

LCD Digital Rotary Evaporator

User Manual

LCD Digital Rotary Evaporator



Please read the User Manual carefully before use and follow all operating and safety instructions!

Technical specifications and outline are subject to change without prior notice.

12301032

Version: 20191221

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Contents

PREFACE.....	1
SERVICE	1
WARRANTY	1
1 SAFETY INSTRUCTIONS.....	2
2 PROPER USE	5
3 INSPECTION	6
3.1 RECEIVING INSPECTION.....	6
3.2 LISTING OF ITEMS	6
4 CONTROL.....	6
4.1 CONTROL ELEMENTS.....	6
4.2 DISPLAY.....	8
5 INSTALLATION AND OPERATION	9
5.1 INSTALLATION.....	9
5.2 OPERATION.....	12
6 FAULTS.....	13
7 MAINTENANCE AND CLEANING	13

8 ASSOCIATED STANDARDS AND REGULATIONS.....	14
9 SPECIFICATIONS.....	15

Preface

Welcome to choose our products. Users should read this Manual carefully, follow the instructions and procedures, and be aware of all the cautions when using this instrument.

Service

When help needed, you can always contact the Service Department of manufacturer for technical support.

Please provide the customer care representative with the following information:

- Serial number (on the rear panel)
- Certification
- Description of problem (i.e., hardware or software)
- Methods and procedures adopted to resolve the problems
- Your contact information

Warranty

This instrument is warranted to be free from defects in materials and workmanship under normal use and service,

for a period of 24 months from the date of invoice. The warranty is extended only to the original purchaser. It shall not apply to any product or parts which have been damaged on account of improper installation, improper connections, misuse, accident or abnormal conditions of operation.

For claims under the warranty please contact your local supplier. You may also send the instrument directly to manufacturer, enclosing the invoice copy and by giving reasons for the claim.

1 Safety Instructions

- Read the operating instructions in full before starting up and follow the safety instructions.
- Keep the operating instructions in a place where they can be accessed by everyone.
- Ensure that only trained staff work with the appliance.
- Follow the safety instructions, guidelines, occupational health and safety and accident prevention regulations. When working under a vacuum in particular!
- Wear your personal protective equipment in accordance with the hazard category of the medium to be processed. Otherwise there is a risk of:
 - splashing liquids,
 - body parts, hair, clothing and jewelry getting caught,
 - injury as a result of glass breakage.
- CAUTION! Inhalation of or contact with media such as poisonous liquids, gases, spray mist, vapors, dusts or biological and microbiological materials can be hazardous to user.
- Set up the device in a spacious area on an even, stable, clean, non-slip, dry and fireproof surface.
- Ensure that there is sufficient space above the device as the glass assembly may exceed the height of the device.
- Prior to each use, always check the device, accessories and especially the glass parts for damage. Do not use damaged components.
- Ensure that the glass assembly is tension-free! Danger of cracking as a result of:
 - stress due to incorrect assembly,
 - external mechanical hazards,
 - local temperature peaks.
- Ensure that the stand does not start to move due to vibrations respectively unbalance.
- Beware of hazards due to:
 - flammable materials,
 - combustible media with a low boiling temperature,
 - glass breakage.
- CAUTION! Only process and heat up media that has a flash point higher than the adjusted safe

temperature limit of the heating bath that has been set.

- The safe temperature limit of the heating bath must always be set to at least 25 °C lower than the fire point of the media used.
- Do not operate the appliance in explosive atmospheres, with hazardous substances or under water.
- Only process media that will not react dangerously to the extra energy produced through processing. This also applies to any extra energy produced in other ways, e.g. through light irradiation.
- Tasks with the device must only be performed when operation is monitored.
- Operation with excess pressure is not permitted (for cooling water pressure see "Technical Data").
- Do not cover the ventilation slots of the device in order to ensure adequate cooling of the drive.
- There may be electrostatic discharges between the medium and the drive which could pose a direct danger.
- The appliance is not suitable for manual operation.

- Safe operation is only guaranteed with the accessories described in the "Accessories" chapter.
- Refer to the operating instructions for the accessories, e.g. vacuum pump.
- Only use the device under an all side-closed exhaust, or a comparable protective device.
- Adapt the quantity and the type of distill and to the size of the distillation equipment. The cooler must work properly. Monitor the coolant flow rate at the cooler outlet.
- The glass equipment must always be ventilated when working under normal pressure (e.g. open outlet at cooler) in order to prevent a pressure build-up.
- Please note that dangerous concentrations of gases, vapors or particulate matter can escape through the outlet at the cooler. Take appropriate action to avoid this risk, for example, downstream cold traps, gas wash bottles or an effective extraction system.
- Evacuated glass vessels must not be heated on one side; the evaporating flask must rotate during the heating phase.
- The glassware is designed for operation under a

vacuum of up to 10 mbar. The equipment must be evacuated prior to heating (see chapter “Commissioning”). The equipment must only be aired again after cooling. When carrying out vacuum distillation, uncondensed vapors must be condensed out or safely dissipated. If there is a risk that the distillation residue could disintegrate in the presence of oxygen, only inert gas must be admitted for stress relief.

- CAUTION! Avoid peroxide formation. Organic peroxides can accumulate in distillation and exhaust residues and explode while decomposing!
- Keep liquids that tend to form organic peroxides away from light, in particular from UV rays and check them prior to distillation and exhaust for the presence of peroxides. Any existing peroxides must be eliminated. Many organic compounds are prone to the formation of peroxides e.g. dekalin, diethyl ether, dioxane, tetrahydrofuran, as well as unsaturated hydrocarbons, such as tetralin, diene, cumene and aldehydes, ketones and solutions of these substances.
- DANGER OF BURNING! The heating bath, tempering

medium, evaporator piston and glass assembly can become hot during operation and remain so for a long time afterwards! Let the components cool off before continuing work with the device.

