# Automatic Intelligent Distiller
# TK-1000
# User
# Manual

Thank you for your trust in our products and for choosing the TK-1000 Automatic Intelligent Distiller. Please read this user manual carefully before use.

Please keep this user manual, Certificate of Conformity and Warranty Record Card in a safe place for future reference. Do not tear off any labels on the instrument. For any questions, please contact your distributor or our After-sales Service Department at 0531-88908220.

This manual applies to standard models only; customized models are for reference only.

# Content

**General Operating Guidelines**

Before powering on the instrument, confirm that all components are securely connected and that the flasks contain a sufficient volume of samples. Press the main power switch to turn on the power, then set the heating power, required distillate volume and heating time via the touch screen. After completing the settings, first start the cooling water circulation system, then press the button for the corresponding channel on the touch screen. The instrument will automatically tare to zero and start heating. When the weight of the distillate reaches the set value, the instrument will stop heating automatically. Users only need to remove the receiving flask. After the distillation of all channels is completed, stop the cooling water circulation with a delay of more than 10 minutes.

# 1. Touch Screen Operation Instructions

### 1.1 Working Interface

Click the parameters of the corresponding channel to set the heating power, target weight, heating time and heating switch for the channel. After the experiment starts, this interface displays the remaining time and the volume of distilled liquid in real time.


### 1.2 Parameter Setting Interface

This interface allows viewing of the volume value and valve status of the corresponding channel, and setting of the weight compensation value, heating compensation value, overtemperature threshold, anti-suck-back switch and pressure relief valve switch for each channel.

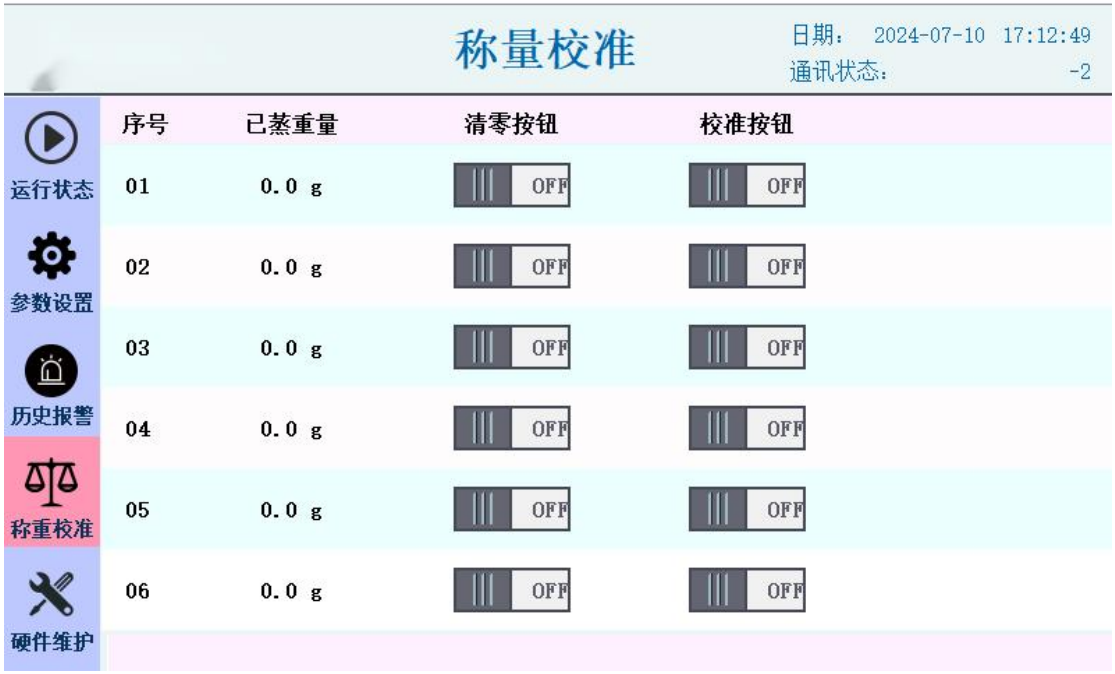

**1.3 Historical Alarm Interface**

Click the Historical Alarm button to enter the interface, which displays all alarm information. Click the Clear Alarm button at the bottom right to clear alarms if needed.


**1.4 Calibration Interface**

Click the Weighing Calibration button to enter the calibration interface.

Calibration and zeroing for the corresponding channel can be performed here (prepare a 200g weight in advance. First click the Zero button (it will rebound automatically), then place the 200g weight on the corresponding channel, and click the Calibrate button (also rebounds automatically) to complete zeroing or calibration automatically).




