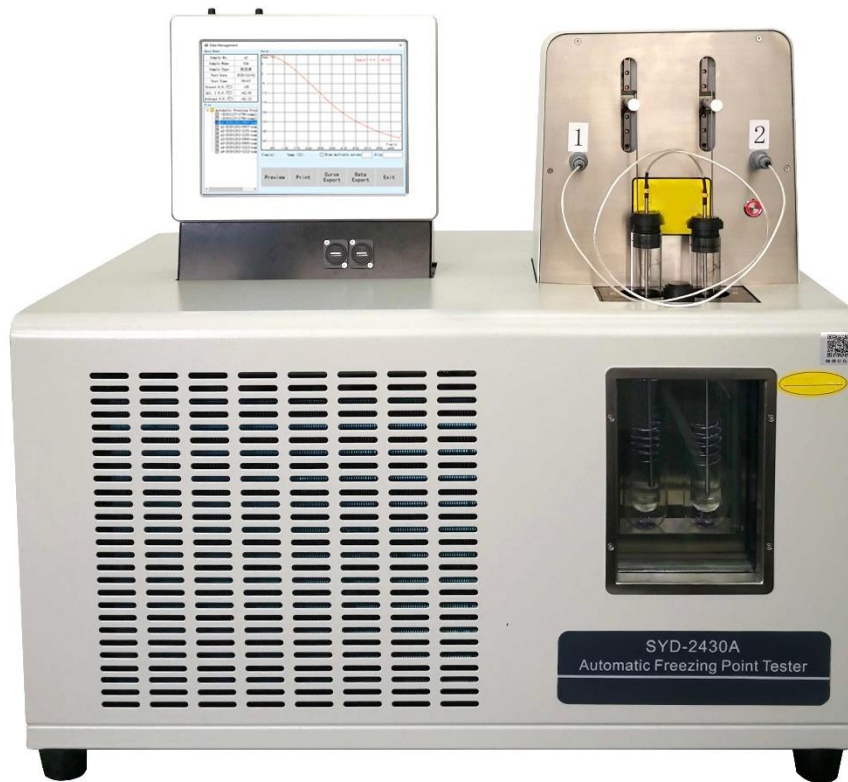


SYD-2430A

Automatic Freezing Point Tester


Operation Manual



Content

I. Safety cautions.....	2
II. Purpose and scope.....	2
III. Main technical specification and parameters.....	2
IV. Introduction of Components and Functions.....	3
V. Usage of instrument.....	5
VI. Maintenance.....	11
VII. Trouble removal.....	12
VIII. Full set and technical documents.....	13

I. Safety cautions

	warning	To ensure your safety, the instrument must be connected to a power supply with reliable grounding.
---	----------------	---

(1) Power supply requirements

The main working power supply is AC (220 +10%) V, 50Hz, single-phase grounding.

(2) Installation requirements

1. When the instrument is transported or moved, it must be kept at rest for 2 hours before it can be energized.
2. The instrument is placed on a firm and flat ground. The distance between the air inlet of the condenser and the wall is not less than 200 mm.
3. There shall be no objects or equipment near the instrument that interfere with the normal operation of the instrument, such as strong magnetic field.

II. Purpose and scope

The instrument is designed and made as per the Industry Standard of People's Republic of China SH/T0090 "Test Methods for Freezing Point of Engine Cooling Liquid". Equipped with different accessories, it can be used to determine freezing point of engine cooling liquids and condensation liquids. It is a multifunctional freezing point tester.

III. Main technical specification and parameters

1. Power supply: AC 220 V \pm 10%, 50 Hz;
2. Cold trough: Stainless steel cold trough, glass observation window.
3. Freezing point range: -54 $^{\circ}$ C \sim 2 $^{\circ}$ C.
4. Temperature controlling range of cold trough: -70 $^{\circ}$ C \sim 30 $^{\circ}$ C;
5. Temperature controlling accuracy: \pm 0.1 $^{\circ}$ C;
6. Refrigeration system: new type of refrigeration compressor;

7. Heating power: 350W.
8. Stirrer for sample: stirred by an electromagnet, 60~80 times/min.
9. Ambient temperature: 15°C~35°C.
10. Relative humidity: ≤80%;
11. Total power consumption: ≤2000W.
12. Dimension: 770 mm×480 mm×730 mm.
13. Net wet:45kg.

