

# WAFER-TP Series GSM Remote type Temperature & Humidity Monitor and Alarm User Manual

For TP01 / TP01A / TP02



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## Introduction:

The WAFER temperature and humidity alert and monitoring solution allows the user to pre-set a temperature and humidity range and receive an alert (via SMS, phone call, email) if the current data exceeds the pre-set range.

An email log is also supported, allowing emailing of temperatures and humidity data once an preset timer from readings taken at preset minute intervals (settings are user configurable) prior to the sending the temperature data-log to the configured email address.

The WAFER device is controlled via the use of SMS command messages, these are standard text messages sent from a mobile phone which are formatted in a specific way to configure the device (i.e. change GPRS settings).

## Functions include:

- Remote temperature reporting of site equipment
- Logging of temperature data in remote locations via email
- Over/under temperature alarm notification via SMS and phone call or email.
- Instantaneous temperature reading via status SMS

## Features:

- Frequency Band: Global Quad Band GSM/GPRS Engine ( 850/900/1800/1900MHz )
- Dimensions: 153 mm x 66 mm x 28 mm
- Weight: 385g
- Supply Voltage: AC/DC12V

## Order description:

Order type	TP01	TP01A	TP02	TP03
Temperature Sensor Input	1	1	1	2
Humidity Sensor Input	0	0	1	1
Email Log Function	NO	YES	YES	YES
Output Numbers	4	4	4	4

## Sensor compatible:

Sensor model	Humidity Range	Sensitivity	Temperature Range	Sensitivity
DS18B20			-55~125°C	± 2°C
AM2301/DHT21	0-100%RH	± 3%RH	-40~80°C	± 0.5°C
AM2305	0-100%RH	± 2%RH	-40~120°C	± 0.3°C

## Installation:

To install the GSM-TP Device, You should make sure that GSM-TP is installed in a place where there is GSM signal coming from the operator you want to use. Check it with a phone



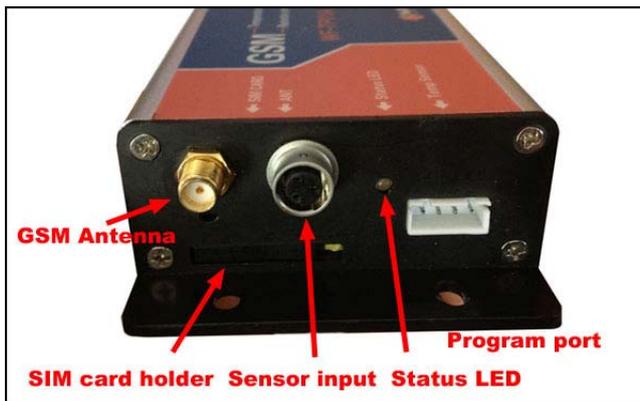
before proceeding with the installation. If you need to install the device in a place with little signal, you may consider using an external antenna that we may supply as an option to be purchased separately with 50cm cable.

You should then insert the SIM Card of the operator you want to use with the right direction as the left picture.

**!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).

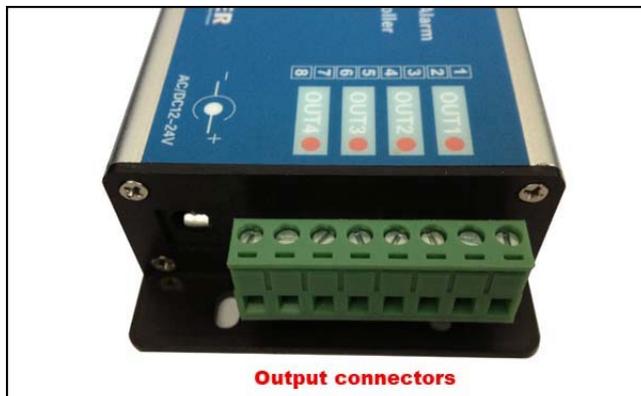
## CONNECTORS DESCRIPTION



On the side panel of Wafer GSM-TP, it has GSM Antenna Connector, Sensor Input Connector, SIM Card holder, Program Adapter.

