

USER GUIDE

GSM500.GC GSM500.GC.R GSM500.GC.NP

Adapter for the connection
of analogue telephones to
the GSM network.



 **ROCOM**

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General

The GSM500.GC gateway is an adapter which enables the connection of existing or new installed analogue telephone devices, like emergency phone system, door phones or PBX with analogue trunks, to the GSM network. The device to be connected to the analogue port must be TBR21 compliant. A connection to the public network is not possible.

Description

The GSM500.GC simulates a standard analogue telephone extension line (FXS). All PBXs with analogue telephone trunks and analogue telephones with DTMF dial can be connected to the GSM500.GC gateway. The adapter generates the normal dial tone as used in the specific country.

The level of the received GSM network signal is shown any time with the green LED. A new random generated PIN code is programmed the first time the device will be activated to ensure that the SIM is locked for no other use.

The device has an integrated emergency power supply using NiMH batteries. Those are tested every two weeks. If an error will be found an alarm is raised using SMS or the attached ECII FLEX emergency phone system. The GSM500.GC can be delivered in three different versions:

- GSM500.GC with batteries and power supply unit;
- GSM500.GC.R with batteries, power supply unit and relay for the signalling of missing GSM network signal (i.e. to switch off the lift);
- GSM500.GC.NP without batteries and power supply unit (for installations where emergency power is supplied by an external source)

Package content

The GSM500.GC package includes:

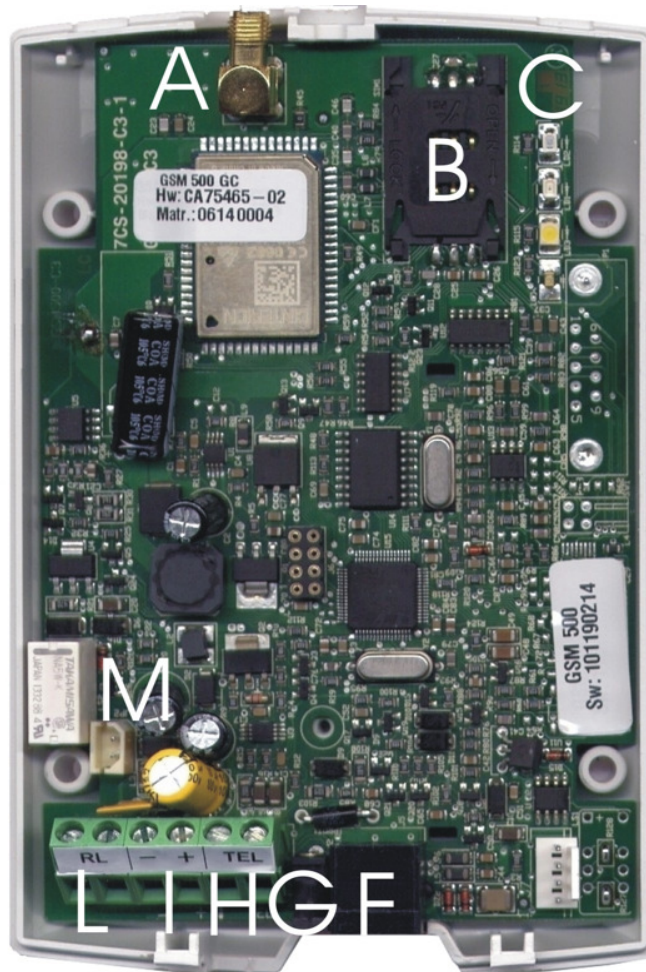
- Device with plastic case
- This user guide
- RMA return instruction and error description leaflet
- GSM antenna
- Installation screws
- Power supply unit 230 Vac (not with GSM500.GC.NP)
- Telephone line cable RJ11/open
- NiMH battery pack (not with GSM500.GC.NP)

Features

- Simulates an analogue telephone extension line (FXS)
- Dial tone generator
- GSM network signal level surveillance
- Automatic random generated PIN code programming
- Integrated emergency power supply
- Automatic periodical battery test with failure alarm over SMS or ECII FLEX emergency phone (not with GSM500.GC.NP)
- Local programming using ECII FLEX emergency phone or analogue telephone device with DTMF dial
- Remote programming using SMS