IV. Introduction of Components and Functions

1. Total structure

The instrument is composed of refrigeration system, controlling system and other components. (See Fig.1)

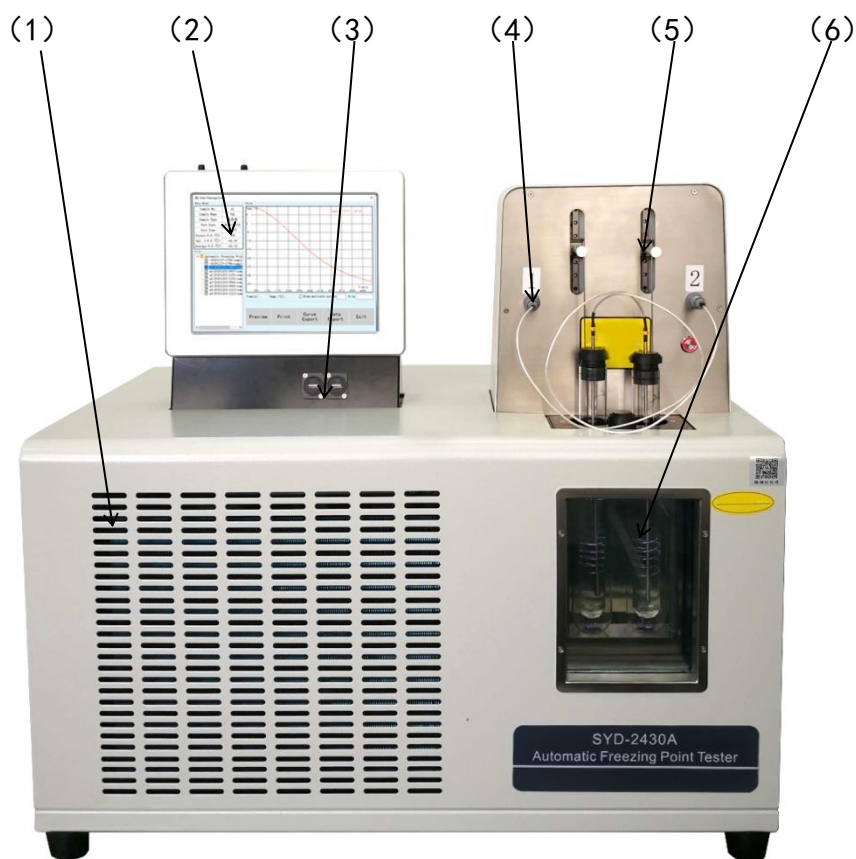
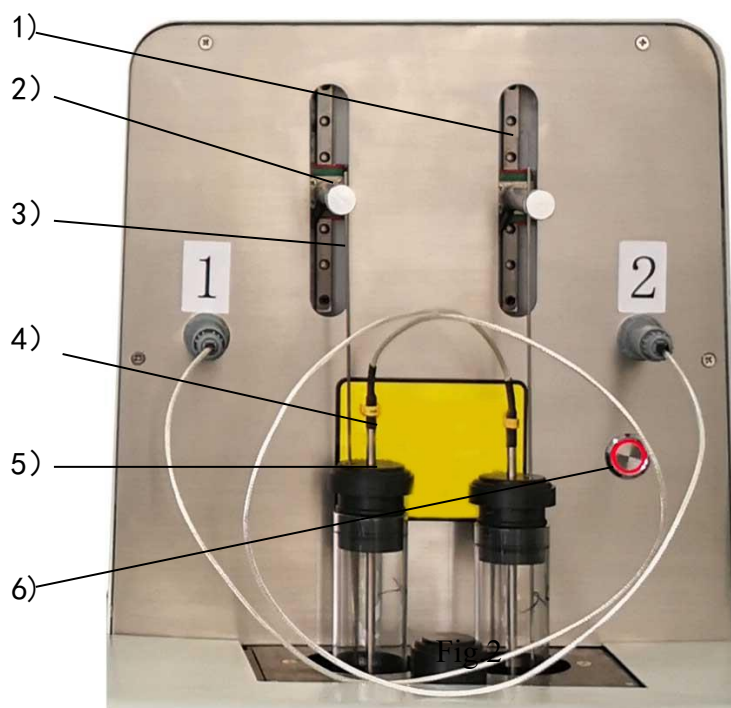


