Huazheng

HZ-662
Automatic Distillation Tester

Huazheng Electric Manufacturing (Baoding) Co., Ltd

Contents

I.Overview

HZ-662 petroleum product distillation tester is designed and manufactured according to GB / T6536-97 test method. Suitable for natural gasoline (stable light hydrocarbons), automotive gasoline, aviation gasoline, jet fuel, special boiling point solvents, naphtha, kerosene, diesel, gas oil, and similar petroleum products.

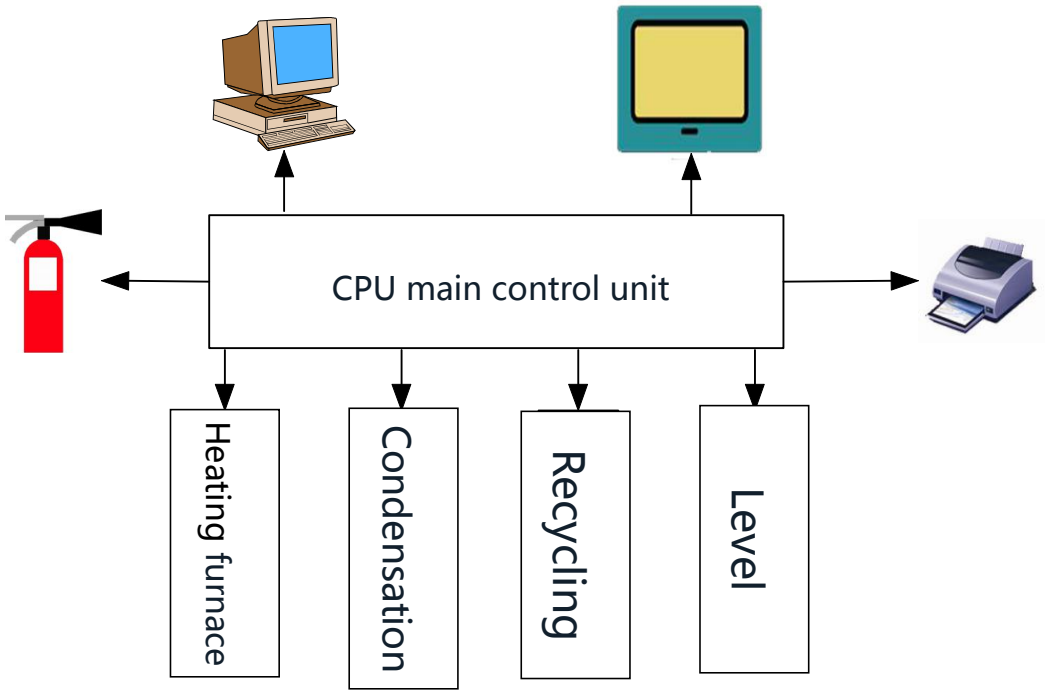
II.Technical Parameters

1. Power supply: AC220V ± 10% 60Hz
2. Heating power: 2KW
3. Refrigeration power: 0.5KW
4. Steam temperature measurement range: 0℃ ~ 400 ℃
5. Electric furnace temperature measurement range: 0℃ ~ 500 ℃
6. Refrigeration temperature range: 0℃ ~ 100 ℃
7. Refrigeration control accuracy: ± 1 ℃
8. Temperature measurement accuracy: ± 0.1 ℃
9. Volume accuracy: ± 0.1ml
10. Fire alarm system: nitrogen fire

III.Structure and principle

The petroleum product distillation tester is composed of an automatic bath temperature control system, an automatic distillation temperature control system, a refrigeration system, an automatic liquid level automatic tracking system, and a safety protection system. The instrument adopts the whole machine multi-thread operation control, which makes the instrument realize the operation, control, calculation and display automation, which greatly improves the measurement intelligence and automation. The instrument adopts the fuzzy temperature control principle, and the Freon compressor is used to control the temperature of the refrigeration equipment, which can accurately and precisely control the temperature of the condenser tube and the receiving chamber. The temperature measurement system uses high-precision thermal resistance to accurately measure the steam temperature. The instrument adopts imported high-precision liquid level identification system, which can accurately measure the distillation volume, and the measurement

accuracy reaches 0.1ml.



