TECHNICAL & FASHION WINNER FROM 2015

NEW VERSION

GSM-RELAY MANUAL

V5.0 From 2015

SHANGHAI WAFER MICROELECTRONICS CO.,LTD
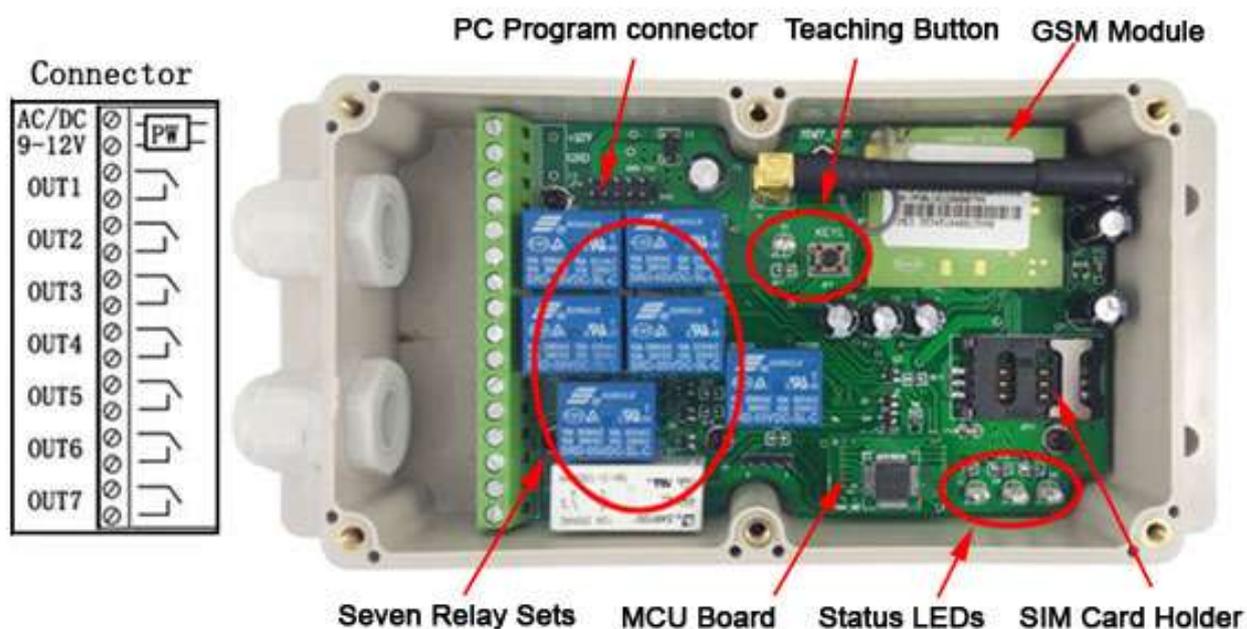
http://www.waferstar.com

GSM-RELAY OPERATING INSTRUCTIONS

PRODUCT DESCRIPTION

WAFER GSM-RELAY is an electronic board with an on-board GSM modem.The purpose of this device is to do the real time and interactive GSM remote control by means of a GSM phone.

CONNECTOR DESCRIPTION

ADVANTAGES OF WAFER GSM-RELAY

- ˇ 7 channels 230V 10A 50Hz relay contacts.
- ˇ No call charges to operate from phone calling.
- ˇ Work with GSM phones calling and SMS.
- ˇ Relay operates almost every applicance.
- ˇ Remote password operation and also password change.
- ˇ Optional relay working mode.
- ˇ One relay output with the calling mode and others with the SMS to control
- ˇ Caller ID confirmation for security.
- ˇ Can be operated from anywhere.
- ˇ All relay output can work at switch mode or pulse timing mode.
- ˇ Easy programming in minutes with your phone or PC software

- ˇ *Support free control mode or Security Authorized number control mode*
- ˇ *Quick & easy number programming with SMS or On Board Fast Teaching Button.*
- ˇ *Can disable the SMS reply back to save the cost*
- ˇ *Support Customized command for easy understand*
- ˇ *Support the optional Wifi-plug for remote parameters program*
- ˇ *Support device operation history LOG check*

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INSTALLATION

To install the GSM-RELAY, you need to power on the board with AC/DC 9V-12V. and also connect the relay output according to your project. The relay contacts can stand **230V 10A maximum**, this is enough for its operation but **don't try to switch higher voltages or currents**. You should install the GSM-RELAY 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 3m 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).

