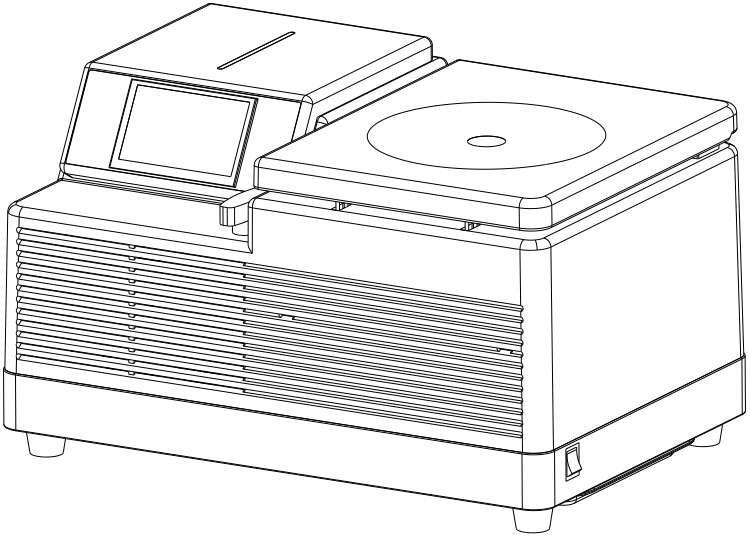
Servicebio®



User Manual

Low-temperature High-speed Centrifuge

SLX-1024F

Please read the instructions carefully or receive professional instrument operation training before using the instrument, and operate the instrument in the correct way.

Wuhan Servicebio Technology Co., Ltd.

CONTENTS

01 Safety Information

Attention

- Before using the low-temperature centrifuge,carefully read the operation manual, follow the instructions and safety information in the user manual to ensure the safe operation of the centrifuge, and maintain the low-temperature centrifuge under safe conditions
- In case of an emergency, immediately cut off the power and do not open the door immediately (the rotor must completely stop rotating before opening the door)

To ensure the safe operation of the low-temperature centrifuge, please follow the following suggestions

· The instrument needs to be placed for about 10 hours before the first use to allow the refrigerant to settle.

· The power cord must be connected to a power outlet with grounding protection.

· Do not adjust or replace internal parts of the low-temperature centrifuge.

· Do not use the equipment if the casing or any parts are missing.

· If liquid spills into the low-temperature centrifuge, turn off the centrifuge, disconnect the power, and contact Servicebio technical support.

· If the low-temperature centrifuge exhibits the following conditions, which pose a safety hazard, do not operate it and contact Servicebio technical support:

(1) Damage to the power cord.

(2) The equipment has been stored in an inappropriate environment for a long time.

(3) Packaging is damaged after long-distance transportation.

(4) Refrigerant leaking.

· If the low-temperature centrifuge is not in use, please turn off the power switch. If not in use for an extended period, unplug the power cord from the power outlet.

02 Environmental Requirements

2.1 Working Environment

Power Parameters	200~240VAC,50~60Hz,700W; power voltage fluctuation does not exceed 10% of the rated power voltage
Ambient Temperature	5°C~40°C
Relative Humidity	Maximum 80%
Operating Location	Indooruse

2.2 Transportation Conditions

Packing	The internal packaging is filled with cushioning materials and the outer box is securely fixed to avoid bumps during transportation or collisions during loading and unloading
Transportation	During transportation, the instrument should be placed upright to maintain stability and should not be overturned, tilted, or impacte