- CLIP
- Roaming support
- Programmable transmit and receiving speech signal level
- LED indicator for GSM network signal level
- LED indicator for device status
- LED indicator for line status
- LED indicator for power supply status
- Automatic device reset if GSM signal is lost for a longer time
- Programmable end-of-dial waiting time
- Immediate end-of-dial using # digit
- Programmable administrator telephone number
- Programmable password
- Programmable min. power failure standby time

Overview



GSM500.GC.R open case

- A SMA connector for external antenna
- B protected SIM card slot
- C Status LEDs: GSM network signal level (green), device status (red), line and data interface status (white), power supply status (blue)
- F RJ11 plug for the connection of an analogue telephone device or PBX trunk (FXS)
- G Plug for the external 230 VAC power supply unit
- H Screw connector for of an analogue telephone device or PBX trunk (in parallel to the RJ11 plug)
- I Screw connector for external 12 VDC power (as alternative to the power supply unit)
- L Contact output relay (only GSM500.GC.R)
- M Connector for the NiMH battery pack

Installation place

The installation place for the device must be:

- inside a dry room;
- free from dust, heat and direct sun radiation;
- free from liquids and chemical aggressive substances.

Before the installation please follow these advices:

- The device must be powered only using the voltage as indicated in the type lable.
- If a liquid gets into the device please disconnet immediatly the device from the power supply. The device can be repaired only by qualified personnel.
- Static discharges may damage the device. Please ensure that you are statically discharged using a power grounding before handling the device.

Security advices

Please read carefully this user guide before you install the device. Follow all security advices. Not following the rules may be against existing law or cause dangerous situations.

The GSM500.GC is a low power radio transmission device, when it is powered it will send and receive radio waves.

The device generates a magnetic field and must be used away from magnetic media (like discs, tapes, and similar).

The use of the device near to electrical of electronical devices like radio, TV, phone- sand PC may generate disturbances.

Radio disturbances

As any other wireless device the GSM500.GC may be disturbed by radio waves.

Use in a car

Do not use the device while driving. If you plan to use the device in a car please ensure that all installed device are protected against radio disturbances. Never use or install the device near to an airbag or within the action radius of an airbag.

Use in a airplan

In an airplan the GSM500.GC must be switched off. The use of GSM device in an airplan is forbidden by law.

Use within an hospital

Switch the GSM500.GC off if you are close to any electromedical apparature. Please take care that disturbances may affect the use of cardiological and acoustical devices. As the GSM500.GC ist not a mobile device it is not intended for a use in contact with human body. The use of the device within an hospital or any other health facility is only possible if the security advices are followed with the highest attention. Wherever the use of GSM devices is forbidden also the use and the instal- lation of a GSM500.GC is not permitted.

Use close to explosive material

The GSM500.GC may not be used or installed within fuel depots, chemical facilities or within areas where explosive gas is present or used. The installation and use of this device within such environments can be done only following the highest security advices.

Usage

Do not use the GSM500.GC in contact with human body. Do not touch the antenna during operation if not specifically required. Use only original and approved spare parts.

Installation

Ensure that at the installation location a power plug is available nearby. For the wall installation you can use the screws delivered with the unit.

It is very important that the GSM500.GC unit has all time the best GSM signal to avoid disturbances during operation time. Before you install the device at his final position be sure that it is the best spot you can find. To do this use an mobile phone with a SIM card of the same provider that you are going to use with the GSM500.GC and try at the spot you are going to use to setup a communication. If during the conversation you will notice disturbances or interruptions you will have to look for a better position.

SIM card installation

For the installation of the SIM card be sure that the device is **SWITCHED OFF!** The SIM card has to be placed into the specific slot. The card should have the PIN code disabled. If a PIN code is required then you have to program it, using a mobile phone, with the code "0000". After installation and first activation the device will change the PIN code with a new, random generated one.

**PLEASE NOTE!**

If you change the SIM card switch all time the POWER OFF!

Ensure that the PIN code of the SIM card is disabled or changed to "0000" with a mobile phone **BEFORE** you install it into the device.