**1.5 Hardware Maintenance Interface**

Click the Hardware Maintenance button to enter the interface, where you can view the heating status, front/rear valve status and cleaning switch of the corresponding channel.


## 2. Cleaning

The instrument is equipped with two cleaning methods:

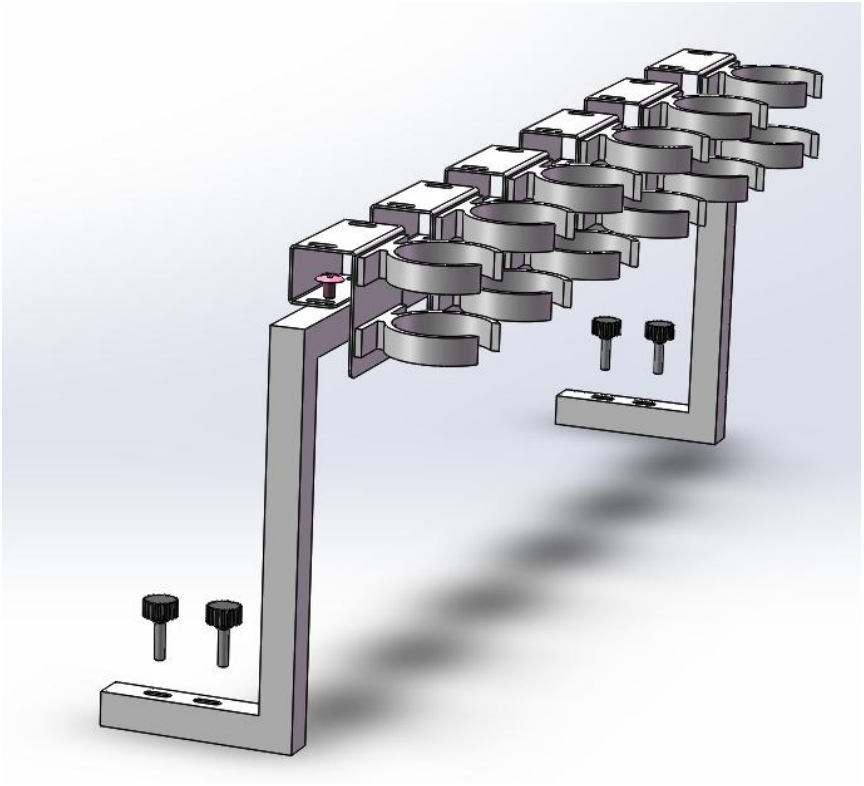
1. After distillation, replace the receiving flask with one filled with clean water or insert the distillate tube into a beaker full of water. Then click the Suck-back button for the corresponding channel on the touch screen; the suck-back process will be completed in 2-3

minutes (lifting the flask a short distance from the heating bowl will greatly shorten the suck-back time). Turn off the main power after the operation.
2. Insert the elbow for cleaning into the side port of the round-bottom flask of the corresponding channel, replace the receiving flask of the channel with one filled with clean water, click the Suck-back button for the corresponding channel on the touch screen, then turn on the Clean button on the touch screen to complete the cleaning of the corresponding channel.

## 3. Instrument Installation

After receiving the goods, unpack and take out all components. First, fix the 6 sets of condenser tube clamps to the 12 opening positions of the condenser support with M6 screws. Then fix the condenser support directly above the main unit with 4 M6 wing screws. No tools are required for this operation.

Connect the hoses on the left side of the main unit to the corresponding water inlet and outlet of the water chiller as marked, and connect all pipelines according to the pipeline connection diagram at the end of this manual to complete the assembly.



## 4. Precautions for Use

4.1 Before powering on the water chiller, strictly check that all pipeline connections are correct and secure to prevent water leakage during operation. Start the circulating cooling

water before turning on the heating; do not connect the cooling water after distillation starts. Sudden contact of the condenser tube with cold water when filled with high-temperature steam may cause the condenser pipeline to crack due to thermal expansion and contraction.

4.2 Use pure water for circulating cooling water; tap water is strictly prohibited.

4.3 Ensure the flasks contain a sufficient volume of liquid and are closely attached to the heating bowl; otherwise, dry heating or slow distillation may occur.

4.4 Prolonged dry heating of round-bottom flasks may cause them to crack; avoid this as much as possible.

4.5 Do not touch the heating bowl and its surrounding parts manually during heating to prevent scalding.

4.6 Before using the instrument, check that the flasks are not damaged and the condensers are intact and leak-free. In case of abnormalities (e.g., flask cracking), turn off the main power immediately; if a condenser cracks, first turn off the water chiller power, then the instrument power, and then remove the corresponding condenser.

