

GSM GATE

# MiniGate A

## FxS-FxO



**Installation guide v1.0**

## Basic features:

Mini Gate A is dual band GSM Gate based on Siemens GSM module TC35i (eventually MC55) equipped by a lot of adjustable features increased comfort of service. It has been designed for GSM network 900 MHz as same as 1800 MHz.

- By implementing your MiniGate A FxS – FxO into your PSTN line you reduce your phone bill – GSM calls are routed to GSM network and land line calls are transparently routed to PSTN line.
- Polarity reversal of telephone line allows exact detection of start and end of call.
- CLIP support all ordinary protocols and allows send not only incoming call number,
- CLIP is very important for using next services (CallBack, Mobility Extension etc.);
- Identification of PSTN line fail allows automatic switching to GSM line ( back up);
- Call billing allows control exact call duration due tax pulses 12/16 kHz (1. pulse when outgoing call is picked up).
- Beeps in minute period into the call allows easy identification of GSM call.
- Integrated USB port with PC software allows you easy configuration as same as sending and receiving SMS messages ( via SMS mail sw)\* or data transmission.

\*option

Thanks of many Mini Gate features you can satisfy very wide group of customers. By setting of permitted numbers to memory of Mini Gate you can restrict unrequested calls (to public numbers).As same as you can set Mini Gate to provides incoming calls only. The CallBack and Mobility Extension are next features which either provide your permanent reach ability ( Mobility extension) or reduce your phone costs when you are abroad ( outgoing, incoming roaming savings).

## Possibilities of unit installations:

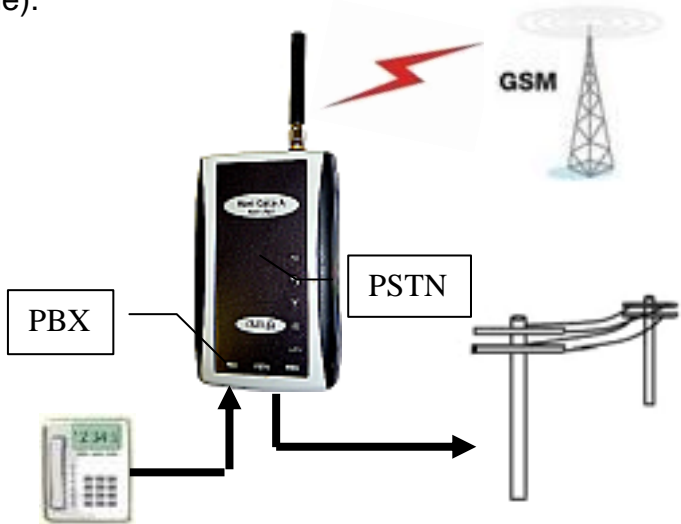
### 1. basic connection – substitution of analogue land line (PSTN). All calls are terminated over GSM



- The unit simulate ordinary PSTN line with CLIP and call billing. When call is established or ended is switch line polarity reversal.
- Call barring by programming up to 9 permitted 1 to 4 digits prefixes. All remaining prefixes are prohibited ( busy tone).
- After setting „waiting for dial to PSTN line for CallBack“ when dial 0 during call back you will transfer immediately to connected analog phone or PBX (via : description of CallBack feature).
- Mobility Extension feature works the same way like at ordinary GSM mobile phone – call forwarding when you don't accept the call. Phone or PBX connected to the unit is ringing. After certain time approx. 3 rings) is call automatically forwarded to preprogrammed GSM mobile number.

## 2. Installation between PBX(phone) and PSTN line.

Land line calls are terminated via PSTN line and GSM calls via GSM network. All incoming calls are routing to connected PBX (analog phone).



