

# GSM-AUTO 4G

## INSTALLATION MANUAL

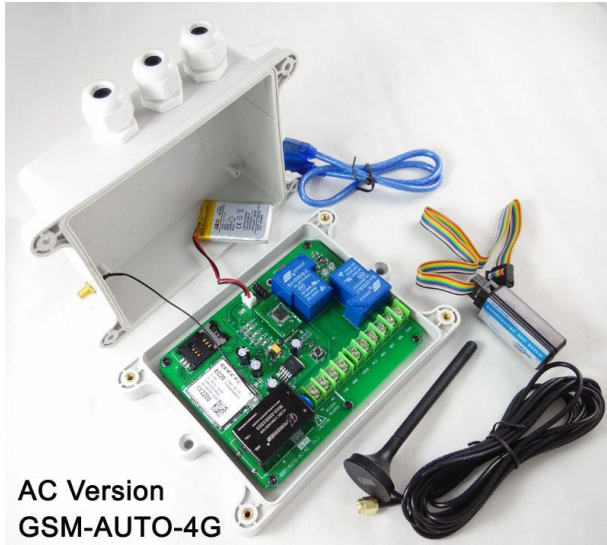
### For AC and DC Version



# Installation and Operation Instructions

**IMPORTANT!** – This instruction manual should be read thoroughly and understood BEFORE installation and operation of this equipment. Failure to do so may result in serious bodily injury!

**IMPORTANT!** –The board must be powered correctly, pay attention to the power supply voltage and the positive and negative poles of the power supply.



If you are unsure how to install your GSM-AUTO or insert your network SIM card please refer these tasks to a Qualified Person.

## GSM-AUTO Description:

The GSM-AUTO is a wireless remote On/Off switch that can be controlled through a connection to the GSM cell phone network. The connection to the 4G cell network is accomplished by purchasing a SIM card and Pay-As-You-Go (PAYG) plan from your local wireless provider. Once the SIM card is installed in the SIM card holder on the top of the GSM module of your GSM-AUTO will have its own telephone number.

The unit is activated by an incoming call to its cell phone number. The unit cannot answer a voice call but in sensing the call, its logic will activate one or both of the output relays in a pre-programmed sequence. Because the unit doesn't answer the call, the activation of the relays does not incur any call charges to the PAYG plan or to the caller.

Alternately, the individual relays can be activated by sending SMS text messages to the unit's phone number. Similarly, the unit is programmed by sending specific SMS text commands.

The GSM-AUTO unit controls 2 independent switches. You can therefore control 2 separate devices from one unit. An example would be in a aircraft hangar where the battery charger and engine pre-heater are turned on in sequence to prepare an aircraft for a flight.

## **GSM-AUTO Features**

- ✓ Working with 4G LED and WCDMA
- ✓ Secure caller ID allows controlled access of up to 99 authorized users, the users telephone numbers are added to the white list, only the numbers in the white list are able to activate the GSM-AUTO, users can be added and deleted as required using text messages
- ✓ There are no call costs incurred when calling the unit, it will recognise an authorized telephone number calling it and reject the call without answering
- ✓ The GSM-AUTO has two independent relays with normally open and normally closed contacts, these can be programmed to switch on for between 1 second and 18 hours, in addition a delay time between relay 1 and 2 switching can be set, programming is achieved by sending text messages to the GSM-AUTO, once programmed you simply call the unit to activate the relay operations already programmed
- ✓ The programmed operation can be temporarily overridden and the Relays switched on for up to 18 hours by sending a text message command, a confirmation text will be returned when the relay(s) is switched on and another when it is switched off
- ✓ The relays can be permanently switched on or off by sending the GSM-AUTO a text message, again a confirmation text will be returned
- ✓ An on board clock and 24 hour timer with 8 time segments for each relay enables the relays to be switched on and off for a preset time, for example relay1 switches on at 0600 (6am) and off at 1900 (7pm), once set the timer function repeats every day until reset. The caller functions are disabled when the 24 hour timer is active.
- ✓ One alarm input on board, when shorted, will send the alarm SMS

## **GSM-AUTO Requirements**

The GSM-AUTO cellular switch requires the purchase of a mobile phone SIM card and a Pay-as-You-Go card with enough credit to cover the cost of the SMS messages required to program the unit.