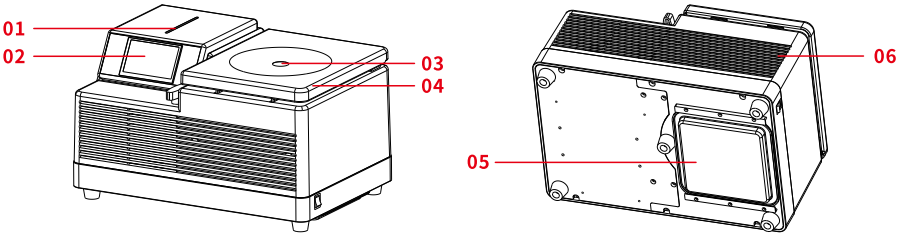
2.3 Technical Parameters

Dimensions	530×355×268mm
Weight	45Kg
Screen Size	5 inches
Temperature Control Accuracy	±2°C
Operating Time	1~99 minutes

03 Instrument Introduction

The low-temperature centrifuge is widely used in various fields such as biology, medicine, agriculture, and chemical industry. It is an instrument that utilizes centrifugal force to perform gravity-based fractionation of samples. The maximum speed of this machine is n=15000rpm, and the centrifugal force is RCF=21381×g. This low-temperature centrifuge ensures that the samples do not heat up during centrifugation, providing optimal protection for the samples.

3.1 Product Overview



01 **Status LED Strip**

02 **Touch Screen**

03 **Glass Window** To view if the rotor is running/stopped

04 **Centrifuge Lid**

05 **Condensation Water Tray**

06 **Emergency Manual Door Opening Mechanism** If unable to open the centrifuge lid, the emergency door opening mechanism can be manually operated.Insert a pen refill, spanner, tweezers, etc. with a diameter of less than 4mm into the lock latch from both sides to inwardly toggle it, so as to open the door in an emergency

Attention

- When manually operating the door opening mechanism, observe if the rotor has stopped through the glass window on the centrifuge lid. Wait for the rotor to completely stop before operating the manual door opening mechanism
- Rotating rotor can cause injury

3.2 Function Introduction

Operating Mode	Continuous
Time Setting	1~99minutes
Balancing Monitoring	Gyroscope
Cooling System	SECOP Compressor Cooling
Temperature Range	-20°C to room temperature
Temperature Efficiency	Specimens at room temperature go in (centrifuge for 10 minutes) and come out at 4°C
Rotor Capacity	【1.5mL /2mL×24】【5mL×12】【10mL×6】
Rotor Replacement	Quick-change mode: Only requires a dedicated wrench for removal and installation
Rotor Removal	Can be removed as a whole without opening the lid, to prevent the dispersion of specimen gas molecules
Sample Safety	Equipped with multiple sealing rings to prevent dispersion contamination
Interface Operation	Full touch screen interface, can be operated with gloves
Machine Safety	Double lock mechanism, and equipped with manual door opening mechanism during power failure
Status Indicator	LED strip status indicator, displays real-time working status
Software Functions	【Quick cooling setting】【Real-time temperature monitoring】【User program memory (up to 10 sets)】【Real-time parameter adjustment】【Gyroscope balancing detection】【Real-time monitoring of motor overvoltage, undervoltage, blockage, and overheating, with alarms and automatic shutdown】

04 Unpacking and Installation

Installation Steps

01.Remove the low-temperature centrifuge from the packaging box and place it in a suitable location, ensuring all components are complete;

02.Place the machine on a flat and level experimental table to prevent vibration during operation;

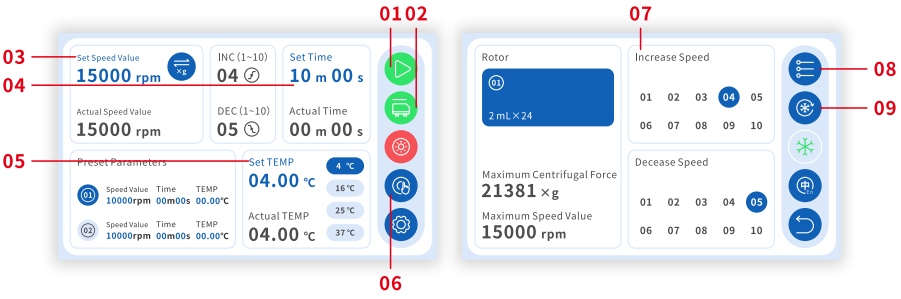
03.Let it stand for 10 hours to ensure the coolant is in place, connect the power supply (200~240V), and turn on the power switch at the back of the low-temperature centrifuge;

04.Turn on the instrument power switch, wait for 10~15 minutes, and observe if the temperature inside the centrifuge chamber reaches the preset temperature;

05.If the temperature reaches the preset temperature, the machine is ready for use.