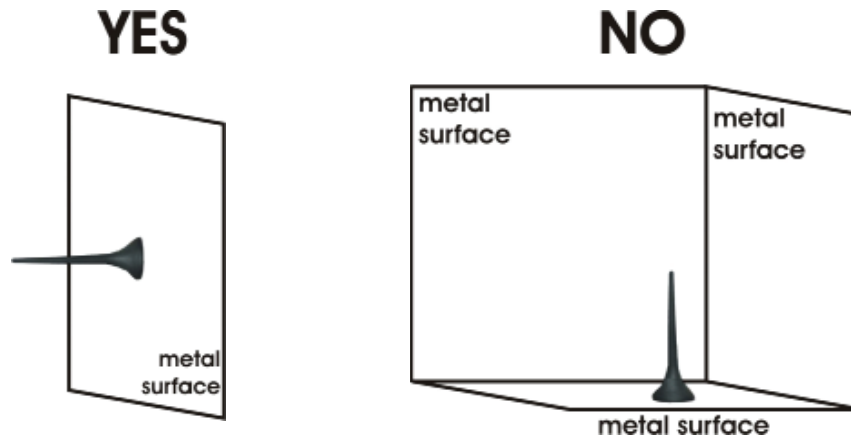
If the SIM card is changed ensure that the new card has the PIN code disabled or changed to "0000". If the new card has the PIN "0000" you have to restart the device with factory default data using the reset button to ensure a new random code is programmed.

Keep the PIN and PUK number for the SIM card available during this procedure.

If you change the SIM card with a new one and you are using data connectivity you must unregister and reregister the device to the VNDNET Server.

GSM antenna

The antenna provided is connected to the device with the proper connector outside the case. If you notice problems in getting a proper GSM network signal you may change the antenna. Specific antennas may solve the problem. Ask the technical support for more informations,



GSM500.VND Proper antenna positioning



PLEASE NOTE!

Never power the GSM500.GC WITHOUT connected antenna. The radio transmission engine may be damaged.

Connection of the analogue telephone device

The analogue telephone device (phone, PBX, emergency phone, etc.) is connected to the RJ11 plug (see also picture on page 4). Use the provided RJ11 cable to connect devices without proper plug. The connection of analogue modem and fax is not possible.

As alternative to the RJ11 plug you can use also the screw connectors TEL (see also picture on page 4).

Connection of the external power supply

The device is designed for statical installation and external power supply with 230 VAC. If required also a 12 VDC power voltage can be used. The device has an internal NiMH battery for emergency power supply if external power is missing.

The external power supply and battery status is show by the blue LED (see also *LED indicators*).



PLEASE NOTE!

While you are handling with the 230 VAC power be aware to fullfill all national and international security standards as required.

If you need to switch off the device it is not enough to unplug the external power supply unit, as in this case it will be still powered by the internal battery. To complete switch off the unit you have to unplug the external PSU and the internal battery.

Putting into service

After connection of the external power supply the device will first check the SIM card. If no card has been installed, or if it is broken or can't be recognized by the unit, the red LED will start to flash quickly. In this case the SIM card has to be changed.

If everything is OK the device will start the initialisation procedure and login to the provider. This can take some time about 30 to 60 seconds. During this time the red LED will flash quickly. After succesful login the red LED will flash slowly.

PIN code

For normal use we suggest to use SIM cards without PIN code. In this case deactivate the PIN code for the specific SIM card using a mobile phone before you install it into the GSM500.GC. If required also the following PIN code handling can be used.

Program using a mobile phone the PIN code to "0000" on the SIM card you are going to use. Install now the SIM card into the GSM500.GC.

The device will now reprogram the PIN code automatically with a random generated code and overwrite the old one, locking this way the SIM card with the device.



PLEASE NOTE!

Read also *SIM card Installation!*

Battery

The bulid in NiMH battery is continously tested by the GSM500.GC. If it will dein- stalled or fail the device will rise an appropriate alarm. A battery error is also showed by the blue LED. Furhermore this status is also indicated by a special dial tone. Every 30 seconds the device will check if the battery is connected or not. Also the batte- ry capacity is tested by a discharging procedure. The first time this procedure will take place 15 days after first activation. During the procedure the battery will be discharged over a load for 3 hours. If after the test the battery capacity will be below a defined level an appropriate alarm is rised. The discharging test will not take place or will be interrupted if the device is missing the external power supply. Furthermore the battery is protected against deep discharge. The battery should be changed any- way all 2 to 4 years depending on the installation enviroment and usage. In case of substitution only the same or a equivalent battery must be used to avoid damage on the product. The remaining capacity which should be recognized by the device after a discharging procedure is programmable. As default this value is 4 hour emergency power stand by time. This value can be changed in eight steps between 1 and 7 hours.



