

# Linear Shaker & Orbital Shaker

## User Manual



Analog Linear Shaker

Analog Orbital Shaker

LED Digital Linear Shaker

LED Digital Orbital Shaker

*Please read carefully before use, and follow all operating and safety instructions!*

*The design and specifications are subject to change without prior notice.*

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## Preface

Welcome to the “Linear Shaker & Orbital Shaker User Manual”. Users should read this manual carefully, follow the instructions and procedures, and beware of all the cautions when using this instrument.

## Service

When help needed, 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



## Warning!

- Read the operating instructions carefully before use.
- Ensure that only trained staff works with the instrument.



## Protective ground contact !

- Ensure the socket must be grounded (protective ground contact) before use.

- When working wear personal safety guards to avoid the risk of:
  - Splashing liquids
  - Broken glass containers
- Follow the safety instructions, guidelines and accident prevention regulations.
- Do not touch the running parts, moving instrument care not rolling your fingers.
- Set up the instrument in a spacious area on a stable, clean, non-slip, dry and fireproof surface. Do not operate the instrument in explosive atmospheres, with hazardous substances or under water.

- If the instrument does not run smoothly, please decrease the motor speed.
- Firmly secure the accessories and vessels in place to avoid damage or risk.
- Preparation of samples may lead to dangerous flammable. Only process samples that will not react dangerous.
- Use the standard accessories listed in the “accessories” section, and follow the instructions to use accessories to ensure safety. Please switch off the power before assembly of accessories, confirm the instrument and accessories are intact before switch on each time.
- The instrument only be opened by expert, please switch off before use.
- The voltage stated on the nameplate must correspond to the mains voltage.
- Do not cover the instrument during running. Prevent the collision and extrusion to instrument and accessories.
- Keep away from high magnetic field.

## 2. Proper Use

The instrument is designed for mixing sticky substance in schools, laboratories or factories. It can be installed on a variety of impeller, for different viscosity of the medium. This instrument is not suitable for using in residential areas or other constraints mentioned in Chapter 1.

Do not use the accessories recommended by the manufacturer, or failure to use the instructions, may be caused unsafe situation.

## 3. Inspection

### 3.1 Receiving Inspection

Unpack the instrument carefully and check for any damages which may have arisen during transport. If it happens, please contact manufacturer/supplier for technical support.



**Note:**

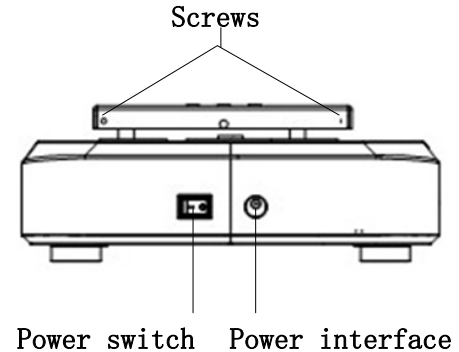
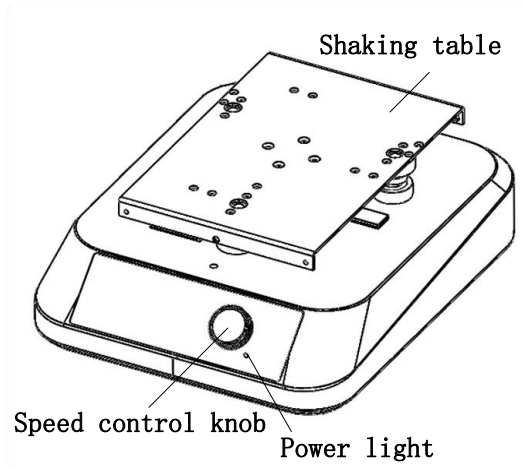
If there is any apparent damage to the system, please do not connect to the power line.

### 3.2 Listing of Items

Items	Qty
Main unit	1
Power cable	1
User manual	1

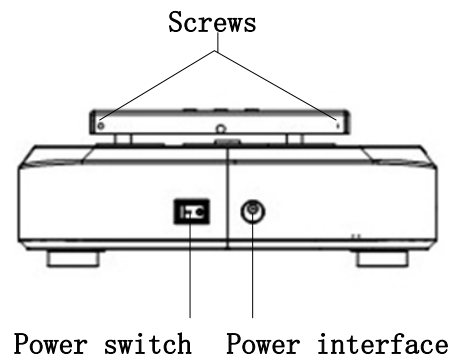
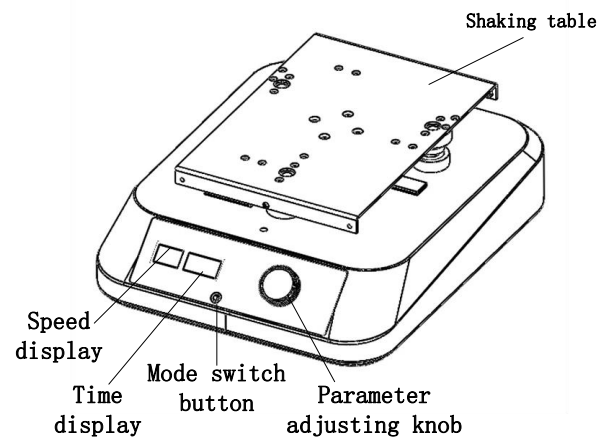
## 4. Control

