# HG6000 Humidity Generator User Manual


EN

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**Special statement:** This document is a supporting manual for HG6000. Due to product upgrades or other reasons, if the pictures, mechanical dimensions, and etc. in the document are different from the actual product, please refer to the actual product. Without the written permission of ZOGLAB, any content of this document shall not be copied or disseminated in any form or in any way, including electronic and mechanical means, for any purpose. The company reserves the right of final interpretation.

## Annotation

The content marked by this symbol contains warning information, please read it carefully to prevent instrument damage or data loss.

The content marked by this symbol involves functional details, please read it carefully before using the instrument.

# Contents

## CHAPTER 3 Operation and Usage



## CHAPTER 4 System Settings

## Appendix

Communication protocol

HG6000 common problem troubleshooting table

# CHAPTER 1
# Safe Usage Instruction

# Safe Usage Instruction

The HG6000 humidity generator is a precision instrument. Safety precautions must be observed during all stages of using this instrument. The company shall not be liable for any abnormal operation, damage or indirect economic losses caused by failure to observe these safety measures or other warnings or instructions in this manual.

Before using this instrument, please read carefully the safe usage instructions.

## General principles

Please use this instrument in accordance with the provisions of this manual, otherwise the protection provided by this instrument may be damaged and it will not be safe to use.

## Before turning on the power

Check whether all safety precautions have been taken. Before turning on the power, supply and select the appropriate voltage in the fuse module, make sure to connect all equipment.

## Ground the instrument

The standard wire of the instrument is a three–core wire, which is connected to the live wire, the ground wire and the neutral wire respectively. Interrupting the connection of the protection (ground protection terminal) will result in a potential electric shock hazard, resulting in personal injury.

## Operating environment

Do not use this instrument in places with explosive, flammable gas, steam or smoke. Operating temperature: 5˚C~50˚C storage temperature: –20˚C~70˚C; maximum humidity: 5%RH~95%RH (no condensation).
Please don‘t use this instrument in an environment that exceeds the temperature and humidity range.

## Don't remove the housing

Only qualified, maintenance–trained professionals who understand the potential hazards can open the housing. Before removing the housing, be sure to disconnect the power supply and external circuits.

## Don't adjust the instrument

Professional maintenance personnel not belonging to or authorized by our company are not allowed to repair, modify with substitute parts or adjust the instrument by themselves. If the instrument is abnormal, please contact your supplier for repair and replacement.

## When damage appears

Once the instrument shows signs of damage or malfunction, immediately stop operation and prevent operation by mistake, and wait for maintenance personnel to repair it.

## Water damage

If water damage happens, the power supply should be cut off immediately; if the instrument fails to work, please return the equipment to the dealer or the original factory for inspection and repair in time.

## WEEE

When the service life of the instrument is over, please return the electronic waste to our company to jointly support the environmental protection regulations of electrical appliances.

# CHAPTER 2
# HG6000 Product Introduction

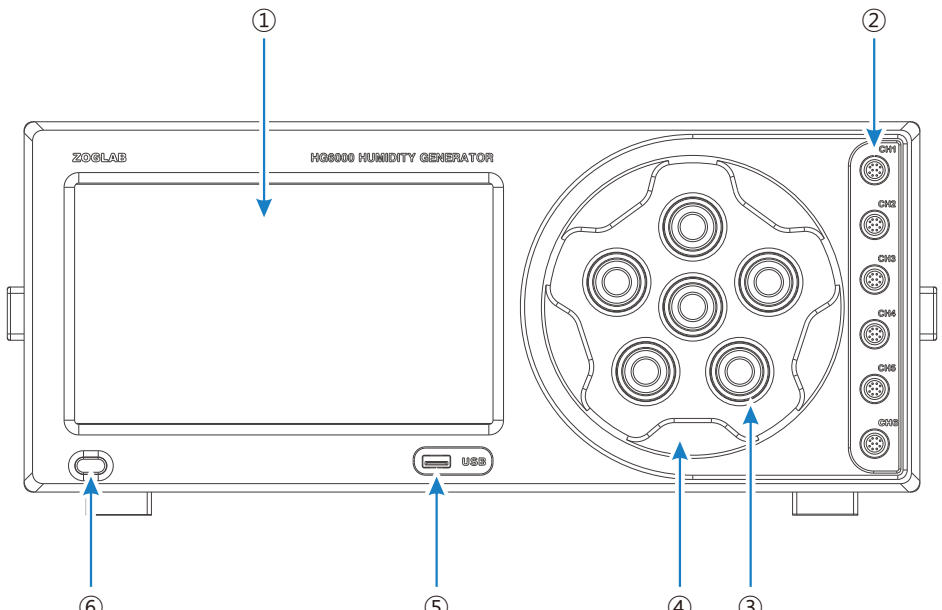
# About HG6000

HG6000 is a dual–flow humidity generator. Based on semiconductor constant temperature technology, various humidity environments can be generated within a set temperature range. Built–in circulation pump and stirring fan can quickly respond to the set humidity value. The stabilization time is less than 10 minutes, and the calibration and verification can be completed in a short time.

The reasonable structure design can quickly respond and stably generate the required humidity, and provide excellent uniformity.

# Structure view and function description

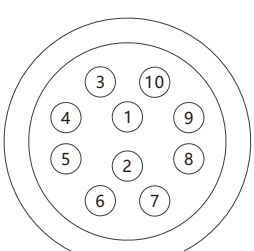
## Front view



## Function description

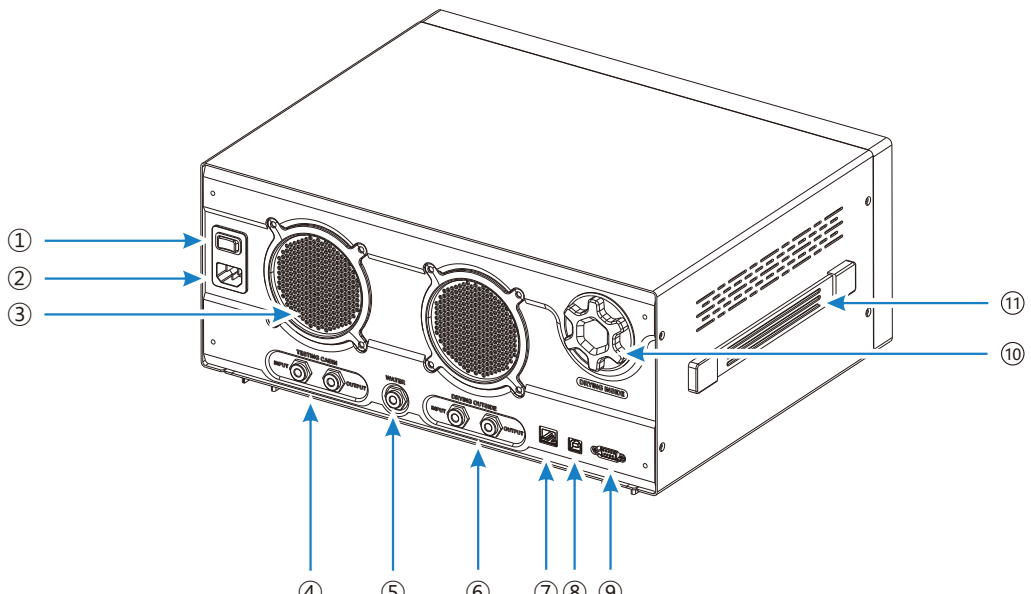
| View ID No. | Part name | Function description |
|---|---|---|
| ① | LCD display | Main working screen, touch operation interface |
| ② | Interface area of test instrument | Data communication/signal collection |
| ③ | Dimension of verification window probe | Standard version compatible with ø12~19mm |
| ④ | Verification hatch | Seal inspection cabin, fix the inspected equipment |
| ⑤ | USB | USB interface |
| ⑥ | Power | Turn on/off |