SIM CARD DIRECTION

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

WAFER GSM-RELAY PROGRAMMING

You can program the GSM-RELAY 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.

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.

TO PC   TO GSM-RELAY

PC Program Adapter

http://www.waferstar.com

The following compand is used in the GSM-RELAY :

#PWD:	Password
#CAP:	Change password
#WHL:	White List (add or remove numbers)
#ACM:	Safety control mode or free control mode
#REPLY:	When send the SMS to control,if need to reply the SMS
#GOT:	Relay working output delay time
#MODE:	Relay mode
#CSQ:	Check Signal Quality
#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-RELAY 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

#ACM *Free control mode or safety control mode*

This command is used to select the safety control mode or free control mode

#PWD123456#ACM=ON   or   #PWD123456#ACM=OFF

When at safety control mode,then only the numbers in the WHL list can control the device

Customized Text Command is only working at ACM=ON mode

When at free control mode,then any number can control the device

#REPLY *SMS reply enable or disable for relay output control command*
This command is used to save the cost for SMS reply when no need the SMS reply back
#PWD123456#REPLY=ON or #PWD123456#REPLY=OFF
When REPLY=OFF,then any relay output control text command would no confirmed SMS reply from controller,including the OUT, RLY and the Customized Text Command

#WHL *White List*.
This is the command that you will use most. it is used to add or remove numbers that are enabled to control the relay sets into the White List. You can add up to 200 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 with SMS, 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 18 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 17 digits or less, it is not a problem. The important thing is that you don't exceed 18 digits.
• **To add a new number,you also can use the fast teaching button**
(only from WHL01 to WHL10)
Press the button KEY1 for around 2 to 3 second and then the LED D1 would be lighting,and then you can use the phone to call the device number and then device would reject the calling and the LED D1 would flash one or two times,then the number would be saved. If you need to continue to program,then just use another phone to call the device. If you don't need to program more ,then just press the KEY1 button again to QUIT the teaching process,then the LED D1 would be OFF. Then you can use the numbers just programmed into the device to control the device.
(Fast Button program only support the program from WHL01 to WHL10,if it is full,then after you press the teach button,the LED would flash sometimes,and Quit the process automatically)

• 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

......

#QUERY *White List*.

If you are not sure a number in the position of the device,you can use the SMS #PWD123456#QUERY=132324242

The device would answer the SMS with: QUERY RESULT: 132324242 AT WHL121

Or QUERY RESULT: 132324242 NOT EXIT

#GOT *Relay working output delay time.*

This command is useful in case you need to keep the Relay output working 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   (PC$PHONE)(Only for NO.1 Relay)

Acknowledge**: DELAY TIME SET TO 0500MS**

With the above command the delay time has been set to 500 ms (0,5 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 0500 MS**

Also you can change the Timer Ratio from millisecond to Second or Minute
#PWD123456#TIMER-DELAY-AT-MILLISECOND;
#PWD123456#TIMER-DELAY-AT-SECOND;
#PWD123456#TIMER-DELAY-AT-MINUTE;

#MODE Relay Operation Mode SETUP   (PC$PHONE) (Only for NO.1 Relay)
#PWD123456#MODE0

Acknowledge**:   RELAY SET TO MODE0**

#PWD123456#MODE1

Acknowledge**:   RELAY SET TO MODE1**

If setup to MODE0,that is Momentary pulse mode, when you call the SIM card number , device will toggle the relay and delay a GOT timer ,then the relay will back the previous status.

If setup to MODE1,that is Ratchet relay mode,when you call the SIM card number,device will switch to the other status ON or OFF ,and when you call again ,it will switch the status again.

#PWD123456#MODE?   (Check the RELAY MODE Status)

Acknowledge**:   RELAY IS MODE0   or RELAY IS MODE1**

#OUT Relay output control

(1)ON the relay output contact

#PWD123456#OUTX=ON   (PC$PHONE)

Where X is the number of the relay in the list (X is from 1 to 7)

Acknowledge**: OUTX ON OK**

(2)OFF the relay output contact

#PWD123456#OUTX=OFF   (PC$PHONE)

Where X is the number of the relay in the list (X is from 1 to 7)

Acknowledge**: OUTX OFF OK**

(3)ALL the relay control at the same time

#PWD123456#OUT=1101011   (PC$PHONE)

Where the number is 1 or 0 to ON or OFF the relay.