- ATTENTION! Avoid delayed boiling! Never heat the evaporating flask in the heating bath without switching on the rotary drive! Sudden foaming or exhaust gases indicate that flask content is beginning to decompose. Switch off heating immediately. Use the lifting mechanism to lift the evaporator piston out of the heating bath. Evacuate the danger zone and warn those in the surrounding area!
- When the device is switched off or the power supply disconnected, the internal safety lift removes the evaporator piston from the heating bath.
- CAUTION! Never operate the device when the evaporator piston is rotating and the lift is raised. Always lower the evaporator piston into the heating bath first before starting the rotation drive. Otherwise hot tempering medium may be sprayed out!
- Set the speed of the drive so no tempering medium is sprayed out as a result of the evaporator piston

rotating in the heating bath. If necessary, reduce the speed.

- Do not touch rotating parts during operation.
- Imbalance may result in uncontrolled resonance behavior of the device or assembly. Glass apparatus may be damaged or destroyed. In the event of unbalance or unusual noises, switch off the appliance immediately or reduce the speed.
- The appliance does not start up again automatically following a cut in the power supply.
- The device is only disconnected from the power supply network if the device power switch is off or the plug is pulled out.
- The socket for the mains cord must be easily accessible.
- The voltage stated on the type plate must correspond to the mains voltage.
- Socket must be earthed (protective ground contact).
- Removable parts must be refitted to the appliance to prevent the infiltration of foreign objects, liquids etc.
- Protect the appliance and accessories from bumps and impacts.

- The appliance may only be opened by experts.

2 Proper Use

The instrument is designed for distilling in schools, laboratories or factories. Together with the accessories recommended by manufacturer, the device is suitable for:

- quick and gentle distillation of liquids
- evaporation of solutions and suspensions
- crystallization, synthesis or cleaning of fine chemicals
- drying of powder and granulate material
- recycling of solvents

This device is not suitable for using in residential areas or other constraints mentioned in Safety Instructions.

3 Inspection

3.1 Receiving Inspection

Unpack the equipment carefully and check for any damages which may have arisen during transport. Please contact manufacturer/supplier for technical support.



Note:

If there is any apparent damage to the system, please do not plug it into the power line.

Loosen transportation lock before Power ON.

3.2 Listing of Items

The package includes the following items:

Items	Qty
Main unit	1
Heating bath	1
Power cable	1
Glassware vertical	1
User Manual	1

Table 1

4 Control

4.1 Control elements



Figure 1

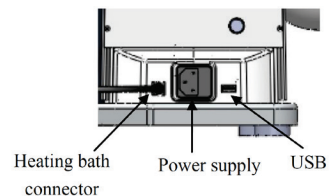


Figure 2

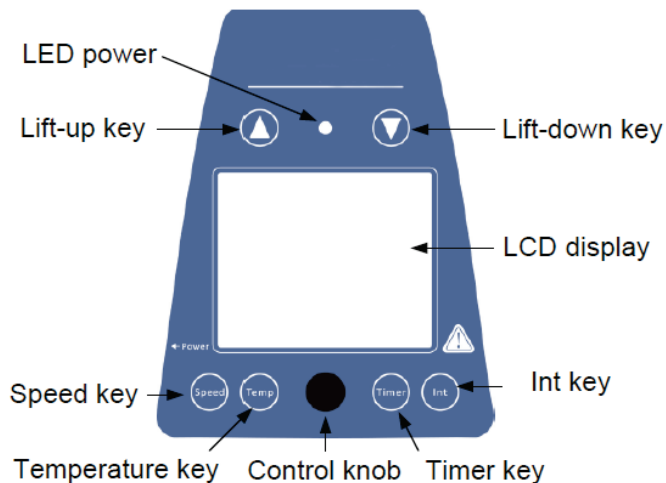


Figure 3

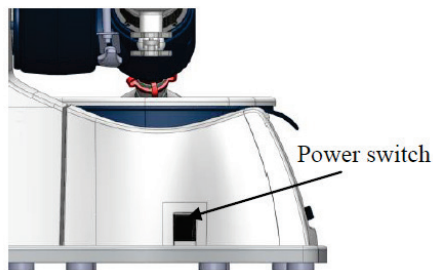


Figure 4

Items	Descriptions
Speed key Speed	Push the key and then rotate control knob to set the rated speed in the range from 20 to 280.
Temperature key Temp	Push the key and then rotate control knob to set the rated temperature in the range from room temperature to 180°C.
Timer key Timer	Push the key and then rotate control knob to set the rated time in the range from 1 to 999min.
Int key Int	Push the key and then rotate control knob to set the interval for right-left running in the range from 1 to 999s.
Control knob	Clockwise rotate to increase program values. Rotate anti-clockwise to decrease program values. Press the knob, switch ON/OFF the unit.
Lift-up key	Press the key, the lift goes up. Release the key the lift stops and remains in that position.
Lift-down key	Press the key, the lift goes down. Release the key the lift stops and remains in that position.