We strongly recommend that if you are using a PAYG card that you choose to automatically "Top-Up" the card. Alternatively, there are cards with carriers such as AT&T in the U.S. Ensure that when you purchase the SIM and PAYG cards that there is no need for activation by phone, that voice mail is deactivated and that the PIN request is disabled from the SIM card before inserting it in the GSM-AUTO. You may have to check for these choices when you register on the company's web site.

If the PIN request mode is not disabled the GSM-AUTO will not work and you will have to contact the service provider to reset the PIN using PUK Code. To date, there have been no problems with SIM chips obtained through AT&T. They have gone into the unit and worked right away

The SIM card should now be ready to insert into the SIM Card holder located on the the GSM-AUTO circuit board.

## GSM-AUTO Installation

1. Check if the GSM-AUTO packaging and accessories are complete.
2. Remove the 4 screws from the cover, remove the box lid and set them aside..
3. Look along the top left hand edge of the circuit board for the black 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
4. Before supply power to the equipment, User must know the equipment is powered by **AC100-240V or only DC12V**.

The following description pictures only use DC12V as an example. If the actual device needs 220V power supply, only two wires need to be connected, namely the live wire and the neutral wire, and no ground wire is required.

## GSM-AUTO Specifications:

Power supply	GSM-AUTO ( <b>DC Version:</b> DC12V) ( <b>AC Version:</b> AC110-240V)
Power consumption	Maximum during communication 1000mA, typically 50mA
Relay contacts	2 x 230V @ 30 Amp, Normally Open and Normally Closed contacts (Form C), switching capacity 2.5Kw
Alarm Input	One switch type alarm input
Operating temperature	-20 ℃ to 60 ℃
Physical size (Not including the connector)	DC Version: 125*100*52mm AC version: 145*120*60mm
Weight	450 grams

## GSM-AUTO WORKING MODE Reference

GSM-AUTO can work at three mode:

**DIAL WORKING MODE:** Use the phone call to control the output easily

**RLY WORKING MODE:** We can use the RLY to or RLOP to control the relay output

**SMW WORKING MODE:**

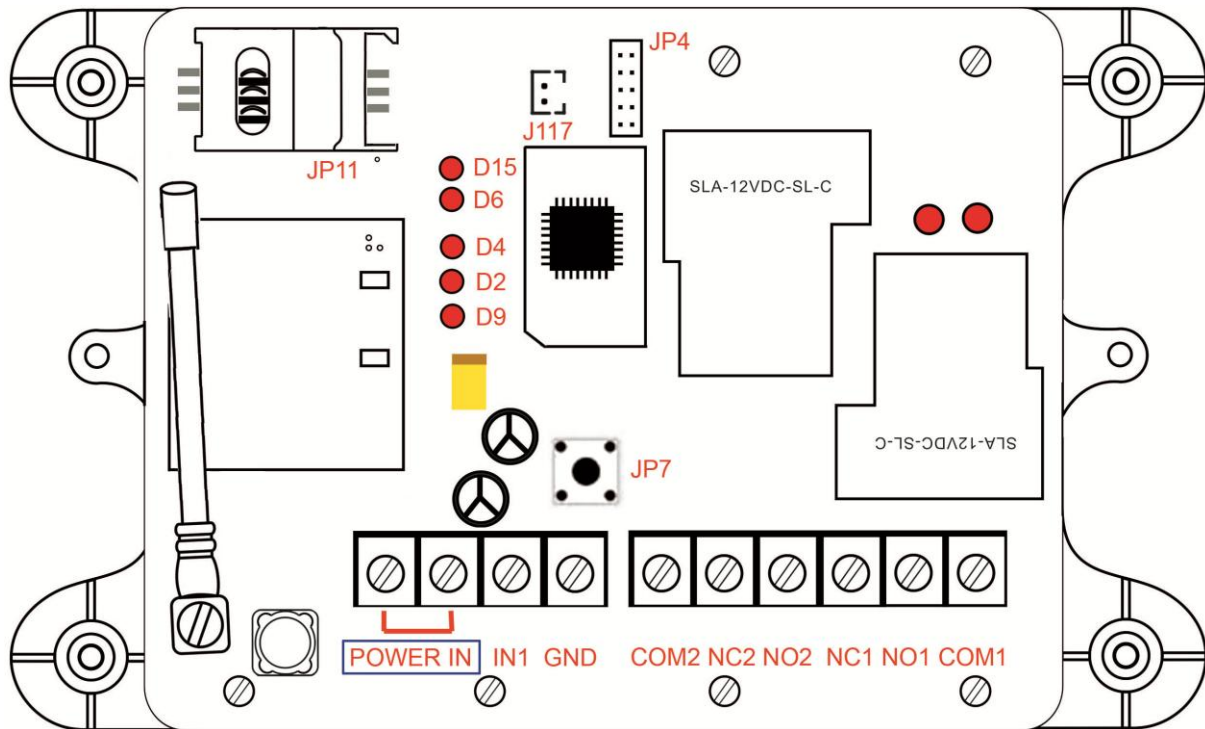
We can use the SMW to arrange the relay working at scheduled time period