PLEASE NOTE!

The battery capacity can vary a lot depending from the working temperature. If the GSM500.GC is going to be installed in location where temperature below -5° C the threshold value should be reduced to avoid unnecessary battery alarms.

Programming

For a normal usage no specific programming is required. But changes and functional details can be changes this way.

The programming is done using the ECII FLEX emergency phone dial pad, a standard DTMF phone or by SMS. Following can be programmed:

- Idle state telephone line voltage;
- End-of-dial time out;
- Country identification (international access and country code);
- Roaming service;
- Telephone number for SMS notifications;
- Administrator telephone number;
- Password programming;
- Battery test;
- Speech channel receiving level;
- Speech channel transmitting level.



PLEASE NOTE!

During programming the time between the dial of two digits should be not longer then 10 seconds. After 10 seconds without digits input you will hear a warning tone, after this you must hang up and terminate the programming session.

After each programming you will hear an acknowledge tone if the programming was correct or an error tone if it was wrong. In any case a dial tone will follow and you can proceed with the programming or dial a telephone number.

The programming can be done also if the devices is not logged on with the GSM network. In this case after every acknowledge or error tone a missing GSM network tone will follow. Now you can proceed with the programming or hang up.

Idle state telephone line voltage

With this programming the idle state voltage on the telephone line which is applied on the RJ11 plug and the TEL screw connectors can be changed to mach the requirement of the connected devices. As default the line voltage is 52 VDC. To change this value:

DTMF

* * 6 1 * <X> #

SMS

RO-IG5* <Password (default "0")> #61* <X> #

Where <X> can have the value 0 for 36 VDC line voltage and 1 for 52 VDC line voltage.

Example DTMF (36 VDC line voltage)

* * 6 1 * 0 #

Example SMS (36 VDC line voltage)
RO-IG5*0#61*0#

End-of-dial timeout

The end-of-dial timeout is the max. time the device will wait between two dialled digits to recongnized that the dial is ended. As a alterantive you can use also the digit # to terminate the dial immediately. As default this time is set to 5 second. To change this value:

DTMF

* * 8 * <X> #

SMS

RO-IG5* <Password (default "0")> #8* <X> #

Where <X> can have the value 0 for 10 seconds and a value between 1 to 9 for 1 to 9 seconds.

Example DTMF (timeout 10 seconds)

* * 8 * 0 #

Example SMS (timeout 10 seconds)
RO-IG5*0#8*0#

Country identification (international access and country code)

This programming will define the country where the GSM500 has been installed. This will activate specific values for that country like the call progress tones and the suppression of the international code for national caller on the CLIP.

International access code

The international access code is the first part of the international country code which defines that a international call is been made. For example the internationl access code in Germany is 00, and the complete international country code is 0049. As default this code is set to 00. To change this value:

DTMF

* * 0 8 * <XXXXX> #

SMS

RO-IG5* <Password (default "0")> #08* <XXXXX> #

Where <XXXXX> is the value of the local international access code with max. 5 digits.

Country code

The country code is the second part of the international country code of your country. In example the country code for Germany is 49 and the complete international country code is 0049. As default this code is set to 49. To change this value:

DTMF

*** * 0 9 * <XXXXX> #**

SMS

RO-IG5* <Password (default "0")> #09* <XXXXX> #

Where <XXXXX> is the value of the local international country code with max. 5 digits.

Example DTMF (Austria)

*** * 0 9 * 4 3 #**

Example SMS (Austria)

RO-IG5*0#09*43#

Roaming service

This programming will define if the roaming service will be active or not. If the roaming service is deactivated the GSM500.GC will not place calls if not the specified provider is registered. In this case you will get the following special dial tone:



As default the roaming service is activated. To change this value:

DTMF

*** * 5 * 0 * <XXX> <YYY> #**

SMS

RO-IG5* <Password (default "0")> #5*0* <XXX> <YYY> #

Where <XXX> is the MCC (Mobile Country Code) and <YYY> the MNC (Mobile Net-



work Code) of the desired provider.

Please note!

The MCC-Codes and MNC-Codes for some provider in UK and Ireland are:

Provider	UK		Ireland	
	MCC	MNC	MCC	MNC
BT Group	234	76		
Vodafone	234	27	272	01
O2	234	11	272	02
Orange	234	34		
eircom Ltd			272	07

More MCC/MNC codes can be found under www.mcc-mnc.com.