Fig.1

- | | | |
|--------------------------|-------------------------|------------------------|
| (1) Refrigeration system | (2) Touch screen | (3) USB socket |
| (4) Temperature sensor | (5) Testing stir device | (6) cold trough device |



- 1) Stirring device 2)Screw grip 3)Stirring rod
4)Temperature sensor 5) Test tube stopper 6)Power switch

2.Side of instrument(Fig.3)

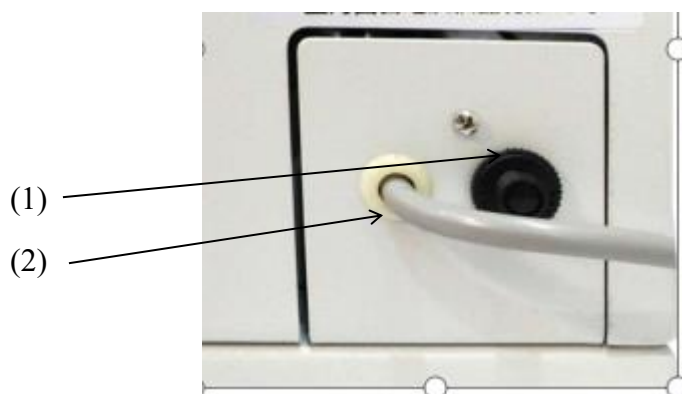


Fig.3

- (1) Recoverable overload protector (2)Power supply

V. Usage of instrument

(I) Preparation before use

1. Please read the Operation Manual before use.
2. Please read the Industry Standard of People’s Republic of China SH/T0090 “Test Methods for Freezing Point of Cooling liquids” to acquaint and familiar with test methods, test procedures and test requirements.
3. Prepare all test apparatus and materials as per the stipulation of standard.
4. Check working state of the instrument to ensure it is in accord with working environment and working condition stipulated in the Operation Manual.
5. Check outer shell of the instrument to ascertain it is fine grounded.

(II) Operation methods

1. Add some alcohol into the cold trough, and ensure that the liquid level of industrial anhydrous ethanol is 10 mm higher than the isolation plate in the cold trough. When the industrial anhydrous ethanol is insufficient, it must be added and then tested.
2. Turn on the power switch, the industrial computer starts automatically, and the control software runs to the control home page automatically (as shown in Figure 4).

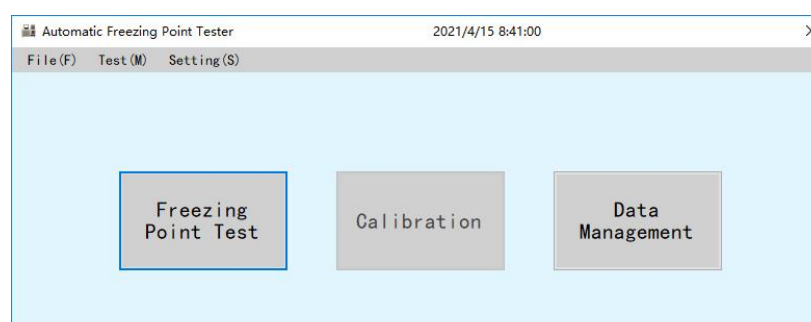
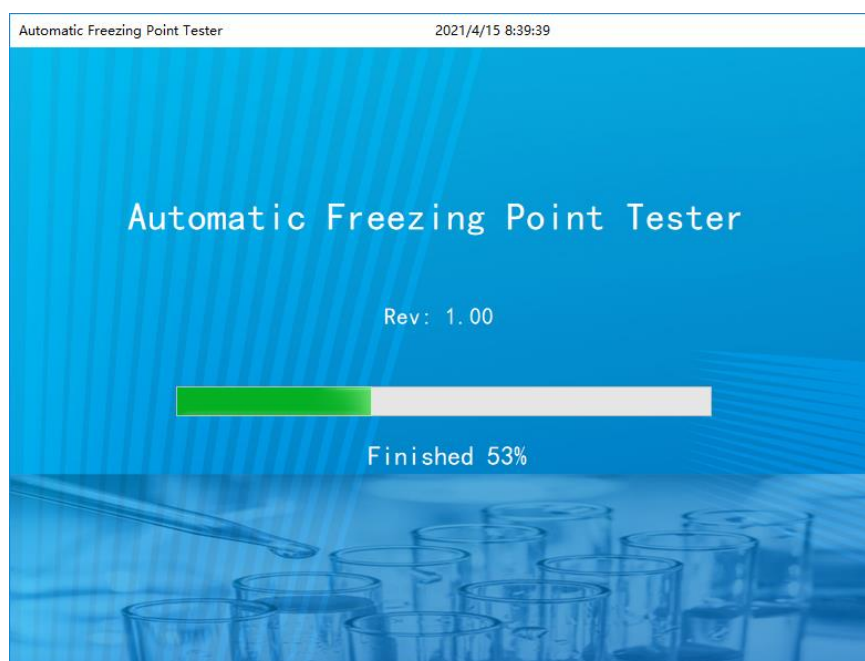