System structure diagram

In order to facilitate human-computer interaction, the system uses a true color touch screen. The user can set the instrument parameters through the touch screen. The touch screen has real-time monitoring of system operating parameters, records key temperature points, tracks temperature volume curves, and stores 256 sets of test data with queries. Function, you can easily query the historical data of various oil products.

The instrument is in accordance with the GB / T6536-2010 standard. Users can choose automatic pressure calibration or not. The system has a built-in atmospheric pressure measurement device with high measurement accuracy. At the same time, the instrument also comes with fully automatic monitoring of temperature, air pressure, auxiliary equipment, fire extinguishing equipment and liquid level tracking equipment. Once the system works abnormally, the system will automatically give prompts and take corresponding measures immediately to prevent accidents.

The instrument has the following characteristics:

1 Compact structure, beautiful appearance and easy operation.

2 Using fuzzy temperature control principle, the temperature control accuracy is high, and the

response speed is fast.

3 The 10.4-inch large true color touch screen makes it easy to use.

4 High level tracking accuracy.

5 Fully automatic distillation process, full automatic process monitoring.

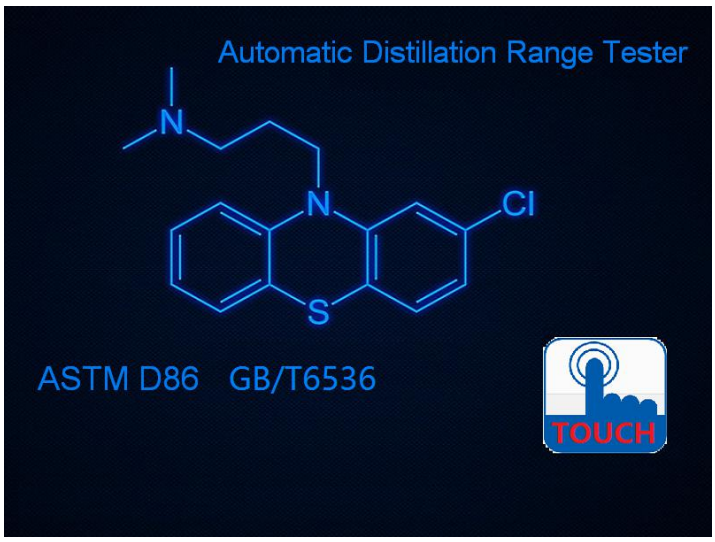
IV.Operating procedures

1. After unpacking the instrument, please check the accessories according to the packing list. If it is damaged, please contact our company in time.
2. The instrument should be carried vertically. The inclination angle should not be greater than 30 degrees along the height of the instrument. It should be installed in a place with good ventilation and light, and the distance from the wall should be more than 0.2 meters. The installation should be stable, otherwise the vibration and noise will increase.
3. Check the antifreeze. The antifreeze has been added at the factory.
4. Connect the power supply of the instrument to a socket with a capacity of 220V / 15A or more. Be sure to have a good ground wire.
5. Take a 100ml sample from a graduated cylinder, and pour as much as possible of the sample from the graduated cylinder into the distillation flask, taking care that no liquid can flow into the branch tube of the distillation flask.
6. Insert the temperature sensor for measuring steam vertically into the distillation flask. The lowest end of the sensor should be 10mm lower than the highest point on the bottom of the inner wall of the branch tube of the distillation flask.
7. Extend the branch tube of the distillation flask into the condensing tube 25 mm to 50 mm so that the rubber stopper on the branch tube is tightly connected to the condensing tube. Rotate the knob of the lifting rack to adjust the height of the electric furnace, and adjust the quartz glass partition to align the electric furnace with the center of the bottom of the distillation flask.
8. Hang the drainage piece on the wall of the measuring cylinder, then place the measuring cylinder in the recovery chamber, rotate the measuring cylinder so that the drainage piece is not on the optical path of the initial distillation point detection, and close the door of the recovery chamber.
9. Check that all parts are ready, turn on the main power of the instrument, and follow the steps on

the touch screen to set the distillation parameters (for the detailed operation process of the touch screen, see the next section).