## Interface definition of test instrument




| NO. | Color | Signal | NO. | Color | Signal |
|---|---|---|---|---|---|
| 1 | Red | +5V output | 6 | Green | TTL-R |
| 2 | Black | GND | 7 | Blue | mAIN+ |
| 3 | Brown | 485-A | 8 | Purple | mAIN- |
| 4 | Orange | 485-B | 9 | Gray | VIN+ |
| 5 | Yellow | TTL-T | 10 | White | VIN- |

## Rear and side view

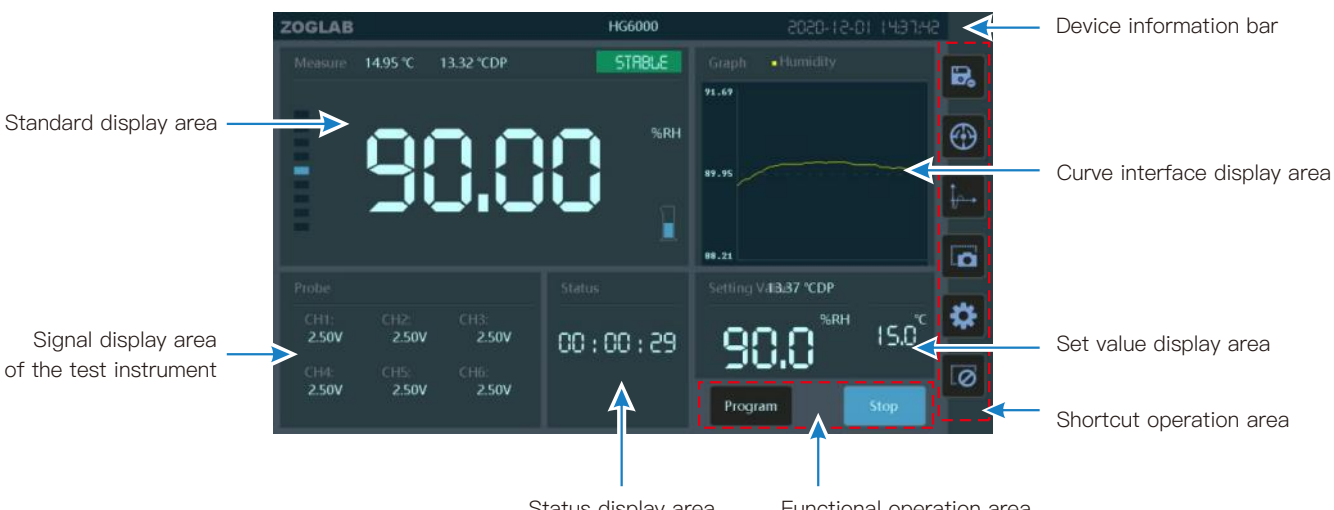


## Function description

| View NO. | Part name | Function description |
|---|---|---|
| ① | Power switch | Switch “–”to turn on; switch to“O”to turn off |
| ② | Power connection | Connect power cable |
| ③ | Vents | Used for cooling |
| ④ | External expansion test cabin interface | Used to expand the test cabin to adapt to special needs |
| ⑤ | Water port | Add /Drain water |
| ⑥ | Expansion desiccant interface | External desiccant, good for using the instrument for a long time |
| ⑦ | LAN | LAN interface |
| ⑧ | USB | USB interface |
| ⑨ | COM | RS232/RS485 interface |
| ⑩ | Desiccant cartridge cover | Unscrew the cover of the desiccant cartridge, take out the built–in drying chamber, and replace the internal desiccant |
| ⑪ | Handle | For moving the instrument |

