



GSM-KEY-3G MANUAL

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SHANGHAI WAFER MICROELECTRONICS CO.,LTD

<http://www.waferstar.com>

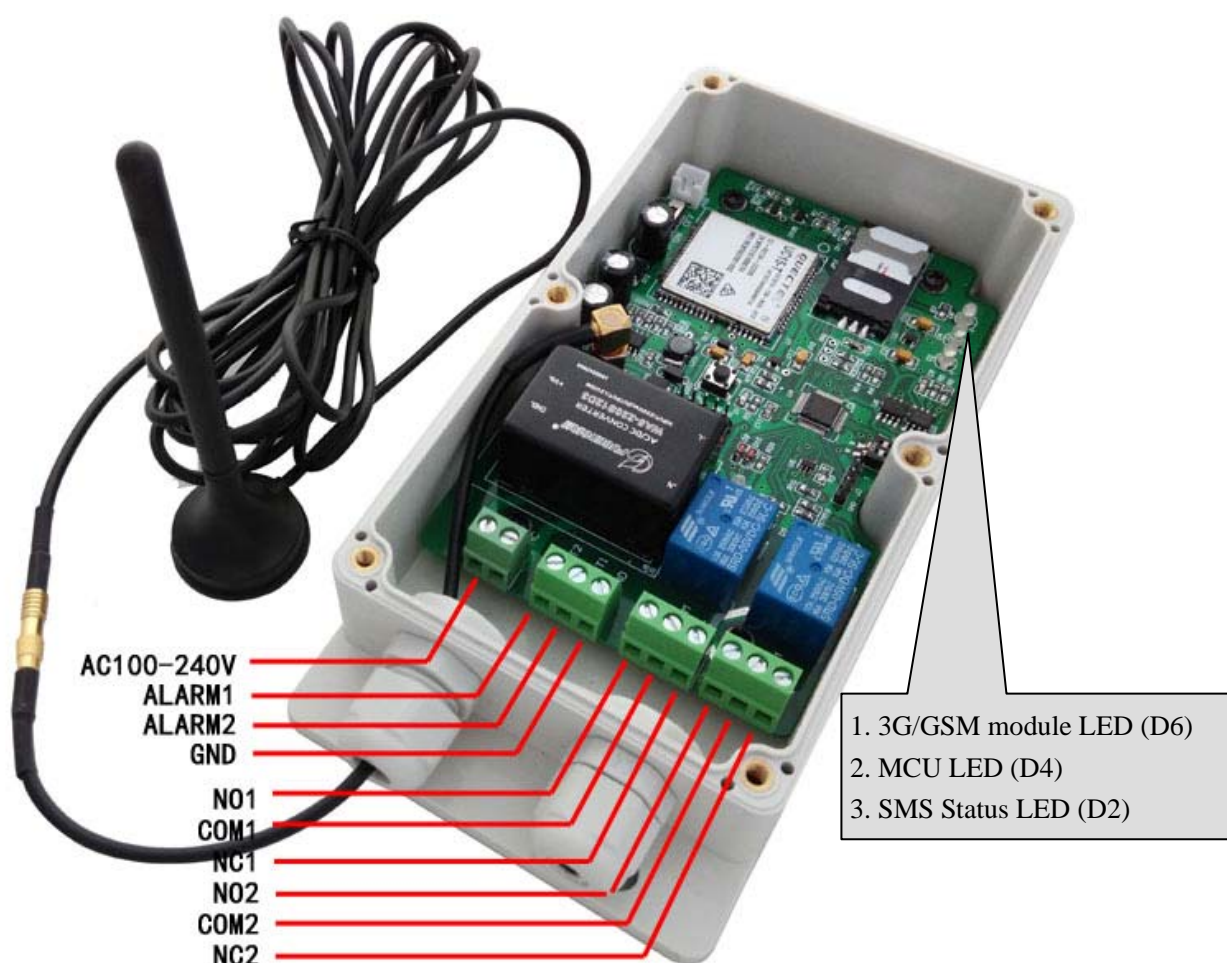
GSM-KEY OPERATING INSTRUCTIONS

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 numbers who are enabled to open the phone, up to 2000. 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.