10. After the test, turn off the power switch.

V.Touch screen operation details



<Power-on initial interface>

Click "CLICK HERE" to enter the next interface

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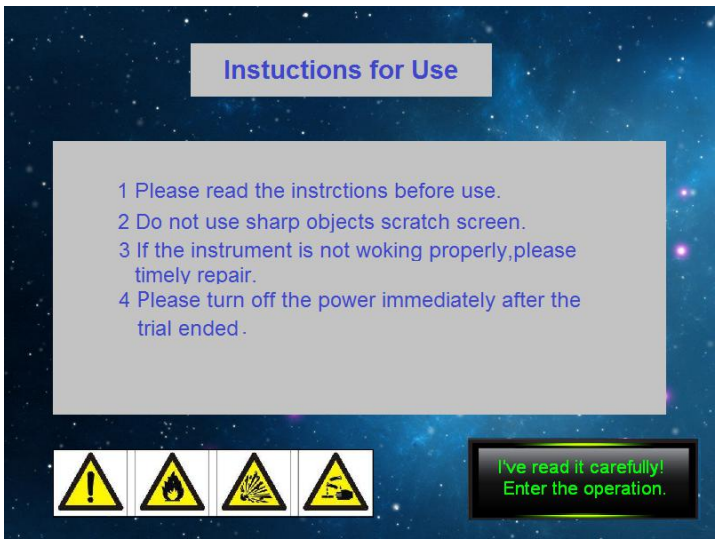

2 <Precautions for use interface>

Click "OK" to enter the next interface.

3 <Oil selection interface>

Please select the type of test oil accurately. Improper selection may cause abnormal test results. The instrument supports oil products: diesel, gasoline, kerosene, methanol, benzene, solvent oil and custom oil products. For unknown models and custom oils, the equipment needs to estimate its initial boiling point and set it into the system before work.

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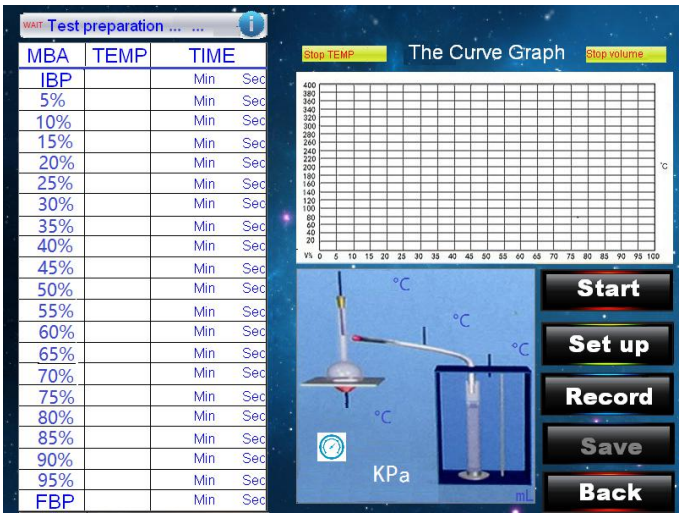

4〈Test process monitoring interface〉

1 Click the "Start" button, the system will start to work according to the preset parameters.

2 Click the "Set" button to enter the setting interface and set the test related parameters.

3 Click the "History" button to enter the historical data query interface, which is used to query the sample data made before.

4 Click the "Back" button to exit the interface automatically and return to step 2.

5 The "Save" button is gray, which means that pressing this button is invalid in the current state.

6 The lower left area of the interface shows the temperature of each important volume point during the distillation.

7 The top shows the temperature-volume curve during heating, where the x-axis is the volume and the y-axis is the temperature

8 The middle area under the interface is the real-time values of various parameters during the system's operation, including atmospheric pressure, heating furnace temperature, steam temperature in the distillation flask, refrigeration tube temperature, recovery chamber temperature and recovery volume.

Note: Before clicking "Start", you must ensure that all test parameters are set correctly. Otherwise, once the test is started, you cannot modify the parameters again. If you click the "Force Stop" button during the test, the test will end in advance. It means unsuccessful and all data of the test is invalid. Click the "Back" button to restart the test.

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5〈Parameter setting interface〉

1. Click the "Hand" area to set the parameters. Enter a maximum of one decimal place. After selecting the parameters, click the "Set" button to determine the parameters. The parameters will be automatically saved after each modification, and CE is Grid key.