Table 2

4.2 Display

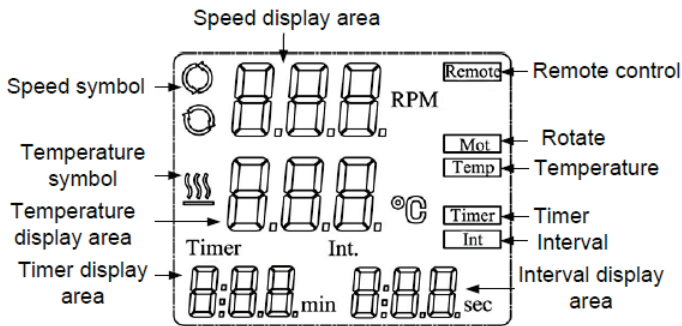


Figure 5

Characters	Description
Remote	Display in case of remote control.
Mot	Display when the rotating function is switched ON
Temp	Display when the heating function is switched ON.
Timer	Display when timer function is switched ON.
Int	Display when "Int" function is switched ON.

Characters	Description
Speed display area	When setting speed, displaying the setting value and flashed. The setting value does not flash until real speed reaches the set point.
Speed symbol	Display when the rotating function is switched ON.
Temperature display area	When setting temperature, displaying the setting value. When the heating function is switched ON, displaying the real value.
Temperature	Display when the heating function is switched ON.
Timer display area	When setting timer, displaying the rated time. When the timer function is switched ON, displaying remaining time.
Interval display area	Displaying the "Int" target value.

Table 3

5 Installation and Operation

5.1 Installation

- Adjustable base (Figure 6).

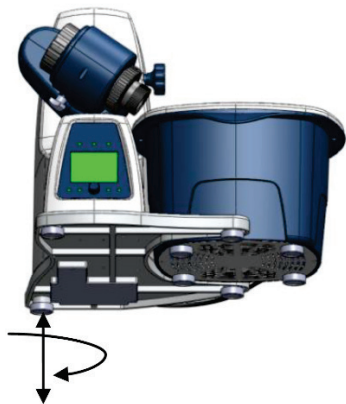


Figure 6

CAUTION! Loosen transportation lock Figure 7).

- Hold the lift with your hand on the height position and remove the thumb screw on the back of the appliance (a).
- Once the transportation lock has been removed, the

lift moves slowly to its upper end position. The distance is 150mm.

- Connect the device to the power supply using power cable (b).
- Connect the heating bath to the device (c).

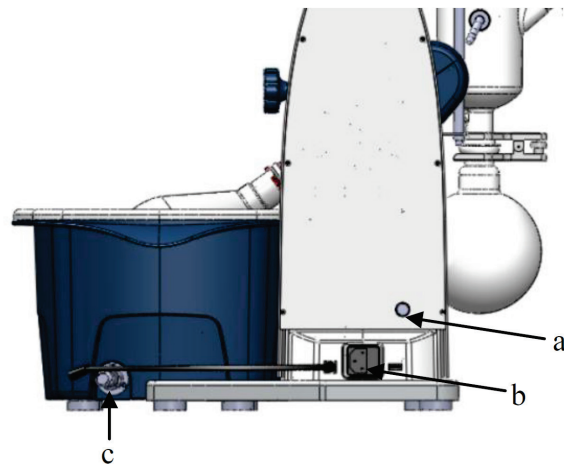


Figure 7

- Remove the clamping device for the angle setting of the rotation drive on the right side of the lift by rotating the knurled screw (d) counterclockwise.
- Set the drive at an angle of approx. 30° (Figure 8)

- Then secure the rotation drive from being accidentally turned by tightening the knurled screw in a clockwise direction.

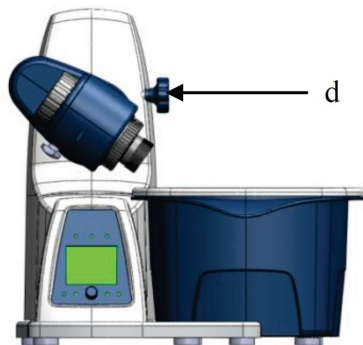


Figure 8

- Open the locking device on the drive head by turning it 60° counter clockwise (e), (Figure 9).
- Feed the steam pipe in until it stops.
- Then lock the locking device by turning it clockwise by 60°.
- The plastic screw nut (f) helps loosen tight-fitting piston ground-in connections (Figure 9).
 - Hold the tight-fitting evaporator piston and counterclockwise (e), and then turn the plastic

screw nut (f) until the evaporator piston neck.

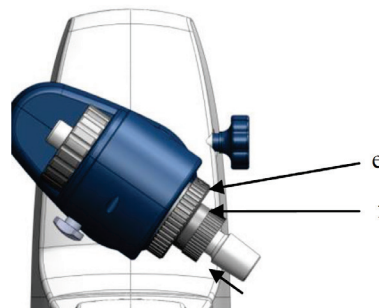


Figure 9

Note: Prior to commissioning, hand-tighten the plastic screw nut (f) left-aligned.

- Installing condenser seal (Figure 10 and Figure 11).



Figure 10

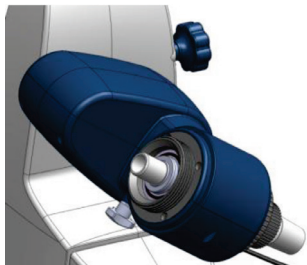


Figure 11

- Installing condenser (g) (Figure 12 and Figure 13).
 - Load the cap nut (h) and locking spring (i) to condenser in turn.
 - Tighten the cap nut hand-screwed (h). Start the device at 200 rpm for 2 min. Then tighten the cap nut firmly.

