



# GSM-KEY MANUAL

AC2000 VERSION 3.2



SHANGHAI WAFER MICROELECTRONICS CO.,LTD

<http://www.waferstar.com>

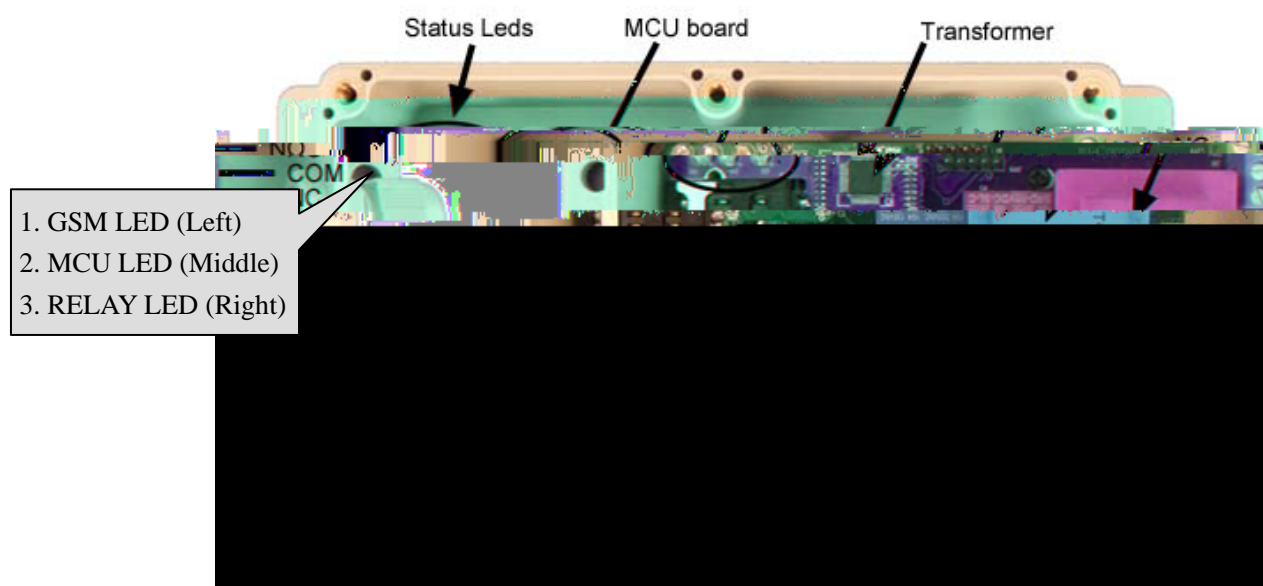
## GSM-KEY OPERATING INSTRUCTIONS

### PRODUCT DESCRIPTION

WAFER GSM-KEY is an electronic board with an on-board GSM modem. The purpose of this device is to open an electric gate by means of a GSM phone. It has a door open relay whose contact has to be connected in parallel with the button which opens the gate. It has a White List of regular user numbers who are enabled to open the phone, up to 2000 and also it has up to 750 number for time zone. When the GSM-KEY receives a call, it will check to see if the calling number is in the list. If it is in the list it will reject the call (so there will be no charge -at least with today's charging procedures) and click the relay momentarily.

Also GSM-KEY has two alarm input port for the security detection including the intruder detection alarm and gate problem alarm.

### CONNECTOR DESCRIPTION



### ADVANTAGES OF WAFER GSM-KEY

- ~ 2000 Regular User Numbers memory.
- ~ SHL250+PHL300+QHL250 ,total 800 Special Numbers memory for time zone.
- ~ 5 Alarm Numbers memory.
- ~ Up to 500 logs stored in database.
- ~ No call charges to operate.
- ~ No line rental using 'Pay as You Go'.
- ~ No key-fobs for children to lose.
- ~ Let visitors and deliveries in remotely.
- ~ Impossible to clone or intercept.
- ~ Caller ID confirmation for security.
- ~ Quick & easy number barring.
- ~ Easy programming in minutes with your phone or PC software.

## INSTALLATION

### Please read this entire manual before installation **!Note!**

Take **EXTREME** care with the high voltage AC220V Power line installation  
In case of fault pull the mains adapter out from 220V network immediately.

If device is connect into electricity, you couldn't take off its cover.



To maximise reception, install the GSM antenna in a prominent elevated position if possible, and vertically mounted.

The GSM unit requires mounting carefully in a weatherproof enclosure for out door operation.

Always ensure that the power is switched OFF before inserting or removing a SIM card from its holder or damage will be caused to the module.

To install the GSM-KEY, you need to connect the 2 wires of the relay contact in parallel with the gate opening button. The relay contacts can stand **48V 0.5A maximum**, this is enough for its operation but **don't try to switch higher voltages or currents**. You should install the GSM-KEY in a place where there is GSM signal coming from the operator you want to use. Check it with a phone before proceeding with the installation. If you need to install the device in a place with little signal, you may consider using an external antenna that we may supply as an option to be purchased separately with 50cm cable.

You should then insert the SIM Card of the operator you want to use with the right direction according to the following pictures.