CONNECTOR DESCRIPTION



ADVANTAGES OF WAFER GSM-KEY

- ✓ 2000 Number memory.
- ✓ No call charges to operate.
- ✓ No line rental using 'Pay as You Go'.
- ✓ Open gates prior to arriving.

- ✓ Let visitors and deliveries in remotely.
- ✓ Caller ID confirmation for security.
- ✓ 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! : You must remove the PIN request from the SIM before inserting it in the unit, otherwise the device will not work. In order to do so, insert the SIM in a phone and disable the PIN request (usually there is a security menu that enables you to do so).



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.

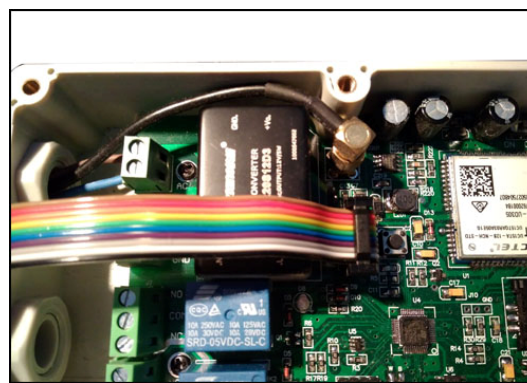
WAFER GSM-KEY PROGRAMMING

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 below 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.



The following command is used in the GSM-KEY :

#PWD:	Password
#CAP:	Change password
#WHL:	White List (add or remove numbers)
#GOT:	Gate pulse time
#ALARM:	Alarm information setting
#MODE:	Relay mode
#CSQ:	Check Signal Quality
#SCA:	Set service center address
#STATUS:	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#WHL01?

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? (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 (SHL maximum number is 250)

#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.

Set from date to date you want these numbers operate (SHL maximum number is 250)

#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

Set how many times these numbers can operate (QHL maximum number is 100)

#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

.....

#QUERY Query the phone number in the WHL list. (PC\$PHONE)

Query the phone number in the position of the WHL list,Special phone list or Alarm phone list

#PWD123456#QUERY=143535353

(PC\$PHONE)

Acknowledge: **QUERY RESULT: 143535353 AT WHL004**

#ACM *Safety control or free control mode setting.* (PC\$PHONE)

#PWD123456#ACM=ON

#PWD123456#ACM=OFF

ACM=OFF, Then any number can free control the device through the phone calling

ACM=ON, Then only the authorized number can control the device through the phone calling

#GOT *Relay working output delay time.* (PC\$PHONE)(Only for NO.1 Relay)

When setup the GOT Timer,first you also need to setup the timer multiplier at millisecond or second or minutes.

#PWD123456#GOT5000:MILLISECOND

#PWD123456#GOT500:SECOND

#PWD123456#GOT500:MINUTE

This command is useful in case you need to keep the Relay output working longer. The standard time is 5 seconds (5000 ms). You can change it with the GOT command.

With the above command the delay time has been set to 5000 ms (5 seconds).

You can check what the current relay output delay time is with the command

#PWD123456#GOT? (PC\$PHONE) (Only for NO.1 Relay)

Acknowledge: **DELAY TIME IS 05000 MS**

#ALARM Alarm setup

In GSM-KEY V2015,that Alarm01 is very important position,not only act as a alarm number,but also working as the REPORT phone number, that means if you enable the REPORT function,then every report event happen,then would send the REPORT SMS to this number

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

#PWD123456#ALARM01=13818120592 (PC\$PHONE)

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? (PC\$PHONE)

Acknowledge: **ALARM01 IS 61143815 OK**

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

#PWD123456#ALARM=ALL? (PC\$PHONE)

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 (PC\$PHONE)

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

#PWD123456#ALARM-IN1=ON:PHONE:10,ALARM-IN2=OFF (PC\$PHONE)

Acknowledge: **ALARM_IN1=ON:PHONE:10,ALARM_IN2=OFF OKAY**

#PWD123456#ALARM-IN1=ON:SMS:300,ALARM-IN2=ON:PHONE:10 (PC\$PHONE)

Acknowledge: **ALARM_IN1=ON:SMS:300,ALARM_IN2=ON:PHONE:10**

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 .

(5) Config the SMS TEXT : **(PC)**

#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)

Check the text set

#PWD123456#UDI?