# Display icon and function description

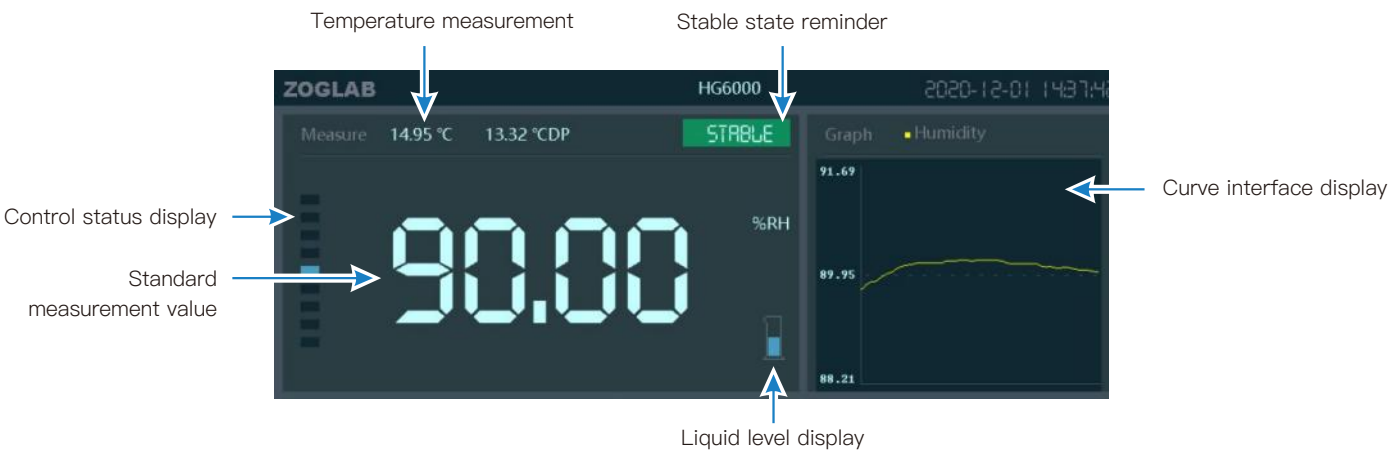
## Main interface icon



## Main interface function description

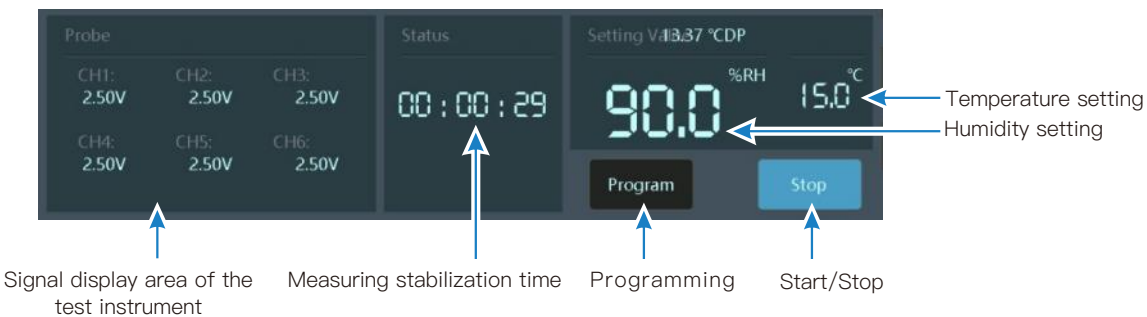
| Part name | Function description |
|---|---|
| Device information bar | Display brand, instrument name, current year, month, day and time, etc. |
| Curve interface display area | Display humidity and temperature curves |
| Set value display area | Display control humidity and temperature target value; click this area to enter the target value |
| Shortcut operation area | The shortcut keys from top to bottom are: [Storage] to view the storage status; [Calibration] to calibrate the humidity value; [Control] to adjust parameters; [Lock] to lock the current humidity value; [Screenshot] to capture the current screen image; [Settings] to enter the system setting |
| Functional operation area | Programming and start/stop operation |
| Status display area | Display stable state time |
| Signal display area of the test instrument | Set the type of analog/digital signal |
| Standard display area | Display the humidity value of the built–in reference sensor |

# Humidity measurement icon and description



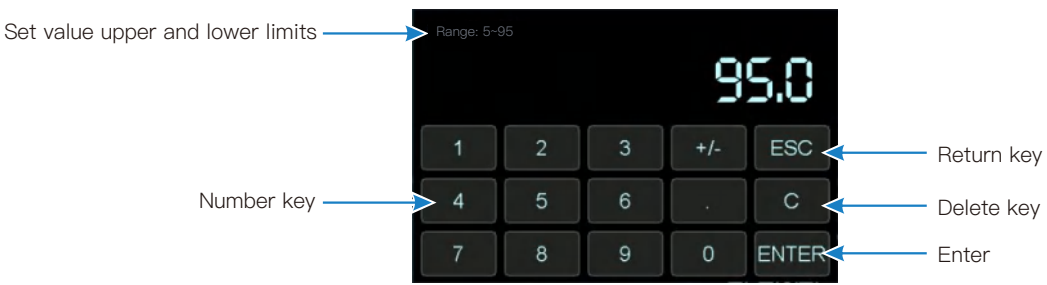

| Part name | Function description |
|---|---|
| Temperature measurement | Display the humidity value measured by the instrument |
| Stable state reminder | The color of the value turns green to indicate stable state |
| Curve interface display | Display curve |
| Liquid level display | Display the height of the liquid level in the instrument |
| Standard measurement value | Display the humidity value measured by the instrument |
| Control status display | Display current running status |

# Measurement function icon and description




| Part name | Function description |
|---|---|
| Temperature setting | Display the set temperature value, click to set |
| Temperature setting | Display the set humidity value, click to set |
| Start/Stop | Perform start/stop operation |
| Programming | Programmable control, setting of step and stabilization time; setting of calibration point, stabilization time and error judgment, etc., to perform automatic calibration |
| Measuring stabilization time | Display the measured stabilization time |
| Signal display area of the test instrument | Display the relative difference between the currently measured humidity value and the set value |

# Value setting numeric soft keyboard icon




| Part name | Function description |
|---|---|
| Set value upper and lower limits | Display the upper and lower limits of humidity. Cannot enter a value beyond the limits |
| Number key | Input number |
| Return key | Used to cancel, exit, return and other operation control |
| Delete key | Delete a character |
| Enter | Confirm the currently entered value |

## Status/setting interface icon

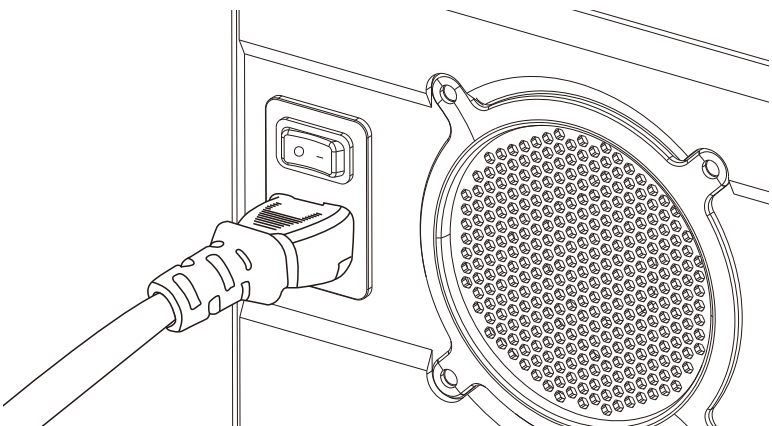
When running, the status bar displays the stabilization time;
the set value display area displays the set humidity value and temperature value


| Part name | Function description |
|---|---|
| Status display area | Display equipment stabilization time |
| Programming | Click programming to create a new task list to perform automatic operation |
| Start/Stop | Click to start the device |
| Set value display area | Display the set humidity/temperature value |

# CHAPTER 3
# Operation and Usage

## Connect power supply

Connect the power cable to the power port on the rear panel of the HG6000, and connect the other end of the power cable to a 100~240VAC, 50/60Hz power supply.

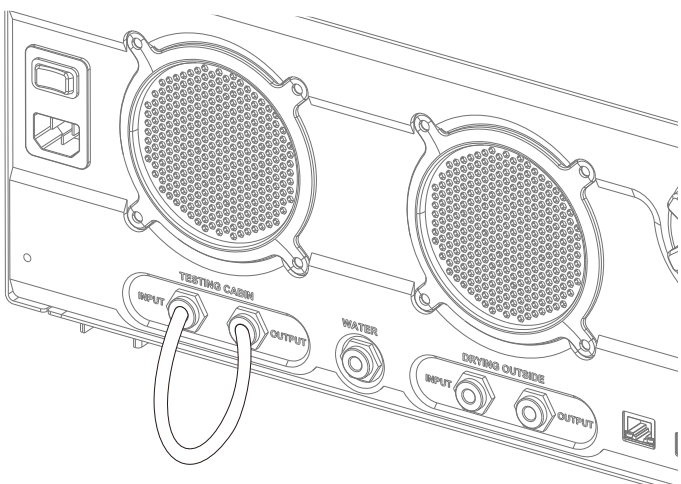


Connect the power cable

Before connecting the power cable, make sure that the power switch is switched to the "O" (power off) state!