### 4.1 Analog Model



Items	Descriptions
Speed control knob	Set target speed.
Power switch	Switch ON/OFF instrument.
Power interface	Connect the power cable
Power light	Green LED display light
Screw	Install the platform.

## 4.2 LED Digital Model



Items	Default settings
Mode switch button <b>Mode</b>	Shift speed and time setup mode
Parameter adjusting knob	Set speed and time by rotating the knob. Push on/off to start/stop rotating function.
Speed display	Display the set speed values.
Time display	Display the set time values.
Power switch <b>I/O</b>	Switch ON or OFF the instrument.
Shaking table	Shaking.
Screw	Install the platform.

## 5. Operation

### 5.1 Analog Model

- Place the instrument in safe and stable surface, ensure the required operating voltage and power supply voltage matched.
- Connect the power cable.
- Install the platform.
- Switch ON the instrument.
- Rotate the speed control knob clockwise to set target speed, and the shaking function will be switched on.
- Rotate the speed control knob to the left-most position to switch off the shaking function.
- Switch OFF the instrument.

### 5.2 LED Digital Model

- Place the instrument in safe and stable surface, ensure the required operating voltage and power supply voltage matched.
- Connect the power cable.
- Install the platform.
- Switch ON the instrument.

- The instrument begins self-checking.
- When initialization is over, LED displays the last running values of speed and timer.
- Rotate the speed/timer control knob to set target speed.
  - a. Press the mode switch button to choose the speed or timer setup interface. When the character of LED display is flashing, rotate the parameter adjusting knob to set the target parameter. Press the knob to start the motion.
  - b. During operation, motion can be stopped at any time by pressing the parameter adjusting knob. If the knob is pressed again, motion will start again and the timer will continue to countdown. When the timer reaches zero, the unit will be automatically halted.
  - c. When the timer is set to be 00:00, start the continuous motion.
- Switch OFF the instrument.

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



**Note:**

The speed value can be altered during shaking.

## 6. Faults

- When switched ON, the instrument does not work
  - Check whether the power cable is connected
- Motor speed cannot reach set value
  - Check whether it is overloaded

## 7. Maintenance and Cleaning

- Proper maintenance can keep instrument working properly and lengthen its lifetime.
- Do not spray cleanser into the instrument when cleaning.
- Do not remove the power line when cleaning. Only use recommended cleansers:

Dyes	Isopropyl alcohol
Construction Materials	Water containing tenside / Isopropyl alcohol
Cosmetics	Water containing tenside /

	Isopropyl alcohol
Foodstuffs	Water containing tenside
Fuels	Water containing tenside

- Before using other method for cleaning or decontamination, the user must ascertain with the manufacturer that this method will not damage the instrument. Wear the proper protective gloves during cleaning of the instrument.

**Note:**

- Electronic device cannot clean with cleanser.
- If you require maintenance service, must be cleaned the instrument in advance to avoid pollution of hazardous substances, and to send back into original packing.
- If the instrument will not use for a long time, please switch off and place in a dry, clean, room temperature and stable location.

## 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

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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. Specification

Items	Specifications	
	Analog Model	LED Digital Model
Voltage [VAC]	100-240	100-240
Frequency [Hz]	50/60	50/60
Motor rating input[W]	16	16
Motor rating output[W]	10	10
Shaking motion	Linear/Orbital	Linear/Orbital
Orbital diameter[mm]	20	20
Max. load capacity ( with platform ) [Kg]	3	3
Motor type	DC motor	DC motor
Speed range[rpm]	0-200	40-200
Dimensions[W×H×D mm]	330 × 270 × 105	330×270×105

Items	Specifications	
	Analog Model	LED Digital Model
Operation type	Continuous	Continuous/timed
Time setting range	-	1min-19h59min
Weight[kg]	3.1	3.1
Permissible ambient temperature[°C]	5-40	5-40
Permissible relative humidity	80%	80%
Protection class acc. DIN EN60529	IP21	IP21