**!Note! : That would be better to test the SIM card in your mobile phone to ensure that SIM Card is working before inserting it in the unit.**



1. Open the SIM card holder



2. Insert the SIM card



3. Put back the SIM card holder



4. Lock the SIM card holder



1. Slide back the SIM door and lift it up
2. Slide the SIM Card into the SIM door making sure that the clipped corner of the SIM card lines up with the clipped corner of the SIM holder
3. Close the SIM door
4. Slide the SIM door to lock the SIM card in place

GSM-KEY also comes with additional 2 Input. The inputs can be used to generate alarms when triggered. For examples, you can connect the safety beam output to the GSM-KEY Alarm1 and Alarm2 input.

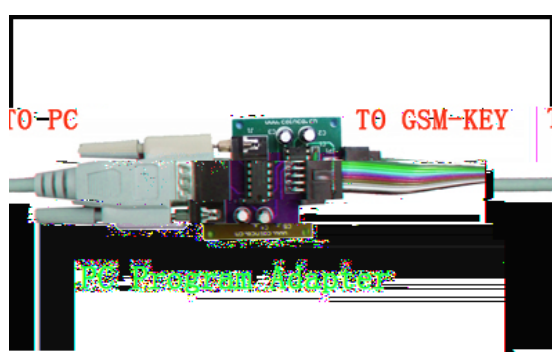
## WAFER GSM-KEY PROGRAMMING

You can program the GSM-KEY with SMS commands using your phone. It is safe to do so because in addition to the fact that other people may not know the number of the SIM inserted in it, we also use a Password that makes it impossible for anybody who doesn't know it to access the system by chance.

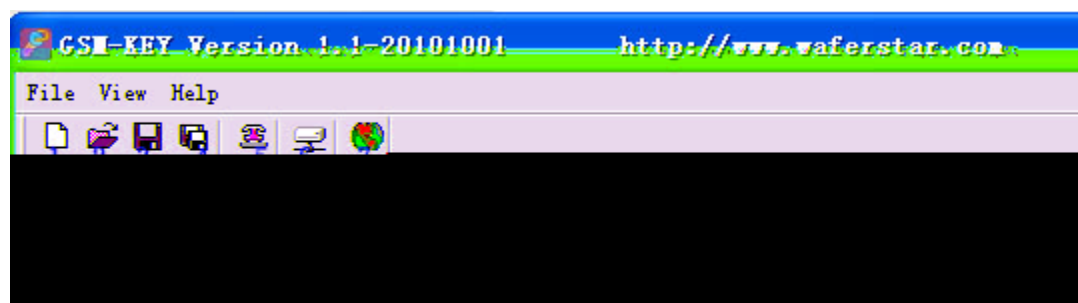
Remember that commands must be CAPITAL LETTERS. It is PWD not pwd, CAP not Cap etc. Don't add spaces or any other character.

Some complicated Instructions, that can't be programmed by the phone SMS. That would need to use the PC software to program and inquire the status of the terminal.

The bellow wire picture is to show how to connect the cable to the PC program connector with the Program adapter. Please connect it in the right direction with the picture.



## GSM-KEY PC Program Software interface



1. Setting and Log page switch
2. Open saved file
3. Save units phone numbers in your computer for future changes
4. Save in a new file name
5. Communication selection, Com port configuration
6. Connect to the unit
7. Select Language
8. Setting Tab – Insert regular/Special phone numbers, miscellaneous
9. Log Tab
10. Phone numbers Tab – Add regular phone numbers 2000
11. Special phone numbers Tab – Add special phone numbers 750
12. Alarm Phone numbers Tab – Add alarm phone numbers 5
13. Miscellaneous Tab

The following command is used in the GSM-KEY :

<b>#PWD:</b>	Password
<b>#CAP:</b>	Change password
<b>#WHL:</b>	White List (add or remove numbers)
<b>#GOT:</b>	Gate pulse time
<b>#ALARM:</b>	Alarm information setting
<b>#MODE:</b>	Relay mode
<b>#CSQ:</b>	Check Signal Quality
<b>#SCA:</b>	Set service center address
<b>#STATUS:</b>	Check status

Once you issue a command with an SMS, you will receive a confirmation SMS with OK if everything is correct or Err if there is an Error.

## GSM-KEY SMS COMMAND LIST:

### **#PWD Password.**

This command must always come first 6 digits as a password.

The standard default one, when the device comes from the factory, is 123456.

We suggest that you change it, using the #CAP command.

In all the following examples we will use 123456 as an example of password.

### **#CAP Change Password.**

Use this command to change the password with a new one that you will chose for your device ( don't forget it or you will have to send the unit back to us to reset it, and this has a cost )

The #CAP command must be issued 2 times to be sure you don't digit a wrong one.

OF course it must be preceded by the old password.

For example, to change the password 123456 into the new password 333444 you need to send the following SMS:

**#PWD123456#CAP333444#CAP333444**

Acknowledge SMS: PWD SETUP OK

If you wrote correctly, or an Error message if you made a mistake.