Acknowledge**: #PWD123456#OUT=1101011 OK**

(3)Check the relay status

#PWD123456#OUT?   (PC$PHONE)

Check the status of all the relay

Acknowledge**:   OUT 1110000   (the Number "1" means RELAY ON and "0" means RELAY OFF)**

#RLY Temporary latching of output relays (Only Can control from RELAY2 to RELAY7)

This command allows the temporarily switch on the Relays for up to 65,000 seconds and receive confirmation SMS text alerts when the Relays switch on and off

• To activate relay 1 for 60 seconds you would send the following SMS text message to the unit

#PWD123456#RLY2=0005   (From RLY2 to RLY7)

Where 2 indicates the relay number and 0005 is the time in seconds and should be entered in a 5 digit format as shown

The administrator number will receive the following confirmation text message from the unit

OUT2 Timer Start ON for 5 Minutes   OK

when the relay 1 switches on, the administrator number will receiver the following message when the relay switches off

OUT2 Timer OFF OK

Note: Relay1 cann't be controlled by the RLY command, if you want to control the Relay1 at a temporary latching timer, you can setup a suitable GOT timer,and use the phone calling to control directly.

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

This command is useful to see what is the GSM network signal level your GSM-RELAY 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 control the relay sets 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 23**

#PWD123456#STATUS?

Acknowledge: **ACM=ON,REPLY=ON,RELAY=MODE0,GOT=3S, CSQ=20,OUT=0000000**

Customized Text Command to control the OUTPUT:

#PWD123456#OUT1-ON-TEXT:XXXX

#PWD123456#OUT1-OFF-TEXT:XXXX

#PWD123456#OUT1-ON-REPLY-TEXT:XXXX

#PWD123456#OUT1-OFF-REPLY-TEXT:XXXX

#PWD123456#OUT2-ON-TEXT:XXXX
#PWD123456#OUT2-OFF-TEXT:XXXX
#PWD123456#OUT2-ON-REPLY-TEXT:XXXX
#PWD123456#OUT2-OFF-REPLY-TEXT:XXXX

………
Then from OUT1 to OUT7, use the similar command to do the TEXT Command customized.

#PWD123456#RLY1-TEXT:XXXX
#PWD123456#RLY1-REPLY-TEXT:XXXX
#PWD123456#RLY2-TEXT:XXXX
#PWD123456#RLY2-REPLY-TEXT:XXXX

………
Then from RLY1 to RLY7, use the similar command to do the TEXT Command customized.

Text Command QUERY:
#PWD123456#OUT-TEXT?   (only for PC command)
REPLY:
OUT1-ON:WSD1ON
OUT1-OFFWSD1OFF
OUT2-ON:WSD2ON
OUT2-OFFWSD2OFF
OUT3-ON:WSD3ON
OUT3-OFFWSD3OFF
OUT4-ON:WSD4ON
OUT4-OFFWSD4OFF
OUT5-ON:WSD5ON
OUT5-OFFWSD5OFF
OUT6-ON:WSD6ON
OUT6-OFFWSD6OFF
OUT7-ON:WSD7ON
OUT7-OFFWSD7OFF
#PWD123456#OUT-REPLY-TEXT?   (only for PC command)
OUT1-ON-REPLY-TEXT:WSD1ON OK
OUT1-OFF-REPLY-TEXT:WSD1OFF OK
OUT2-ON-REPLY-TEXT:WSD2ON OK
OUT2-OFF-REPLY-TEXT:WSD2OFF OK
OUT3-ON-REPLY-TEXT:WSD3ON OK
OUT3-OFF-REPLY-TEXT:WSD3OFF OK
OUT4-ON-REPLY-TEXT:WSD4ON OK
OUT4-OFF-REPLY-TEXT:WSD4OFF OK
OUT5-ON-REPLY-TEXT:WSD5ON OK
OUT5-OFF-REPLY-TEXT:WSD5OFF OK
OUT6-ON-REPLY-TEXT:WSD6ON OK
OUT6-OFF-REPLY-TEXT:WSD6OFF OK