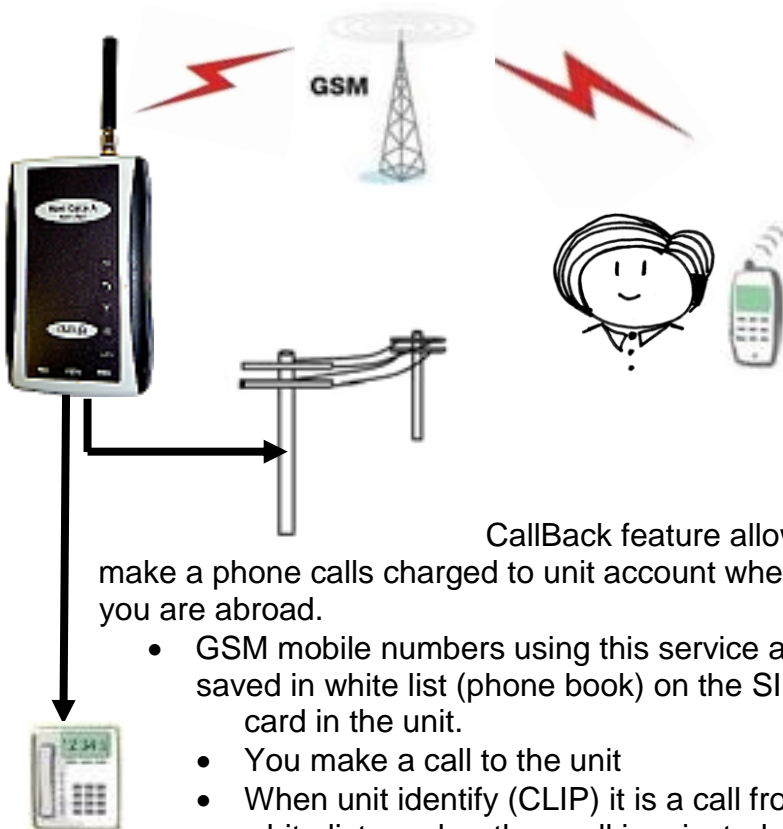
- In basic setting all outgoing calls are routed to PSTN line . In case of PSTN line disconnection or failure all calls are automatically forwarded to GSM ( Back up – security).
- When you program permitted directions to GSM (9 memories for 1to4digits prefixes) then permitted directions are routed via GSM the remaining via PSTN line (when is connected).
- When you activate „wait for dial into PSTN line for CallBack“ you can use during call back either dialing into connected PBX (phone) or get access to PSTN line ( eventually used speed dial for PSTN line).
- Feature Mobility Extension is extended about call transfer from PSTN line to GSM (mobile phone). When forwarded call from PSTN line to your mobile is rejected you can activate SMS feature which inform you by SMS message about calling party CLIP.

# Mobility Extension



Using Mobility Extension feature allows you to do not miss any incoming call to your office even you are out of office. During incoming call from PSTN line is firstly ringing connected PBX (phone). When call is not picked up (aprox. 3 rings) the unit dial automatically preprogrammed number ( for example : your mobile phone). Your mobile phone is ringing then simultaneously with PBX (phone) number ( behavior is like parallel line). Who will pick up first he will get the call. When you reject the call by mobile phone the unit will send you SMS message with number of called party ( when it had a CLIP). When is incoming call to GSM number of unit the call is process like a call when you have activated feature call forwarding during absence on your mobile phone. Connected PBX (phone) is ringing . After a while ( aprox. 3 rings) call is forwarded automatically to preprogrammed GSM number .