If the old password is error,then conformation would be : Error Old Password

If you input two different new password,then reply would be : Error New Password,Please Check the input again

### **#WHL White List.**

This is the command that you will use most. it is used to add or remove numbers that are enabled to open the gate into the White List. You can add up to 2000 numbers in the list. Every position must be indicated in the command and we advise you to keep a list written somewhere to know which numbers are in and in which position.

- To add a number, the syntax of the command is the following:

**#PWD123456#WHL01=61143815**

Acknowledge **would be : WHL01 SET TO 61143815 OK**

Where 01 is the position in the list and 61143815 is the number enabled.

Please note that it is possible to program up to a maximum of 10 digits for a number. If it has more digits you should use the rightmost ones. For example, if your number is 33446665555 you should program 3446665555. If your number appears as +85261143815 you should not program the country code (+852). If your number has only 9 digits or less, it is not a problem. The important thing is that you don't exceed 10 digits.

- To check which is the number in a place of the list:

**#PWD123456#WHL0001?**

Acknowledge : **WHL01 IS 61143815 OK**

- To erase a number:

**#PWD123456#WHL01=0000000**

(or you can write over it another number you wish to add)

Acknowledge : **WHL01 SET TO 00000000**

**List All numbers in the List**

**#PWD123456#WHL=ALL? (Instruction Only for PC)**

Acknowledge :

**WHL01 IS XXX**

**WHL03 IS XXX**

**WHL08 IS XXX**

.....

**#SHL, #PHL, #QHL Special List.**

**Set from what time to what time you want these numbers operate**

**#PWD123456#SHL001=13564121668:1357(8:32-23:59)**

Acknowledge : SHL001 SETUP TO **61143815**:1357(8:32-23:59)

### SHL001 number would operate from 8:32 to 23:59 in Mon,Wen,Fri,Sun in every week.

**#PWD123456#PHL001=13564121668:100324-101012(8:32-18:26)**

Acknowledge : PHL002 SETUP TO **61143816**: 100324-100812(8:32-18:26)

### PHL001 number would operate from 8:32 to 18:26 from Mar.24th to Oct.12

**#PWD123456#QHL001=13564121668:12**

Acknowledge : QHL003 SETUP TO **61143817**:12

### QHL001 number would operate total 12 times,then would be expired.

- To check which is the number in a place of the list:

**#PWD123456#SHL0001?**

Acknowledge : **SHL01 IS 61143815 OK**

**Or #PWD123456#PHL0001?**

**#PWD123456#QHL0001?**

- To erase a number:

**#PWD123456#WHL01=0000**

Or #PWD123456#PHL01=0000 #PWD123456#QHL01=0000

(or you can write over it another number you wish to add)

**List All numbers in the List**

#PWD123456#SHL=ALL? (Instruction Only for PC)

Acknowledge :

SHL01 IS XXX

SHL03 IS XXX

QHL08 IS XXX

.....

**#GOT** Gate pulse delay time.

This command is useful in case you need to keep the button pressed longer. The standard time is 0,3 seconds (300 ms). You can change it with the GOT command.

- The syntax of the command is the following:

#PWD123456#GOT500

Acknowledge: DELAY TIME SET TO 0500MS

With the above command the opening time has been set to 500 ms (0,5 seconds).

- You can check what the current pulse time is with the command

#PWD123456#GOT?

Acknowledge: DELAY TIME IS 0500 MS

**#ALARM Alarm setup**

(1) You can setup the alarm phone number when have the alarm information input

#PWD123456#ALARM01=13818120592

Where 01 is the position in the list

Acknowledge: ALARM01 SET TO 61143815 OK

When the number is seted to 000000,that means delete the number in this position

(2) check which is the number in a place of the alarm phone list:

#PWD123456#ALARM01?

Acknowledge: ALARM01 IS 61143815 OK

(3) List all numbers in the alarm phone list:

#PWD123456#ALARM=ALL?

Acknowledge: ALARM IS XXXXX:XXXX:XXXXXXXX:0000:0000

(Will show total five numbers, if no effective number,that will be replaced with 0000 )

(4) Alarm mode setup

There are two alarm input ,you can set at PHONE or SMS

#PWD123456#ALARM-IN1=ON:PHONE:10,ALARM-IN2=OFF

Acknowledge: ALARM\_IN1=ON:PHONE:10,ALARM\_IN2=OFF

#PWD123456#ALARM-IN1=ON:SMS:2,ALARM-IN2=ON:PHONE:3

Acknowledge: ALARM\_IN1=ON:SMS:2, ALARM\_IN2=ON:PHONE:3

If at phone mode: when receive the alarm input,then will phone the number in the alarm phone list until you reject the phone call or that will continue to phone the number again after the minutes setted.

If at SMS mode: When receive the alarm input,then will send the SMS to the number in the alarm phone list until you send the SMS to PAUSE the alarm .