4.7 In the event of an accident where a flask cracks in the heating bowl, the liquid will flow into the waste liquid storage tank through the round hole at the bottom of the heating bowl and then discharge from the waste liquid port at the lower left of the instrument. It is required to insert the waste liquid pipes at the lower rear and lower left of the main unit into the waste liquid collection device during operation to prevent waste liquid from overflowing into the main unit and causing contamination or damage due to untimely discharge during long-term use.

4.8 Keep the waste liquid pipe at the rear of the instrument smoothly inserted into the waste liquid barrel, which must be placed below the horizontal level of the instrument's waste liquid port. Empty the waste liquid barrel in a timely manner.

4.9 Ensure all instrument pipelines are connected smoothly and securely; do not bend or block the pipelines to avoid hazards.

4.10 After installing the pinch valve hoses and glass tubes, keep the glass tubes in the center of the volumetric flasks and avoid contact with the flask walls.

4.11 Place a 200g weight before the experiment to verify the accuracy of the built-in weighing sensor for each channel.

4.12 Do not cause vibration to the instrument during distillation to avoid affecting the stability of the built-in weighing sensors; also avoid touching the receiving flasks as much as possible to prevent data errors.

4.13 Do not press the receiving bowl or place heavy objects (≥500g) on it, as this may damage the instrument's weighing sensors.

4.14 The distiller is equipped with both anti-suck-back and suck-back functions. The instrument automatically enters the anti-suck-back state after distillation is completed; to enter the suck-back mode, click the Suck-back button for the corresponding channel.

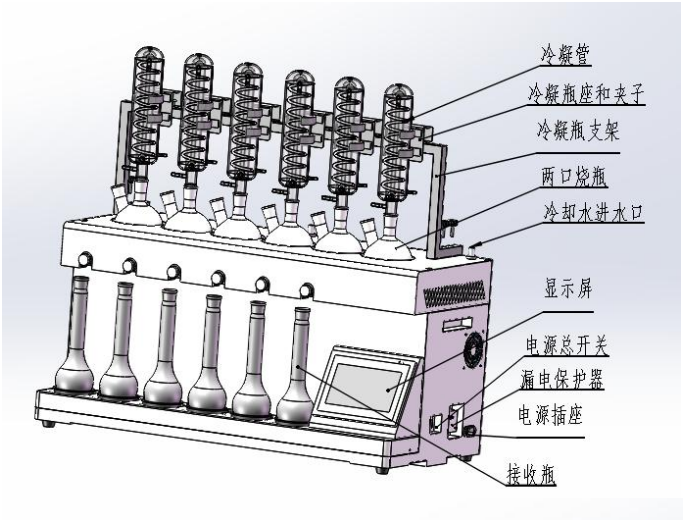
4.15 Do not use the on-line cleaning function when the temperature inside the flask is too high to avoid flask cracking due to excessive temperature difference.

4.16 This product is a high-power heating device and precision instrument, and shall be managed and operated by a designated person. Improper operation in violation of the operating procedures may cause equipment damage or personal injury!

4.17 Ensure the power socket is in good contact and the ground wire is reliably earthed!

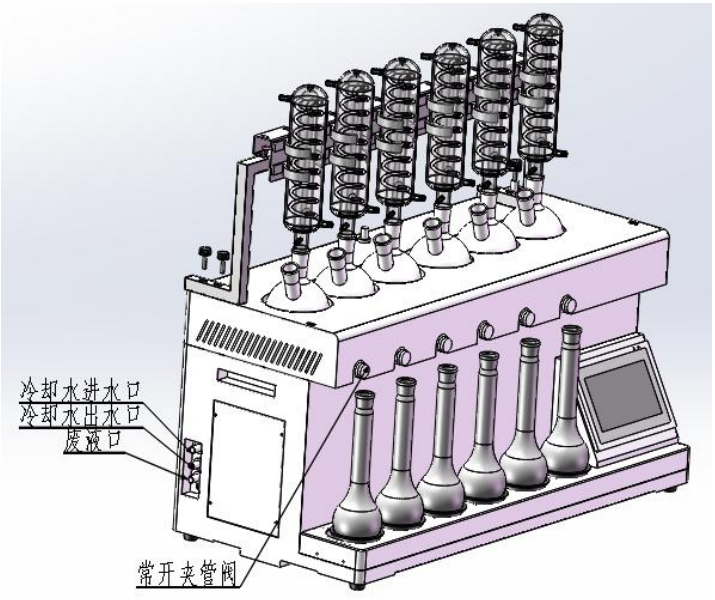
4.18 The instrument is not waterproof; avoid liquid flowing into the main unit during use to prevent short circuit. Check all pipelines before connecting the circulating cooling water to ensure all hoses are securely connected to the interfaces.
4.19 After using the instrument, first remove the receiving flasks, then turn off the water chiller. After stopping the cooling water circulation, all cooling water in the condenser tubes will drain into the water chiller. Finally, turn off the main unit switch of the distiller, and disconnect the power supply if the instrument is not used for a long time.
4.20 Only use the flasks provided by our company for distillation operations. Using other unapproved round-bottom flasks may cause flask cracking, flasks getting stuck in the heating bowl (unremovable), poor distillation effect and other problems.
4.21 If the distillate volume of a certain channel is significantly less than that of other channels during distillation, the cause may be poor contact between the flask bottom and the heating bowl, poor air tightness of the channel, or internal cracking of the condenser.
4.22 The maximum continuous operating time of the instrument shall not exceed 4 hours. For long-term use, stop the instrument for 1 hour every 4 hours.