05 Operation Instructions

5.1 Operation Interface



Instrument Main Interface

01 **Start/Stop button** Starts and stops centrifugal separation

02 **Door lock** Left/right door lock

03 **Set speed** The speed can be displayed in terms of centrifugal force (×g) or revolutions per minute (rpm). The current centrifuge is set to display rpm and ×g. Click on the centrifugal force (or speed value) to modify the parameters, input the desired value for one, and the other will automatically adjust accordingly.

04 **Set time** Input the required parameter values in minutes (range: 1~99) and seconds (range: 0~59)

05 **Set temperature** Adjust the temperature parameters.Range: -20°C to room temperature

06 **Instant release button** Instant centrifugal separation Press and hold the button to start centrifugation, release to stop centrifugation

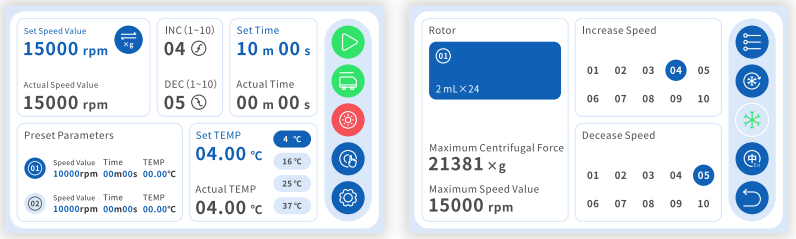
07 **Speed up/slow down** Range: 1~10 (the larger the number, the slower the speed),The comparison table is as follows:

Gear	1	2	3	4	5	6	7	8	9	10
Acceleration Time/s	60	50	45	40	35	30	25	20	15	10
Deceleration Time/s	80	70	60	50	45	40	35	30	25	20

08 **Parameters** View 10 sets of parameter values in the background

09 **Rapid cooling button** Click to enter rapid cooling mode

5.2 Operation Steps



Instrument Main Interface

01. Plug the power cord of the low-temperature centrifuge into a 220V power outlet with grounding protection and turn on the power switch at the back of the low-temperature centrifuge;

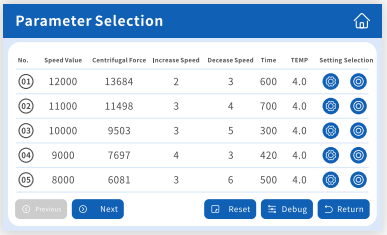
02. After the startup interface is displayed, wait for about 5 seconds to enter the main operation interface;

03. After the low-temperature centrifuge is turned on, the refrigeration system starts to operate. Place the centrifuge tubes symmetrically into the rotor and cover the rotor lid. Then close the top cover of the centrifuge machine;

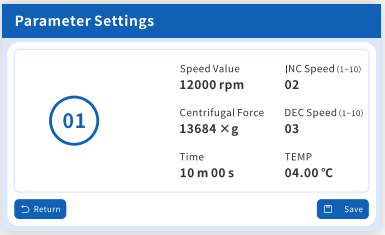
04. Set the centrifugal force (or speed value), time, temperature, acceleration, and deceleration;

05. Click the button to start the centrifugation process. The instrument will automatically stop after the countdown reaches zero.