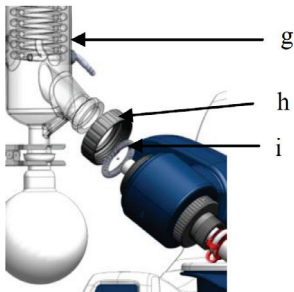


Figure 12

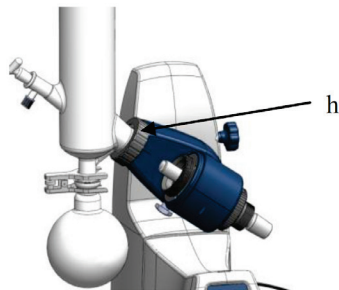


Figure 13

- Installing the vertical glassware condenser locking device (Figure 14). Use the transportation screw on the back of the appliance (a)

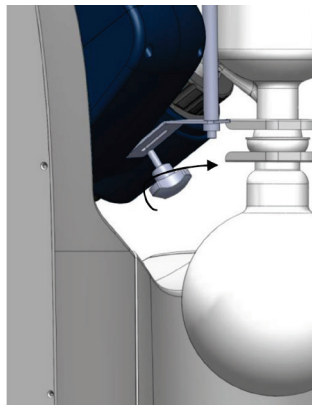


Figure 14

- Connecting tubes (Figure 15).

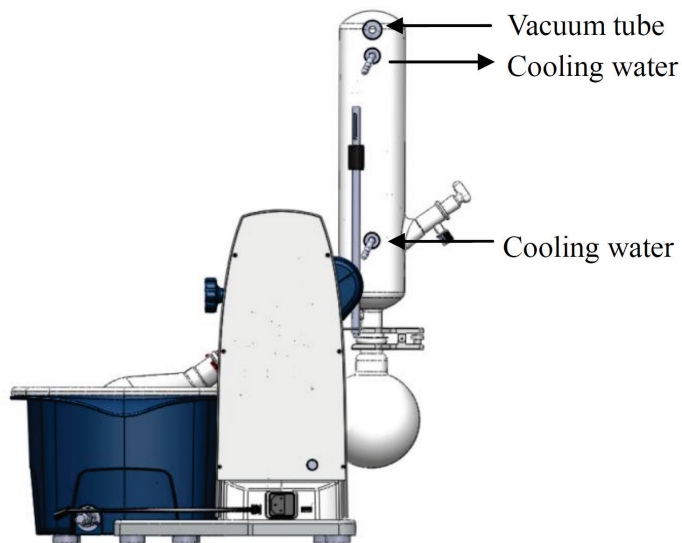


Figure 15

5.2 Operation

- Make sure the required operating voltage and power supply voltage match.
- Ensure the socket must be properly grounded.
- Plug in the power cable, ensure the power is on and

begin initializing.

- Press Lift-up/Lift-down key, the lift goes up/down. Release Lift-up/Lift-down key, the lift stops.
- Push the speed key and then rotate control knob to set the rated speed.
- Push the temperature key and then rotate control knob to set the rated temperature.
- Push the timer key and then rotate control knob to set the rated time.
- Deactivate the timer by setting the target value to "0".
- Press the Int key and then rotate control knob to set the rated interval value.
- Deactivate the interval by setting the target value to "0".
- Press the control knob, switch ON.

If these operations above are normal, the device is ready to operate. If not, the device may be damaged during transportation and please contact manufacturer/supplier.



Note:

Please don't remove the evaporating flask and receiving flask while the instrument is in operation.

6 Faults

- Instruments can't be power ON
 - Check whether the power line is unplugged
 - Check whether the fuse is broken or loose
- Fault in power on self-test
 - Switch OFF the unit, then switch ON and reset the instruments to factory default setting.
- ERR 003, lift operation timeout
 - Load overweight
- ERR 005, lift can't work
 - Check whether the transportation lock is loose
 - Load overweight

If these faults are not resolved, please contact manufacturer/supplier

7 Maintenance and Cleaning

Operate and maintain the product properly, so that it is in a good working state, which can extend the service life of the product. In routine service, keep the product dry and clean, remove the spilled liquid quickly, clean the outer surface with a non-grinding cleaner, and do not connect the power supply until all surfaces are dry. If liquid or moist solid enters the product, please disconnect the power supply quickly and leave off, and contact the manufacturer / supplier for more advice.

- Keep the product clean, and the cleaning solution is not allowed to flow into the machine.
- Power must be disconnected before maintenance and cleaning, and please use our recommended methods to clean the product. The method to clean:

Dye	Isopropanol
Building materials	Aqueous solution / isopropanol with active agent
Cosmetic	Aqueous solution / isopropanol with active agent
Food	Aqueous solution with active

	agent
Fuel oil	Aqueous solution with active agent

- You can consult the manufacturer about the materials that are not listed in the above table. Before using other cleaning methods, the user must confirm with the manufacturer / supplier that the method will not damage the instrument. When cleaning the product, please wear suitable protective gloves.

8 Associated Standards and Regulations

Construction in accordance with the following safety standards:

EN 61010-1

UL 3101-1

CAN/CSA C22.2(1010-1)

EN 61010-2-10

Construction in accordance with the following EMC standards:

EN 61326-1

Associated EU guidelines:

EMC-guidelines: 89/336/EEG

Instrument guidelines: 73/232/EEG

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

9 Specifications

Item	Specifications
Voltage [VAC]	100-240
Frequency [Hz]	50/60
Power [W]	1400
Motor	External rotor brushless motor
Speed Range [rpm]	20-280
Speed Display	LCD
Reversible Direction of Rotation	Yes
Temperature range [°C]	RT -180
Heat Control Accuracy[°C]	±1
Temperature Display	LCD
Heat Output[W]	1300
Lift	Motor
Stroke[mm]	150
Timer[mm]	1-999
Overall Dimensions [D x W x H, mm]	564 x 457 x 583

Item	Specifications
Weight [kg]	15
Permissible Ambient Temperature [°C]	5-40
Permissible Relative Humidity	80%
Protection class acc. to DIN 60529	IP20
USB	Yes