When SMW mode is working, then RLY and DIAL would be inhibited

When RLY mode is working, then DIAL mode would be inhibited



## GSM-AUTO Hardware and connection details:



D15: Battery Charger Status

D6: Net Status

When it is first powered on, D6 does not light up when it is waiting for the connection status. After about 10 seconds, when it starts to connect to the network, D6 will flash at a frequency of 2 times per second. After connected to the network, D6 will be on for three seconds and off for one second.

D4: MCU Working (Flash every second)

D2: SMS receiving and sending indicator

When receiving a text message, D2 will flash several times quickly. Then when the reply message is sent, it will flash several times at a frequency of once a second.

D9: Teach button status LED

J117: Rechargeable battery plug

JP11: SIM card holder

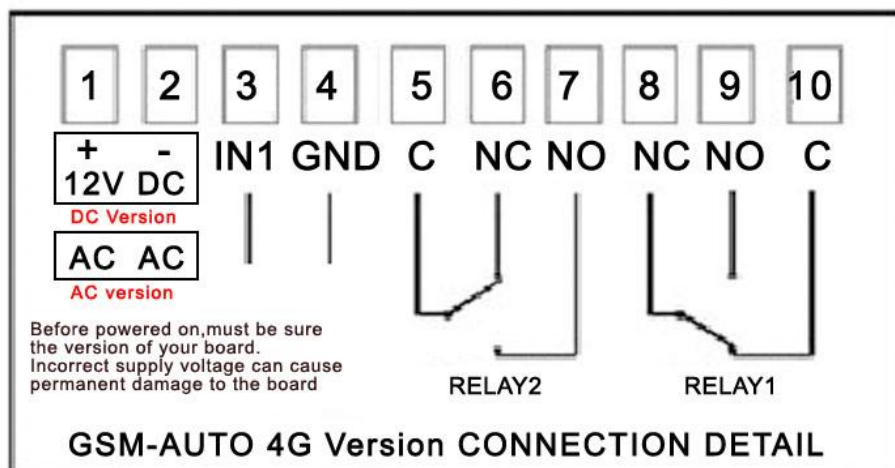
JP4: PC Programmer plug

JP7: Fast teach button

Press JP7, the D9 indicator will light up, and then can use the phone to call the device, and the device will store this phone number in WHL01 to WHL10. After stopping calling for a few seconds, the D9 indicator light goes out, and then This number can call the control device.

POWER IN: DC12v or AC100-240v

*Must be noted again: If the actual board is AC100-240v version, Only two wires need to be connected, namely the live wire and the neutral wire, and No ground wire is required.*