Also it has the Status LED, that is used to show the GSM connection status, SMS receiving status and other working status.

## RELAY OUTPUT TERMINAL



GSM-TP also comes with additional 4 Outputs. The outputs can be controlled through the phone calling or the SMS command.

Each output can be switched Permanently or Temporarily with the SMS Command Only Output1 can be switched Permanently or Temporarily with the phone calling.

### Connect or Disconnect the SENSOR

Connect the sensor to the GSM-TP controller. The left picture is to shows how to mount the sensor.that is easy to mount the sensor,just use the hand from the end to mount the sensor. And the right picture shows how to disassemble the sensor.

( You should mount or disassemble the sensor according to the picture. Don't mount or disassemble the sensor with big force,that would damage the sensor connector. )



### Wafer GSM-TP Programming:

You can program the GSM-TP 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 cann'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.



Simple RS232 program card ( Standard )



USB program adapter box (Optional Parts)

## Program SMS Command:

### CONNECT

(this SMS command is used to test the device easily,no need password)

Reply format: [Device name][Sensor-T1 name][ Sensor-T1 name] [ Sensor-H name]

Example Reply:WEIFANG\*Garden\*Home temperature\*Home humidity

### SMS PASSWORD

Allows setting of a new password.

The password is required in all SMS command messages sent to the unit. The default password is 123456

Format: #PWD[smspassword][new\_password][new\_password]

Example: #PWD123456#CAP121212#CAP121212

Reply: PWD SETUP OK

### WHL

This command is used to add or remove numbers that are enabled to control the device. You can add up to 2 numbers in the list.

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

Format: #PWD[smspassword][WHL ID]=[Phone Number]

Example: #PWD123456#WHL01=61143815

Reply : WHL001 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 16 digits for a number.

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

Format: #PWD[smspassword]#WHL=ALL?

Example: #PWD123456#WHL=ALL?

Reply : WHL1=18017370819,WHL2=0000,ALERT=13564121668

### NAME

Setting of the WAFER unit name used to identify the WAFER unit when events (alarms / logs) are sent.

Format: #PWD[smspassword]#NAME:[name]

Example: #PWD123456#NAME:Server Room1

REPLY: DEVICE NAME IS Server Room1

### SENSOR Config

Set sensor\_no/min temp/max temp/report type/alias.

Format:

#PWD[smspassword]#SENSOR-[sensor\_no][min][max][alert\_type][sensor name]

a) Sensor\_no: SENSOR-T1,SENSOR-T2 or SENSOR-H

b) Mini temp & max temp are in degrees Celsius. The format must be as follows:

a. -/+xxx.x (numbers only)

b. Example: -12.3°C is denoted by -012.3

- c. Example: +5.4°C is denoted by +005.4  
Mini humidity & max humidity are from 0 to 100 (0% to 100%)
- c) Report\_type Type: This consists of the following:
  - a. Both = Alert will be sent if temp goes outside safe limits and alert will also be sent if temp falls back within the safe limits.
  - b. OUT = Alert will be sent if the temp goes outside min & max settings.  
No alert will be sent if the temp falls back into the safe limit.
  - c. IN = Alert will be sent if the temp falls inside the min and max settings.
  - d. Sensor name: This allow you to give the sensors a name.

Example:

```
#PWD123456#SENSOR-T1#MIN-001.5#MAX+005.5#OUT#SERVERROOM
#PWD123456#SENSOR-T2#MIN+010#MAX+050.5#IN#GARDEN
#PWD123456#SENSOR-H#MIN20#MAX80#BOTH#ABCRROOM
REPLY: SENSOR-T1#MIN-001.5#MAX+005.5#OUT#SERVERROOM OKAY
REPLY: SENSOR-T2#MIN+010#MAX+050.5#IN#GARDEN OKAY
REPLY: SENSOR-H#MIN20#MAX80#BOTH#ABCRROOM OKAY
```

### GPRS Setting

Allows settings of the GPRS APN, username, and password for the SIM card. These are obtained from the SIM card provider.

