

HZBD-1177

Automatic Freezing Point Tester



Huazheng Electric Manufacturing (Baoding) Co., Ltd

Dear user:

Thank you for choosing HZBD-1177 Automatic Freezing Point Tester.

We hope that this instrument can make your work easier and more enjoyable, so that you can get the feeling of office automation in the test and analysis work.

Before using the instrument, please read this manual, and operate and maintain the instrument according to the manual to prolong its service life. "Just a light press, the test will be completed automatically" is the operating characteristics of this instrument.

If you are satisfied with this instrument, please tell your colleagues; if you are not satisfied with this instrument, please call (0312) 6775656 to tell you to serve you at all times-Baoding Huazheng Electric Manufacturing Co., Ltd., our company will definitely make you satisfied !

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I. Overview

The automatic engine coolant freezing point tester is designed and manufactured in accordance with the national petrochemical industry standard sh/t0090 determination of engine coolant freezing point. This instrument is suitable for measuring the freezing point of engine coolant. It is applicable to the determination of engine coolant and its concentrate.

Method summary: under the specified cooling conditions, when the tested sample is cooled to a certain temperature, the temperature rises again after solid precipitation, and the maximum temperature reached by the rise is the freezing point.

II. Technical Parameters

1. Power supply: AC220V $\pm$ 10% 50Hz
2. Heating power: 600W
3. Refrigerating power: 800W
4. Mixing motor: AC220V/14W
5. Cold bath temperature: - 70 $\sim$ 30 $^{\circ}$ C
6. Display accuracy: 0.1 $^{\circ}$ C
7. Ambient temperature: 0 $\sim$ 25 $^{\circ}$ C.
8. Relative humidity: $\leq$ 85%.

III. Structure And Characteristics

(1) Structure

The automatic engine coolant freezing point tester consists of five parts. It includes bath cooling system, bath heating system, motor stirring system, color touch screen human-computer interaction system, printing and export system. The instrument bath uses alcohol as the refrigerant and adopts the double compressor refrigeration technology. The minimum temperature of the bath can reach -70 $^{\circ}$ C. After the test, considering that some users still have to continue the test, the refrigerator is not turned off. If it is not used or wants to heat the bath, it can be operated manually. Click on the

system setting to start or close the cooling point if you want to heat or stop cooling. The built-in heating system in the cold bath can make it warm up (15 °C above zero or as required), or turn off and automatically heat up.

The instrument is equipped with a 7-inch color touch screen, which can display the temperature and temperature curve of the sample and cold bath in real time; Users can set the expected freezing point in real time; Modify the instrument time. After the test, the instrument will automatically print the results; At the same time, the test results are stored, and the embedded system design is adopted, so that users can view the historical data.

(2) The system has the following characteristics:

1. Compact structure;
2. Adopt embedded system design, and automatically detect the whole test process;
3. 7 Inch true color touch screen makes it easy to use;
4. High measurement accuracy;
5. Good repeatability;

IV. Preparation

1. After unpacking the instrument, please count the accessories according to the packing list. If there is any damage, please contact our company.
2. The instrument shall be handled vertically. The inclination angle shall not exceed 30 degrees along the height of the instrument. It shall be placed in a place away from light and placed stably. Otherwise, there will be vibration after the instrument is started, which will affect the service life of the instrument.
3. Before starting the machine (adding alcohol for the first time), check the alcohol level in the cold bath to ensure that the alcohol level exceeds the level of the refrigeration circuit and the sample in the cold bath. When the alcohol is insufficient, add enough alcohol first, and then conduct the experiment.
4. Connect the instrument power supply to a socket with a capacity of 220v/10a or more, and pay attention to the good grounding wire.

5. Take out 75 ~ 100ml sample with measuring cylinder and put it into clean and dry cooling pipe.
 6. Place the cooling pipe in the coolant and tighten the bottle stopper.
 7. Adjust the proper position of the test tube agitator so that the sensor is centered in the circle of the agitator.
- Turn on the power and click the touch screen to enter the main control interface.