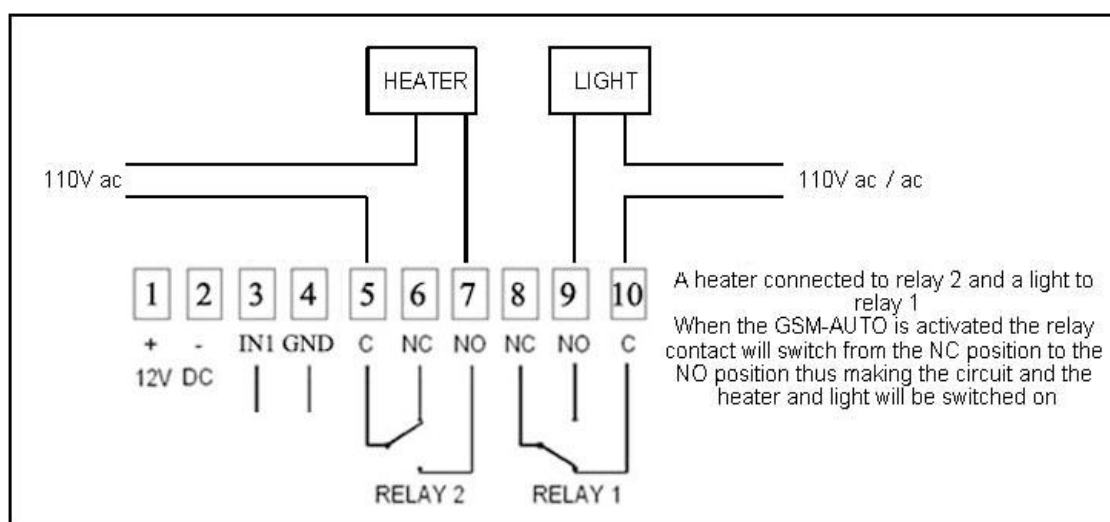


**Important Note:** GND is only for alarm input. Don't use it for AC power input Ground connection, We only use power input with two wires. No need Ground connection

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

- Take EXTREME care with the power input voltage.
- Must be sure clearly the power input voltage is DC12V or AC110 or AC220V.
- To maximise reception, install the GSM antenna in a prominent elevated position if possible, and vertically mounted.
- 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.

Wiring example diagram of DC12V control board



If the user is not familiar with the use of relays, then please download the PDF file to read:

[http://www.waferlife.com/downloads/Relay\\_control\\_output\\_faq.pdf](http://www.waferlife.com/downloads/Relay_control_output_faq.pdf)

## GSM-AUTO Instructions List:

### Programming the GSM-AUTO

The GSM-Auto is programmed by sending it SMS text commands from a mobile phone, these are sent to the telephone number of the SIM card installed in the GSM-AUTO. The password command must pre-fix all SMS text commands it is recommended the default password be changed.

You also can use the PC program adapter to program the device with GSM-AUTO PC software.

*Remember that all SMS text commands must always be sent in **CAPITAL LETTERS** **DO NOT** add spaces or any other characters*

#### GSM-AUTO Programming commands list :

##### #PWD Password

This command must always pre-fix any SMS text commands to the unit using the 6 digits as a password.

The unit comes from the factory with the default password set as 123456 and the following must pre-fix all commands to the unit **#PWD123456**

##### #CAP Changing the Password

To changing the password of the unit you would use the #CAP Command and to change the password to 121212 you Would send the following SMS text message to the unit.

**#PWD123456#CAP121212#CAP121212**

the #CAP121212 is repeated twice as confirmation of the new password.

You will receive the following confirmation from the unit

**PWD SETUP OK**

##### #WHL White List

This is the command that you will use for adding the authorized telephone numbers that can access the system.

The system comes in the open access mode which allows any telephone number to access the system and once the system has been installed and the white list programmed you would secure the system using the **#ACM** command.

To add a number to the white list, you would send the following SMS text message to the unit assuming the number would be 04759309384.

**#PWD123456#WHL001=04759309384**

You will receive the following confirmation from the unit

**#WHL001 SET TO 04759309384 OK**

This is the first number in the white list and number 2 is sent as #WHL002=and so on up to a maximum of 100 numbers, number 100 would be **WHL100=**

- **Checking the number is the white list**

To check the number in a position on the white list, for example position 01 you would send the following SMS text message to the unit

**#PWD123456#WHL01?**

You will receive the following confirmation from the unit

**WHL01 IS 7827829595 OK**

- **Erasing a number is the white list**

To erase a number in the white list you would send the following S.M.S text message to the unit.

**#PWD121212#WHL02=0000**

You will receive the following confirmation from the unit

**WHL02 SET TO 0000 OK**

- **Erasing all the number in the White list**

To erase all the numbers in the white list you would send the following S.M.S text message to the unit

**#PWD121212#WHL02=0000**

You will receive the following confirmation from the unit:

**DELETE ALL OK**

### **#ACM Security Access Mode**

- **#PWD123456#ACM=ON**

This command enables access security mode so only the numbers programmed into the white list can access the system and you would send the following SMS text message to the unit, You will receive the confirmation from the unit to confirm the security access mode is on.