Fig.4

3. Click “Setting” button, it can enter the interface of the communication setting (See Fig.5).The serial port number of the communication port can be set according to the serial port of the industrial computer connected by the serial port line. Click “OK” to save the new setting value and exit this interface. Other communication settings have been set before the instrument leaves the factory, please do not change at will!

Click “Default” to restore the initial settings. Click “Exit” to exit the form interface without modifying the settings.

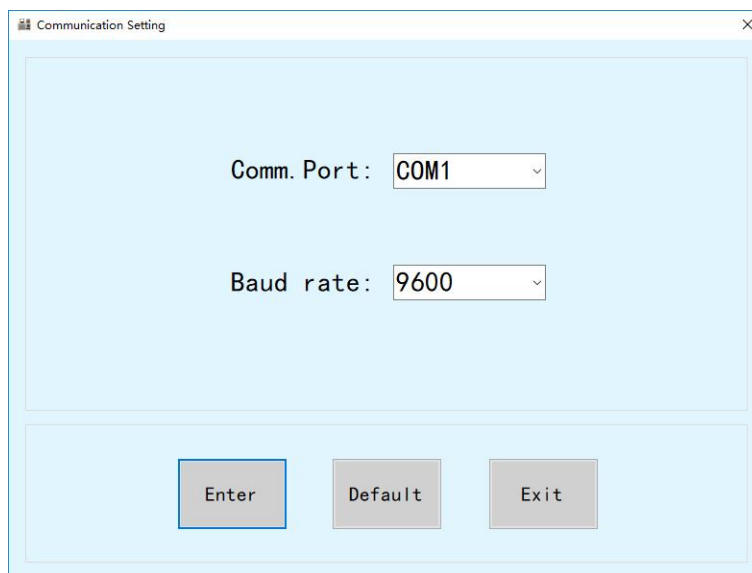


Fig.5

4. Parameter setting(Fig.6)

Input sample No., Sample name and preset the freezing point temperature and sample type in the text box, click “OK” to restore the data and exit the interface.

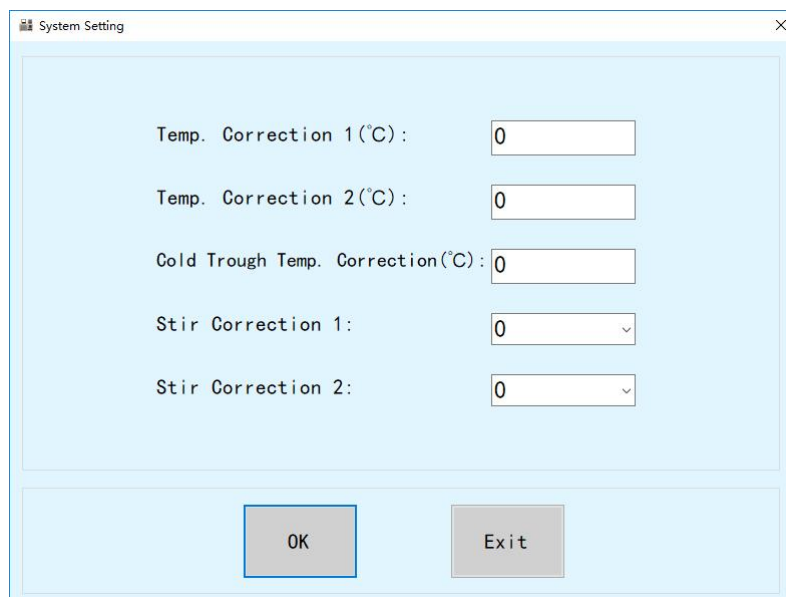


Fig.6

Input detection unit and operator in the “Detection Unit”, click “OK” to restore the data and exit the interface.(see Fig.7)