# CallBack

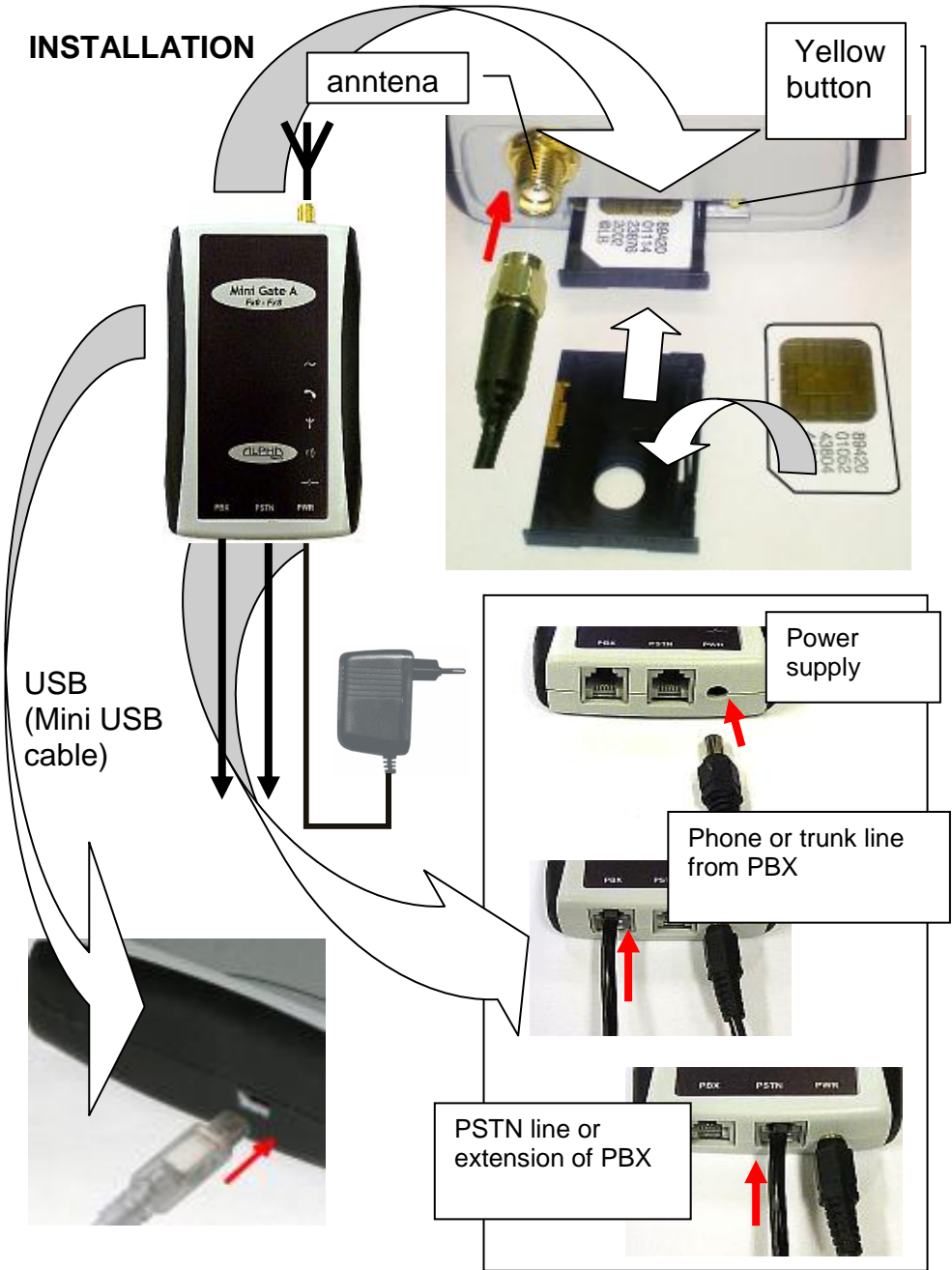


CallBack feature allows make a phone calls charged to unit account when you are abroad.

- GSM mobile numbers using this service are saved in white list (phone book) on the SIM card in the unit.
- You make a call to the unit
- When unit identify (CLIP) it is a call from white list number then call is rejected and unit make a call back.
- When you pick up this call you hear „CallBack“ tone(via. List of tones). You have then following options:  
Dial \*0 – get access to PSTN line, \*1 to \*4 – speed dial memories, whatever next – PBX ( phone) or you can wait for preprogrammed time to be automatically connected to PBX (phone)

This Callback feature allows you to reduce rapidly your phone costs when you are abroad and make a phone calls which are charged to unit bill. You just make a ring to the unit for free.

# INSTALLATION



By pressing of yellow button release the SIM card holder. Insert the SIM card and replace the SIM card holder. **Before inserting the SIM card we recommend checking at various mobile phone state of the SIM card (logging with or without PIN, PIN, etc.) and set logging without PIN. When you want logging with PIN you have to preprogrammed this PIN and set logging with PIN (via table of programming).Without this setting the Gate wont work. DO NOT FORGET ANTENNA CONNECTION!** The available place for installation select up following point of view:

1. distance from PBX – possibility of GSM interferences to other PBX lines as same as lenght of line from Gate to PBX (max. 200m)
2. main 230 V for power supply of Gate
3. Quality of GSM signal at the installation place of GSM Gate

### ***Quality of GSM signal***

The sound quality depends on BTS setting where you are connected by the Gate. To find best place for antenna mounting you can use either mobile or LED flashing on the unit eventually setting sw in your PC connected via USB port. (via. Manual to setting software).. The suitable signal power is 3 scales of mobile graduation.