OUT7-ON-REPLY-TEXT:WSD7ON OK
OUT7-OFF-REPLY-TEXT:WSD7OFF OK

PWD123456#RLY-TEXT?   **(only for PC command)**
RLY1-TEXT:WSDRLY1
RLY1-REPLY-TEXT:WSDRLY1 OK
RLY2-TEXT:WSDRLY2
RLY2-REPLY-TEXT:WSDRLY2 OK
RLY3-TEXT:WSDRLY3
RLY3-REPLY-TEXT:WSDRLY3 OK
RLY4-TEXT:WSDRLY4
RLY4-REPLY-TEXT:WSDRLY4 OK
RLY5-TEXT:WSDRLY5
RLY5-REPLY-TEXT:WSDRLY5 OK
RLY6-TEXT:WSDRLY6
RLY6-REPLY-TEXT:WSDRLY6 OK
RLY7-TEXT:WSDRLY7
RLY7-REPLY-TEXT:WSDRLY7 OK

Data Log Check (Only for PC Connnecting)
With this command,we can check the inside config and control Log information
#PWD123456#LOG=ALL?
Reply would be as following data:
………
LOGS015:201501072143:18017370819:PHONE
LOGS016:201501072143:18017370819:PHONE
LOGS017:201501072141:18017370819:PHONE
LOGS018:201501071937:+8613564121668:WSDRLY2=13
LOGS019:201501071937:+8613564121668:WSDRLY6=6
LOGS020:201501071937:+8613564121668:RLY3=8**……….**
……….

If use this command not properly, that SIM card will not send the SMS successfully

Program software:

Please download from the product link: http://www.waferstar.com/en/GSM-RELAY.html

On board Reset:

Press and hold the button for around 10 second,then the board would reseted,and the following

data would be reseted to:

Password:123456，

From WHL01 to WHL10 would be cleared

ACM=OFF, REPLY=ON, MODE=MODE0, GOT=3S, Relay Output=0000000

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 system 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-RELAY 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-RELAY does not communicate with PC
- Check the serial cable connection.
- Check the COM number setting on PC.
- Check if you select the " New Line " selection box
- Check if you input the right instruction line and that should be all use the Capital word,
- Check the COM parameters (9600 bps, 8N1).
- An incoming call is ringing on GSM-RELAY
- An incoming SMS message is on processing by GSM-RELAY

Relay connection example to Output Driver

The relay control outputs are suitable to control seven different household and other devices as are air-conditioning and heating,connected directly or through external relay modules.
Each relay output has NO and COM contacts.
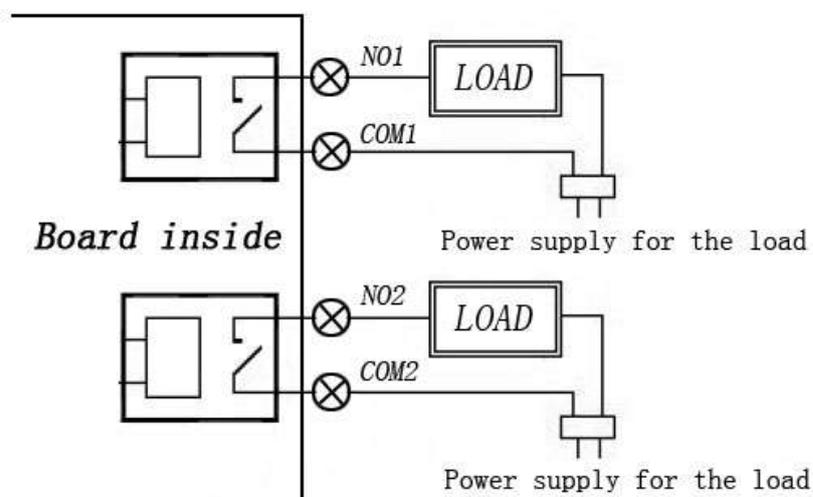
Note:
    Power supply for the each load mustn't exceed 30VDC/10A or 230VAC/10A
Warning:
    GSM-RELAY device only work as a high power switch, don't power the LOAD directly.

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: **http://www.waferstar.com**
    Tel: **0086-21-51870528**

Also accessible via our online skype service: wafer-service

V20111107 - Trouble shooting
V20111126 - Relay connection example
V20150101 – Customized command support
V20150101 – ACM,REPLY function built-in