**ACM SET TO ON**

- **#PWD123456#ACM=OFF** ( The O is capital letter "O", not the zero "0" )

This command is used to turn off the security access mode you would send the following SMS text message to the unit, You will receive the following confirmation from the unit

**ACM SET TO OFF**

confirming the security access mode is switched off and open access mode is activated

- **Check the ACM Status**

This command is used to check the ACM Status, you will receive the following confirmation from the unit

**ACM IS OFF**

or

**ACM IS ON**

### **#RERN Enables the administrator to receive the alert SMS**

This is the command that allows you to enable, disable and check the status of the administrator list, these are the number that will receive system alerts SMS. In the first 8 numbers of the WHL numbers list ,from WHL01 to WHL08, that is administrator numbers, To allow the first 4 administrators in the Administrator List to receive system alerts SMS only ,you would send the follow SMS text command to the unit.

**#PWD123456#RERN=11110000:PWA=ON,REYA=ON,SAWA=ON**

Where 1 is a number enabled for the first 4 positions in the administrator list ,and 0 is a number disabled for the last 4 positions in the list.

You will receive the following confirmation from the unit

**RERN IS SETUP TO 11110000:PWA=ON,REYA=ON,SAWA=ON**

and the first four administrator numbers in the list the receive SMS text alerts

PWA=ON : When power is on again will send the alert message

REYA=ON : When use the RLY to change the relay status,would send the alert message

SAWA=ON : SMW relay status change would send the alert message



To check the status of the RERN list with the following SMS text message to the unit

**#PWD121212#RERN?**

You will receive the following similar confirmation from the unit

**RERN:11110000:PWA=ON,REYA=ON,SAWA=ON**

### **#GOT Relay ON time**

This is the command that allows you to reset the default ON time of relays.

To change the default value, you can send the following text command by SMS text message specifying the number of seconds the relay should stay on when it is called.

It is possible to latch each relay for up to a maximum of 65,535 seconds.

To set relay 1 to switch on for 15 minutes each time the unit is called, the following SMS text message is sent to the unit.

**#PWD123456#GOT1=00900**

Where 1 indicates relay number 1 and 00900 is the relay on time in seconds, this should be entered in 5 digit format as Show. You will receive the following similar confirmation from the unit

**GOT1 DELAY TIME SET TO 0900S**

To set relay 2 to switch on for 10 minutes each time the unit is called, the following SMS command is sent to the unit.

**#PWD123456#GOT2=00600**

Where 2 indicates relay number 2 and 00600 is the relay on time in seconds, this should be entered in 5 digit format as shown .You will receive the following similar confirmation from the unit

**GOT2 DELAY TIME SET TO 0600S**

### **#GOTS**

This is the command that allows you to set the delay time between Relay 1 switching off and Relay 2 switching on. To set the delay time between relay 1 switching on and 2 switching on by 5 seconds, you send the following command by SMS text message to the unit.

**#PWD123456#GOTS=00005**

Where 00005 is the delay time in seconds and should be entered in 5 digit format as shown, You will receive the following similar confirmation from the unit

**GOTS DELAY TIME SET TO 05S**

### **#GOT?**

To check the relay on and delay times you would send the following S.M.S text message to the unit

**#PWD121212#GOT?**

You will receive the following similar confirmation from the unit.

**GOT1=0900,GOT2=0600,GOTS=05**

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

This is the command that allows you to set the Relay working mode

**#PWD123456#RELAY1=MODE0** or **#PWD123456#RELAY2=MODE0**  
Acknowledge: **RELAY1 SET TO MODE0** or **RELAY2 SET TO MODE0**

**#PWD123456#RELAY1=MODE1** or **#PWD123456#RELAY2=MODE1**  
Acknowledge: **RELAY1 SET TO MODE1** or **RELAY2 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 to 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.

When you setup up both RELAY1 and RELAY2 to MODE1, then when you phone call the device, RELAY1 and RELAY would be switched at the same time.

### **#RLY Temporary latching of output relays**

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

#### **This command does not affect the #GOT1 or #GOT2 settings**

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

**#PWD123456#RLY1=0005**

Where 1 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

#### **#RLY1-ON: 05**

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

#### **#RLY-OFF**

- To switch on relay 2 for 360 seconds and the administrator number would send the following SMS text message to the unit

**#PWD121212#RLY2=00360**

Where 2 indicates relay 2 and 03600 is the on time in seconds, this should be entered in a 5 digit format as shown

The administrator number will receive the following confirmation from the unit

#### **#RLY2-ON: 00360**

when relay 2 switches on, the administrator number will receiver the following confirmation when the relay switches off

#### **#RLY-OFF**

### **#RLOP Switching Relay 1 and Relay 2 permanently on and off**

It is possible to switch both relays either on or off using the **#RLOP** commands

To switch Relay 1 permanently on you would send the following SMS text message to the unit.