Acknowledge: **UDI1:ABC1, UDI2:ABC2**



#REPORT Report the system status change **(PC\$PHONE)**

When setup to:

#PWD123456#REPORT=ON

Then any device status change would send the alarm SMS to Alarm01 number

#PWD123456#REPORT=OFF

No report for the device status change

#PWD123456#REPORT?

Check the **REPORT** setting status

#CSQ Check GSM signal quality. **(PC\$PHONE)**

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 (PC\$PHONE)**

#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 **(PC\$PHONE)**

#PWD123456#STATUS?

You will receive a Acknowledge with:

ALARM1=ON:SMS:040960,ALARM2=OFF:SMS:4352,GOT=05S,WHL=01,ALARM1=HIGH,ALARM2=HIGH,BCPW=00,CSQ=10,RELAY1=ON,RELAY2=OFF

#OUT Control the Relay Output on or off (PC\$PHONE)

#PWD123456#OUT1=ON or OFF

#PWD123456#OUT2=ON or OFF (If has the second relay output on board)

Config the RELAY Status when power Reset again

#PWD123456#POWER-RESET=11 (1 means ON ,0 means OFF when power on)

You will receive the following similar confirmation from the unit

POWER-RESET OK

#PWD123456#POWER-SAVE

You will receive the following similar confirmation from the unit

POWER-SAVE OK

Customized output control command TEXT: (PC\$PHONE)

#REPLY SMS reply OFF or ON

#PWD123456#REPLY=ON

When setup to ON,then Device will reply the customized command after Relay is toggled

#PWD123456#REPLY=OFF

When setup to OFF,then Device will not reply the customized command after Relay is toggled

(This command is used to save the cost for user)

With these command you can customize the command to control your output.then would be easy for you to understand the command

#PWD123456#OPEN1-TEXT#XXXX

#PWD123456#CLOSE1-TEXT#XXXX

#PWD123456#RLY-TEXT1#XXXX

If have the second output reply,then use the following command to config the second output

#PWD123456#OPEN2-TEXT#XXXX

#PWD123456#CLOSE2-TEXT#XXXX

#PWD123456#RLY-TEXT2#XXX

Check the Customized command text:

#PWD123456#OUT1-TEXT?

Reply: OPEN1-TEXT=OPEN1,CLOSE1-TEXT=CLOSE1,TRIG1-TEXT=XXXX

#PWD123456#OUT2-TEXT?

Reply: OPEN2-TEXT=OPEN2,CLOSE2-TEXT=CLOSE2,TRIG2-TEXT=XXXX

For example,you send the command:

#PWD123456#OPEN1-TEXT#GATE1 OPEN

Then you can use the simple SMS: GATE1 OPEN to switch on the output1 relay

#PWD123456#CLOSE1-TEXT#GATE1 CLOSE

Then you can use the simple SMS: GATE1 CLOSE to switch off the output1 relay

#PWD123456#RLY-TEXT1#GATE1 DIAN

Then you can use the simple SMS: GATE1 DIAN=5 to trigger the output1 relay for 5 second

#PWD123456#OPEN2-TEXT#GATE2 OPEN

Then you can use the simple SMS: GATE1 OPEN to switch on the output1 relay

#PWD123456#CLOSE2-TEXT#GATE2 CLOSE

Then you can use the simple SMS: GATE1 CLOSE to switch off the output1 relay

#PWD123456#RLY-TEXT2#GATE2 DIAN

Then you can use the simple SMS: GATE1 DIAN=5 to trigger the output1 relay for 5 second

PC Software interface:

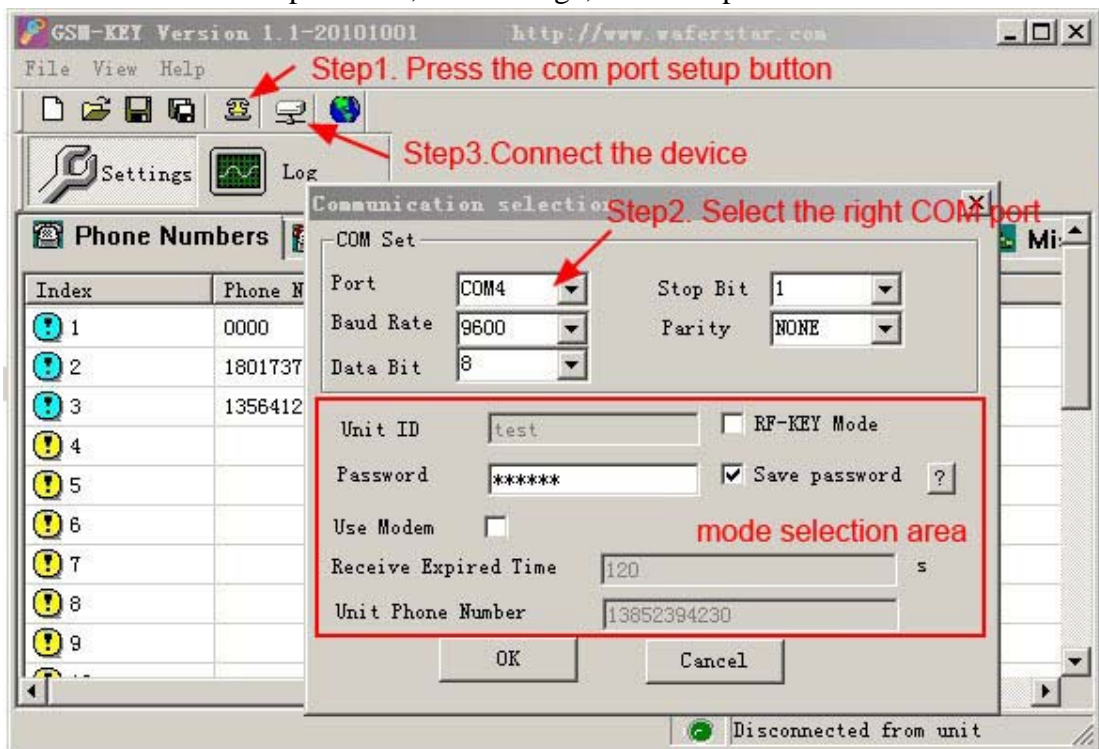
Software language select

Select the right language according to your county,wafer will update the language step by setp.
(When Distributor need to support your local language,please contact wafer company)

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 paramters and then connect the device to PC software.

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



In the is program mode selection area, you have three type of the program mode to select according your program adapter ordered (you can confirm it from the following program adapter pictures list)

1. Nomal program mode (RS232 program adapter and USB program adapter)
No selection of box of the RF-KEY mode and use modem
Input the right password,initial password is “ 123456 ”
2. RF wireless program mode (RF program adapter)
Check the select box of the RF-KEY mode

Input the ID number of your device and password. This mode is only for the GSM-RFKEY device. And each device have a special ID number.

3. GSM modem program mode (GSM modem program adapter)

Check the select box of the “ use modem”

For this mode,that is to use the SMS to program the remote GSM-KEY device. So you need to input the “ Receive expired time ”, and also need to input the GSM-KEY device SIM card number into the “ unit phone number ” text box.

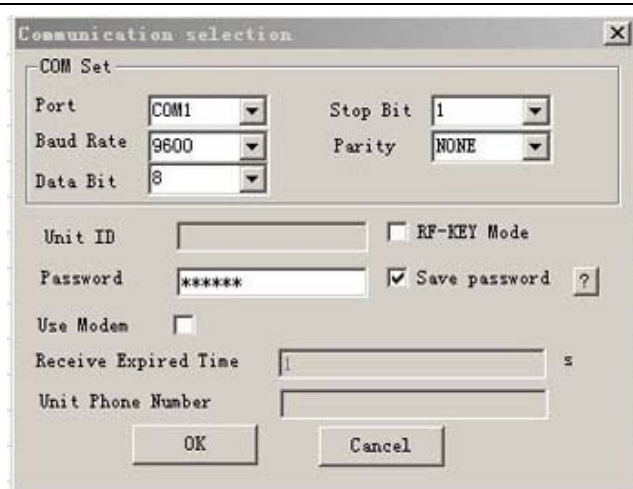
For this mode, you also need to put another SIM card number in the GSM Modem

Normally the “ Receive expired time ” is setup to 2 minutes (120 seconds),

The “ unit phone number ” is the SIM card number in the remote GSM-KEY device,not the SIM card number in the GSM Modem.