To check and find best position from GSM signal point of view you can use also GG SET ( configuration sw). More in manual for GG SET.

## ***Connection of antenna***

When you connect magnetic antenna keep on mounting at bigger iron subject. This subject makes „against-weight“ at its depends the power of radiated signal

### ***1. start***

When you inserted SIM card as same as all cables are connected (correctly connected PSTN line **(phone or trunk line from PBX to the unit, PSTN line or PBX extension to the unit)** connect device to main 230V. The blue LED of „power supply„ is light up within 10 sec. After a while will flash a few times irregularly yellow LED (GSM network registration). The CPU then waiting for communication to GSM module ( via LED table – communication off). After aprox. 45 seconds the yellow LED start flashing up GSM signal strength ( via LED table), green LED PBX lights off – the unit is ready for operation. When pick up connected analogue phone or call to Mini Gate from PBX the LED of PBX line lights up (green LED). In the phone is hearing dial tone of Mini Gate. It is ready to use.

## **The most often problems during Blue Gate compact installation:**

- All LED is not lighting. Problem in power supply. Check connection to main 230V as same as connection of adapter to Mini Gate.
- The LED “power supply” lights. When you make connection to Gate green LED PBX is ON and in handset you hear busy tone. Yellow LED flashing in period „GSM module doesn't communicate with CPU“. During work with USB could be programmed fix

communication rate for GSM module. Use USB to program rate on „autobauding“.

- The yellow LED flashing in period „PIN unreadable“. After calling to Mini gate you get busy tone. The SIM card requires PIN, which is not preprogrammed or is preprogrammed wrongly.
- The LED „communication to GSM,“ is flash shortly one for 2 sec. After calling to Mini Gate you are hearing busy tone. Mini Gate is not log into GSM network – bad signal.
- The yellow LED „communication to GSM,“ is flashing up signal strength“. After calling to Mini gate is not light up green LED PBX is not light up and in analogue phone is quiet. It interrupted conduction of analogue line or so much big resistance in current loop (for example:( longer cable between PBX and Mini Gate).
- The yellow LED „communication to GSM,“ is flashing up signal strength“ as same as green LED PBX lights up. The PBX hold „pick up“ line of GSM Gate. By incoming call you can remove this issue. In other cases check PBX manual.
- The Mini Gate works but call is disturbed by interference. Incorrect position of antenna against telephone line. Change antenna position.

*Note:*.

Default you make by parameter 99 in programming mode (via programming table at page 15).

All LEDs flashing as same as tone types are mentioned in tables at the end of manual.

## USB

The Gate is equipped by USB port for direct control of GSM module Siemens TC35i (or MC35 or MC39 for GPRS) via virtual COM port. The Gate you can further use ordinary GSM modem for data transmission, internet connection or for SMS messages.

When unit is working as GSM modem then is busy for voice connection. When you pick up the line you will hear busy tone. The unit is monitoring data transmission by modem. The data transmission cannot be permanent therefore the unit stays in data mode 10 seconds after finishing of data transmission. Then is going back to Voice mode (calling).

The same is when you are calling over unit. It is busy for data transmission.

The optional sw supply to unit for sending and receiving SMS messages is SMS mail. It is working under Outlook, Outlook Express, Opera etc. And you can work with SMS as with normal e mails. ( see manual for SMS mail). It works in batches and allows program communication interval (1 to 99 minutes) to Mini Gate for sending and receiving SMS. Due this we avoid situation that unit is permanently blocked by data mode for voice communication.

Further functionality of USB is monitoring Mini Gate operation. It is possible record even incoming calls includes time and CLIP, signal strength, etc..

**CAUTION! USB is galvanically connected with PSTN and PBX. When you use PSTN and USB then is necessary to use galvanically isolated PC (for example. notebook and power supply in class II).**

## CONFIGURATION

The programming mode is set after acknowledgement dialing to Blue Gate. In the analogue phone is waiting tone. After password inserting is tone changing to programming tone. Then you can programming each features of Blue Gate (via table of programming)

### **Progress of programming:**

- ❶ Dial 2 digits number of programming feature.
- ❷ Dial 1 to 4 digits number for feature value programming.
- ❸ Wait for a tone of confirming request (3 short tones).
- ❹ Confirm the feature by dialing acknowledgement (#)
- ❺ Wait for confirming tone.
- ❻ Follow programming tone again.
- ❼ Finish programming by hang up a phone.