**#PWD123456#RLOP1=ON** or OFF ( RLOP2 is the same command )

You will receive the following confirmation from the unit

**RLOP1 ON OK** when the relay switches on

**RLOP1 OFF OK** When the relay switches off

The confirmation SMS text messages are only sent to the administrators who are active in the #RERN list

### **#RELAY? Checking the status of the relays**

To check the status of the relays with following SMS text message to the unit

**#PWD123456#RELAY?**

You will receive the following similar confirmation from the unit

**RLY1=OFF,RLY2=OFF**

### **#SMW Schedule Relay working with 24 hour timers**

This is the command that allows you to program the relays to operate at certain times over a 24 hour period.

**Note: The time must be entered in 24-Hour format. You can program up to time sections for each relay.**

**#SMW=SS,MM,HH,TTTTT,F,R**

**SS** is a 2 digits value in seconds

**MM** is a 2 digits value in minutes

**HH** is a 2 digits value in hours

**TTTTT** is a 5 digits value in seconds, this is the amount of time the relays switch on for

**F** is the time Section number **1-8**

**R** is the Relay number **1** or **2**

To program relay 1 to switch on for 30minutes at 9.00 pm you would send the following SMS text message to the unit

**#PWD123456#SMW=00,00,21,01800,1,1**

You will receive the following confirmation from the unit

**SMW=00,00,21,01800,1,1**

To program the output relay 2 to turn on for 1 hour at 6 am, you would send the following SMS text message to the unit

**#PWD123456#SMW=00,00,06,03600,1,2**

You will receive the following confirmation from the unit

**SMW=00,00,06,03600,1,2**

### **#PWD123456#SMW=ON Start the SMW working mode**

**#PWD123456#SMW=ON:OTP**

If the TEST is already setted,then will receive the confirmation SMS message

**SMW=START:TIMER= SS,MM,HH-SS,MM,HH**

Then the SMS will work only on time with the near timer, and later would need to On it again when need to work

If the TEST still not setted,then will receive the confirmation SMS message:

**PLEASE SETUP THE TIMER FIRSTLY**

**#PWD123456#SMW=ON:REPEAT**

If the TEST is already setted,then will receive the confirmation SMS message

**SMW=START:TIMER=SS,MM,HH:REPEAT**

Then the SMW will work automatically when with the SMW timer section inside the device. And the dial to work , RLY and RLOP all would be stoped

If the TEST still not setted,then will receive the confirmation SMS message:

**PLEASE SETUP THE TIMER FIRSTLY**

**#PWD123456#SMW=OFF**

Will stop the SMW and relay working immediately,then will receive the confirmation SMS

message:

**SMW=OFF OKAY**

**Note:** Once this function has activated, the relays will operate automatically according to the programmed time sections. Activation of relays via Caller ID or SMS will be ignored.

### **#TSET Setting the time**

To set the time, you send the following SMS command to the unit. And the time must enter in 24 Hour format.

**Text Command to be sent would be**

**#TSET=SS,MM,HH**

**SS** is a 2 digits value: Seconds

**MM** is a 2 digits value: Minutes

**HH** is a 2 digits value: hours

To program the time 8.00 am, you would send the following SMS text message to the unit

**#PWD123456#TSET=00,00,08**

You will receive the following confirmation from the unit

**TSET=00,00,08**

**To check the time:**

To check the time you would send the following S.M.S text message to the unit

**#PWD123456#TSET?**

You will receive the following similar confirmation from the unit

**TSET=00,00,08**

Note: The Time has to be set to use the #SMW command

### **GSM-AUTO-RESET Resetting the unit**

To reset the unit you would send the following S.M.S text message to the unit

**GSM-AUTO-RESET**

You will receive the following similar confirmation from the unit

**GSM-AUTO-RESET OKAY**

Then the following parameters would be reset to:

ACM=OFF,RELAY1=MODE0:0005,RELAY2=MODE0:0005,GOTS:0005,SMW=OFF,TE  
ST=00:00:00

Also the password is reseted to 123456

### **#POWER- 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**

### **#STATUS? Check system status**

This command is useful to check the system parameters and the inside clock.