Table 4

LCD 数控旋转蒸发仪

使用说明书

LCD 数控旋转蒸发仪



请仔细阅读说明书并在说明书的操作指导下安全使用本仪器。
外形和性能指标如有变动，概不另行通知。

Version: 20191221

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目录

前言	1
如何获取帮助	1
质量保证	1
1 安全事项	2
2 使用范围	4
3 检查	5
3.1 开箱检查	5
3.2 装箱清单	5
4 控制与显示	5
4.1 控制	5
4.2 显示	7
5 安装与调试	8
5.1 安装	8
5.2 调试	11
6 故障诊断	12

7 维护和清理	12
8 相关标准	13
9 技术参数	14

前言

欢迎使用本产品。用户在使用本仪器前应仔细阅读本说明书，按说明书指导进行操作，并了解各种注意事项。

如何获取帮助

如果您在安装和使用的过程中遇到任何问题或需要帮助，请及时与制造商/供货商的售后服务部门取得联系。

请您准备以下资料：

- 产品序列号（仪器铭牌上）
- 质保卡
- 问题现象的描述
- 您为了解决问题所采取的方法及操作步骤
- 您的电话、传真和 Email 地址等联络方式

质量保证

根据制造商的质量保证条款，在本说明书规定的正常使用条件和操作方法下使用该仪器时，该仪器的保修期为 24 个月（自购买之日起）。由于错误安装与操作、私自拆卸与维修以及其他违反说明书中规定的操作条款造成的仪器性能下降和损坏，不能按照本质量保证进行维修。

如出现质保条款中的相关问题，请联系制造商/供货商。

1 安全事项

- 操作仪器前请认真阅读本使用说明并遵守安全操作规范。
- 请妥善保管使用说明以便需要时查阅。
- 请确保只有受过相关训练的人员才能操作本仪器。
- 请遵守安全规范、人身安全和事故防止等相关规范，尤其是在抽真空时！
- 根据处理介质的种类，在操作仪器时请佩戴合适的防护设备；否则可能出现下列危险：
 - 液体溅出
 - 部件飞出
 - 身体、头发、衣物被飞溅出的物质沾染
- 警告！吸入或接触有毒液体、气体、飞沫、蒸汽、尘埃、生物或微生物介质可能对操作人员造成危害。
- 将仪器放置于平稳、干净、防滑、干燥并防火的桌面。
- 注意确保仪器上方有足够的空间，玻璃组件可能超过仪器的高度。
- 使用前，请认真检查仪器、配件尤其是玻璃组件有无破损；请勿使用破损的部件。
- 确保玻璃组件不受应力！以下原因可能导致玻璃组件破损：
 - 错误安装引起的应力
 - 外部机械外力的作用
 - 周边环境温度的剧变
- 确保开启时仪器不因震动而发生移动。
- 注意以下情况带来的危险：
 - 易燃物质
 - 可燃低沸点介质
 - 玻璃件破碎
- 警告！切勿蒸馏和加热着火点低于加热锅安全设定温度的物质。
- 加热锅安全温度应至少低于所处理介质着火点 25°C。
- 请勿在易爆的环境中或水下操作使用本仪器，也不能使用该仪器处理危险的物质。
- 本仪器仅适用于对处理过程中产生的能量不发生反应从而产生危险的介质；同时被处理的物质也不能与其他方式产生的能量，如光照反应从而产生危险。
- 操作仪器时必须保持监控。
- 请勿过压操作本仪器。
- 为了确保马达系统的散热效果，请勿堵塞马达系统的散热口。
- 只有使用“选配件”列表中的配件才能保证操作的安全性。

- 请参考加热锅操作说明。
- 选配件请参考操作说明。
- 请在密闭的通风橱或其他合适的保护装置中使用本仪器。
- 根据蒸馏的量和蒸馏类型选择蒸馏装置，冷凝器必须正常工作，请监控冷却器出口处冷却液的流速。
- 为了防止压力的累积，在常压状态下操作时，玻璃组件应保持通气，例如冷凝管保持开口。
- 请注意气体、蒸汽、或其他物质可以通过冷凝管上部开口溢出产生危险，为了降低避免产生危险，请采取合适的措施，例如向下连接冷却管和洗气瓶或其他有效的提取装置。
- 玻璃蒸发瓶不可一面受热，加热阶段，旋转蒸发瓶必须转动。
- 玻璃组件设计耐压为 10 mbar，加热前必须开启通气阀门（见“调试”部分），冷却之后也必须再次开启通气阀门。在进行真空蒸馏时，蒸汽在释放前必须经冷凝处理排出或者安全释放。
如果蒸馏残余物在遇到氧气是有分解的危险，请仅向其中加入用于应力释放的气体。
- 警告！请注意避免过氧化物的形成，蒸馏过程中积累的过氧化物发生分解可能发生爆炸。

形成过氧化物的液体请避免光线照射，特别是紫外线的照射，在蒸馏前请注意检查有无过氧化物的形成，如有过氧化物，必须清除。很多有机物都易于形成过氧化物，例如甲氧乙基吡啶、二乙醚、二氧杂环乙烷、尿四氢呋喃以及未饱和氢化喹诺酮，例如四氢化萘、二烯烃、异丙基苯、醛式氢、酮以及上述物质的溶液。