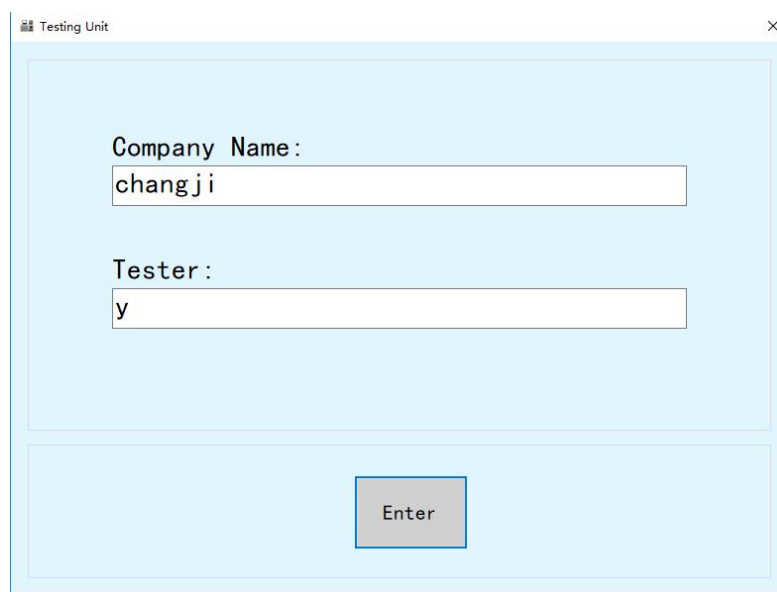


Fig.7

5. System setting (Fig.8)

This menu can be used for temperature correction and sample mixing times correction. The factory default value is 0. Operators can use distilled water to test the freezing point value and then correct the temperature.

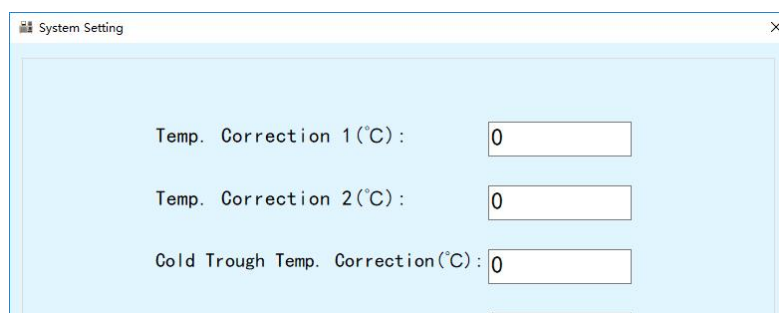


Fig.8

6. Freezing Point test (Fig.9)

After setting above parameters, enter the "freezing point test" menu, and click "cold bath start" to cool the test bath. Operators can also input "preset freezing point" directly in the test interface and pop up the "OK" button.

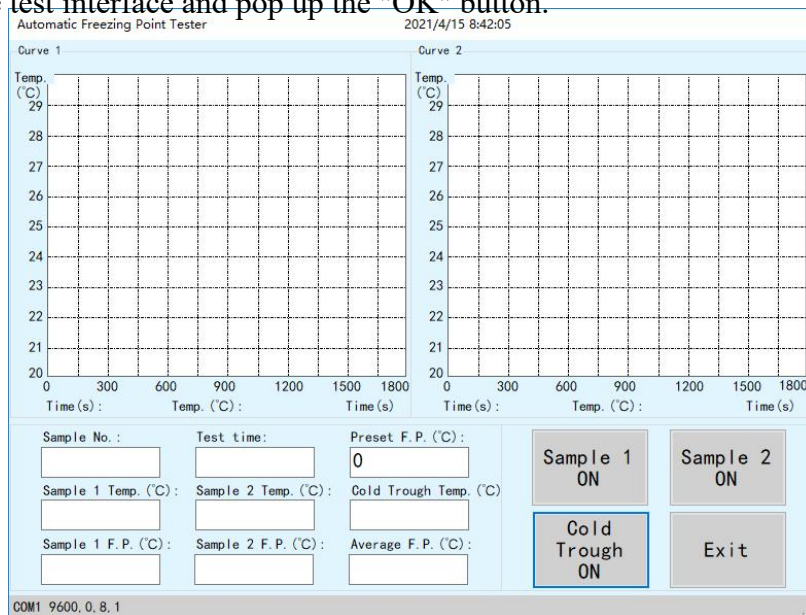


Fig.9

7. When the cold bath temperature reaches the test temperature, take (80 ± 5) ml sample with the measuring cylinder and put it into the test tube.