V. Instructions For Using The Touch Screen

1. Turn on the power switch and the instrument enters the following main interface:

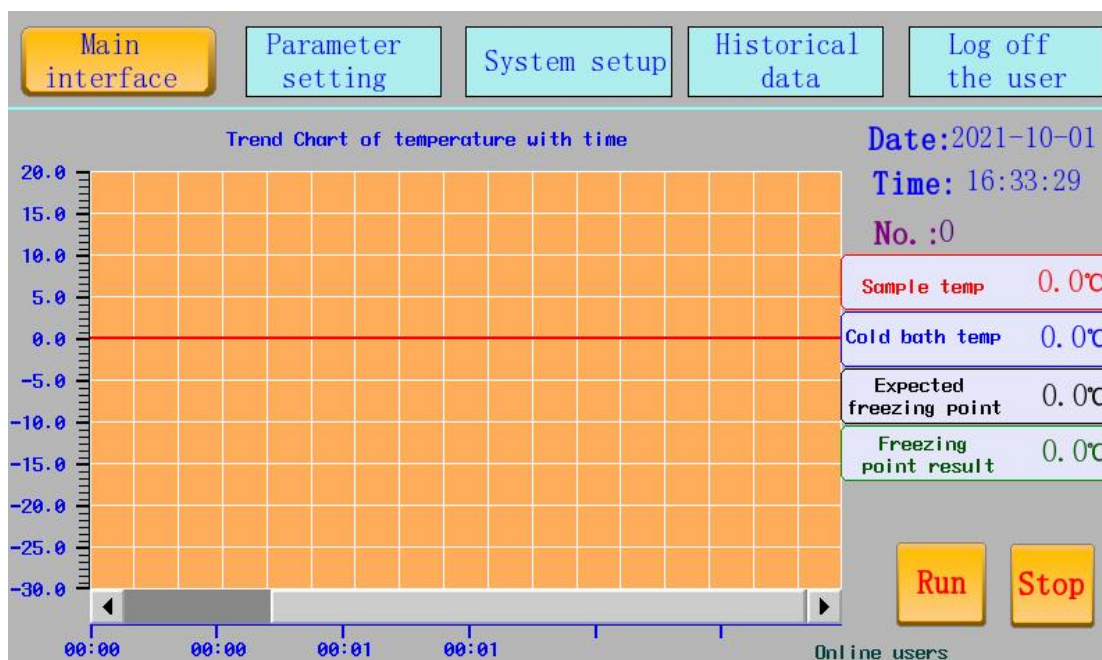


Figure 1

The main interface of the instrument is shown in Figure 1. The above 4 buttons are respectively for the main interface, parameter settings, system settings and historical data.

The main display area is the trend chart of the temperature of the sample over time, which can show the temperature value of the sample and the ice bath. In the display area, the right display area will show the specific value, and below are the experimental results of the expected freezing point and test tube. The bottom right corner is the trial start and close buttons.

2. Parameter settings are set as shown in Figure 2

Figure 2

The parameter setting interface can set the date and time for the temperature calibration of the sample temperature and the bath temperature. Samples can also be numbered. If you modify these parameters, the dot and the long box to modify the number. Where the expected freezing point is related to the experimental process, the instrument detects the freezing point from above the expected freezing point and records every 15 S until the freezing point is detected; if the expected freezing point is not yet

If the freezing point is detected, the instrument can be extended to 30 degrees below the expected freezing point, continue to detect, give up a large range, convenient for users. The bath temperature control is also associated with the expected freezing point (beyond the range of the bath heating)