In this instruction,that **ALARM-IN1=ON:SMS:2,ALARM-IN2=ON:PHONE:3**

**That means that alarm1 signal would be triggered when the alarm1 is shorted to The alarm input1 and last to 2 seconds.**

**That means that alarm2 signal would be triggered when the alarm2 is shorted to The alarm input2 and last to 3 seconds.**



(5) Config the SMS TEXT :

**#PWD123456#UDI1:XXXXXX, UDI2:XXXXXX**

Acknowledge: **UDI1:XXXXXX, DI2:XXXXXX OKAY**

**(When the Alarm input is triggered,then will send the SMS you already setted with this UDI command)**

**#CSQ** *Check GSM signal quality.*

This command is useful to see what is the GSM network signal level your GSM-KEY is receiving. It ranges from 0 to 32 (if it is 0 we doubt it will ever answer...). You should have a signal above 12 to be sure of being able to open the gate in any condition. Better if above 16. You should add an external antenna if this is not the case, or eventually even change operator with another that serves your area better.

**#PWD123456#CSQ?**

Acknowledge: CSQ IS 26

**#MODE** Relay Operation Mode **SETUP**

**#PWD123456#MODE0**

Acknowledge: **RELAY SET TO MODE0**

**#PWD123456#MODE1**

Acknowledge: **RELAY SET TO MODE1**

If set to MODE0,that is Momentary pulse and If Config to MODE1,that is Ratchet relay

**#STATUS** Check the config information of the terminal

**#PWD123456#STATUS?**

You will receive a Acknowledge with:

ALARM1=ON:SMS:10,ALARM2=ON:SMS:20,GOT=1000,WHL=85,ALARM1=H,ALARM2=H,BCPW=34,CSQ=20,RELAY=ON

**#PWD123456#TIMER-UPDATE: 96754667**

This is used to setup the phone number that is used to update the device inside working clock

You will receive a Acknowledge with:

**#PWD123456#TIMER-UPDATE: 96754667 OK**

**#PWD123456#CLOCK ( Only the Timer update phone number can be effective with this )**

That is used to update the device clock with the specified update phone number

Acknowledge: **CLOCK UPDATE TO 2010-10-18,16:58:10**

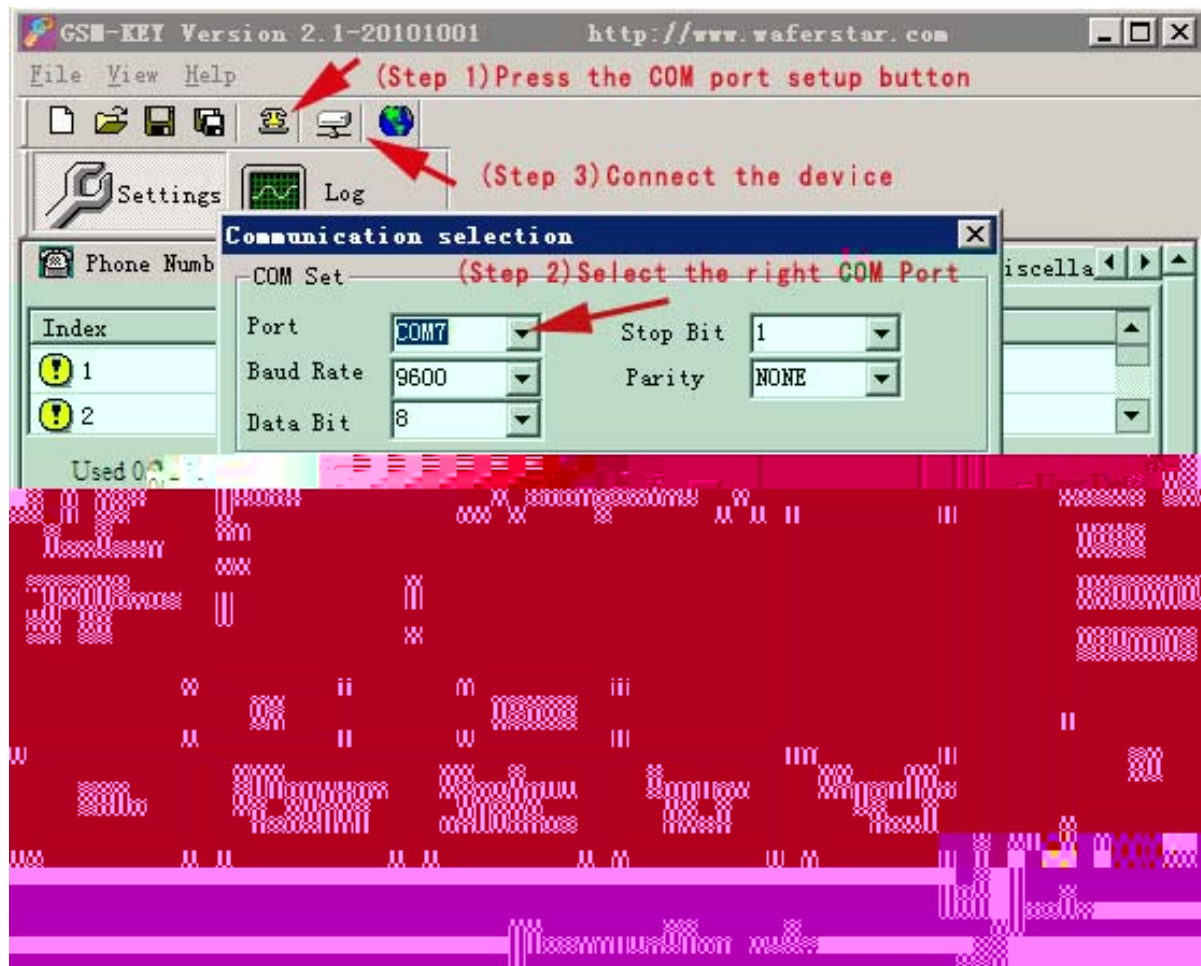


**PC Software interface:**

**COM Port parameters config interface and connect to the device**

Before program the device through the PC, firstly you need to config the COM port parameters and then connect the device to PC software.

Password is the PWD password, if no change, the initial password is “ 123456 ”



**Phone Numbers Setting interface:**

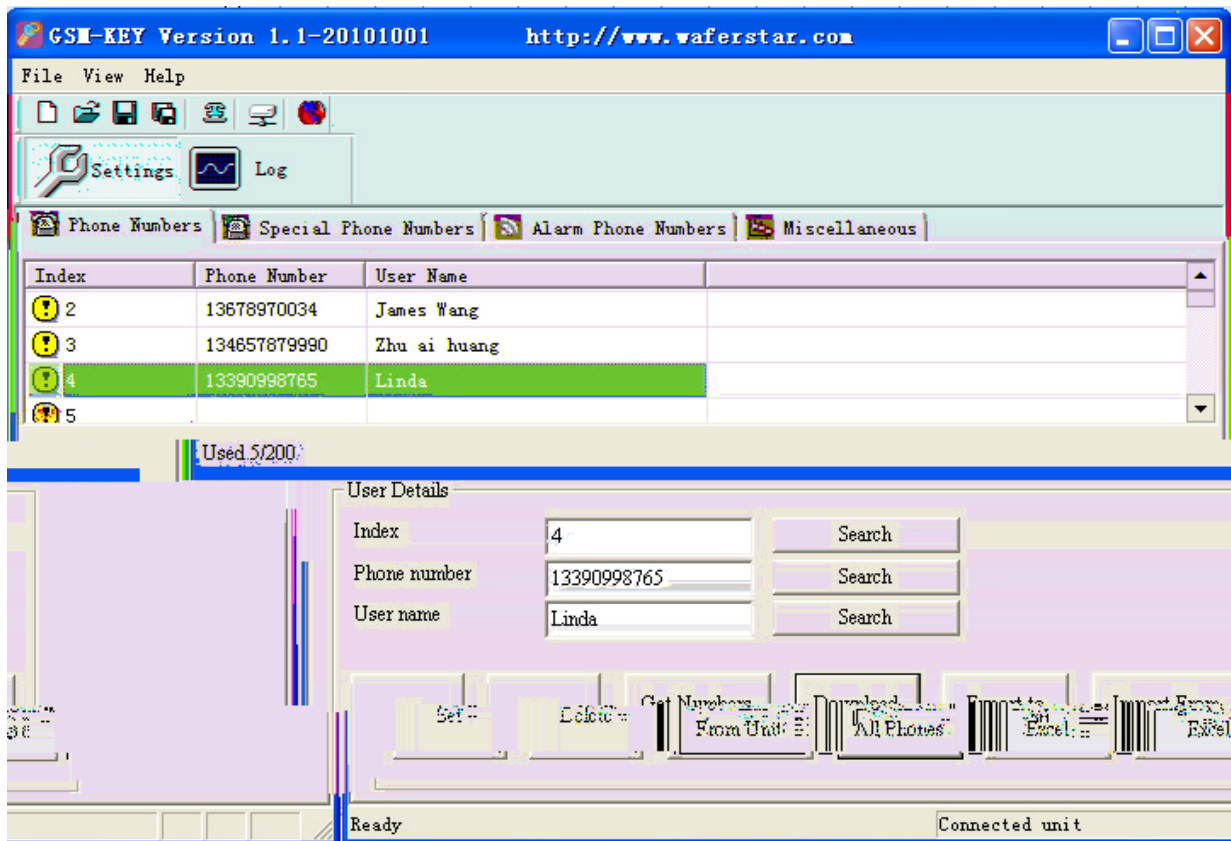
Normally you firstly would be better to get all numbers from the device unit, then would make sure to know which numbers are already inside the device.

Before download the phone numbers, you need firstly select the right index number and then input the user details, after input, then press the “ **SET** ” button to set the input index to Red color, then press the button” **Download All Phones**”, after download, it would turn to Green color.

If you want to delete one index information, then you need to select the right index line and press the “ **Delete** ” button, and then press the button” **Download All Phones**”.

You can set or delete one or several index line information in one time.