2. Click the "Reset" button, and all parameters will be restored to the initial settings.

3. The special measurement column is used by the commissioning staff. After clicking, it will enter the special password area. The operator does not need to click this column. If it is wrong, click the "Back" button.

4. Click "System Self-Test" to enter the system self-test interface. This key function can be used to detect all parts of the system and ensure that each part of the system can work normally every time it is used. On the 1st of every month, the system will automatically prompt the user to perform a self-test, and the user can also manually set it to self-test each time it is used.

5. Before the equipment leaves the factory, the default measuring cylinder diameter is calibrated to 26.3mm. When replacing measuring cylinders with other diameters, the diameter of the measuring cylinder needs to be set to the nearest three decimal places. For the setting range, see the appendix.

6. Click the "Back" button to return to the test monitoring interface.

7. After clicking the "Temperature Control" button, the system will work according to the set temperature value. Click "Normal Temperature", the system will work at the current temperature by default, and the set value is invalid. In order to prevent the temperature control system from frequently turning on, the system will only turn on the temperature control if the set value deviates from the current temperature value of the controlled part by more than 3 degrees Celsius, otherwise the temperature control system will not turn on.

8. Click the "Clock" icon in the upper right corner to enter the time setting interface.

9. All setting data have corresponding ranges. If the input is too large or too small, the system will automatically block the input value. See the appendix for specific input ranges.

   For example: The current temperature of the condenser tube is 15 degrees Celsius. If the user enters 30 degrees Celsius and selects the temperature control option, the temperature control system will start heating until the temperature reaches the set value and maintain a constant temperature. Refrigeration is required, but the cooling system compressor cannot be started frequently, so the temperature control system still does not work after setting. At this time, click the back button. After confirming the setting, click the start button to start the refrigeration system.

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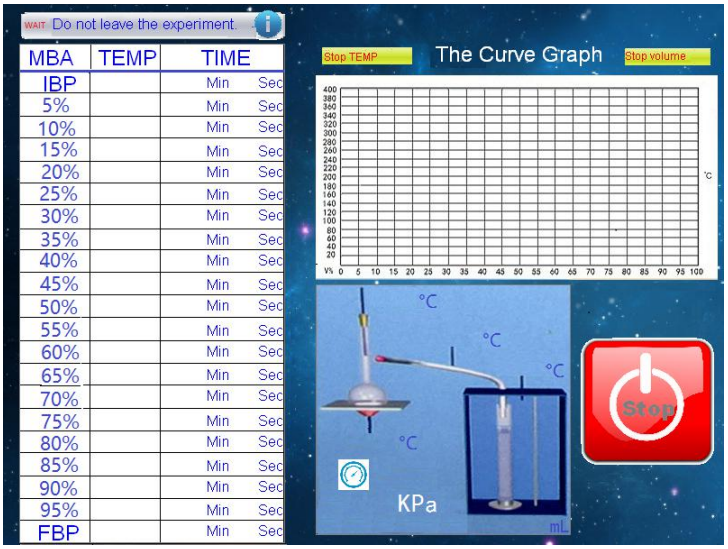

6〈Test start interface〉

Clicking the "Stop" button will forcibly exit the test for emergency situations. The gray button indicates that pressing the button is invalid in the current state.

Note: After the test is started, under normal conditions, the system will perform distillation in accordance with the set parameter sequence; the experiment can only be performed when the temperature of the cooling tube and the temperature of the recovery chamber meet the requirements and the temperature of the heating furnace is lower than 40 degrees Celsius, otherwise the system will automatically adjust Temperature, the heating furnace does not heat in this process.

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7〈Distillation completion interface〉

When the distillation end point appears, the system considers that the distillation process is over. At this time, the system automatically stops heating, the temperature of the condenser tube and the receiving chamber is maintained at the original set value, the current important data is saved, displayed on the screen, and a sound prompt is given signal. Click "OK" to enter the next interface.