Format: #PWD [smspassword]#GPRS:[APN name][username]#[password]

Example: #PWD123456#GPRS:CMNET#abaad#sddss

REPLY: GPRS SETUP OK

(Sometimes,with the SIM card,that APN name is fixed,and no need to config the user name and password,then we only use:

#PWD123456#GPRS:CMNET##

Note: CMNET is the APN name)

### GPRS Test

Check the GPRS setting

Format: #PWD[smspassword]#GPRS?

Example: #PWD123456#GPRS?

REPLY: GPRS:CMNET##

### EMAIL Parameters Config

Setup the email sever parameters:

Format:

#PWD[smspassword]#SMTP:[SMTP]#POP3:[POP] #ACCOUNT:[email account]:PASS:[email password]

Example:

#PWD123456#SMTP:smtp.163.com#POP3:pop3.163.com#ACCOUNT:fclmyl2#PAS S:565621321

### LOG INTERVAL and LOG TIMER

- Log data save timer and the Log data send timer setting

a) log\_repeat: Interval in which the temperature is recorded in seconds (30 to 86400 seconds).

b) log\_send: Number of temperature readings (1 to 500) after which the log is emailed.

Format: #PWD[smsspassword]#LOGININTERVAL[log\_repeat]#LOGSEND[log\_send]

Example: #PWD123456#LOGININTERVAL60#LOGSEND100

REPLY: LOG INTERVAL IS 60 SECONDS AND RECORD LIST IS 100

Will record the temperature every 60 seconds and then after 100 logs, the WAFER will email the log of 100 records.

#### • Log Interval checking

Format: #PWD[smsspassword]#LOGININTERVAL?

Example: #PWD123456#LOGININTERVAL?

REPLY: LOGININTERVAL IS 0120,LOGSEND IS 20

### LOG NOTIFY

Log information only can be sent through EMAIL

Format: #PWD[smsspassword]# NOTIFYLOG# EMAIL:[Email address]

Example: #PWD123456#NOTIFYLOG#EMAIL: wafer@waferstar.com

REPLY: NOTIFYLOG EMAIL IS wafer@waferstar.com

### LOG email Function close

This command is used to close the email Log report function

Format: #PWD[smsspassword]# NOTIFYLOG=OFF

Example: #PWD123456#NOTIFYLOG=OFF

REPLY:

### LOG TEST

This command is used to check the LOG setting parameters.

Format: #PWD[smsspassword]#LOG?

Example:#PWD123456#LOG?

REPLY:

LOG-SETTING=ON\*GPRS=OK\*EMAILSETTING=OK\*LOGININTERVAL=0120\*LOGSEND=60\*LOGNOTIFY=OK

### ALERT

Set the alert notify medium:Email or SMS or Phone call

Format: #PWD[smsspassword]# NOTIFYALERT#[Method]

Example: #PWD123456#NOTIFYALERT#email: [support@example.com](mailto:support@example.com)

REPLY: NOTIFYALERT EMAIL IS [support@example.com](mailto:support@example.com)

Example: #PWD123456#NOTIFYALERT#SMS:+441111111111

REPLY: NOTIFYALERT SMS IS +441111111111

Example: #PWD123456#NOTIFYALERT#CALL:+441111111111

REPLY: NOTIFYALERT CALL IS +441111111111

## ALERT INTERVAL

This command is designed to send repeated alerts to the alert contact list if the temperature or humidity is kept in alert status for interval time.