- 高温警告！操作过程中加热锅、加热介质、蒸发瓶以及玻璃组件可能灼热并且停止操作后还会在一段时间内保持高温！再次操作前，请让各个部件冷却。
- 注意！注意避免沸腾延迟！在仪器没有开启旋转情况下，请勿加热蒸发瓶！突然出现泡沫或者出现气体则说明蒸发瓶内介质开始分解，请立即关闭加热并将蒸发瓶提升至加热锅以上位置，保持周边危险区域通风良好，并提醒周边人员。
- 当仪器关闭或者电源中断时，马达自动将蒸发瓶提升至加热锅以上位置。电源中断时，马达最大可提升重量为 1.5Kg。
- 注意！当蒸发瓶旋转或马达升降时，切勿移动仪器。仪器马达旋转开启前，请将蒸发瓶降低至加热锅位置，否则，沸腾加热介质可能溅出。
- 操作时，如有必要，请降低马达转速，防止加热锅中

介质中溅出。

- 操作时,切勿触摸旋转部件。由于仪器或者装配问题,有可能导致仪器不均衡,将有可能损坏玻璃组件。出现不均衡或者异常噪音时,请立即关闭仪器或降低转速。
- 电源中断后重新供电,仪器不会自行启动。
- 当仪器电源关闭或者拔下电源插头,仪器电源才会中断。
- 电插座必须方便操作。
- 实际供应电源电压必须与仪器铭牌上的规定电压一致。
- 电源插座必须接地保护。
- 为防止外部液体的渗入,活动部件必须安装到位。
- 确保仪器和配件免受挤压和碰撞。
- 只有专业维修人员才能打开仪器。
-

2 使用范围

本仪器是为学校、实验室和工厂等应用环境设计的,配合制造商推荐的选配件,可用于:

- 快速柔和蒸馏液体
- 蒸馏溶液或悬浮液

- 结晶、合成或者清洗化学品
- 干燥粉末或者颗粒状物质
- 溶剂回收

本仪器供以下环境使用:


- 海拔不超过 2000 米
- 温度在 0°C到 40°C
- 安装类型: 产品是为了连接室内插座而设计的,电压波动不超过正常值的 $\pm 10\%$

本仪器不适合在住宅区以及安全事项中规定的一些限制条件下应用。

3 检查

3.1 开箱检查

用户如发现任何包装损伤，请在收据上注明。在打开包装后如果发现任何内部损伤，请联系制造商/供货商。



注意：

如发现仪器上有任何明显的损伤，请不要将其连接到电源。

打开电源开关前，请松开运输锁定装置。

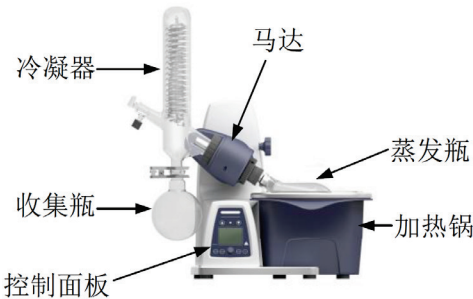
3.2 装箱清单

表格 1

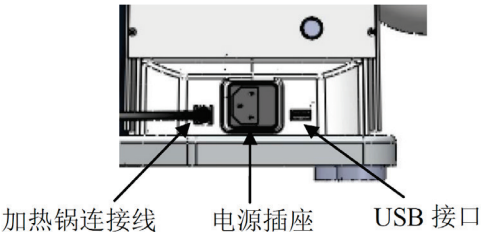
名称	数量
主机	1 台
加热锅	1 台
电缆	1 根
竖直玻璃组件	1 套
使用说明书	1 本

4 控制与显示

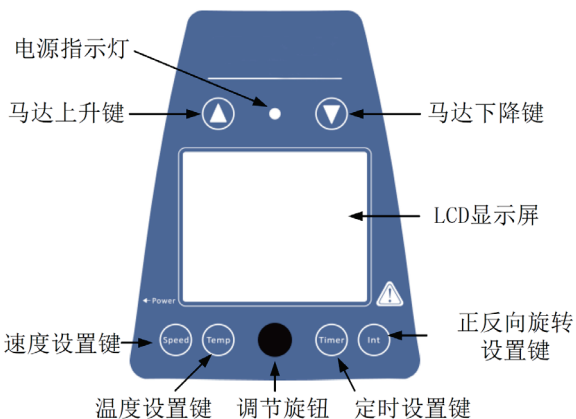
4.1 控制



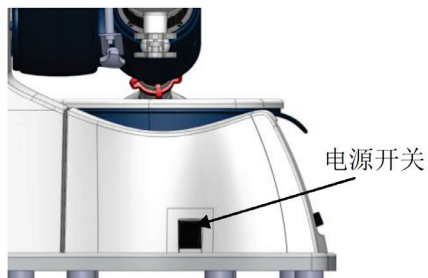
图表 1



图表 2



图表 3

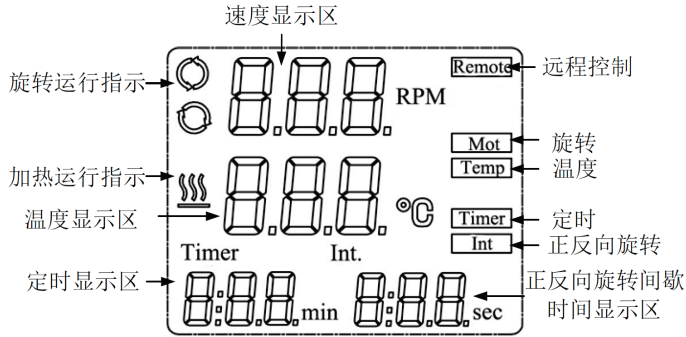


图表 4

表格 2

名称	说明
速度设置键 Speed	按下该键，进入速度设置状态，旋转调节旋钮，可设定 20-280rpm 范围内的转速
温度设置键 Temp	按下该键，进入温度设置状态，旋转调节旋钮，可设定室温-180℃范围内的温度
定时设置键 Timer	按下该键，进入定时设置状态，旋转调节旋钮，可设定 1-999min 范围内的时间
正反向旋转设置键 Int	按下该键，进入间歇左右旋转设置状态，旋转调节旋钮，可设定 1-999sec 范围内的间歇左右旋转时间
调节旋钮	顺时针旋转，参数增加，逆时针旋转，参数减小。按下该键，开启/关闭仪器
马达上升键	按住该键马达上升，松开该键马达停止上升
马达下降键	按住该键马达下降，松开该键马达停止下降
LCD 显示屏	液晶显示屏显示仪器当前工作状态及各项设置
电源指示灯	打开电源开关，指示灯闪烁，工作时，指示灯常亮
电源开关	打开、关闭仪器主电源