### **Example: programming of new permitted fix numbers (02) to memory 09:**

Dial acknowledgement (default is #). In phone you are hearing waiting tone (■—■—■—■—). Dial password (default 0000). Waiting tone is changing to programming tone (■—■—■—■—). Dial 1902. Wait for tone of confirming request (3 short tones). Confirm the feature by dialing acknowledgement (#). Wait for confirming tone (one long tone). Finish programming mode by hang up a phone.

***Warning:*** After dialing of parameter value you have to wait for 3 short tones and then dial acknowledgement # . Wait for long tone confirm acceptance of this parameter .

## Notes to each parameters:

11 – 19 When you program some prefixes the Mini Gate allows outgoing calls starts by those prefixes only. The others will get busy tone. When memories will be empty the calling won't be restricted (default). Memory of prefixes can content 1 digit only. If you insert 1 digit only the Mini Gate will check first position only.

Rewriting of memory – by storing of new fix-numbers are old fix-numbers erased.

Erasing of memory - Memory you will erase by storing of „nothing“. You dial only number of memory which you want erase and confirm it.

22 very important feature is acknowledge character setting. Default is #. When is # used for PBX features you can change it on \*.

24 An analogue phones are not enable send „+,, which is very used in GSM. In this case is possible to use combination „00,, to send it to mobile phone.

29 For feature CallBack must be in phone book of SIM card saved phone numbers of authorized persons ( white list) who can use this feature. Otherwise the feature is off.





31 This feature identicated connection of Mini Gate to external line at some type of PBX (ex.:Siemens Hicom).

32,35 The GSM phones requested command to connection on inserted number. The unit will send a command immediatly after acknowledge character dialing (#), or after timeout programmed by parameter 32 (it is a time for which unit wait for dial next digit).

You can also program number of digits (parameter 35), after which is command send immediately. In this case you can of course dial shorter number. (acknowledgement character and timeout are still valid).

- 52 You can program up 20digits phone number where are forwarded unpicked up calls at PBX (phone) – Mobility extension.
- 54 It is possible program up to 20digits phone number where are periodically ( default 30 days, adjustable) sends SMS messages with unit status (IMEI, IMSI, signal strength, BTS number).
- 61-64 4 memories for savings of speed dial ( 20digits phone numbers). They are used when CallBack feature is activated. It is useful for easy calls to often calling numbers. They are activated by dial \*1, \*2, \*3, \*4
- 77 Permission of sending SMS to number program in parameter 52. This SMS with phone number of calling party is send in case that phone call through mobility extension feature wasn't picked up.
- 78 After timeout without dialing of any code to access PSTN line (\*0) or speed dial (\*1 to \*4) the call is automatically forwarded to PBX (phone) port which starts ringing.

## **Notes:**

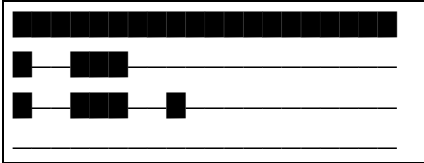
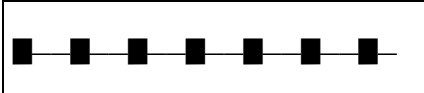
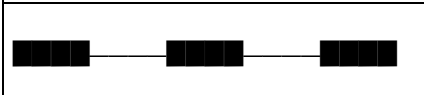
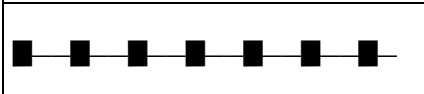
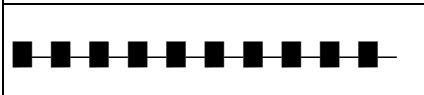
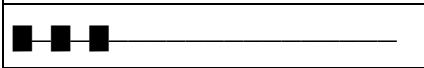

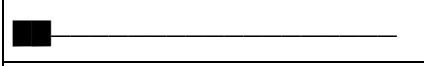
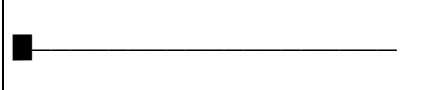
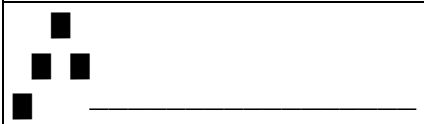
-  Programming is only by tone dial DTMF. Don't forget set even external line at PBX.
-  Changes are valid after hang up only (finishing of programming mode). It is very important especially in acknowledge character changes- till hang up you must use previous acknowledgement.
-  **After numbers dialing you must wait for confirming request , insert acknowledge character and wait for confirming tone. When you insert acknowledge character before won't be accepted.**
-  Switch to programming mode is possible even in busy tone.