( Download All phones, that only means that is download all the **SETTED numbers** into the device )



**Special Phones Setting:**

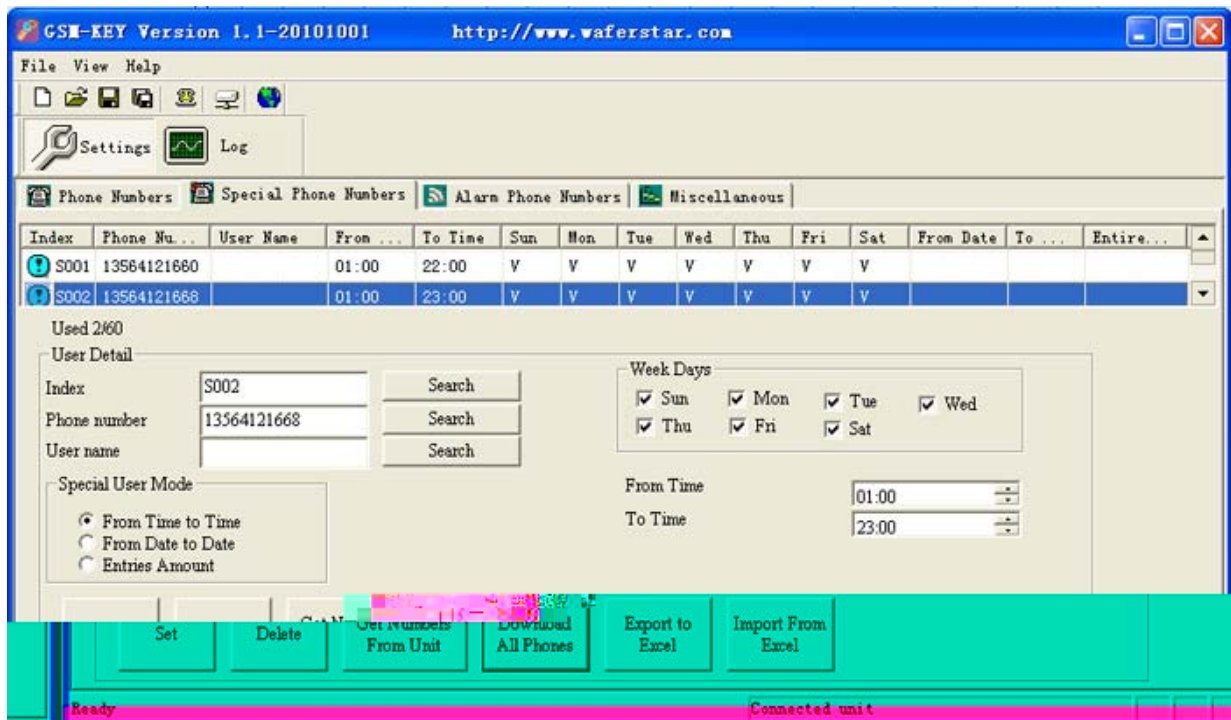
Special phone number is used to setup the special number to control the device.

It has three user mode:

From Time to Time: Which days in a week and when can control the device.

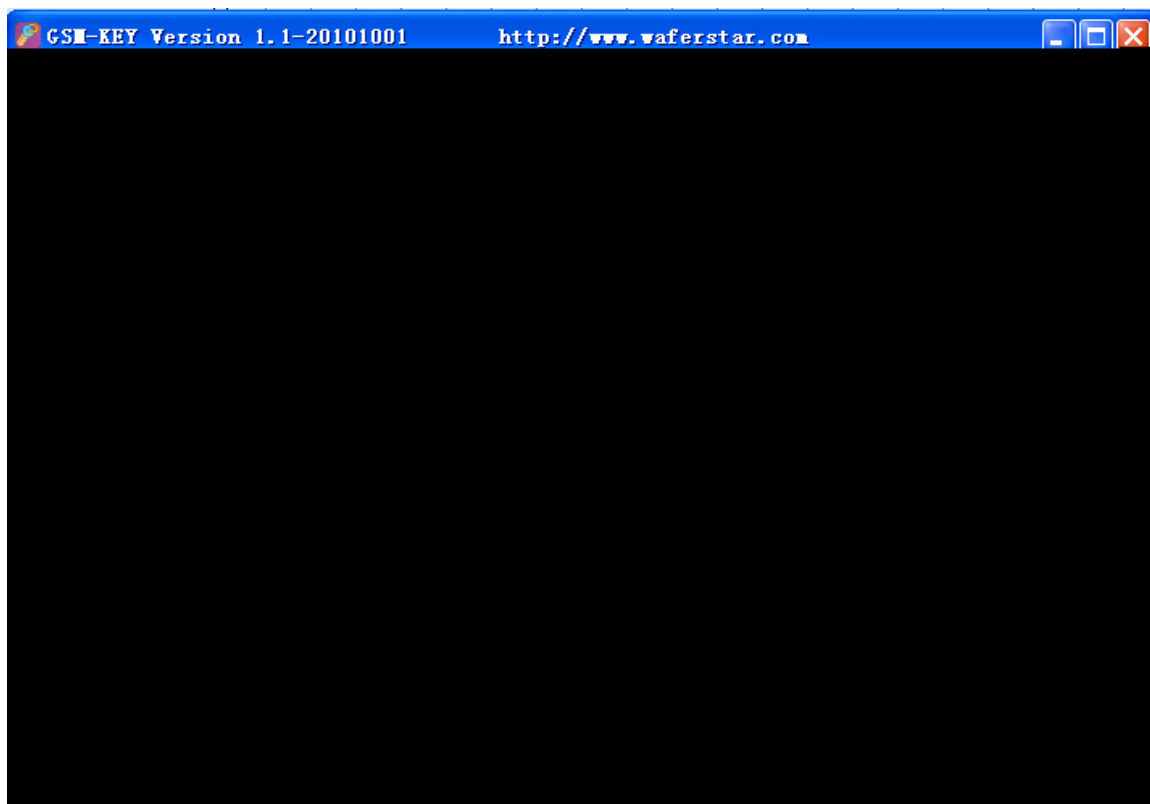
From Date to Date: From date to date, the special number can control the device.