Set alert repeat / min alert interval

- a) alert\_repeat: The intervals at which the alarm is repeated  
For no repeat alert set to 0.
  - b) alert\_interval: Delay for the alert information is kept to send the alarm information
- Format: #PWD[smspassword]#REPEAT[alert\_repeat]#INTERVAL[alert\_interval]  
Example #PWD123456#REPEAT3000#INTERVAL120  
REPLY: REPEAT SET TO 3000,INTERVAL SET TO 120

## ALERT

This is used to turn on the alert or off the alert function

Select the alert information through SMS or Email or Call

- Format: #PWD[smspassword]#ALERT=ON:[CHANNEL]  
Example: #PWD123456#ALERT=ON:SMS  
#PWD123456#ALERT=ON:EMAIL  
#PWD123456#ALERT=ON:CALL  
#PWD123456#ALERT=OFF  
REPLY:ALERT IS SMS

## ALERT TEXT

This is used to setup the alarm text for the sensor alert

- Format: #PWD[smspassword]#[ALERT]:[ALERT TEXT]  
Example: #PWD123456#ALARM-OUT-TEXT:Server Room1 maximum alarm  
#PWD123456#ALARM-IN-TEXT:Server Room1 in alarm  
REPLY: ALARM-OUT-TEXT IS Server Room1 maximum alarm  
ALARM-IN-TEXT IS Server Room1 in alarm

## ALERT CHECK

This command is used to check the ALERT setting parameters.

- Format: #PWD[smspassword]#ALERT?  
Example: #PWD123456#ALERT?  
REPLY:

ALERT-SETTING=ON\*SMS:1828038338\*ALERTINTERVAL=0180\*ALERTREPEAT=60

## STATUS

This will retrieve the current temperature readings and send the data via SMS to the number this originated the request.

- Format: #PWD[smspassword]#status?  
Example: #PWD123456#STATUS  
REPLY:

MINT1-001.5,#MAXT1+005.5,TEMP1+20:MINT2-001.5,#MAXT2+005.5,Temp2:+20,  
MINH10, MAXH80,HUMIDITY40

## RELAY WORKING

**#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

**For example:** To activate relay 1 for 60 seconds you would send the following SMS text message to the unit

```
#PWD123456#RLY1=00005
```

Where RLY1 indicates the relay number (From 1 to 4) 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

```
#RLY1-OFF
```

The confirmation SMS text messages are only sent to the administrators who are active in the relay.

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

```
#PWD123456#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