To reactivate the roaming service:

DTMF

* * 5 * 1 #

SMS

RO-IG5* <Password (default "0")> #5*1#

Example DTMF (only provider BT UK)

* * 5 * 0 * 2 3 4 7 6 #

Example SMS (only provider BT UK)

RO-IG5*0#5*0*23476#

Telephone number for SMS notifications

This programming enables you to define the telephone number where the notification SMS are to be send to (i.e. answer to the SMS status interrogation for battery, and network and/or the SMS alarms for battery failure, empty battery and power failure). As default no value is set here. To change this value:

DTMF

* * 4 0 * <telephone number> * <telephone number> #

SMS

RO-IG5* <Password (default "0")> #40* <telephone number> * <telephone number> #

Where < telephone number > is the required telephone number and his repetition as acknowledge.

To delete the telephone number:

DTMF

* * 4 0 #

SMS

RO-IG5* <Password (default "0")> #40#

Administrator telephone number

Normally the SMS programming is accepted from any phone which is able to send SMS. Defining an administrator telephone number only this phone will be able to change values using an SMS. As default no value is set here. To change this value:

DTMF

* * 1 8 * <telephone number> * <telephone number> #

SMS

RO-IG5* <Password (default "0")> #18* <telephone number> * <telephone number> #

Where < telephone number > is the required telephone number and his repetition as acknowledge.



Please note!

The telephone number of the administrator **MUST** be complete with the international country code (i.e. for Germany 0049)

To delete the telephone number:

DTMF

* * 1 8 #

SMS

RO-IG5* <Password (default "0")> #18#

Password programming

This programming will change the password. As default the password "0" is set. To change this value:

DTMF

* * 1 9 * <XXX> * <XXX> #

SMS

RO-IG5*<Password (default "0")>**#19***<XXX>*****<XXX>**#**

Where <XXX> is the new max. three digits long password and his repetition as acknowledge.



Please note!

Ensure to **WRITE DOWN** somewhere the new password. If it is missed the device can be reseted only at factory.

Battery test

If battery test is active the GSM500 will test the battery continuously. Durind the test the battery will active discharged using a specific load the the measured levels will be compared to predefined values. If the battery doesn't match this values the device will set a battery alarm using an SMS or the ECII FLEX emergency phone. A new alarm is also send when the battery will match again the defined values, i.e.after it has been replaced. Furthermore an alarm, only by SMS, can be send if the battery is close to be discharged. The internal battery can deliver up to 8 hour in stand-by and up to 1 hour in active status. As default the battery test is activated, to deactivate it:

DTMF

*** * 5 1 #**

SMS

RO-IG5*<Password (defaul "0")>**#51#**

To reactivate this feature:

DTMF

*** * 5 0 #**

SMS

RO-IG5*<Password (deafult "0")>**#50#**

A further programming is the minimum stand-by time the battery must support. If during the battery test the device will recognize that the battery capacity is below this minimum required time a battery failure alarm using SMS or the ECII FLEX emergency phone will be raised. As default this value is set to 4 hour. To change this value:

DTMF

*** * 5 2 * <X> #**

SMS

RO-IG5*<Password (default "0")>**#52* <X> #**

Where <X> can have the following values:

0	1	2	3	4	5	6	7
7h	6:30h	6h	5:30h	4h	2:30h	1:30h	1h



Please note!

The battery capacity is very dependent from the enviromental temperature. The above mentioned time are considering a working tempertaure of about 20°C. If you can expect at the installation site temperature which may very differ from this value (i.e. below -10°C or higher then 40°C) we suggest to set this value to 6 (1:30h) or 7 (1h) as otherwise you will get in winter or summer time unnecesary battery alarms.



Please note!

If you activate the device the first time without conneting the battery you will get a battery alarm after 30 seconds. After connecting the battery it can take up to 15 days before the battery alarm will be set back.

Speech channel receiving level

You can change the speech receiving level if required. As default it is set to -2dB. To change this value:

DTMF

* * 1 1 * <X> #

SMS

RO-IG5* <Password (default "0")> #11* <X> #

Where <X> can have the following values:

1	2	3	4	5
-8dB	-6dB	-4dB	-2dB	0dB



Please note!