4.2 显示



图表 5

表格 3

显示	说明
Remote	进行远程控制时显示
Mot	旋转功能开启时显示
Temp	加热功能开启时显示
Timer	定时功能开启时显示
Int	正反向旋转功能开启时显示
速度显示区	设置时，显示速度设置值并闪烁，直到实际速度达到设置数值时停止闪烁
旋转运行指示	旋转功能开启时显示
温度显示区	设置时，显示温度设置值，加热功能开启时，显示温度实际值
加热运行指示	加热功能开启式显示
定时显示区	显示定时时间
正反向旋转间歇时间显示区	显示正反向旋转间歇时间

5 安装与调试

5.1 安装

- 调节基座（图表 6）

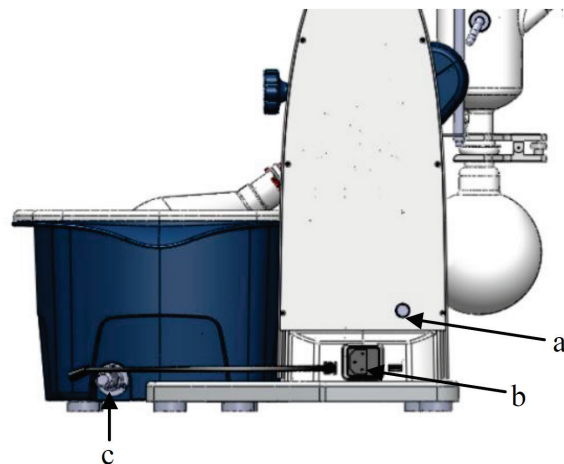


图表 6

注意！小心松开运输锁定装置（图表 7）

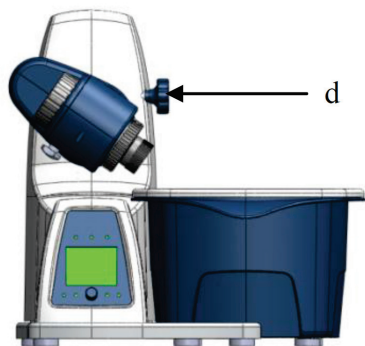
- 用手按住升降架顶部并卸下仪器背部的固定螺丝 (a)
- 运输锁定装置取下后，升降架将缓慢升至顶端位置，行程 150mm
- 连接电源线 (b)

- 连接加热锅 (c)



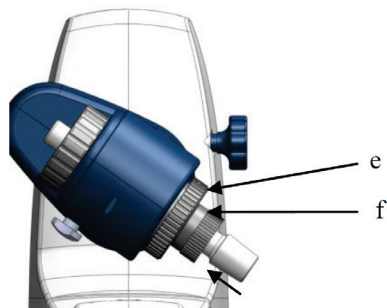
图表 7

- 逆时针旋转并松开升降支臂右侧的马达头部角度锁定装置 (d)
- 将马达角度设定为 30° 左右（图表 8）
- 然后顺时针转动并锁定装置固定马达头部角度，防止意外转动



图表 8

- 逆时针转动锁定装置 (e) 60° (图表 9)
- 将蒸发管安装到位
- 顺时针转动锁定装置 (e) 进行锁定
- 推出装置 (f) 有助于松开蒸发瓶 (图表 9)
 - 握住锁定装置 (e) 和蒸发管, 转动推出装置 (f) 直到蒸发管松开



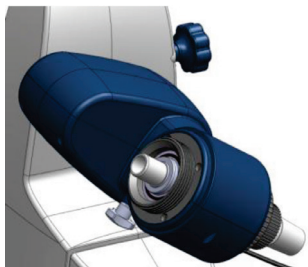
图表 9

注意: 开机调试前, 请用手旋紧推出装置 (f), 这有助于将蒸发管固定牢固

- 安装密封圈 (图表 10 和图表 11)

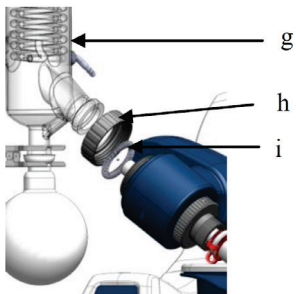


图表 10

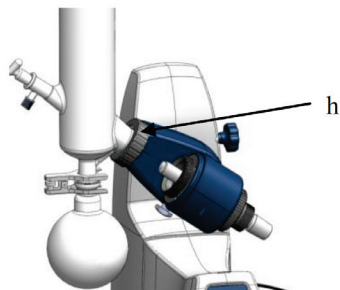


图表 11

- 安装冷凝器 (g) (图表 12 和图表 13)
 - 依次将固定螺盖 (h) 和压紧弹簧 (i) 套在冷凝器上
 - 用手拧紧固定螺盖 (h)，以 200rpm 开启马达旋转 2min，然后再次拧紧