**#PWD123456#STATUS?**

You will receive the following similar confirmation from the unit  
ACM=ON,RELAY1=MODE1:00800,RELAY2=MODE0:00434,GOTS:0023,SMW=ON,TE  
ST:28:17:10

### #CSQ Check GSM signal strength

This command is useful to see what the GSM network signal strength is at the location of the unit. To check the signal strength of the location of the unit you would send the following SMS text message to the unit

**#PWD123456#CSQ?**

You will receive the following similar confirmation from the unit

**CSQ IS 19**

with signal quality in range 0 to 31, minimum signal strength of 5 is required, if it is below 5 then a change of network or fitting an external antenna is advised.

## How to Use Alarm IN1?

For 4G Version GSM-AUTO, Have designed one alarm input port. When IN1 is shorted to GND or Disconnected from GND will trigger the alarm.

Enable or disable the alarm input with the following SMS command:

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

**#PWD123456#ALARM-IN1=ON:5,ALARM-IN2=OFF**

Setup the alarm input when Opened or Closed to trigger the alarm

ALARM-IN1 is for Alarm input Opened from GND, then will trigger the alarm  
ALARM-IN2 is for Alarm input Shorted to GND, then will trigger the alarm  
The number 10 or 5 is Alarm delay timer setting. For example, then you setup  
ALARM-IN2:10, then when input is shorted to GND for 10 seconds, then will trigger  
the alarm.

**#PWD123456#UDI1:wsdOn,UDI2:wsdOff**

Setup the alarm SMS text when alarm happens

( Alarm SMS will be sent to RERN Enabled phone numbers )

**#PWD123456#UDI?**

Check the UDI setting

**#PWD123456#ALARM-IN?**

Check the alarm setting: For example will reply SMS:

**ALARM-IN1=ON:05,ALARM-IN2=ON:05**



## About the rechargeable Li-po Battery for power failure alert

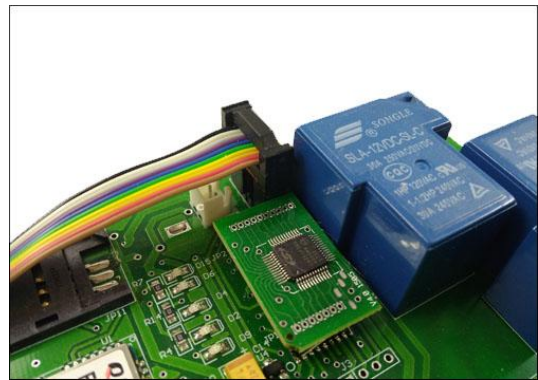
That battery is only for power failure alarm, that means, when the main power supply failure, then the battery will provide the power to send the " Power failure Alarm SMS" to the RERN enabled alarm numbers. and when Main power supply back to Normal, then will send the notification SMS again to those numbers. But the battery can't support all board including relay working fully. Only for power failure alert. Also the battery will be charged automatically when Normal AC or DC power supply backed.

## HOW TO USE THE PC SOFTWARE TO PROGRAM

You can program the GSM-AUTO with SMS commands using your phone. But Some complicated Instructions, those can't be remembered correctly. 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 according to the below picture.


