SMS to user. The default SMS is “Main Power Lost” and it is possible to change it. You can also program how many time the unit must be without power. The default level is 5 second.

The new VM5 can control also the battery level and when the level is under 10, 5 V will send the SMS “Low Battery”.

The low level of the battery can be detected just in case when the VM5 works without main power supply.

15.1.1 Programming table for “MAIN POWER LOST” and telephone numbers linking

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number (Default)	Description
LK6		Main Power Lost
LK7		Main Power OK

Example:

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number (Default)	Description
LK6	01	Main Power Lost SMS will be send to TL0 and TL1
LK7	02	Main Power OK SMS will be send to TL0 and TL2

15.1.2 LK remote programming by SMS

For the upper example send the following SMS from the host phone to the VM5:
;LK6=01;LK7=02;

If you want to get the confirmation SMS back then write “+” before SMS command:
;+ LK6=01;LK7=02;

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15.2“LOW BATTERY” AND TELEPHONE NUMBERS LINKING – LK7, LK8

15.2.1 Programming table for “LOW BATTERY” and telephone numbers linking

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number (Default)	Description
LK8		Low Battery (less then 10,5V)
LK9		Low Battery OK (under 10,5V)

Example:

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number (Default)	Description
LK8	01	Low Battery SMS will be send to TL0 and TL1
LK9	02	Low Battery OK SMS will be send to TL0 and TL2

15.2.2 LK6 and LK7 remote programming by SMS

For the upper example send the following SMS from the host phone to the VM5:
;LK6=01;LK7=02;

If you want to get the confirmation SMS back then write “+” before SMS command:
;+ LK6=01;LK7=02;

15.3“MAIN POWER LOST” FILTER PARAMETR - VMT

Parameter VMT determinate length of the pulse which is required to create the alarm after the main power is lost. This time can be from 1 second up to 240 seconds. The default value is 5 seconds.

For example: When the VM5 will be without main power supply more than 5 seconds (default) then will send the SMS message with following text: “Main Power Lost”.

At the moment when the main power will come back the VM5 will send the SMS message with following text: “Main Power OK”.

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15.3.1 Programming table for “MAIN POWER LOST” filter – VMT

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number (Default)	Description
VMT	5	Main Power Lost filter (5 seconds default)

15.3.2 “MAIN POWER LOST” filter remote programming by SMS

For the upper example send the following SMS from the host phone to the VM5:
;VMT=5;

If you want to get the confirmation SMS back then write “+” before SMS command:
++;VMT=5;

15.4 “LOW BATTERY” FILTER PARAMETER - VBT

Parameter VBT determinate length of the pulse which is required to create the alarm after the power of the battery is low and it is below 10,5V. This time can be from 1 second up to 240 seconds. The default value is 10 seconds.

NOTE:

The “Low battery” will be detected when the VM5 operates only with back-up battery and it is not connected on the Main Power Supply.

For example: When the voltage of the back up battery will be less then 10,5V, the VM5 will send the SMS message with the following text: “Low Battery”.

At the moment when the battery power will be higher then 10,5V the VM5 will send the SMS message with the following text: “Low Battery OK”.

15.4.1 Programming table for “LOW BATTERY” filter - VBT

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number (Default)	Description
VBT	10	Low Battery filter (10 seconds default)

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15.4.2 “LOW BATTERY” filter remote programming by SMS

For the upper example send the following SMS from the host phone to the VM5:

;VBT=10;

If you want to get the confirmation SMS back then write “+” before SMS command:

++;VBT=10;

15.5 “MAIN POWER LOST” AND “LOW BATTERY” TEXT EDITOR

In case of “Main Power Lost” or “Low Battery” event you can send also short SMS message to the client. It is possible to use default pre-programming SMS messages or you can write your own text (different languages).

15.5.1 Programming table for “MAIN POWER LOST” and “LOW BATTERY” text messages

PHONE BOOK – NAME – DEFAULT MESSAGES

1	2	3	4	5	6	7	8	9	10	11	12	13	14
\$	6	M	A	I	N	P	O	W	R	L	O	S	T
\$	7	M	A	I	N	P	O	W	R		O	K	
\$	8	B	A	T	T	E	R	Y		L	O	W	
\$	9	B	A	T	T	E	R	Y		O	K		

Normally, when we want to store the SMS text, the telephone **number needs to be entered**. Since the latter is required only because of the basic design of the phone book memory, it is not important what kind of a number we entered.

When we enter the number which is not equal to “0” this number will be paste together with text message.

15.5.2 “MAIN POWER LOST“ and “LOW BATTERY” text messages remote programming by SMS

For the upper example send the following SMS from the host phone to the VM5:

;\$6MAIN POWER LOST=0; \$7MAIN POWER OK=0; BATTERY LOW =0;BATTERY OK=0;

If you want to get the confirmation SMS back then write “+” before SMS command:

++;\$6MAIN POWER LOST=0; \$7MAIN POWER OK=0; BATTERY LOW =0;BATTERY OK=0;

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15.6 INPUT TRIGGER COUNTER BEFORE ALARM - IC

With IC parameter you can program how many trigger on the input must be for the alarm activation. The counter can be programmed from 1 to 240 pulses. The default value is 0 and this mean immediate alarm.