5.3 Parameter Settings



Parameter Selection Interface



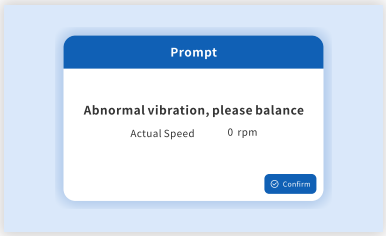
Parameter Setting Interface

The instrument has 1 set of preset parameters, with a total of 10 sets of parameters, each of which can be edited of which can be edited.

For example, click on to enter the parameter setting interface, select the centrifugal force (or speed value), acceleration, deceleration, and time for modification. After the modification is completed, click Save to save the corresponding parameters.

Click on button to start the device. The touchscreen will countdown according to the set time. After the countdown is complete, the centrifugation ends, and the instrument automatically stops. Wait for the low-temperature centrifuge to completely stop before opening the top cover, unscrew the fixing screws, and remove the adapter. If the centrifugation is not complete, repeat the above steps until the centrifugation requirements are met.

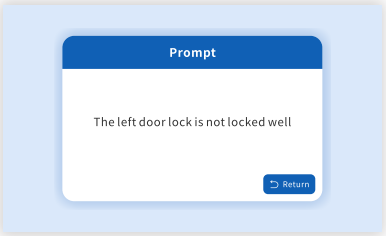
5.4 Alarm Prompt



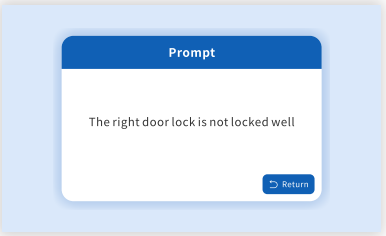
Alarm Prompt Interface

When you click start, if the instrument detects an unbalanced rotor, this interface will pop up and the experiment will be stopped.

Once this interface appears, there will be continuous alarm sounds until you click "Confirm" to dismiss it.

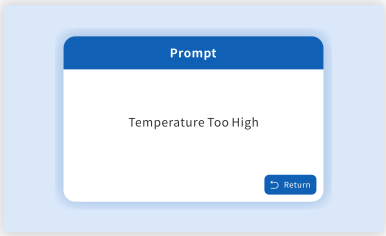


Left door lock is not locked well Interface



Right door lock is not locked well Interface

When the left/right door lock is not properly locked, this interface will pop up.

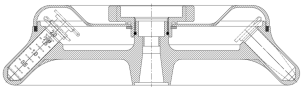
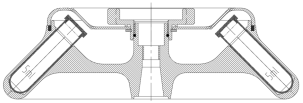
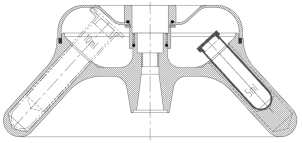
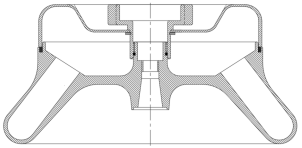


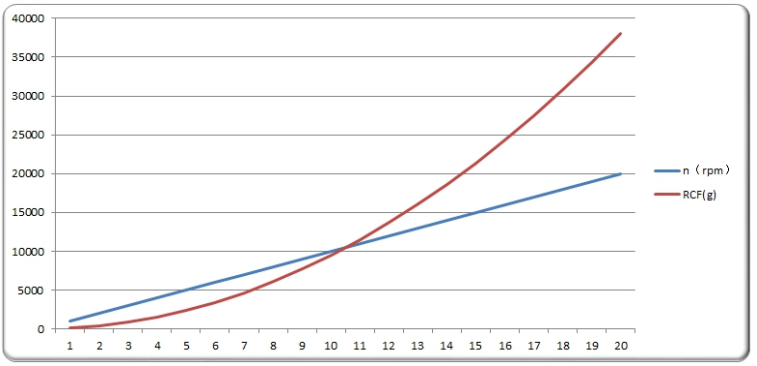
The cooling system is not enabled. When the temperature exceeds 35°C, an alarm will be triggered and this pop-up will appear.