3、System setup is shown in Figure 3

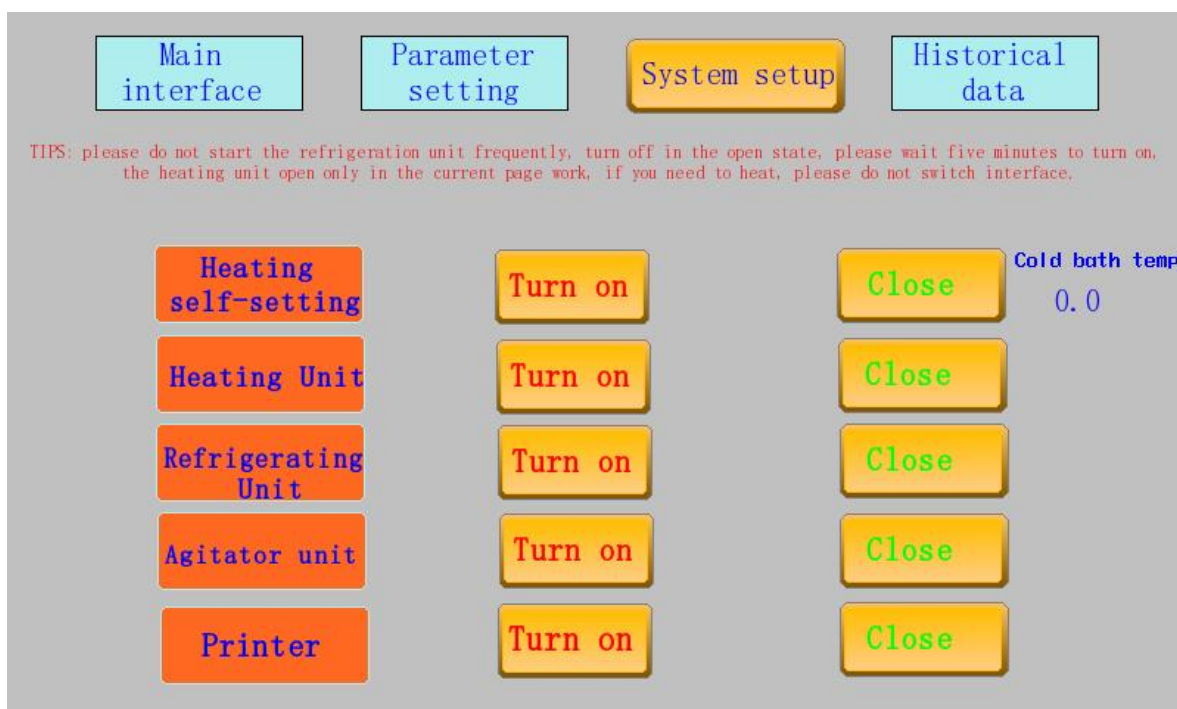


Figure 3

Open and close can be manually set in the system setting interface. Check the various parts of the instrument first. The point heating device is opened, the instrument bath warms up; the point refrigeration device is opened (not opened frequently), the refrigeration starts, the instrument bath drops; the point stirring device is opened, and the instrument sample is stirred. Point close is vice versa.

When the test tube and mixer are installed, you can point the mixing device to start, see if the stirring is good, and then turn off. Open the cooling unit with alcohol in the bath to cool the bath first (because the test tube temperature lags behind the bath, do not start the test immediately, drop the bath temperature first (3-5) °C, and then return to the main interface)

4. After clicking the start button of Figure 1, the instrument automatically turns off the parameter setting, system setting, and historical data viewing, so the parameters must be set in advance before starting the test.

After all the preparation work is done, click the start button to conduct the test. During the test, the system will automatically detect the freezing point. After the test, the stirring motor will stop and print the freezing point result. After the test, the compressor will enter the system setting interface to close (or shut off). For heating, heating can also

be turned on manually at the system setting interface. When the cold bath temperature rises to room temperature (155, the heating system automatically turns off °C).

5. Print the following interface after the freezing point detection:

```

Freezing point results
.....
Sample name:

Sample number 0
  Expected      0.0℃
freezing point
  Freezing      0.0℃
point result
  Date: 2021-10-01
  Time: 16:34:20
Operator _____
  
```

5. Historical data interface

Serial	Date:	Time:	Sample name:	Sample number	Expected

Enquiry Y/ M/ D/ H M S
 start time 0 12
 End time 0 3

Query display Data import USB drive Delete data 返回 back USB on

Figure5

Figure 5 shows the historical data query interface. At the end of each experiment, the experimental results are stored in the historical database. Time, date, number, expected freezing point, and experimental freezing point, etc. 7. The path of importing the data

into the U disk is: export / freezing point experimental data /

VI. Maintenance And Repair

1. Keep the instrument clean frequently to prevent the erosion of acid, alkali, oil pollution and wet gases. 2. Due to the high degree of automation of the instrument, when the instrument fails, please repair it, do not dismantle it. 3. If the test is not conducted for a long time, please turn off the power supply and unplug the power plug.

VII. Packing list

No.	Item	Qty
1	main engine	1
2	Test bottle glue plug	1
3	Freepoint test tube	1
4	temperature sensor	2
5	Power connection line	1