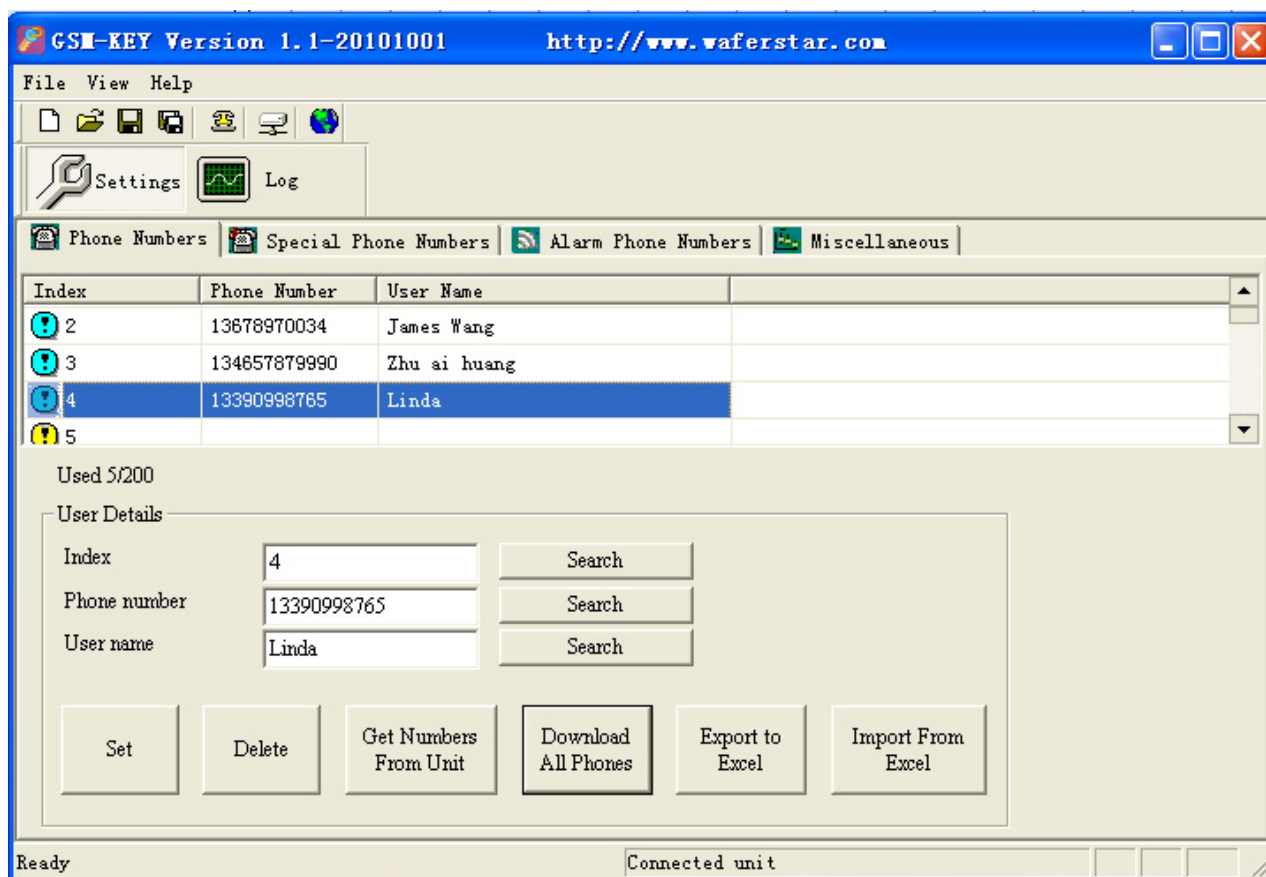


RS232 and USB program adapter