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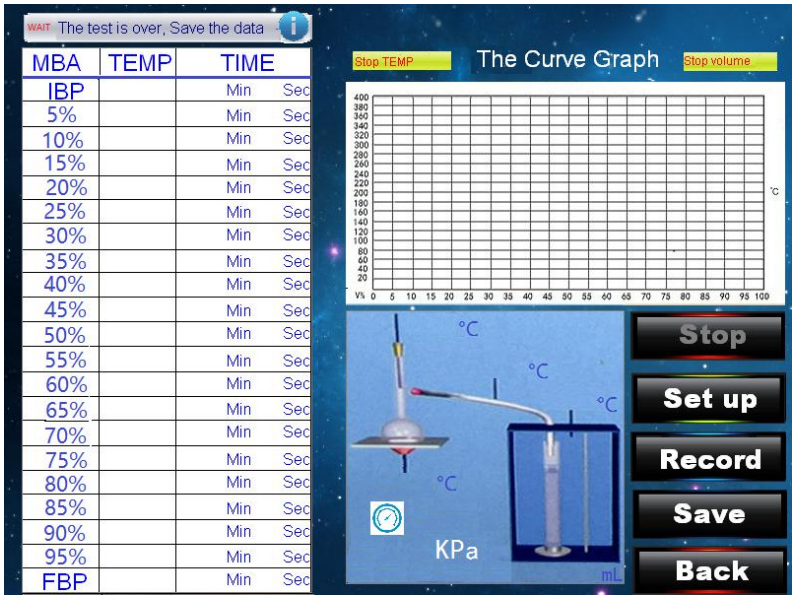

8〈Distillation completion selection interface〉

1 Click “Save”, the system will automatically save the current parameters,

And print out all the data for this test.

2 Click “Back” and the system can continue to the next test.

Note: After the test is over, the data is saved only when the "Save" button is clicked. The system can save the final data of 256 groups of experiments. When the number of tests is greater than 256, the system will automatically overwrite the oldest data.

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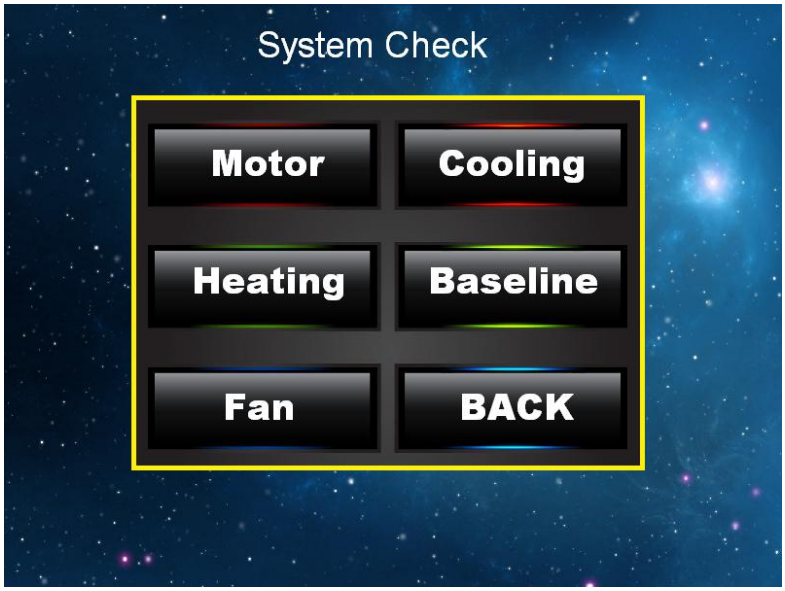

9〈System self-test interface〉

1. "Liquid level tracking equipment" self-test, can control the tracking equipment

Moving up and down. Please do not run the tracking motor to the top or low end of the recovery chamber.

2. Self-test of "cooling equipment", self-test takes 5 minutes.

3. "Heating equipment" self-test, the electric furnace will automatically heat for 20s.

4. “Calibration” self-test. In this selection item, the steam thermometer and atmospheric pressure can be calibrated. Please use it with caution.

5. "Auxiliary system" self-test, fan cooling and alarm.

6. At the beginning of each month, the device automatically prompts that a self-test is required.

Note: It is not recommended that users frequently self-check the refrigeration equipment. The system does not respond to new inputs while the self-test is in progress.