**PC Software Download:** <http://www.waferlife.com/downloads/gsm-auto-weekly.rar>




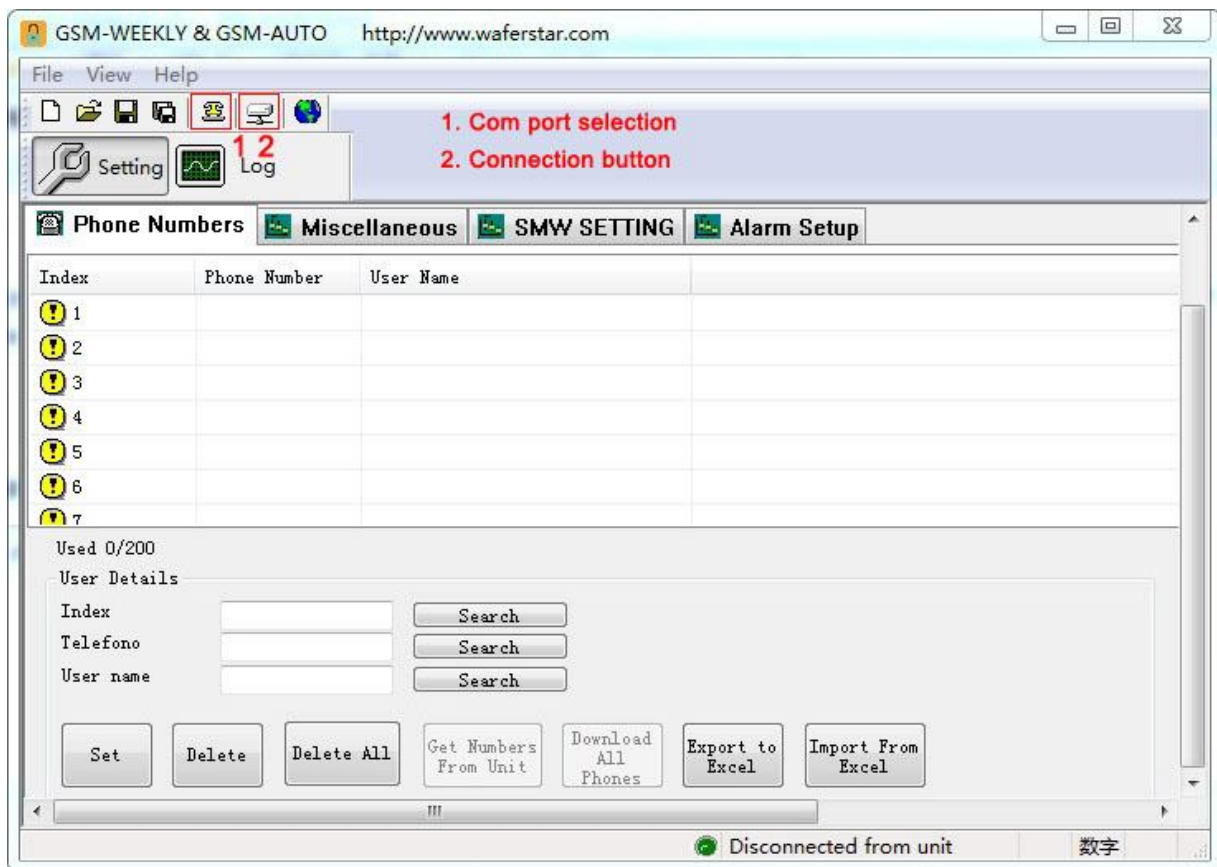
**Step1:** After plugged the USB programmer to PC, Windows will quickly find a new USB device and if windows don't have the existing USB driver, then you need to download the CP2102 USB driver. After installed the USB driver, then Go to Computer Windows " Device manager " to check if USB programmer has created a proper Com port.

Download the USB driver in the following link:

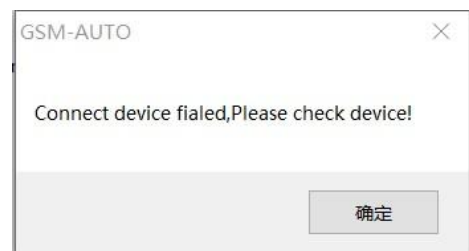
<https://www.silabs.com/products/development-tools/software/usb-to-uart-bridge-vcp-drivers>

**Step2:** Run the PC software and click the Telephone icon  at the Right-upper corner to select the Right COM port that created in the device manager.

**Step3:** Power on the GSM-AUTO device and press the next "Connection" icon  to connect to the GSM-AUTO device. After connected, then the Buttons on the software will be enabled



After you pressed the button "connect" and device pop the information:"Connect device failed,Please check device", then you need to check the programmer wire, if has properly plugged. Also if the GSM-AUTO has been powered on.



## Connecting the Device you want to Control

You must provide an external power source to the device you want to control. No voltage is present at the relay terminals (remember it is just a switch). The relay is normally connected in *series* with the positive (+) power wire of the device you want to control. In this case, the positive wire from the power source should be connected to Common. Then either the NO or NC terminal (as appropriate for your purpose) is connected to the positive (+) wire going to the device you want to control. The negative (-) wire does not connect to the relay at all. It goes directly from the power source negative output to the device negative (-) terminal.