## Table of programming

Dial number					Feature	Default			
0	0	n	n	n	Password nnnn to programming mode access	0	0	0	0
1	1	n	n	n	Memory x for permitted fix number (1 to 4 digits)				
1	2	n	n	n					
1	3	n	n	n					
1	4	n	n	n					
1	5	n	n	n					
1	6	n	n	n					
1	7	n	n	n					
1	8	n	n	n					
1	9	n	n	n					
2	1	n			Reversal polarity n=0 OFF n=1 ON	0			
2	2	n			Acknowledge character setting n=0 - # n=1 - *	0			
2	3	n			Type of dial tone n n=0 – permanent tone n=1 – dial tone up table of tones n=2 - dial tone of public lines operator n=3 – quiet	0			
2	4	n			Turning on combination for dialling „+„ to mobile phone n=0 – combination turn off n=1 – sending „+„ to mobile after „00„ dialling	0			
2	5	n			Signalization to the call – short tone each minute n=0 – tone is turn off n=1 – tone is turn on	0			
2	6	n			Restriction of call duration n=0 – without restriction n=1 – call duration restricted at 10 minutes	0			
2	7	n			PIN n=0 – start without PIN n=1 – start with PIN	0			
2	9	n			Callback n = 0 - OFF n = 1 – ON	0			
3	1	n	n		Ringng after inicialization nn decimal of sec. (00 to 99 it is 9,9 sec) („00„ not ringng during inicialization)	0	0		
3	2	n	n		Waiting for last number nn sec. (01 to 15) (after finishing of dial by acknowledge character is sending immediatly)	0	6		
3	3	n	n		Waiting nn sec. for dial after pick up (00 to 99 it is 9.9 sec) („00„ waiting is not limited)	0	0		
3	5	n	n		Number of dialled numeral, after its is dial send immediatly (lenght of telephone number) nn=00 – function none active nn=01-19 – number of numeral telephone number	0	0		










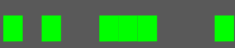



3	6	n	n			Ignorance of dial nn decimal of sec. After picking up nn=00-99 decimal of seconds	0	0		
3	7	n	n	n	n	Storing of PIN				
3	8	n				Amplification of sound in outgoing direction (1 to 4)	1			
3	9	n				CLIR feature, switching OFF outgoing CLIP (#31#) n=0 OFF n=1 ON	0			
5	2	n	n	n	n	Max 20 digits number for „mobility extension“				
5	3					Free				
5	4	n	n	n	n	GSM number for sending control SMS				
6	1	n	n	n	n	Max 20 digits number of 1. speed dial memory of Call back				
6	2	n	n	n	n	Max 20 digits number of 2. speed dial memory of Call back				
6	3	n	n	n	n	Max 20 digits number of 3. speed dial memory of Call back				
6	4	n	n	n	n	Max 20 digits number of 4. speed dial memory of Call back				
7	1	x	x	y	y	Xx= 00 No charging pulses Xx= 12 12 kHz charging pulses Xx= 16 16 kHz charging pulses Yy= 00 1 pulse only at the moment of connection Yy= 01 to 99 seconds. Pulses each 01 up 99 seconds				
7	3	n				N= 0 CLIP is switch OFF N= 1 FSK CLIP Bell N= 2 FSK CLIP BT N= 3 DTMF CLIP				
7	4	n				Call progress tone n=0 – OFF n=1 – ON				
7	5	n				Roaming n=0 – prohibited n=1 – permitted				
7	6					Free				
7	7	n				Sending of SMS with CLIP of called party when you reject the call from „mobility extension“ feature n = 0 – restricted n = 1 – permitted				
7	8	n				Waiting for dial to PSTN line for CallBack				
9	9					Default setting				