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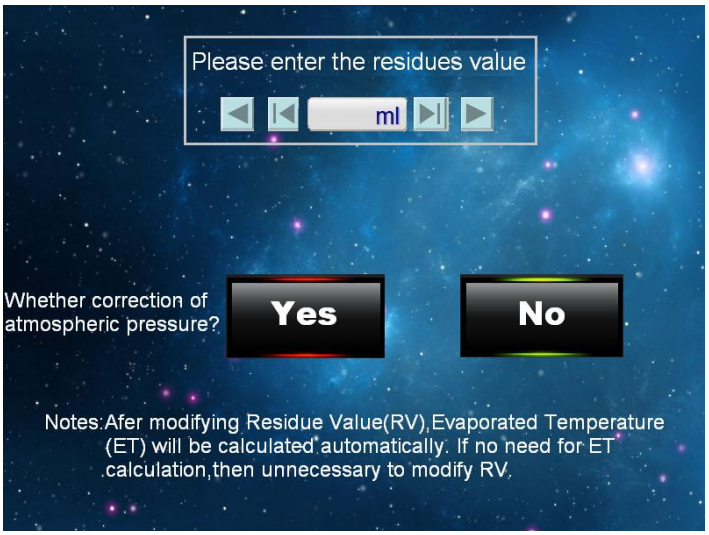

10〈Corrected atmospheric pressure selection interface〉

This interface choose atmospheric pressure correction, if you need to measure temperature atmospheric pressure correction, click "√" click the check the number, the system will automatically to modify data, and then stored, and at the same time through the printer for printing, back to the main control interface, all data is the latest revised data.

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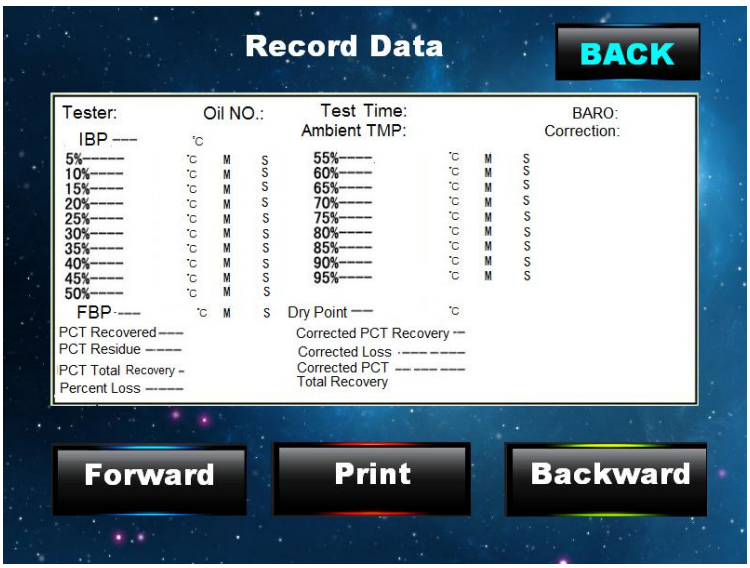

11〈Historical data query interface 〉

1. Click the "Left" arrow to perform a turn-up action to find the previous historical data through the test time.

2. Click the "Right" arrow to perform a downward movement.

3. Click “Print” to print out the query results currently displayed.

4. Click “Back” to return to the main interface of test monitoring.

Note: This page will show the test time, experimenter, oil number, various temperature points and final distillation volume of the historical test.

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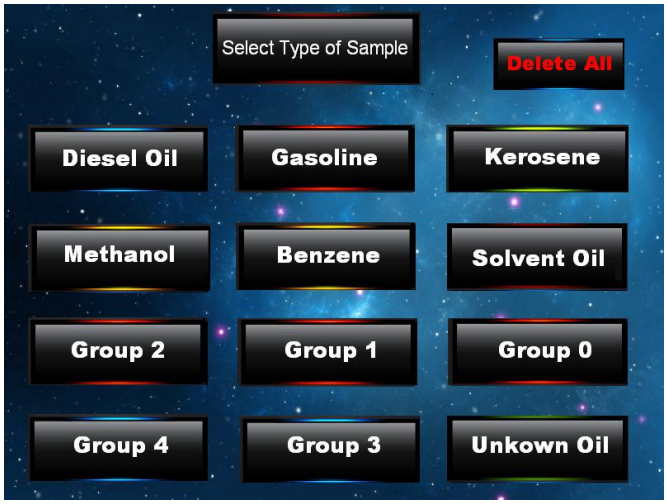

12〈Various oil history data selection interface〉

Select the type of distilled petroleum you want to query. In order to facilitate the query, you need to sort by query. The system stores a maximum of 256 sets of data. Clicking the "Clear History Data" button will clear all historical storage data.