# Connect external expansion test cabin interface

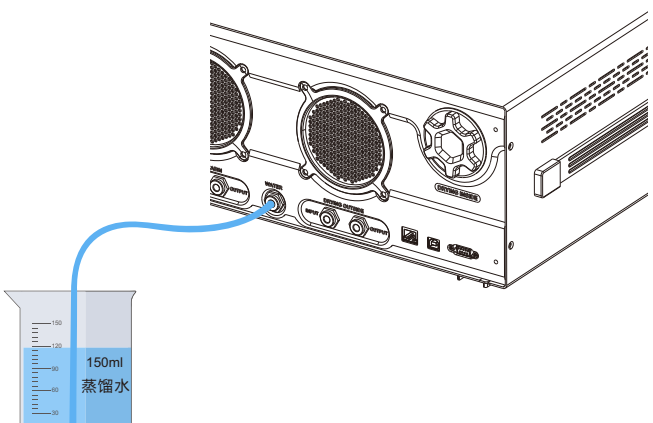
When there is no external test chamber, the INPUT and OUTPUT ports of the extended test chamber need to be connected with an outer diameter 8mm PU pipe



# Add/Drain water

Use a PU pipe with an outer diameter of 8mm, put one end of the water pipe into a container with distilled water, and put the other end into the ”add/drain” port. On the main operating interface, click the ”liquid level display” icon to automatically add water from the ”add/drain” port, and the water tank will automatically stop when it is full.

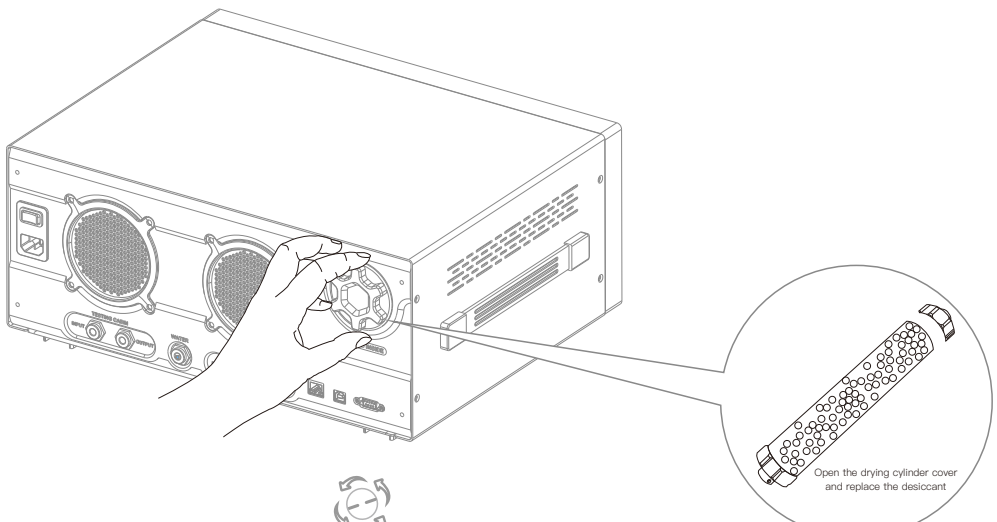

Add water




Automatically add water

# Add desiccant

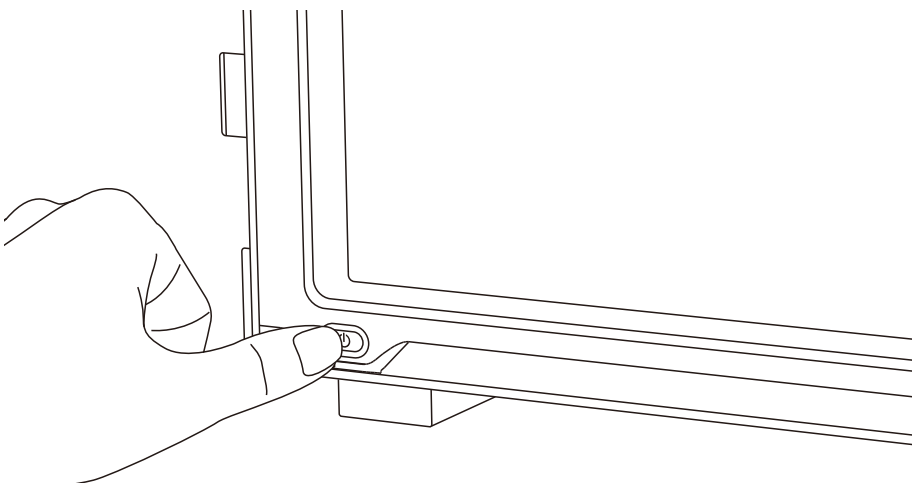
Grasp the drying compartment cover, then turn it counterclockwise to open the drying compartment cover, take out the drying cylinder and unscrew the drying cylinder cover at one end, add/replace the desiccant. After replacement, put it back in the drying compartment, and turn the cover of the drying compartment clockwise.




Turn counterclockwise to open the drying hatch

# Power on / off

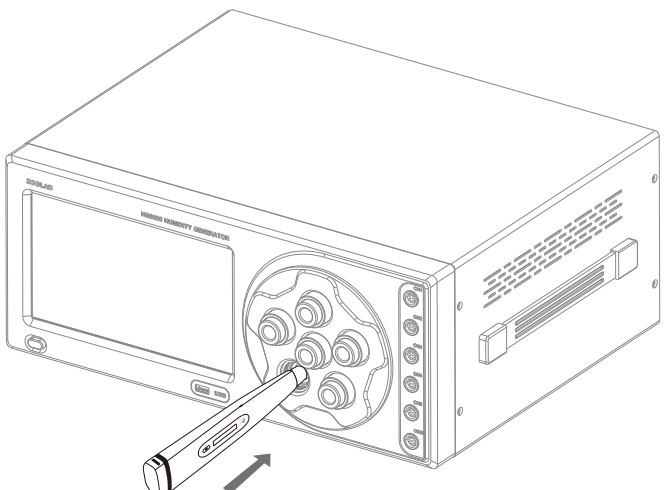
Switch the power switch on the rear panel to ”–” (power on) state, press the power button on the panel, the HG6000 will be turned on after the buzzer beeps, and enter the initialization self–check.The main work screen will be on. In the power–on state, press the power button on the front panel to shut down.



Press the power button

# Insert the humidity probe to be tested

Remove the plug of the test chamber and insert the humidity probe for testing.



If the probe needs additional power supply and communication, you can use the interface of the test instrument on the panel. Please refer to page 7 for the interface wiring definition of the test instrument.

# Humidity setting

Set the humidity target value. Please input the target value according to the effective range of the instrument.
Take the control range of 5~95%RH as an example. If the input target value exceeds the valid range, it is an invalid operation.

Target value input method: Click on the ”humidity value” area to pop up the target value input interface,
and enter the target value through the soft keyboard.


Input setting value interface

Please also set the target temperature. When the deviation between the set temperature and the actual temperature exceeds ±2˚C, the equipment will automatically stop humidity control until the temperature is controlled to an appropriate value. It is recommended that the ambient temperature be controlled at around 25˚C±2˚C to improve the efficiency of constant temperature control of the instrument.