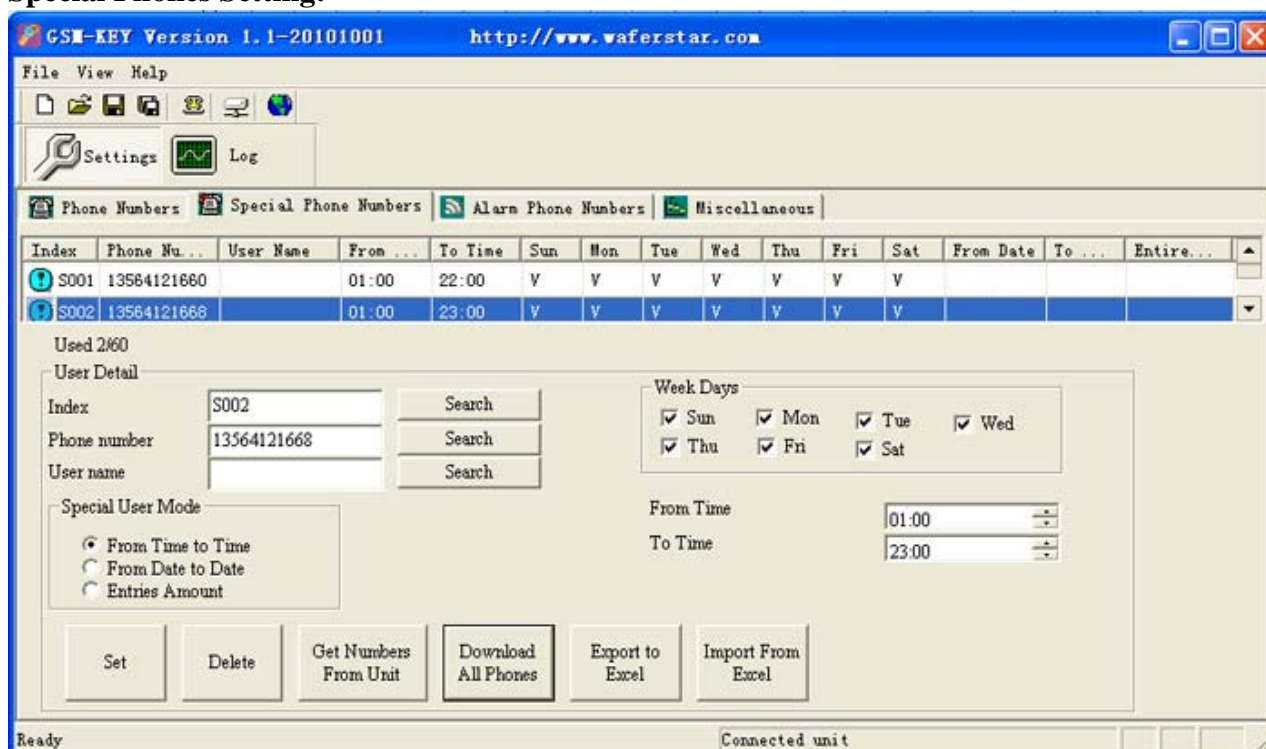


Phone Numbers Setting interface:

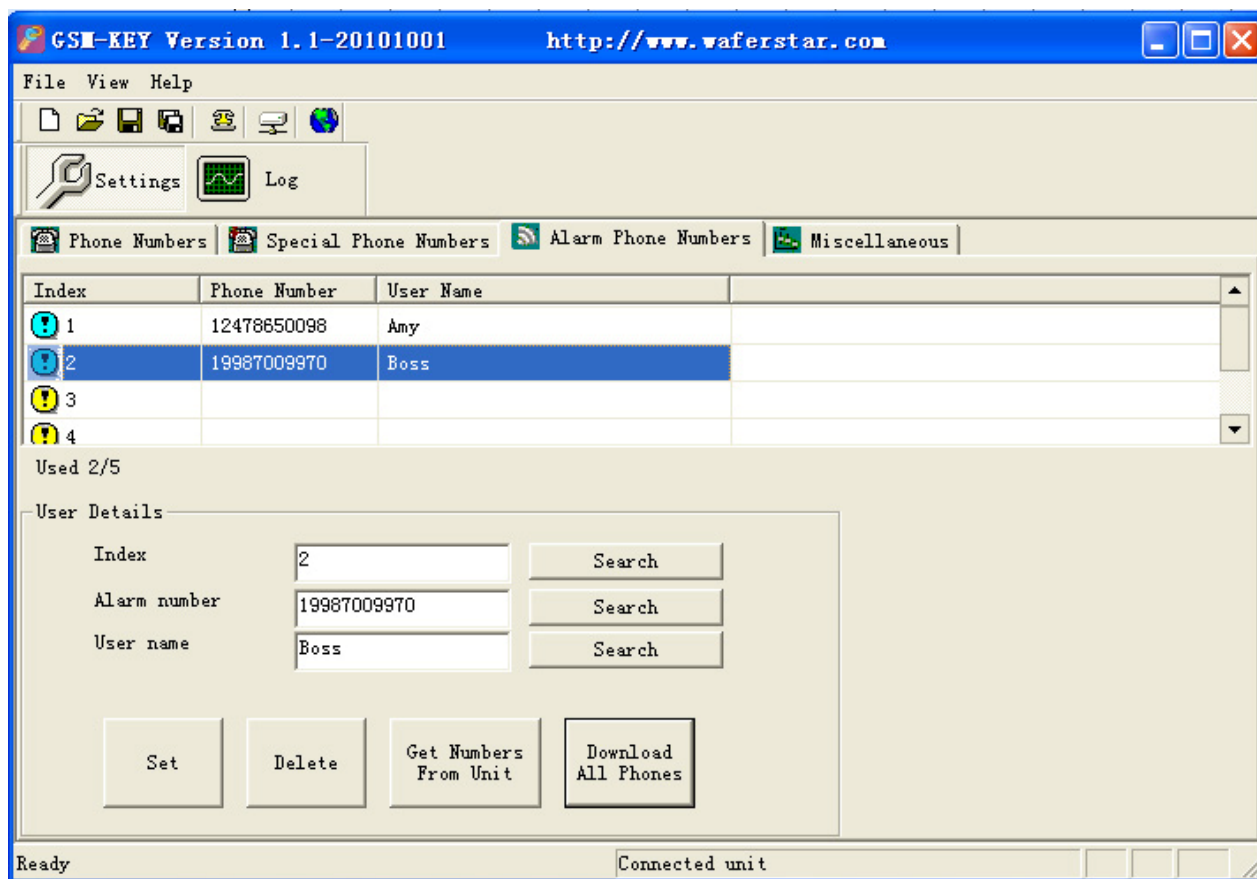
(Before download the phone numbers,you need to SET the index to red color,then push the button"Download All Phones")



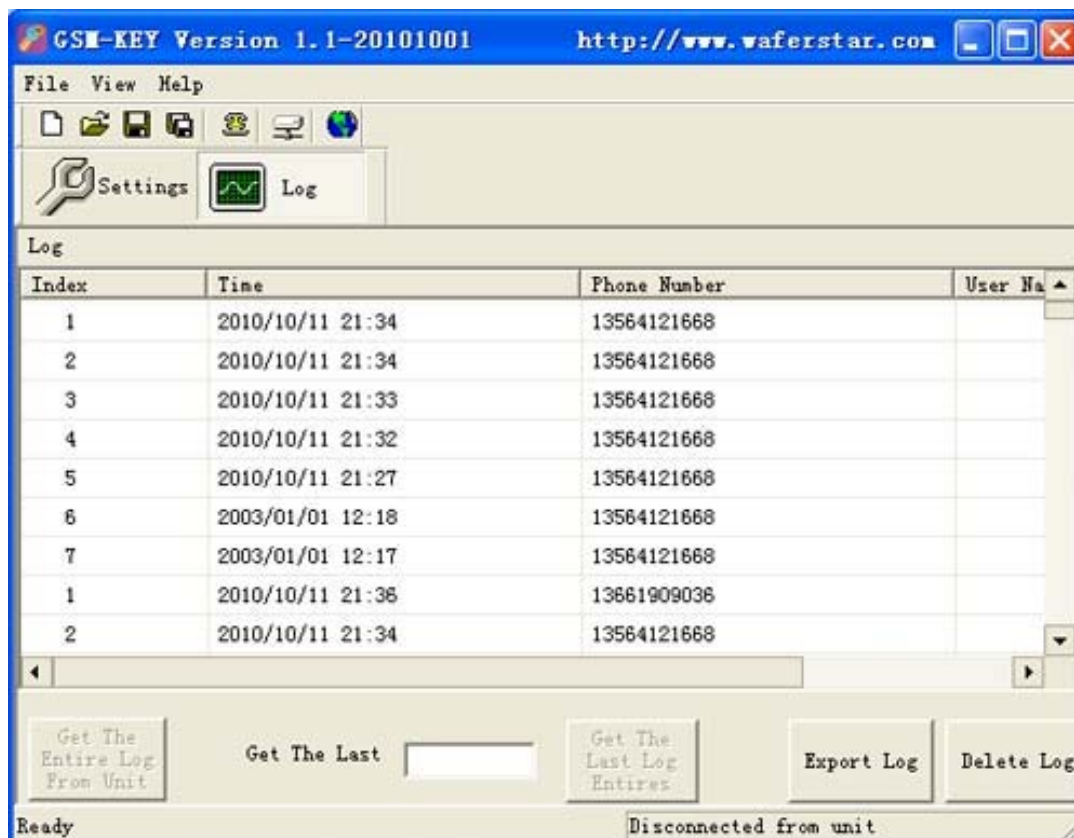
Special Phones Setting:



Alarm Phone Numbers Setting:



Log Interface



Miscellaneous Parameters Setting Page:

The screenshot shows a web browser window titled "GSM-KEY Version 1.1-20101001" with the URL "http://www.waferstar.com". The interface is divided into several sections:

- Unit Info:** Unit Name (GSM-KEY-DC200), Unit Version (V2.1). Buttons: Get Unit Name, Set Unit Name.
- Unit Time:** Date/Time (2010/10/19 21:27:23). Buttons: Get Unit Time, Get PC Time, Set Unit Time.
- Unit Password:** Password, New Password, Confirm Password fields. Button: Set Unit Password.
- Reception:** Value (16). Button: Get Reception.
- Battery backup:** Enable (checked), Interval (20) minute. Button: Set Data.
- Self clock update SMS:** Enabled (checked), UnitPhone Number (13584121668). Buttons: Get Data, Set Data.
- Band Selection:** GSM 900, DCS 1800. Buttons: Get Data, Set Data.
- Relay Mode:** Mode 0 (selected), Mode 1. Buttons: Set Mode, Get Mode.
- Relay Status:** ON (selected), OFF. Buttons: Get Gate Delay, Set Gate Delay.
- Gate Delay:** Value (1000) ns. Buttons: Get Gate Delay, Set Gate Delay.
- Alarm:** Alarm1 and Alarm2 sections. Each has SMS (selected) and PHONE options, and an Interval (10) minute. Button: Set Alarm Mode.
- Alarm content:** Alarm1: Gate Beam Sensor Broken, Alarm2: Gate Lock Alarm. Button: Set Data.

At the bottom, it shows "Ready" and "Connected unit".

- 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 should not 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.
- Battery backup function is not available on the normal Wafer products.

Troubleshooting

No LED is on after power up

- Check the power supply.

GSM LED D6 is not flash slowly or kept light continuously (fast flash around 0.5s per time)

- GSM Signal is not good and can't register to GSM
- Check the SIM card.
- Check the PIN.
- Check the antenna connection.
- Select a place with a good GSM signal.

MCU LED is not flash slowly

- MCU is not working properly, Check the system power
- Don't move the GSM antenna above the MCU board

No tone can be heard after line off-hook

- Check the telephone line connection.
- GSM-KEY is not initialized properly upon start (approx. 10s after power up).
- GSM-KEY is not supplied with power.

No COM port on my computer

- COM port can be found in the computer device manager or not ?
- Our device has no relationship with the COM port can be found or not.
- If you use the USB to RS232 adapter, should check the driver is properly installed or not

What type of the USB to COM port adapter should order to work with GSM-KEY

- That would be better to order WAFER USB adapter
- Order the good quality USB adapter with FT232 chip inside

GSM-KEY does not communicate with PC

- Check the serial cable connection.
- Check the COM number setting on PC.
- Check the COM parameters (1200-115200 bps, 8N1).
- An incoming call is ringing on GSM-KEY
- An incoming Alarm is on processing by GSM-KEY

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)

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

Email: wafer@waferstar.com

Web: www.waferstar.com

Tel: 0086-21-51870528

Also accessible via our online Service Skype: wafer-service

If you need any sample order, please check our online store:



[Http://www.wafer-shopping.com](http://www.wafer-shopping.com)

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