This value are defined for the optimal interworking with te ECII FLEX emergency phone, please change this only if required.

Speech channel transmitting level

You can change the speech sending level if required. As default it is set to -2dB. To change this value:

DTMF

* * 1 0 * <X> #

SMS

RO-IG5 <Password (default "0")> #10* <X> #*

Where <X> can have the following values:

1	2	3	4	5	6	7
-2dB	0dB	+4dB	+6dB	+9dB	+11dB	+12dB



Please note!

This value are defined for the optimal interworking with te ECII FLEX emergen-

Reset to factory default

You can reset the device to factory default using the following programming:

DTMF

*** * 9 9 #**

SMS

RO-IG5 <Password (default "0")> #99#*

Restart

You can anytime restart the device without switching off the power using the following programming:

DTMFV

*** * 9 8 #**

SMS

RO-IG5 <Password (default "0")> #98#*






Read the actual GSM network signal level

Further to the LED indicator you can anytime read out the actual GSM networking signal using this programming:

DTMF

*** * 3 0 #**

You will get the following tone feedback:

Tone	GSM signal quality
	No GSM signal
	Poor signal (25%)
	Average signal (50%)
	Good signal (75%)
	Very good signal (100%)

SMS

RO-IG5* <Password (default "0")> #30#

You will get the following feedback as SMS:

RO?IG5* <Password default "0"> #30 <X> #

Where <X> can have the following values:

0	No GSM signall
1	Poor signal (25%)
2	Average signal (50%)
3	Good signal (75%)
4	Very good signal (100%)

Read the actual battery status

Further to the LED indicator you can anytime read out the actual battery status using this programming:

DTMF

*** * 9 1 #**

You will get the following feedback as SMS:

Battery <X>

SMS

RO-IG5* <Password (default "0")> #91#

You will get the following feedback as SMS:


RO?IG5* <Password (default "0")> #91 <X> #

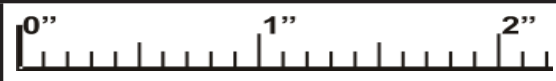




Where <X> can have the following values:

0	No battery installed
1	Poor (25%, ca. 2h standby)
2	Average (50%, ca. 4h standby)
3	Good (75%, ca. 6h standby)
4	Very good (100%, ca. 8h standby)


Optical indicators

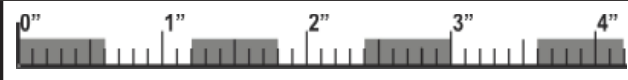


Green LED for GSM signal strenght




	No GSM signal
	Poor signal (25%)
	Average signal 50%)
	Good signal (75%)
	Very good signal (100%)

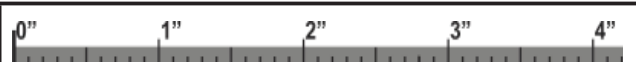


Red LED for device status




	Device is trying to register into the GSM network
	Device is registred a ready to use
	Device is busy


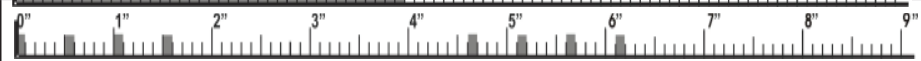


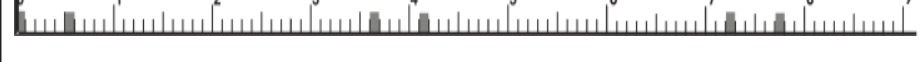
White LED for line status



	Line is busy
	Line is free
	Incoming call

Blue LED for power status



	Power OK
	Power OFF Battery 100%
	Power OFF Battery 75%
	Power OFF Battery 50%
	Power OFF Battery 25%


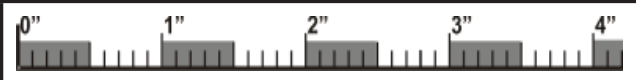
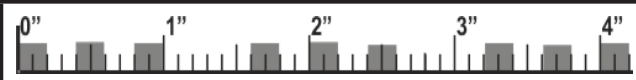
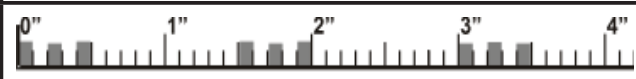
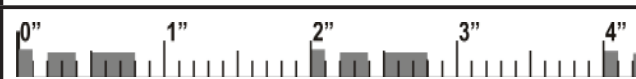
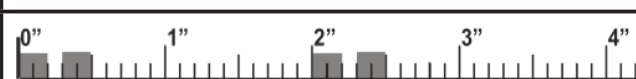
Outgoing call