## Operation

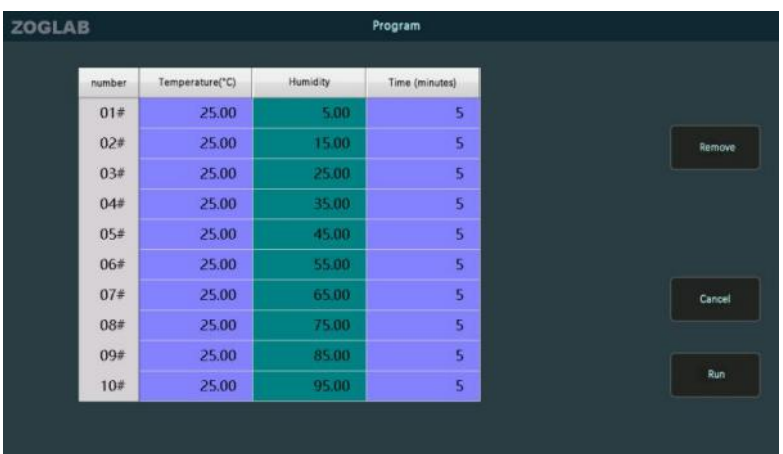
Click the ”Start” button on the screen, the measured value display area displays the measured humidity inside the instrument.


When the value in the numerical display area is close to the target value and the status cursor bar turns green, it indicates that the humidity has stabilized. Compare the humidity value of the test device and the standard device to complete the operation.

# Programming

Click the ”Program” button on the interface of the function operation area to enter the programming mode interface.
Multiple control points can be edited as needed to automatically control the output.
This interface can view and set the temperature value, humidity value and stabilization time.

Example: Click the ”Humidity Value” area, the target value input interface will pop up,
and enter the target value through the soft keyboard




Programming mode interface

# Test probe measurement

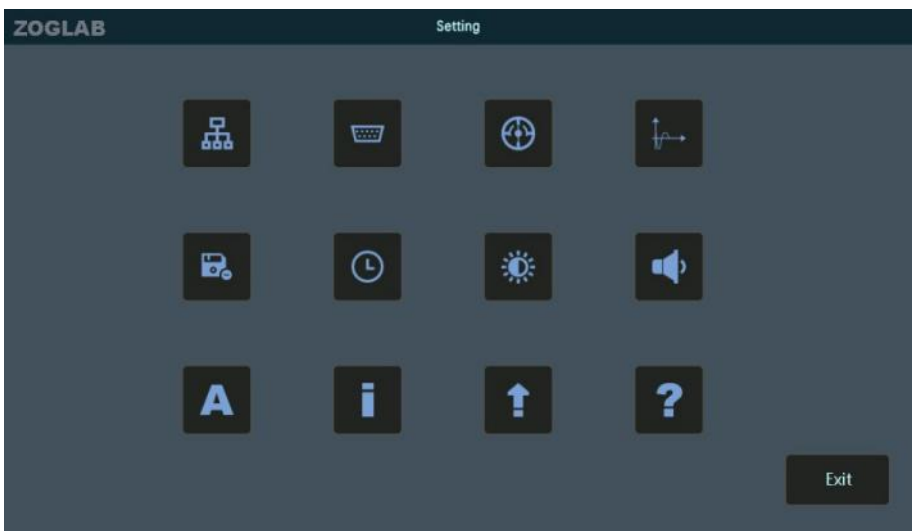
## Probe measurement

Click the value on the interface of the signal display area of the test instrument in the lower part of the interface, and the selection interface pops up. Choose a different temperature and humidity probe communication protocol or analog signal definition as needed, and then click ”Exit” to return to the main interface.

# CHAPTER 4
# System Settings

# System setting interface

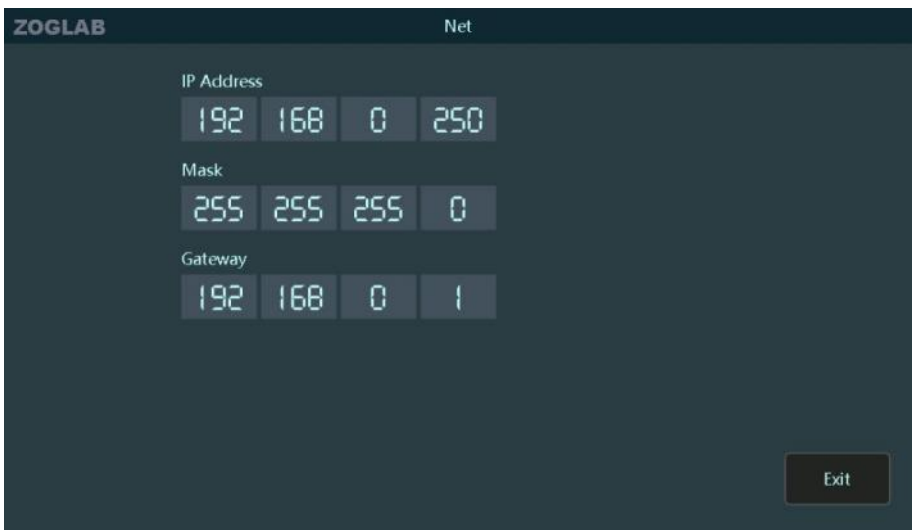
Click ‘setting’ button on the right side of the main working interface to enter the system setting interface. System settings include network, serial port, calibration, control, storage, time, brightness, sound, language, information, upgrade, and help. Click ‘Exit’ button to return to the main working interface.




Main interface of system settings

# Network setting

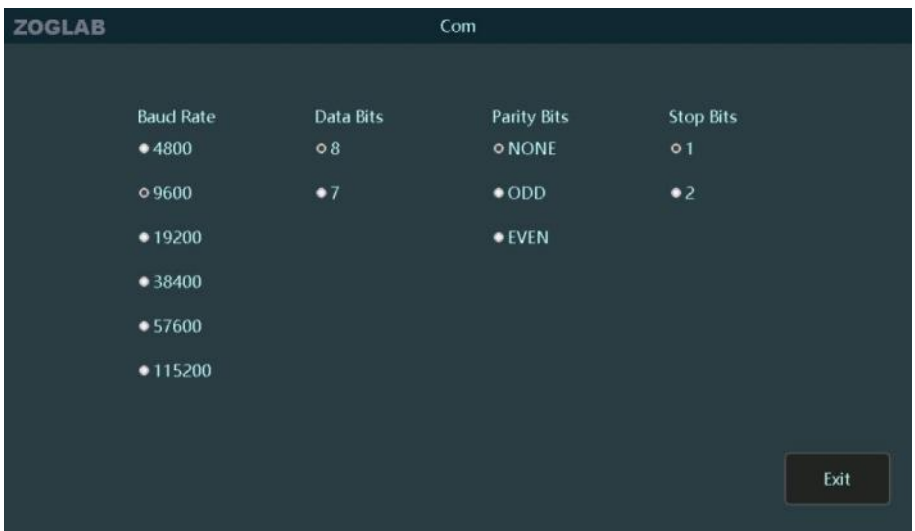
Click the system setting interface button to enter the network settings interface. Through the numeric soft keyboard, enter the IP address, subnet mask and default gateway. Click the 'OK' button to save the network settings and return to the system settings interface. If there is no need to change, click the 'Exit' button to return to the system setting interface.