8. Install the test tube, test tube plug, stirring rod, temperature sensor, etc. according to the test procedures, put the test tube assembly into the cold bath, and insert the sample detection temperature sensor (Fig.10).

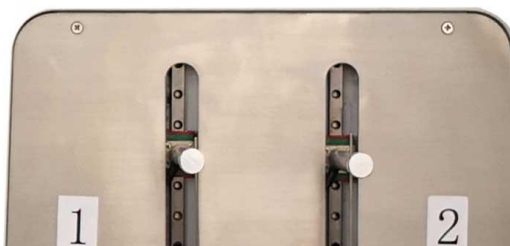


Fig.10

9. Manually adjust the position of the stirring device to the lowest or highest position, and adjust the moving position of the stirrer to make it not higher than the liquid level, yet not touch the bottom of the tube. Then tightening the clamping button.

10. Click “Stir 1” or “Stir 2”, to start freezing point test, controlling software records test temperature, and the values are displayed in the test value area, Figure of temperature change, shown in the area shown with sample 1 or sample 2.

11. When the freezing point appears, the instrument can automatically display the freezing point temperature value and stop stirring, the average freezing point of the parallel sample is calculated automatically, and the test value area of the main interface is displayed, the graph area of the main page shows the change of the test temperature graph, and the temperature characteristics of the freezing point are clearly recorded in the graph.

Operator can also capture the freezing point value manually, double-click the inflection point of the temperature curve to pop up the freezing point temperature value of the sample at this time.

12. Take out the sample temperature sensor plug, release the stirrer clamping knob, take out the test tube, and clean these for the next test.

13. The test data record appears again. Click "Data management" on the home page to enter the test data query and print interface (Figure 11).

(Note: After click a file in the restored data files, operator can only click other data files after the measurement curve is drawn).

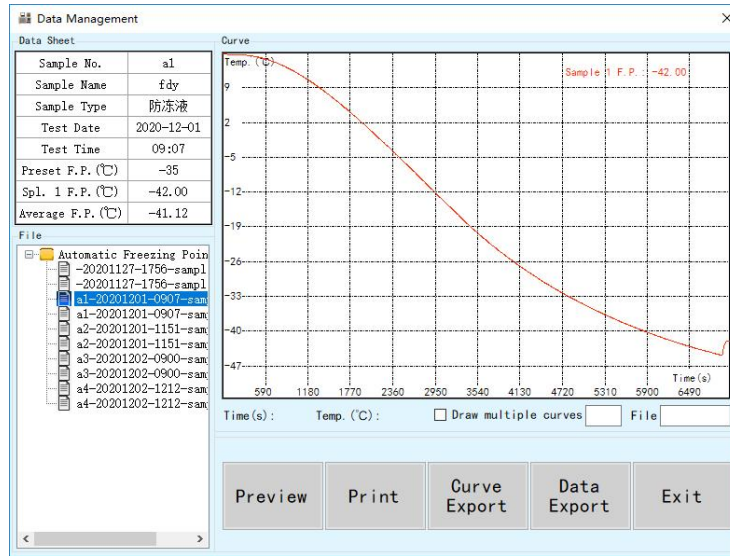


Fig.11

14. Click "Export" in Fig. 11 to enter the data deriving interface (as shown in Fig. 12). First, select the test results to be derived from the data file on the left, then select the folder path to be imported from the target folder on the right, and then click "Export" to complete the data file export. To delete data, select the data file to be deleted and click "Delete" to delete data. (Note: Delete data with caution)