- 1) Size the line going off hook or sizing the trunk of the connected PBX.
- 2) You will get dial tone from the GSM500 or special dial tone if the battery is broken or the device is using another provider (roaming tone).
- 3) Dial a telephone number.
- 4) If the called party is busy or the GSM network has problems (i.e. overload) you will get a busy tone until you hang up.
- 5) If the telephone line is opened, i.e. going on hook, the GSM500 will terminate the network connection and will be ready for another call within few seconds. If the called party hangs up first you will get busy tone until you release the line as well.

Incoming call

- 1) To call the GSM500 gateway just dial the telephone number of the used SIM card.
- 2) If the GSM500 gateway is switched off or not reachable the network will send you an appropriate message.
- 3) The incoming call is send to the connected analogue device using a ring voltage. Getting off hook the call will be answered.

4) If the telephone line is opened, i.e. going on hook, the GSM500 will terminate the network connection and will be ready for another call within few seconds. If the called party hangs up first you will get busy tone until you release the line as well.

	Dial tone
	Busy tone
	Warning tone
	Acknowledge tone (only during programming)
	Error tone (only during programming)
	Roaming tone

Trouble shooting

GSM500 gateway is not initialising, the red LED is always blinking fast

Check the following:

1. Is the SIM card correctly installed
2. Is the SIM card in order to work?
3. Did you disabled the PIN code or did you have programmed the PIN code 0000?

GSM500 gateway is not initialising, the green LED is off

Check the following:

1. Do you have network signal reception?

The PBX or emergency phone connected to the GSM500 are not able to dial external numbers

Check the following:

1. Does your PBX or emergency phone have a dial tone detection?
2. Have you activated the appropriate dial tone programming the right country code?

During call setup you are getting a special dial tone

1. Your battery is empty or faulty and it must be changed.
2. Your device is logged in a provider which is not your original one (roaming tone).

The dial of the connected phone is not recognized by the gateway

Check the following:

1. Is your phone able to dial DTMF tones?
2. Did you have programmed the right idle state line voltage for your phone?

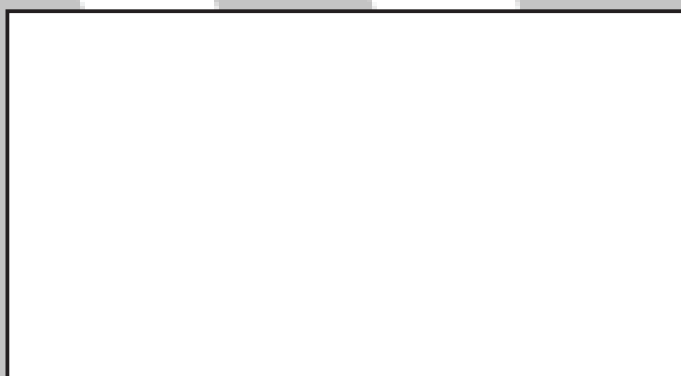
Technical support

Please contact the telephone number, fax number or e-mail address as indicated on the last page for further support.

Technical data

Power supply:	10 to 17 Vdc, 230 Vac with provided PSU
Consumption:	40 mA (10 V) to 60 mA (12 V) in standby 90 mA (17 V) to 105 mA (12 V) during Operation
Battery:	niMH 650 mA high temperature
Battery backup time:	up to 8 hour standby, 1 hour operation
Indicators:	four LED
Idle state line voltage:	36 or 52 Vdc programmable
Dial receiver:	DTMF
Programming:	using DTMF or SMS
Dimensions HxLxD:	140 x 96 x 28 mm
Weight:	220 g with battery
Operational temperature:	-20° to +50°C
Humidity:	30 to 90% relative humidity degree w/o condens- ing
Casing:	ABS
Protection degree:	IP20
GSM engine:	Dual band 900/1800 Mhz. external 50 Ohm an tenna with SMA connector
Specification reference:	EN60950-1; EN50385; EN301489-1; EN301489-7; EN12015; EN12016; EN301511
Type approvals:	R&TTE, CE

Your dealer:



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