Network setting interface

# COM setting

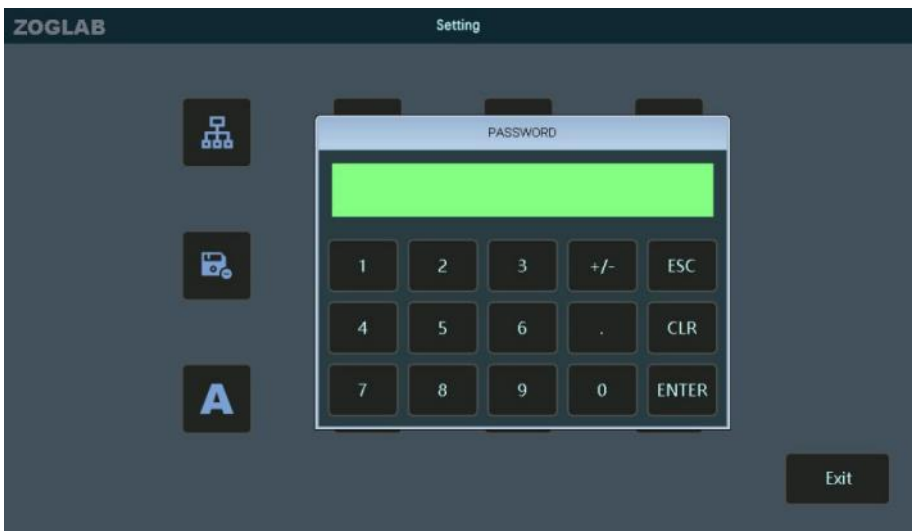
Click the system setting interface button to enter the COM setting interface. Set the baud rate, parity bit, data bit and stop bit by clicking the dot icon in front of the parameter. If there is no need to change, click the 'Exit' button to return to the system setting interface.




COM setting interface

# Calibration setting

Click the system setting interface button to enter the calibration management interface. The HG6000 can be calibrated for humidity, voltage and current. Click the ”Exit” button to return to the system setting interface.




Calibration management interface

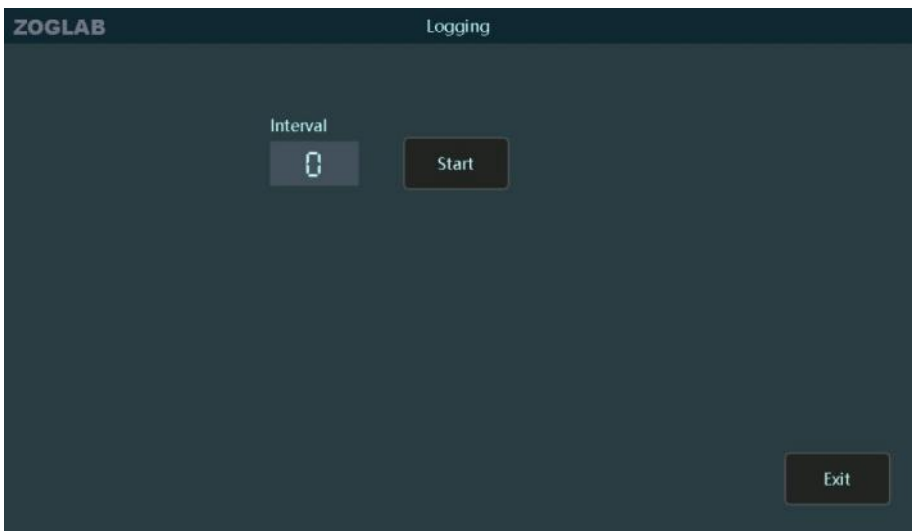
# Control setting

Click the system setting interface button to enter the control parameter setting interface (password required). After editing the control parameters, click the ”Exit” button to save and return to the control parameter setting interface, and return to the control parameter setting interface. (For original factory debugging and adjustment, users operate with caution)


Control parameter setting interface

# Store records

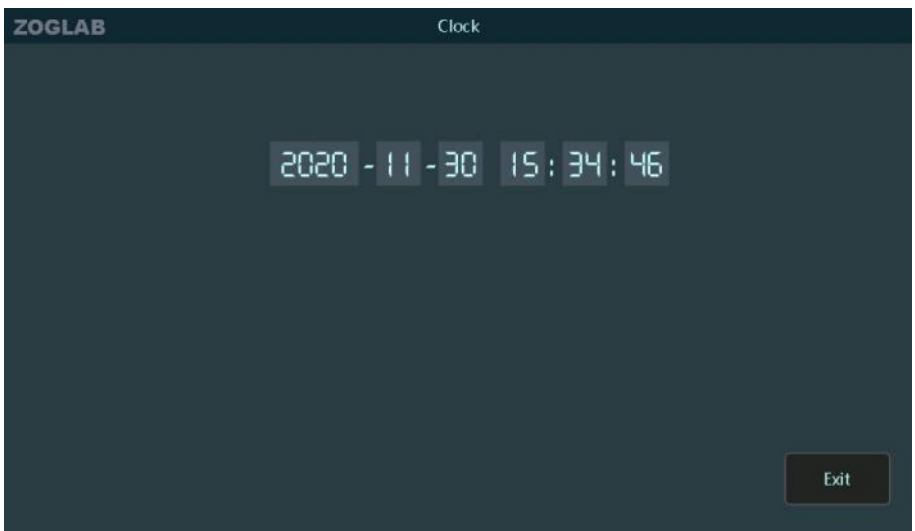
Click the system setting interface button to enter the storage management interface. Can read and set the data record status, click the ”Exit” button to return to the system setting interface.




Storage management interface

# Time setting

Click the system setting interface button to enter the time setting interface. Through the numeric soft keyboard, modify the year, month, day and time displayed on the screen. Click ”Exit” to save the changes and return to the system setting interface.