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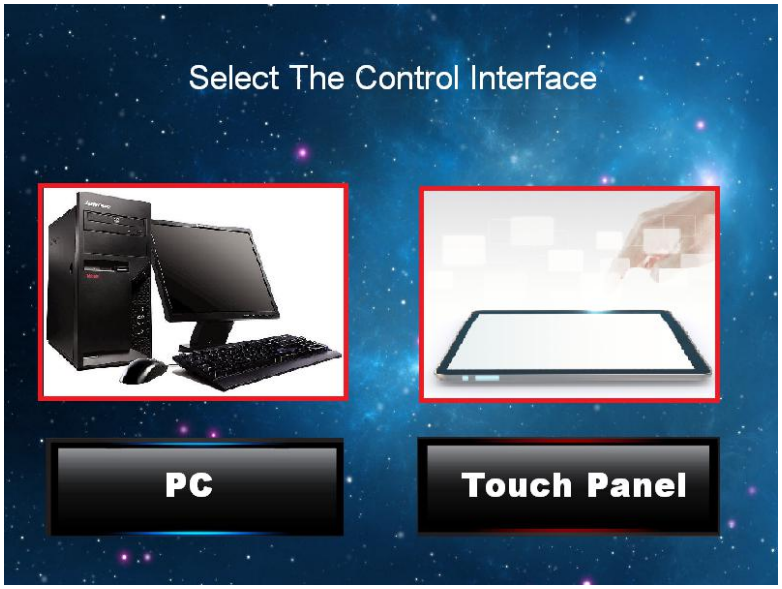

13〈Network selection interface〉

The device can support both touch screen and computer control terminals. The default is the touch

screen interface after booting. When the computer button on the touch screen is clicked, the system will automatically close the touch screen and enter the computer control terminal. Selecting the touch screen will enter the touch screen control terminal.

This model is not configured with this function, only the touch screen is effective!

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14〈Alarm interface of graduated cylinder not cleaned〉

Click the "Start" button, the system will start distillation. At this time, the liquid level tracking device will automatically detect whether the cylinder is refreshed. When the cylinder wall is not brushed clean, the touch screen will automatically give a prompt. Take out the graduated cylinder and brush again, and then you can start the test again.

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15〈Liquid level tracking runaway interface〉

When the liquid level tracking system works abnormally, the system will automatically give the liquid level tracking out of control interface to avoid equipment damage. At this time, the test will be regarded as a failure and the system will automatically stop the heating furnace. Click the "OK" button to restart the test.

Note: When the user parameters are set incorrectly and the heating speed is too fast, or the distilled oil is opaque, the liquid level tracking equipment will not work properly at this time, resulting in failure to track or out of control.

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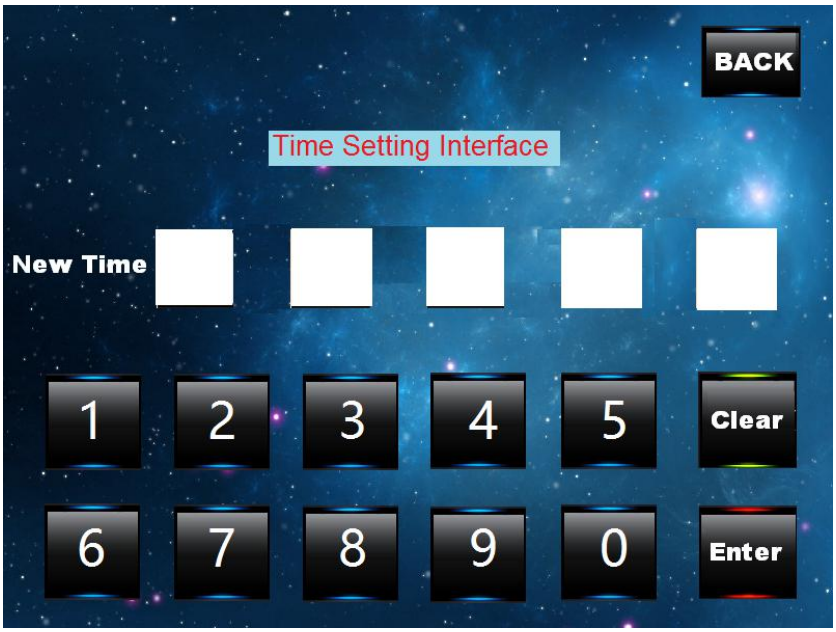

16〈Time calibration interface〉

1. Set the new time after entering this interface.
2. First click the "Clear" button to enter the time setting state.
3. Enter the new time correctly in sequence, and click
   "OK" button, the system time is successfully modified.
4. Click the "Back" button to return to the parameter setting interface.