## 10. Order Information

### Accessories

	Cat. No.	Descriptions
	18900025	SK 180.1 Universal attachment with 3 bars
	18900026	SK180.2 Fixing clip attachment
	18900038	SK180.3 Lengthways roller attachment
	18900039	SK180.4 Dish Attachment with non-slip mat
	18900029	Fixing clip for flask volume 25 ml
	18900030	Fixing clip for flask volume 50 ml

	18900031	Fixing clip for flask volume 100 ml
	18900032	Fixing clip for flask volume 200/250 ml
	18900033	Fixing clip for flask volume 500 ml
	18900037	Bar for SK180.1 Universal attachment, black

# 线性摇床&圆周摇床



## 使用说明书

经济款线性摇床

经济款圆周摇床

LED 数显线性摇床

LED 数显圆周摇床

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。

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## 前言

欢迎使用《线性摇床&圆周摇床使用说明书》。用户在使用本仪器前应仔细阅读本说明书，了解相关注意事项，并按照说明书中的指导和规范进行操作。

## 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：



- 产品序号（在仪器背板上）
- 质保卡
- 问题现象的描述
- 您为了解决问题所采用的方法和操作步骤
- 您的电话、传真和 E-mail 地址等联络方式

## 质量保证书

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保修。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

	<p>警告！</p> <ul style="list-style-type: none"><li>• 在使用仪器之前请仔细阅读本说明书，并根据以下安全说明进行操作。</li><li>• 只有经过专业培训的人员才可以操作本仪器。</li></ul>
	<p>安全接地保护！</p> <ul style="list-style-type: none"><li>• 为保证安全，使用本仪器前请确认电源插座接地良好。</li></ul>

- 工作时，请穿戴个人防护工作服装，以避免可能由以下事项引发危险：  
振荡液体飞溅  
机械振荡力导致玻璃容器破碎  
身体、头发、衣服及首饰等被卷入
- 根据安全事项说明和职业安全准则操作仪器，避免意外伤害。
- 不要触碰仪器的运动部件，避免头发、衣服等卷入仪器。搬动仪器时注意不要碾压到手指。
- 请把仪器置于宽敞通风的区域内使用，并确保工作台平稳、洁净、干燥、阻燃且具有一定的摩擦力。请勿在室外，危险物质环境，水中运行本仪器。

- 设置仪器转速时请注意振荡板上放置的容器，避免样品溅出。如果仪器运行不平稳，请调低电机转速。
- 配件必须可靠连接，容器必须稳固放置，避免发生危险。
- 制备易燃样品可能会导致危险。只能制备在振荡过程中不会产生危险反应的样品。
- 请使用“配件”章节中列出的标准配件，并按照本说明书使用配件以确保安全。在装配附件之前请先切断电源，每次开启仪器之前请确认仪器及其附件未被损坏。
- 只有专业人员才能打开仪器，打开仪器之前请拔出电源插头。
- 铭牌上指定的工作电压必须与电网供电电压相匹配。
- 仪器在使用过程中不要遮盖仪器。防止撞击和挤压仪器及配件。
- 请勿在强磁场区域使用本仪器。



## 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，用于对液体进行振荡混匀。本仪器可以安装多种配件，适用多种规格的试管。本仪器不适合在住宅区以及第 1 章中规定的一些限制条件下应用。