5.5 Breathing Light Prompt Comparison Table

No.	Instrument Status	Breathing Light Color	Breathing Light State
1	Self-test	Magenta	Fast breathing
2	Fault	Red	Steady on
3	Stand by	Green	Breathing
4	Door not closed properly	Yellow	Fast breathing
5	Acceleration	Blue	Flowing
6	Deceleration	Blue	Flowing
7	Arrival at specified speed	Blue	Steady on
8	Rapid cooling	Cyan	Flowing
9	Rapid cooling reaches standard	Cyan	Steady on
10	Instant centrifugation	White	Flowing

06 Speed/Centrifugal Force Comparison

Rotor	Spec.	Radius of Rotation
	2mL×24	86.75mm
	5mLx12	85mm
	5mL×6/10mL×6	85mm
	5mL×12 Blood Collection Tubes	86.75mm



n (rpm)	RCF(g)
1000	95.03
2000	380.12
3000	855.27
4000	1520.48
5000	2375.75
6000	3421.08
7000	4656.47
8000	6081.92
9000	7697.43
10000	9503
11000	11498.63
12000	13684.32
13000	16060.07
14000	18625.88
15000	21381.75
16000	24327.68
17000	27463.67
18000	30789.72
19000	34305.83
20000	38012

07 Equipment Maintenance

After each use, perform the following routine maintenance to ensure the reliable operation of the low-temperature centrifuge:

01 If solvents or salt water, acidic or alkaline solutions are spilled on the low-temperature centrifuge, use a soft cloth dampened with water to wipe them clean immediately to avoid damage to the instrument.

02 Make sure to turn off the power and unplug the power cord before cleaning.

03 Do not perform high-pressure sterilization on any part of the low-temperature centrifuge, including the adapter.

04 The components of the adapter should be cleaned after use. Use appropriate cleaning agents, rinse with distilled water, and then dry with paper towels.

05 After using suitable cleaning agents, wipe the low-temperature centrifuge clean with a soft cloth.

06 Recommended disinfectants and cleaning agents for cleaning the low-temperature centrifuge and adapter include:

· General cleaning agent

· Neutral detergent

· 70% alcohol

08 Configuration List

No.	Product Name	Cat.No.	Qty	Notes
1	Low-temperature High-speed Centrifuge	SLX-1024F	1	
2	Standard Rotor 【2mL×24】		1	Can process 24 samples at one time
3	Centrifugal Tube 【2mL】		1	
4	Power Cord		1	Power input cable
5	User Manual		1	
6	Rotor Removal Wrench		1	For removing and installing the rotor
7	Water Receiver Tray		1	For collecting condensate and waste water
8	Screws for fixing rotor 【M8×25】		1	For fixing the rotor
9	T-handle Allen wrench		1	

09 Rotor List

Standard Listing

No.	Product Name	Spec.	Compatible Model	Cat.No.
1	Angle rotor	2mL×24	SLX-1024F	

Optional Accessories List

No.	Product Name	Spec.	Compatible Model	Cat.No.
1	Angle rotor	5mL×12	SLX-1024F	
2	Angle rotor	5mL×6 / 10mL×6	SLX-1024F	
1	Blood Collection Tubes Rotor	5mL×12	SLX-1024F	

10 Notes

01. Ensure that the load is balanced on both sides of the adapter when using the machine, and do not use it on one side only.

02. To protect the internal circuits and mechanics of the machine, do not rinse with water; instead, wipe with a damp cloth.

03. In case of any abnormalities during use, immediately power off the machine and contact a professional for assistance.

04. The machine must be placed on a level and smooth experimental platform to prevent vibrations during operation.

05. After ensuring that the adapter and fastening screws are correctly installed, cover the top and start the machine.

Warranty Card

Name		Tel	
Model		Serial number	

Maintenance Records

Declared date	Failure and maintenance records	Repair date	Repaired by

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