# Tones on lines of GSM unit

	<p><b>Dial tone (up setting)</b> Mini Gate is ready to accept dial</p>
	<p><b>Busy tone – short tone repeated</b> Called part is busy, doesnt exist, not permitted, etc..</p>
	<p><b>Ringing tone – long tone and pause repeated</b> Called part is ringing</p>
	<p><b>Waiting tone – short tone repeated with quick cadence.</b> Mini Gate waiting for password insert</p>
	<p><b>Programming – short tone with quick cadence í</b> Programming mode of Mini Gate</p>
	<p><b>Confirmation inquiry - 3 short tones</b> Inquiry to confirm inserted parametr</p>
	<p><b>Confirmation tone – long tone</b> Parametr was saved correctly.</p>
	<p><b>„CallBack“ tone – 1 tone</b> Inquiry to dial dialling in code or dial number of speed dial</p>
	<p><b>Minute tone – short tone with 1 minute period</b> Minute beep to inform about GSM call.</p>
	<p><b>Call progress tone – short tones with different frequency</b> Searching of called part.</p>

# LED signaling



	<b>Permanent light</b> (lights up 3 sec after connection of main power) GSM modul is powered.
	<b>Permanent light</b> PBX port is OFF HOOK
	<b>Do not light</b> PBX port is ON HOOK
	<b>Flashing in rhythm of busy tone</b> Programming mode or PC communication
	<b>Flashing in 2 sec. interval</b> SIM is not readable (wrong PIN, SIM is not inserted, etc...)
	<b>Short lights off in period 2 sec.</b> GSM modul is not communication with unit CPU
	<b>1- 5 light flash in period 4 sec.</b> stand by mode, unit registered into GSM network, number of flashes = signal strength (5 max)
	<b>Short light flashing in period 2 sec.</b> Unit is not registered in GSM network
	<b>The speed flashing with different time period</b> GSM communication is running: GSM network registration, data communication, etc..
	<b>Unregular flashing</b> Voice communication on the line
	<b>Permanent light or light is off</b> No communication on the line
	<b>Not lighting</b> PSTN port is ON HOOK
	<b>Permanent light</b> PSTN port is OFF HOOK

## Technical parameters:

Type	Mini Gate A
Operating position	various
Operating conditions	temperature: +5° C ÷ +40° C, humidity: 10% ÷ 80% at 30° C
Dimensions (mm)	110 x 68 x 27 mm

### Part of power supply

Supply voltage	230 V ( $\pm 10\%$ ) ( adapter)
Power input	max. 15 VA
Protection	thermal fuse in adapter
Safety group	ČSN EN 60950 group 2

### Analogue telephone lines

telephone interface	2-wires
telephone connector	RJ 11
Impedance	600 $\Omega \pm 20\%$
Dial	tone DTMF $t_t > 30$ ms

Start and end of connection	Polarity reversal
Signalization	425 Hz $\pm 20$ Hz
<b>CLIP</b>	FSK Bell, BT,DTMF

PBX	
Supply conduction	symmetrical 24V
Current loop	max 38 mA
Resistance of subscribers conduction	max. 500 $\Omega$
Ringling	55 $V_{ef}$ / 50 Hz
Billing	12/16 kHz

PSTN	
DC resistance in ON HOOK	min. 1 M $\Omega$
Line current	10 – 65 mA
Ringling detection	min. 20Vrms 25 - 50 Hz

### GSM:

mobile network provider	compatible for GSM 900 and GSM 1800 according SIM card (3V and 1.8 V)
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<b>USB</b>	version 1.1, virtual COM
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## Functionality:

- Waiting for dial after pick up 1 - 99 sec or unlimited
- Waiting for last digit of dial 1 - 15 sec
- Dial after preprogrammed number of digits 1 - 19
- Immediate dial sent up setting „#“ or „\*“
- Permitted direction ( 9 memories of 4 digits numbers)
- Dial type setting
- CLIR
- CLIP
- Call billing ( tax pulses 12/16 kHz)
- Reversal polarity ( start and end of call)
- Roaming ON / OFF
- Call duration control
- Time beeps in call
- GSM signal strength identification
- Mobility Extension
- CallBack
- Memories of speed dial into PSTN line

Registered company address:

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