15.6.1 Programming table for the input trigger counter - IC

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number (Default)	Description
IC1	0	Default value is 0 – immediate alarm on Input 1
IC2	0	Default value is 0 – immediate alarm on Input 2
IC3	0	Default value is 0 – immediate alarm on Input 3
IC4	0	Default value is 0 – immediate alarm on Input 4

Example:

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number	Description
IC1	3	2 triggers on Input 1 for alarm
IC2	5	5 triggers on Input 2 for alarm
IC3	0	Immediate alarm on Input 3
IC4	4	4 triggers on Input 4 for alarm

15.6.2 The input trigger counter before alarm remote programming by SMS

For the upper example send the following SMS from the host phone to the VM5:

;IC1=3;IC2=5;IC3=0;IC4=4;

If you want to get the confirmation SMS back then write “+” before SMS command:

++;IC1=3;IC2=5;IC3=0;IC4=4;

15.7 INPUT TRIGGER COUNT UP INACTIVITY PRESET – IR

The IR parameter determinate the times before the pulse counter (ICn parameter) will be reset on 0. The IRn value can be in second, hours and days.

For example:

1 – 60	in seconds	(1 = 1s, 60 = 60s)
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61 – 120	in minutes	(61 = 1min., 120 = 60min.)
121 – 150	in hours	(121 = 1h, 150 = 30h)
151 – 250	in days	(151 = 1 day, 250 = 100 days)

15.7.1 Programming table for the input trigger count up inactivity preset - IR

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number (Default)	Description
IR1	0	Default value is 0 – no counter preset
IR2	0	Default value is 0 – no counter preset
IR3	0	Default value is 0 – no counter preset
IR4	0	Default value is 0 – no counter preset

Example:

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number	Description
IR1	20	Counter preset time is 20 seconds
IR2	75	Counter preset time is 15 minutes
IR3	131	Counter preset time is 10 hours
IR4	157	Counter preset time is 7 days

15.7.2 The input trigger count up inactivity preset remote programming by SMS

For the upper example send the following SMS from the host phone to the VM5:
;IR1=20;IR2=75;IR3=131;IR4=157;

If you want to get the confirmation SMS back then write “+” before SMS command:
++;IR1=20;IR2=75;IR3=131;IR4=157;

15.8ACTIV ALARM SMS MESSAGE RE-SEND TIME - IA

The VM5 can resend the alarm SMS message when after some time the Input is still in alarm condition. This time is programmed by IA parameter and it can be in minutes, hours or days.

For example:

1 - 60	in second	(1 = 1s, 60 = 60s)
61 – 120	in minutes	(61 = 1min., 120 = 60min.)

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121 - 150	in hours	(121 = 1h, 150 = 30h)
151 - 250	in days	(151 = 1 day, 250 = 100 days)

15.8.1 Programming table for the activ alarm re-send time - IA

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number (Default)	Description
IA1	0	Default value is 0 – the re-send time is not active
IA2	0	Default value is 0 – the re-send time is not active
IA3	0	Default value is 0 – the re-send time is not active
IA4	0	Default value is 0 – the re-send time is not active

Example:

VM5 PROGRAMMING TABLE		
SIM CARD PHONE BOOK		
Name	Number	Description
IA1	20	SMS will be re-send after 20s of the Input activity
IA2	75	SMS will be re-send after 15min of the Input activity
IA3	131	SMS will be re-send after 10h of the Input activity
IA4	157	SMS will be re-send after 7 days of the Input activity

15.8.2 The activ alarm re-send time remote programming by SMS

For the upper example send the following SMS from the host phone to the VM5:
;IA1=20;IA2=75;IA3=131;IA4=157;

If you want to get the confirmation SMS back then write “+” before SMS command:
++;IA1=20;IA2=75;IA3=131;IA4=157;

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16 TECHNICAL DATA

Power Supply: 12V DC (from 10 – 18V DC)

Maximum current in transmission mode: 2A pick

Average current in transmission mode: 250 mA

Current in idle mode: 30 mA

PCB dimensions: mm

Metal box dimensions: mm

Antenna: Dual Band rubber antenna with FME connector or external (3m cable) antenna with FME connector (optionally)

16.1 GSM MAIN FEATURES

GM47 GSM module main features:

Dual band GSM 900/1800 MHz

Data, voice, SMS and fax

Data speed up to 14,4 Bps

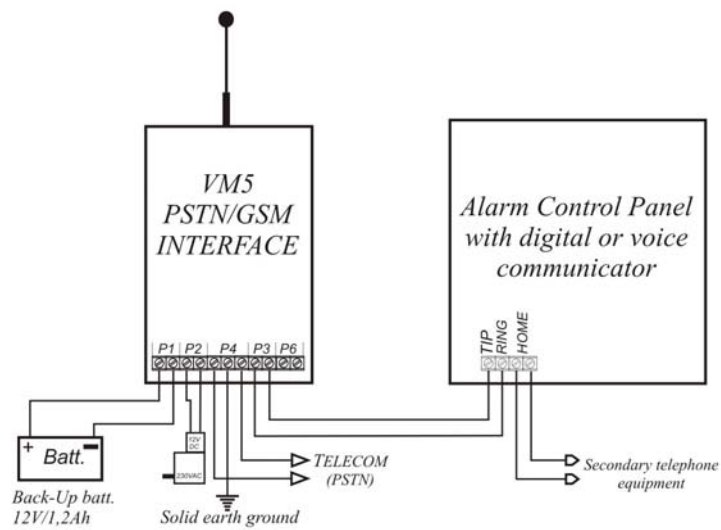
Low power consumption: - idle mode 3,5 mA,
 - speech mode 250 mA (average)

- Full type approval
- Compliant to GSM phase 2/2+

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17 VM5 TYPICAL CONNECTIONS

The VM5 typical connection with standard Alarm Control Panel



The VM5 typical connection with EPABX - Private Analog Telephone Exchange