Time setting interface

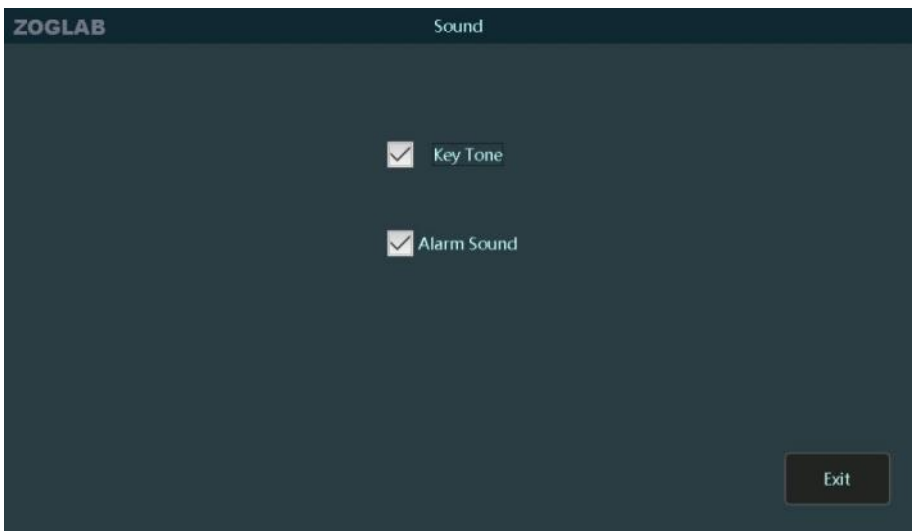
# Brightness setting

Click the system setting interface button to enter the brightness setting interface. Slide the triangle icon on the interface to change the backlight brightness of the screen. The higher the brightness percentage, the brighter the screen backlight. Click the ”Exit” button to return to the system setting interface.


Brightness setting interface

# Sound setting

Click the system setting interface button to enter the sound setting interface. Click the square icon in front of the option to set the key tone and alarm tone. Highlight the "√" symbol in the icon to turn on the option prompt. Click the "Exit" button to return to the system setting interface.




Sound settings interface

# Language setting

Click the system setting interface button to enter the language setting interface. Click the round icon in front of the option to select the language. If there is no need to change, click the ”Exit” button to return to the system setting interface.


Language settings interface

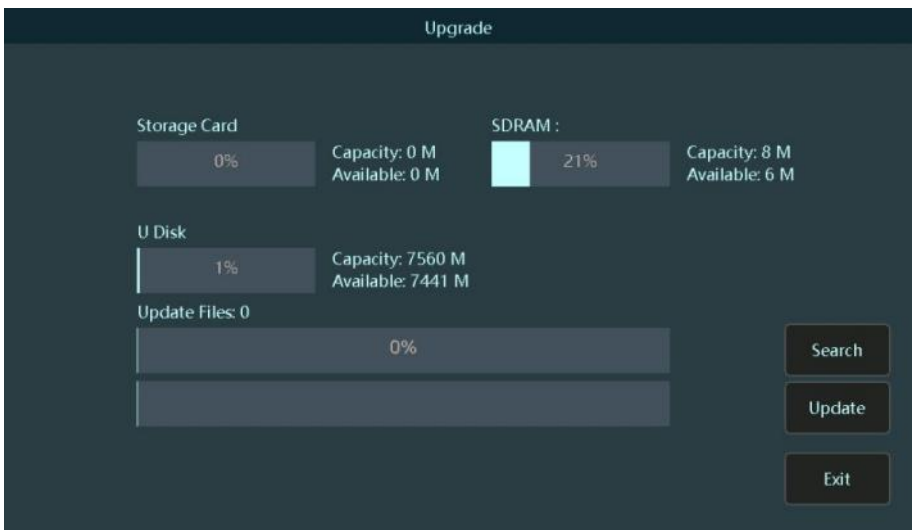
# System information

Click the button of the system setting interface to check the system information. Click the "Exit" button to return to the system setting interface.


System information interface

# System update

Click the system setting interface button to enter the system update interface to update the system files and control system. The system update requires the supplier to provide the corresponding update file. If the file does not exist, the update will not be possible. Click the "Exit" button to return to the system setting interface.




System update interface

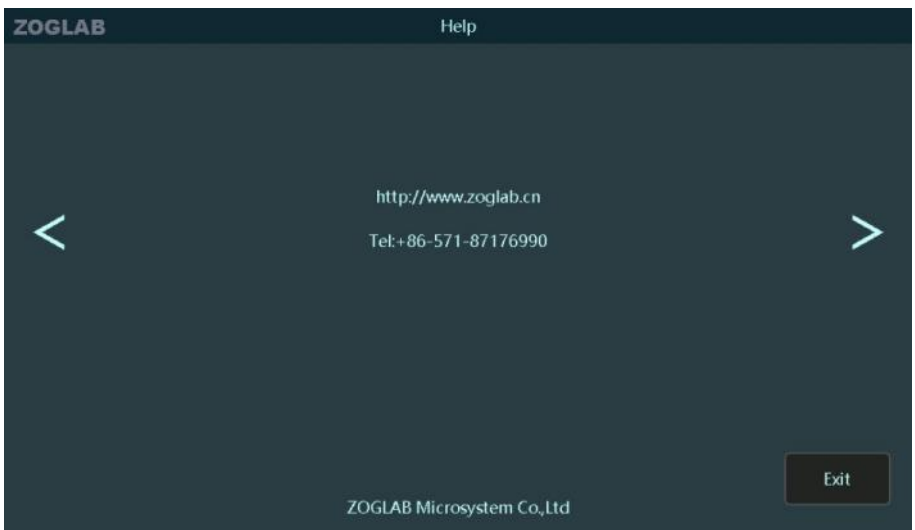
System update process:

1.Connect the update file to the instrument through the USB-A communication interface, and then enter the system update interface.

2.Click the "Update" button, check the progress bar, wait for the update to complete, the update will take effect after restart the device.

# Help

Click the button of the system setting interface, if you have any questions, please consult the free hotline: +86-400-8878-571




Help interface

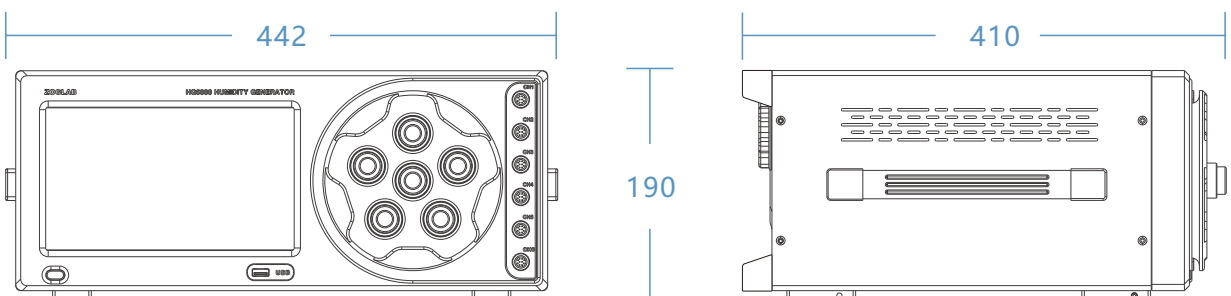
# CHAPTER 5
# HG6000 Product Information

# Technical specification

| | |
|---|---|
| Humidity control range | 5~95%RH |
| Temperature control range | 5~50℃ |
| Humidity control stability | ±0.2%RH |
| Temperature control stability | 0.1℃(23℃)，0.2℃ (Full scale) |
| Temperature accuracy | ≤0.2℃ |
| Humidity accuracy of standard probe(23℃) | ±1.0%RH(10~90%RH)；±2.0%RH(≤10，≥90%RH) |
| Temperature and humidity stability in the verification chamber | ±0.2%RH；±0.1℃ |
| The uniformity of temperature and humidity in the verification chamber | ±0.3%RH；±0.2℃ |
| Humidity adjustment response time | Change 30%RH in less than 5 minutes |
| Average temperature decrease rate | 1.0℃/min (ambient temperature <23℃) |
| Humidity adjustment heating speed | 3.0℃/min |