```
#RLY2-OFF
```

The confirmation SMS text messages are only sent to the administrators who are active the relay

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

It is possible to switch four 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,RLOP3,RLOP4 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

## PHONE CALLING

**#MODE** Relay Operation Mode selection (Phone calling mode)

This command allows user to control the Relay with pulse mode or switch mode

**MODE0:** Pulse mode (Momentary Relay pulse)

**MODE1:** Switch mode (Ratchet Relay)

Example: #PWD123456#MODE0

REPLY: RELAY SET TO MODE0

Example: #PWD123456#MODE1

REPLY: RELAY SET TO MODE1

**#GOT** Gate pulse delay time

When setup the GOT Timer,

**First** you need to setup the timer multiplier at millisecond or second or minutes.

Example: #PWD123456#TIMER-DELAY-AT-MILLISECOND

Example: #PWD123456#TIMER-DELAY-AT-SECOND

Example: #PWD123456#TIMER-DELAY-AT-MINUTE

REPLY: TIMER-DELAY-AT IS MILLISECOND

REPLY: TIMER-DELAY-AT-SECOND

REPLY: TIMER-DELAY-AT-MINUTE

**Then** you need to setup the GOT timer number:

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:

Example: #PWD123456#GOT500

REPLY: 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

Example: #PWD123456#GOT?

REPLY: DELAY TIME IS 0500 MS

# Quick Start Guide

## Connect the device to the GSM net

1. Insert the SIM Card  
Press the right yellow button to eject the SIM card holder out, then put the SIM card inside the holder, then Push the SIM card fully into the slot.
2. Connect the Antenna  
Screw the antenna clockwise into the round connector, with the antenna pointing upwards. Do not over-tighten the nut.
4. Connect the temperature and humidity sensor
3. Connect the Power adapter  
Connect the power supply plug to your power outlet and switch on.
4. Confirm that you have a GSM Signal  
After the GSM-TP has been switched on, firstly the RED LED will flash 1 flasch every one second, after a few seconds ,after GSM succefully is connected ,then the Green LED and RED LED will start to flash together.

GSM connection to the network for SMS, then Move to Step 5.  
If No GSM connected, then try to relocate the device to an area with GSM coverage. Or use a high gain antenna (please contact us for details). Do check that your SIM card is working in the chosen location of the WAFER by fitting it into a GSM mobile phone first.

## 5. SMS Setup

To confirm that your GSM-TP unit is set up and working successfully on the GSM network, send the following text message from your mobile phone.

Message:           CONNECT  
Reply:             Device name and sensor name  
Example reply:   WEIFANG\*Garden\*Home temperature\*Home humidity

## Now we'll add a useful configuration to the GSM-TP:

**The following set up will add an SMS alert on temperature sensor 1 called "Server Room" to be sent via SMS to the phone number "0044777011111"**

An alert SMS will be sent if the temperature falls below, in this case, 15°C or exceeds 25°C..

Send these SMS text messages to configure your GSM-TP:

#PWD123456#SENSOR-T1#MIN+10.5#MAX+25.0#OUT#Server Room

Then send a separate SMS, replacing the mobile phone number below with your own:

#PWD123456#NOTIFYALERT#SMS: 0044777011111

Then switch on the alert function to the SMS

#PWD123456#ALERT=ON:SMS

If you want to use the email to send the alert or send the data Log, then firstly you need to config the GPRS data, Email Config

#PWD123456#GPRS:CMNET#abaad#sdds

#PWD123456#SMTP:smtp.163.com#POP3:pop3.163.com#ACCOUNT:fclmyl2#PASS:56562121

#PWD123456#NOTIFYLOG#EMAIL: [wafer@waferstar.com](mailto:wafer@waferstar.com) (Email for Log information)

#PWD123456#NOTIFYALERT#email: [wafer@wafersensor.com](mailto:wafer@wafersensor.com) (Email for Alert information)

Then setup the Log data save timer and the Log data send timer setting

#PWD123456#LOGINTERVAL60#LOGSEND100

After setting ,you need to check the GPRS and Log email setting is working,then send the folling SMS:

#PWD123456#LOG?

Then you will get the REPLY SMS:

LOG-SETTING=ON\*GPRS=OK\*EMAILSETTING=OK\*LOGINTERVAL=0120\*LOGSEND=60\*LOGNOTIFY=OK

You should check the parameter of LOGNOTIFY should be OK,then

**In your LOG email box would receive a LOG test email.**

If the LOGNOTIFY=NOT, then you need to check your parameters setting according to the reply.

**For extended SMS configuration, please refer to the GSM-TP SMS command.**

## Troubleshooting

No LED is on after power up

- Check the power supply.

GSM Green LED is not flash,only flash the RED LED slowly

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

No SMS reply,after SMS command send to device

- Try to send the test SMS command: "CONNECT" to the device
- When send out the SMS, then check the Green LED would quick flash around five times,that means device can accept the SMS.
- After Green LED quick flash five times,then would followed the slow flash five timers,that means device send out the SMS
- If no LED flash,then check the GSM signal

Cnn't get the LOG data from email

- Check the GPRS setting is properly
- IF your SIM card can use the GPRS.
- Check the emil address is right
- Check the LOG interval save timer and send timer is setting properly
- Check the LOG sending function is enabled
- Use the Self-test SMS command: "#PWD[password]#LOG?" to sort the problems

Cnn't get the Alert data at my mobile phone

- Check if the temperature or humidity is out of the alert range
- Check the alert phone number list is right or not
- Check the interval and resend timer is properly
- Check the alert direction IN or OUT is properly
- Use the Self-test SMS command: "#PWD[password]#ALERT?" to sort the problems

No tone can be heard after line off-hook

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

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

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