## 5. Instrument Appearance and Component Nomenclature




Condenser tube
Condenser holder and clamps
Condenser support
Two-neck flask
Cooling water inlet filter

Display screen
Main power switch
Earth leakage protector
Power socket
Receiving flask




Cooling water inlet
Cooling water outlet
Waste liquid port

Normally open pinch valve

## 6. Maintenance and Care

6.1 If you feel an electric shock when touching the instrument, or notice abnormal noises, pungent odors, smoke or other abnormal phenomena during use, immediately cut off the power supply, stop using the instrument and contact our After-sales Service Department in a timely manner.
6.2 Do not disassemble, repair or modify the instrument without authorization.
6.3 Regularly check that the power cord plug and socket are in good and secure contact, reliably earthed, and free of overheating.
6.4 The instrument is not waterproof. Do not expose the main body to water, otherwise it may cause poor insulation, leading to electric leakage and equipment failure. In case of accidental water ingress into the instrument interior under special circumstances, immediately cut off the power supply, stop using the instrument and contact our After-sales Service Department promptly.
6.5 Keep the instrument away from excessive moisture to reduce the risk of rust on metal components.
6.6 Only part of the instrument's exterior is corrosion-resistant. If strong acids, strong alkalis, organic solvents or other reagents splash onto the instrument surface, immediately cut off the power supply, stop using the instrument and wipe the surface clean in a timely manner. If a large amount of reagents spill into the heating bowl, onto the weighing tray or into the instrument interior, immediately cut off the power supply, stop using the instrument, clean up the visible reagents on the surface at once and contact our After-sales Service Department without delay.
6.7 The distillate connecting hoses are consumables; the degree of wear varies with different experimental projects. It is recommended to check the hoses regularly and lift them from the clamped position of the pinch valve. Replace the hoses if adhesion, damage or reduced elasticity is found on the tube wall.
6.8 Replace the silicone tubes for cooling water connection every 6 months to 1 year according to actual usage conditions.

7. Warranty Terms
7.1 The entire instrument is covered by a one-year warranty.
7.2 The following situations are not covered by free warranty services, but paid repair is available:

- Lack of Warranty Card and invoice;
- The instrument has been disassembled or repaired without authorization (verified by the anti-disassembly sticker);
- Damage caused by improper transportation, use or maintenance by the user;
- Damage caused by force majeure;
- Expiration of the three guarantees period.

## About Zhongke Tk

Zhongke Tk (Shandong) Intelligent Technology Co., Ltd. was founded in 2015, with its headquarters located in Jinan, Shandong Province. It is a high-tech enterprise specializing in the R&D, production, sales and service of water quality analysis equipment.

The company has a professional R&D team. With profound professional knowledge and rich practical experience, the team members continuously promote the innovation and progress of water quality analysis technology to ensure that the products are always at the advanced level of the industry.

Our products cover a variety of water quality analysis equipment, including hydrogen conductivity meter, dissolved oxygen meter, pH meter, conductivity meter, multi-parameter water quality analyzer, etc. At the same time, the company also provides customized solutions for customers, tailoring suitable water quality analysis equipment and monitoring schemes according to their specific needs.

Adhering to the business philosophy of Technological Innovation, Quality First, Service Supreme, we continuously improve product quality and service level, provides customers with suitable water quality analysis equipment and solutions, and makes greater contributions to the development of the water quality analysis industry.

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