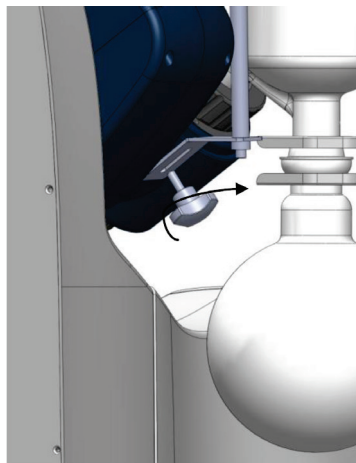


图表 12



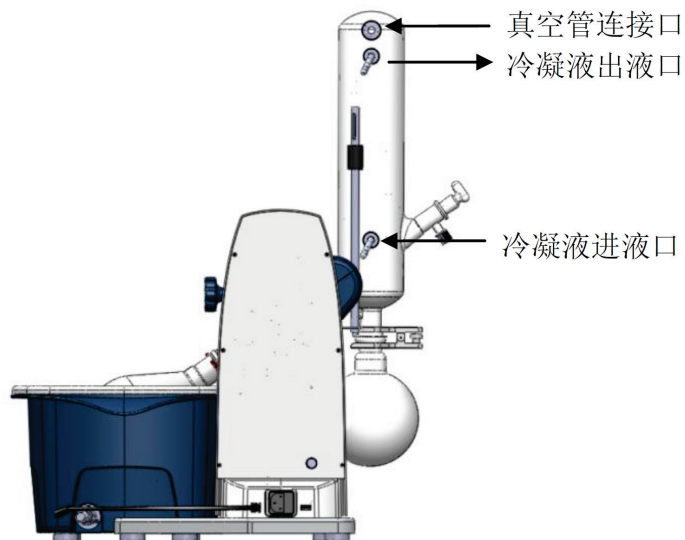
图表 13

- 安装垂直冷凝玻璃组件固定装置 (图表 14)



图表 14

- 软管连接 (图表 15)



图表 15

5.2 调试

- 检查铭牌上指定的工作电压与电网电压是否匹配
- 电源插座要求接地良好
- 接通电源，打开电源开关，进行开机自检
- 按下马达升/降键，马达上升/下降，松开马达升/降键，

马达停止上升/下降

- 按下速度设置键，旋转调节旋钮，设置目标转速
- 按下温度设置键，旋转调节旋钮，设置目标温度
- 按下定时设置键，旋转调节旋钮，设置目标时间。将设置值置于“0”，解除定时功能
- 按下间歇时间设置键，旋转调节旋钮，设置目标间歇时间。将设置值置于“0”，取消间歇旋转设置。
- 按下调节旋钮，开启仪器

如果上述操作运行正常，说明仪器可以开始正式使用。
如果运行不正常，仪器可能已经在运输过程中损坏，请与制造商/供货商售后服务中心取得联系。



注意：

仪器运行过程中请不要移走蒸发瓶和收集瓶。

6 故障诊断

- 打开电源仪器不启动
 - 请检查电源线是否连接牢靠
 - 请检查电源保险管是否损坏或松动
- 仪器开机自检不正常
 - 请关闭仪器，重新启动。
- ERR 003，表示升降装置运行超时
 - 溶液样品及容器过重
- ERR 005，表示升降装置未升起
 - 运输锁定装置未松开
 - 溶液样品及容器过重

如果故障没有排除，请联系制造商/供货商。

7 维护和清理

正确地使用和维护仪器，使其处于良好的工作状态，可以延长仪器的使用寿命。常规工作中请保持仪器干燥与洁净，迅速除去溢出液体，使用非研磨清洁剂清理外表面，在所有表面干燥之前请不要连接电源。如果液体或者潮湿固体进入仪器内部，请迅速断开电源不再使用，联系制造商/供货商获得更多建议。

- 保持仪器整洁，切勿使清洗溶液流入机内。
- 维护和清理之前必须断电，请使用我们推荐的方法清理仪器。祛除方法：

表格 4

染料	异丙醇
建筑材料	含活性剂的水溶液/异丙醇
化妆品	含活性剂的水溶液/异丙醇
食物	含活性剂的水溶液
燃油	含活性剂的水溶液

- 上表没有列出的材料，可以咨询制造商。在采用其他清理方法之前，用户必须与制造商/供货商确认该方法不会损坏仪器。清理仪器时，请戴上合适的防护手套。



注意：

- 电子设备不能用清洁剂清理。
- 送修仪器必须清理，同时避免危险物质的污染，并把仪器放回原始包装箱发送。
- 当产品长期不用时，请将仪器断电存放，并置于干燥、洁净、常温、平稳处。

8 相关标准

仪器结构符合以下安全标准

EN 61010-1

UL 3101-1

CAN/CSA C22.2(1010-1)

EN 61010-2-10

仪器结构符合以下电磁兼容标准

EN 61326-1

符合以下欧盟标准

EMC 标准: 89/336/EEG

机械设计标准: 73/23/EEG

9 技术参数

表格 5

项目	参数
电压 [VAC]	100-240
频率 [Hz]	50 / 60
功率 [W]	1400
电机	直流无刷电机
速度范围[rpm]	20-280
速度显示	LCD
温度范围 [°C]	室温-180
温度控制精度 [°C]	±1
温度显示	LCD
加热功率[W]	1300
升降方式	电动
升降行程[mm]	150
定时[min]	1-999
外形尺寸[D x W x H, mm]	465 x 457 x 583
重量 [kg]	2.8
允许环境温度 [°C]	5 – 40
允许相对湿度	80%

项目	参数
DIN EN60529 保护方式	IP20
USB 接口	有