Entries Amount: setup the total numbers that can control the device.

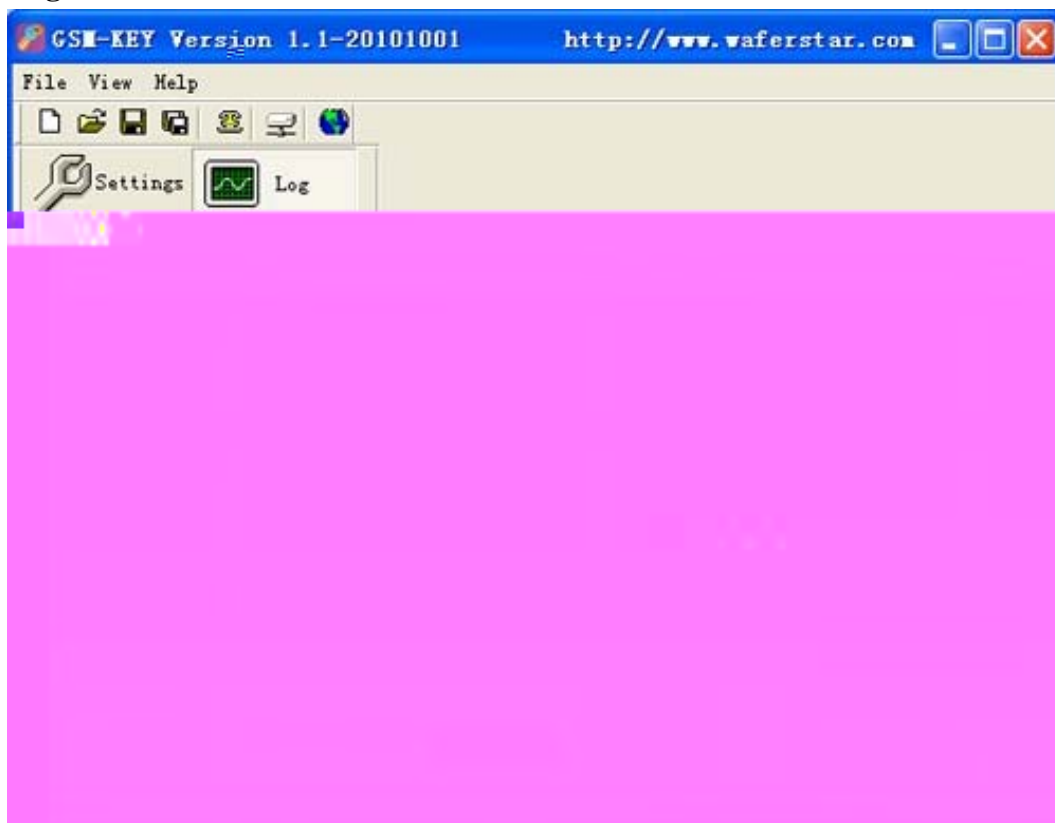


**Alarm Phone Numbers Setting:**

That is used to setup the alarm phone number, when the alarm input is triggered ,then device would call the number or send the SMS to the number.