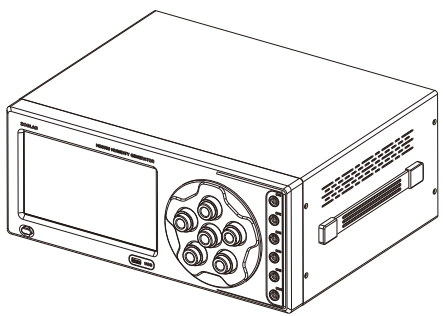
| | |
|---|---|
| Dimensions of the verification chamber | Φ96 × 120mm |
| Dimensions of the Window | Φ12–19mm，Special size is optional |
| Operating environment | –10~40℃，10%~95%RH(No condensation) |
| Storage environment | –20~70℃，10%~95%RH(No condensation) |
| Desiccant | Molecular sieve desiccant |
| Display screen | 9inch，1024×600TFT LCD display |
| Power supply | 100~240VAC 1.5A，50/60Hz |
| Communication Interface | RS485/232，USB，LAN，Wi–Fi* |
| Overall Dimensions | 442×190×410mm(Standard 4U, 19–inch rack) |
| Weight | 18.8kg |
| Certification | CE、FCC、VCCI、C–TICK |

# Dimensions(mm)



# Packing list

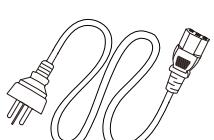
Please confirm the following items should be in the package:



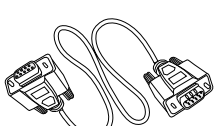
HG6000 humidity generator

USB communication cable

LAN communication cable

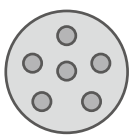


Power cable

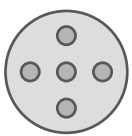


Rs232 communication cable

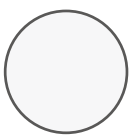
## Working hatch* (optional)



M01
Φ15~18×6
For HC2-S

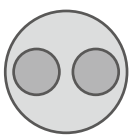


M02
Φ12~15 ×5



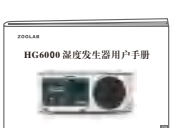
M03
Transparent acrylic cover

M04
Φ12~18+Φ30mm
For DSP2000 dew point sensor



M05
Φ30×2
For DSP2000 dew point sensor

Calibration certificate




User manual


Maintenance manual


Warranty card


Quality card


WEEE tips

# Quality certification

HG6000 has multiple international patents, and has obtained CE certification, FCC certification, C-TIC certification, VCCI certification.

HG6000 is tested and certified by the world renowned certification agency SGS.

# CHAPTER 6
# Service

# Warranty

Thank you for choosing our products. In order to protect your legal rights, please read the following warranty terms carefully after getting the product. This product has a one–year warranty service for the host and one year for accessories after purchase. If you need to repair the product, please send the product back to our company.

**The following conditions are not covered by the warranty:**

1.Operations not in accordance with the user manual, resulting in product failure or damage

2.The barcode of the warranty card does not match the barcode of the host, or the barcode of the host is altered or torn.

3.Warranty expired

4.Product failure and damage caused by human error or force majeure.

5.User disassembles the instrument without permission.

* Login to the official website of ZOGLAB and register as a member to get related services. For details, please call the service hotline (+86)400–8878–571

# Appendix I

## Communication protocol

| Function | Command | Return | Description |
|---|---|---|---|
| Information | AT*TakeInfo | AT*TakeInfo<br><br>DeviceID: HG6000S20200723002A<br>Manufacturer: ZOGLAB Microsystem Co.,Ltd<br>Ver: 1.10, 1.11<br><br>OK! | Serial number<br>Manufacturer<br>Hardware and software version |
| Reboot the system | ATˆReboot | ATˆReboot<br><br>OK! | |
| Read temperature | AT*ReadSensor:0 | AT*ReadSensor:0<br>T= 19.99℃<br>RH= 49.98%RH<br><br>OK! | |

| Function | Command | Return | Description |
| --- | --- | --- | --- |
| Set humidity | AT+SetHumi:50.0 | AT+SetHumi:50.0<br>OK! | (5–95) 5–95%RH |
| Read humidity set value | AT*ReadSetPoint:0 | AT*ReadSetPoint<br>SetPoint:95.00 %RH<br>OK! | |
| Read stabilization state | AT*ReadStable:0 | AT*ReadStable<br>Stable:1<br>OK! | 1 stable, 0 unstable |

| Function | Command | Return | Description |
| --- | --- | --- | --- |
| Set backlight brightness | AT+SetLight=(1–8) | AT+SetLight<br>OK! | 1-8 level brightness |
| Read the backlight brightness | AT*ReadLight | AT+ReadLight<br>LcdBackLight:6<br>OK! | |
| Set system time | AT+RTC=20–12–03 15:09:30<br>OK! | AT+SetTime<br>OK! | |
| Read system time | AT*RTC<br>2020–12–03 15:09:31<br>OK! | AT*ReadTime<br>Time:20–12–03 15:09:43<br>OK! | System time |

| Function | Command | Return | Description |
| --- | --- | --- | --- |
| Set IP address | AT+SetIPAddr=192.168.0.100 | AT+SetIPAddr<br>OK! | |
| Set IP address | AT*ReadIPAddr | AT*ReadIPAddr<br>IPAddr:192.168.0.100<br>OK! | IP address |
| Set the gateway | AT+SetGateWay=192.168.0.1 | AT+SetGateWay<br>OK! | |
| Read gateway | AT*ReadGateWay | AT*ReadGateWay<br>GateWay:192.168.0.1<br>OK! | gateway |

| Function | Command | Return | Description |
| --- | --- | --- | --- |
| Set the subnet mask | AT+SetNetMask=255.255.255.0 | AT+SetNetMask<br>OK! | |
| Read the subnet mask | AT*ReadNetMask | AT*ReadNetMask<br>NetMask:255.255.255.0<br>OK! | Subnet mask |
| Set DNS | AT+SetDNS=202.101.172.35 | AT+SetDNS<br>OK! | |
| Read DNS | AT*ReadDNS | AT*ReadDNS<br>DNS:202.101.172.35<br>OK! | DNS |

# Appendix II

## Common problem troubleshooting table

| Common problems | Solutions |
|---|---|
| Unable to start | The fuse is burned out, replace fuse |
| The screen is dim | Enter the system settings, adjust the backlight brightness of the screen |
| Low humidity can't be reached for a long time | The desiccant is invalid, please replace the desiccant in time |
| High humidity can't be reached for a long time | The water tank is short of water, please add water; or the set target temperature is too low. |
| | |
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| | |