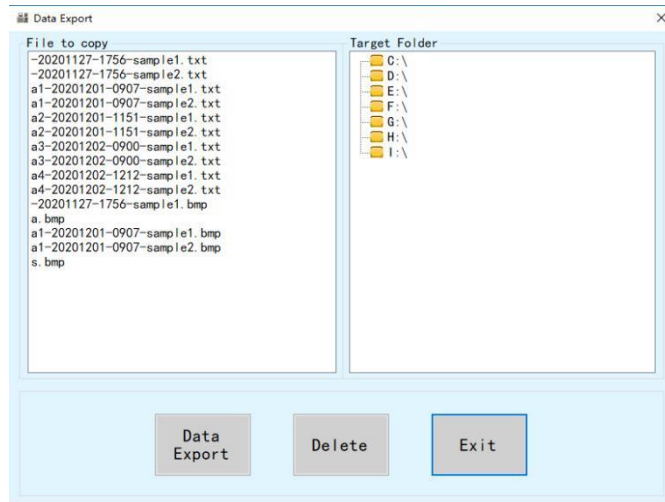


Fig.12

15. Turn off the control software and IPC, click "Turn off" in the home interface, the control software will exit, and turn off the operating system and IPC one minute later. After the IPC is turned off, the instrument power can be turned off.

VI. Maintenance

1.The test must be carried out in strict accordance with the sample quantity of (80 ± 5) ml, because this is the test quantity verified by a large number of experiments, and the user cannot change it at will, otherwise the test results will be affected.

2.The instrument shall be placed stably, otherwise it will affect the normal operation of the instrument.

3.It is recommended to use industrial anhydrous ethanol as the cooling medium in the cold trough. Put industrial anhydrous ethanol into the cold bath to ensure that the liquid level of industrial anhydrous ethanol is 10 mm higher than the isolation plate in the cold trough. When the industrial anhydrous ethanol is insufficient, it must be added and then tested. Otherwise, do not start the machine.

4.The industrial anhydrous ethanol injected into the cold bath has a process of thermal expansion and contraction at low temperature. It is necessary to control the amount of industrial anhydrous ethanol injected into the cold bath to ensure that the level of industrial anhydrous ethanol in normal operation is higher than the cooling coil in the cold bath


5.Industrial anhydrous ethanol is often added to the cold bath to make up for the loss of volatilization. After the test, take out the test tube and the test tube seat in time, and cover the heat preservation bath cover.

6. When the industrial anhydrous ethanol in the bath becomes turbid, it should be replaced in time to ensure the clarity in the cold bath, so as not to affect the test observation.

7. If the test sample falls on the surface of the instrument, wipe it off with a warm cloth as soon as possible. Pay special attention to the electric control part, do not let water get wet.

8.It is forbidden to store or use the instrument in the environment of humid and corrosive gas; if it is not used for a long time, please wrap it for storage to avoid dust intrusion!

VII. Trouble removal

	Warning	<p>If there is any trouble appears, please cut off the power supply immediately. Then ask a professional to check and repair it. You can use it again only after the problem has been solved to avoid any accidents.</p>
---	----------------	--

Problems	Reason	Solution
The instrument does not work after starting up.	1.If the display does not show after the power switch is turned on, the compressor does not start after three minutes, it may be the overload protector pops up.	Press the overload protector again.
	2.When the voltage is lower than 170V, it is difficult for the compressor to start and work normally.	Continue to use after the voltage is normal.
The instrument is noisy when working.	1. The instrument is placed unevenly, and the tilt resonance will produce noise.	Check whether the instrument workbench is flat.
	2.Check whether the fixing screws of compressor and condenser are loose.	Retighten the screws.
Poor refrigeration effect	The working environment temperature exceeds the upper limit of normal use temperature of the instrument by 35 °C.	Reduce indoor ambient temperature.

VIII. Full set and technical documents

No	Name	12	Unit	Quantity	Remark
----	------	----	------	----------	--------

SYD-2430A Automatic Freezing Point Tester

1	Main unit	Set	1	
2	Double wall cooling tube	Piece	2	
3	Single wall test tube	Piece	1	
4	Test tube stopper	Piece	2	
5	Temperature sensor	Piece	2	
6	Stirrer	Piece	2	
7	Constant temperature bath cover	Piece	3	Two large and one small
8	Test tube holder	Piece	1	
9	O-shaped ring (Φ28×2.4)	Piece	2	
10	Disk(software backup)	Piece	1	Don't make up if it is lost.

1. Full set

2. Technical documents

(1) Operation Manual

1 piece

(2) Quality Certificate

1 piece

(3) Repair Guarantee

1 piece