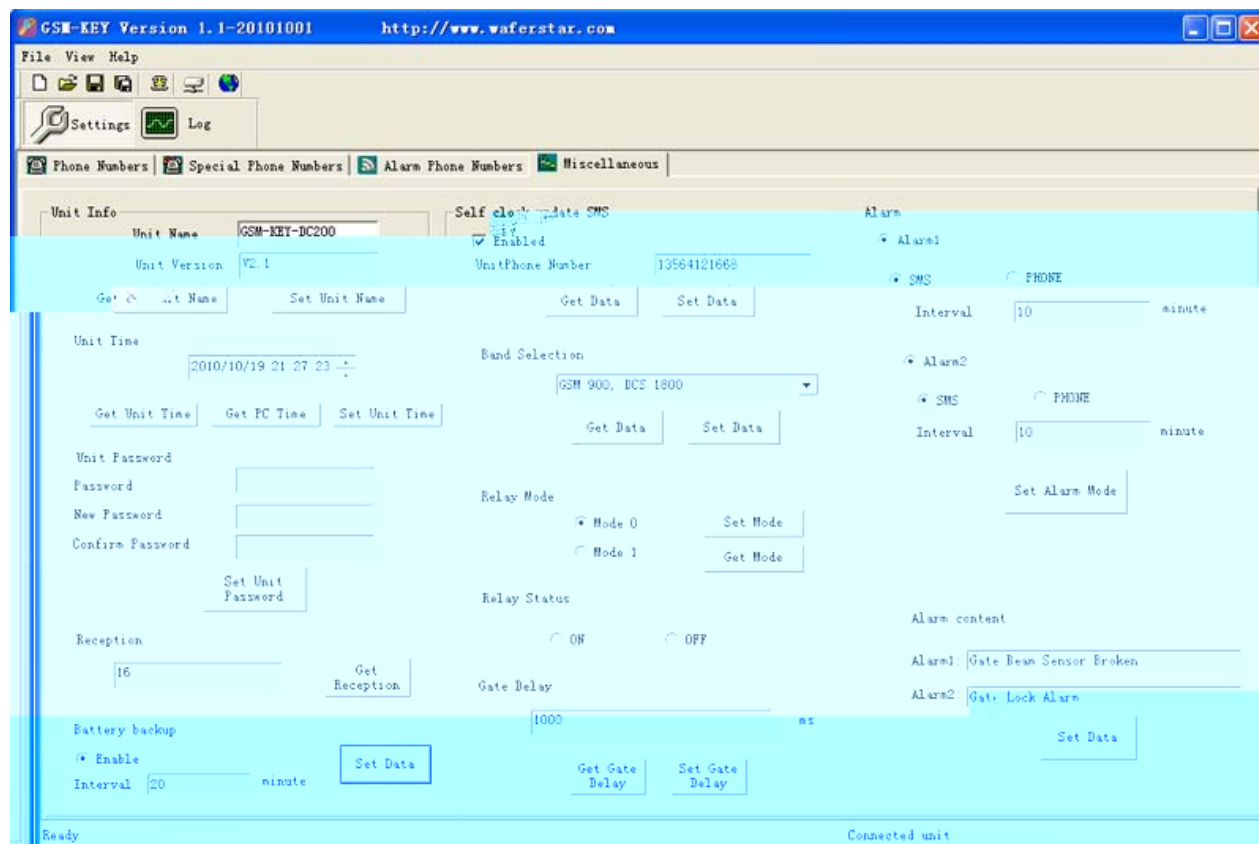


**Log Interface**



### Miscellaneous Parameters Setting Page:

That is used to setup the parameters of the device.



- Unit Info: That is showing the Device edition of the design,you don't need to change it
- Unit Time; That is used to setting the timer of the GSM-KEY Device
- Unit Password: That is used to change the control password
- Reception: That is used to test the GSM signal quality of the site
- Battery backup: That is used to setup the Power off alarm when power off.
- Self clock update SMS: That is used to setup the phone number that is used to update the clock
- Band selection: Not available
- Relay Mode: That is used to setup the working mode
- Relay Status: That is used to test the device through ON or OFF the on board relay
- Alarm: That is used to setup the alarm mode of the two alarm channel
- Alarm content: That is used to setup the alarm SMS content.

Note:

1. Gate delay can't be setup to "0", then when you call the device, that relay output would not work.
2. You shouldn't change the BAND selection if you are not very familiar with the GSM device, that would cause the function to stop to work
3. You can use the Relay Status selection box to check if that relay output can work well or not.
4. Battery backup function is not ava

## Troubleshooting

No LED is on after power up

- Check the power supply.
- Check the wires is connected well.

GSM LED D6 is not flash slowly

(GSM LED normally flash quickly when power off and when it connected to GSM net ,then would flash around two seconds per time).

- Check your ordered device if that is the proper GSM BAND to your country.  
(Some country is QUAD BAND , some others is DUAL BAND, please check wafer website:  
<http://www.waferstar.com/en/gsm-frequencies-list.html> to check if that is proper)
- Check the SIM card is properly inserted.
- Check the PIN.(Normally don't need to check, if SIM card can work with your mobile phone.)
- Check the antenna connection is fitted well.
- GSM Signal is not good and cann't register to GSM,try to move to another place to test.
- If still cann't registered to the GSM net, try to contact wafer to get the technical support
- When LED D6 is flashing slowly,try to call the SIM card,the calling status would be in busy.

MCU LED D4 is not flash slowly

- MCU is not working properly,Check the syster power

No Relay working tone can be heard when phone calling the device

- Check if your Control number is already setup into the device.
- GSM-KEY is not initialized properly upon start (approx. 10s after power up).
- If the GOT timer is setup to a very short timer ( normally should be more than 500ms )

GSM-KEY does not communicate with PC

- Check the serial cable connection.
- Check the COM number setting on PC.
- Check the COM parameters (9600 bps, 8N1).
- An incoming call is ringing on GSM-KEY
- An incoming SMS message is on processing by GSM-KEY

**This brochure provides an overview of the products and services of WEIFU GSM Modules, For further information and queries kindly contact:**

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