Example: The current time is 12: 00 on January 01, 2012, and the new time is 16:30 on February 01, 2012. Click the "Clear" button and enter 1, 2, 0, 2, 0, 1, in turn. 1, 6, 3, 0, and then click the "OK" button.

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VI.Precautions

1. Please read the manual carefully before use to avoid misoperation.

2. When the system automatically prompts an error, please follow the instructions step by step to troubleshoot.

3. Avoid sticking oil to the bottom of the flask, if necessary, wipe it dry with a rag, otherwise it may cause a fire.

4. The equipment has been calibrated before leaving the factory. Do not touch precision equipment such as photoelectricity during operation.

5. Please set the test parameters accurately, otherwise the test results may be unreliable.

6. Refrigeration equipment cannot be turned on continuously, and the interval between two uses is more than 10 minutes.

7. The instrument bath must be filled with medium before it can be powered on, otherwise the heater will be damaged.

8. The instrument will not be used for a long time, and the medium in the bath should be completely removed by using a liquid suction device, and the instrument should be wiped clean with a rag to avoid affecting the life of the instrument due to the presence of the medium. The next time you use it, be sure to fill it with media before using it.

9. For safety, the air nozzle at the rear of the machine can be connected to nitrogen or carbon dioxide gas source. For equipment without automatic fire extinguishing, if a fire occurs, turn off the power switch of the host and then press the fire button on the front panel of the host.

Appendix I

Reference table of initial power setting value and initial boiling point temperature

Initial boiling point temperature（$^{\circ}C$）	Initial power
$T \leq 50$	10~20%
$50 < T \leq 80$	30~40%
$80 < T \leq 120$	40~45%
$120 < T \leq 160$	45~50%
$160 < T \leq 200$	50~60%
$T > 200$	120~50

Note: This table is a reference set value. The initial power of the distiller has been set before

leaving the factory. For known oil products (diesel, gasoline, kerosene, methanol, benzene, and solvent oil), the setting is set by the manufacturer after a large number of tests. The best setting value obtained is not recommended for users to modify. When the user changes, the default value will be overwritten by the new setting value. Before using, users can refer to Appendix II.

Appendix II

Parameter setting value initial default value

Oil name		Initial default			
	Initial power	Refrigeration tube temperature $^{\circ}C$	Recovery chamber temperature $^{\circ}C$	Final boiling point power	Measuring cylinder diameter mm
Diesel	40%	40	25	90%	26.500
gasoline	16%	2	15	40%	
kerosene	40%	25	25	90%	
Methanol	15%	2	15	10%	
Benzene	18%	2	15	10%	
Naphtha	20%	2	15	20%	
2 组油	15%	2	15	40%	
1 组油	12%	2	12	40%	
0 组油	8%	2	10	30%	
4 组油	50%	40	25	100%	
3 组油	70%	40	25	100%	
未知型号油	40%	25	25	60%	

Appendix III

Parameter setting range

	Initial power	Condenser temperature $^{\circ}C$	Recovery chamber temperature $^{\circ}C$	Measuring cylinder diameter mm
Setting range	0~100	0~50	0~35	26~27.5

Packing List

No.	Item	Qty
1	Analyzer	1
2	Power cord	1
3	fuse tube（6*30 15A）	1
4	distillation flask	2
5	graduated cylinder（Automatic without ）	2
6	Flask support plate（Φ38）	1
7	Flask support plate（Φ50）	1
8	rubber stopper	4
9	drainage piece	1
10	measuring cylinder cap	1
11	cleaning leads	1
12	temperature sensor	1
13	Printing paper	2
14	User manual	1
15	Certificate of Conformity	1