未使用制造商推荐的配件，或者未按使用说明进行操作，可能会出现不安全的情况。

## 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。

### 3.2 装箱清单

名称	数量
主机	1 台
电源适配器	1 套
使用说明书	1 份

## 4. 控制

### 4.1 标准款

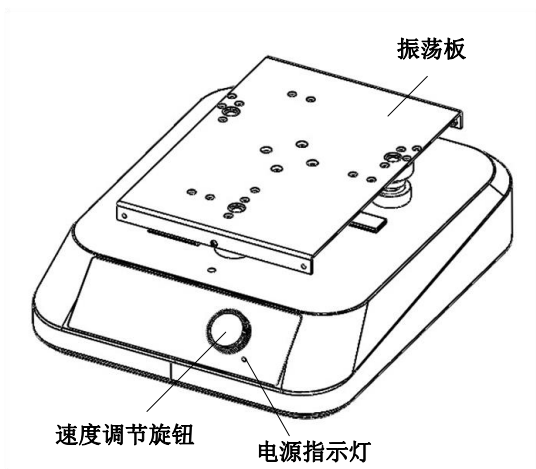


图 1 标准款

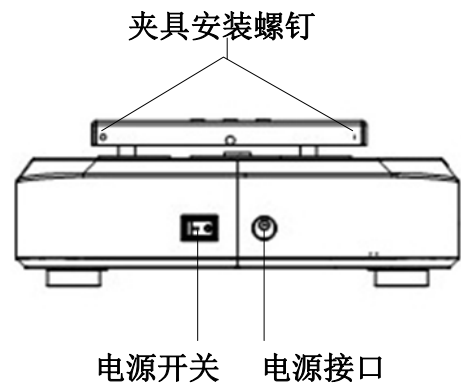


图 2 主机电源

名称	说明
速度调节旋钮	设定摇床转速。
电源开关	打开/关闭仪器电源。
电源接口	连接电源适配器
电源指示灯	接通电源时，指示灯亮
夹具安装螺钉	安装夹具

## 4.2 LED 数显款

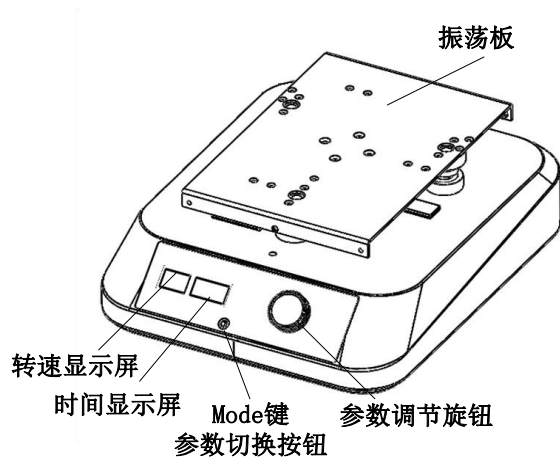


图 3 LED 数显款

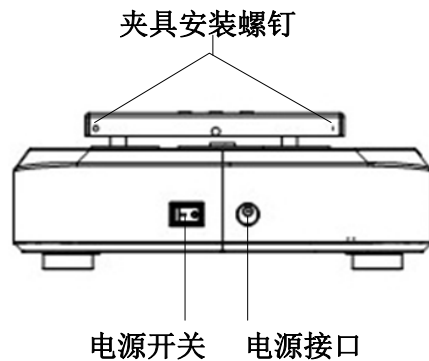


图 4 主机电源

名称	说明
转速显示屏	显示设定转速。
时间显示屏	显示定时时间，如设为 00:00 则为连续工作模式。
Mode 键	参数切换按钮，用于切换时间和转速设定界面
参数调节旋钮	在不同的参数设定界面下，调节输入参数。按下该旋钮，确定参数输入。
电源开关	打开/关闭仪器电源。
电源接口	连接电源适配器
电源指示灯	接通电源时，指示灯亮
夹具安装螺钉	安装夹具

## 5. 操作

### 5.1 标准款

- 将摇床置于安全平稳处，检查铭牌上指定的工作电压与电网供电电压是否匹配；
- 接入电源适配器；
- 安装托架；
- 打开电源开关；

- 顺时针旋转速度调节旋钮至目标转速位置，旋转功能启动；
- 将速度调节旋钮旋转至最左侧关闭旋转功能；
- 关闭电源。

### 5.2 LED 数显款

- 将摇床置于安全平稳处，检查铭牌上指定的工作电压与电网供电电压是否匹配；
- 接入电源适配器；
- 安装托架；方法：旋松夹具安装螺丝（每面各两颗），将夹具对准放好，旋紧螺丝即安装完毕。
- 打开电源开关；
- 开机自检
- 定时工作模式设定：点按 mode 键，转速显示屏字符闪动，旋转参数设定旋钮到目标转速。点按 mode 键，时间显示屏字符闪动，旋转参数设定旋钮到所需时间。按下参数设定旋钮，确定参数设定，摇床开始运行。定时时间到，摇床停止运行。当设定时间为 00:00 时，开启连续工作模式。
- 暂停：摇床工作状态下，按下参数设定旋钮，摇床停止运行。
- 重新启动：再次按下参数设定旋钮，摇床按屏幕显示参数运行。

- 注：转速设定范围：70-200rpm；时间设定范围：1min-19h59min。
- 关闭电源。

如果上述操作运行正常，说明仪器可以开始正式使用。  
如果无法正常运行，仪器可能存在安全设置或者已损坏。  
请联系制造商/供货商。



**注意：**  
调节振荡速度时需缓慢调节，以使仪器平稳运行。

## 6. 故障诊断

- 打开电源仪器不启动
  - 请检查电源适配器是否连接紧密
- 转速无法达到设定值
  - 请检查摇床载重是否超过最大承重量

## 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，

有利于延长使用寿命。保持仪器整洁，切勿将溶液流入机内。

- 维护和清理之前必须切断电源，只能使用我们推荐的方法清理仪器。祛除方法：

染料	异丙醇
建筑材料	水溶表面活性剂/异丙醇
化妆品	水溶表面活性剂/异丙醇
食物	水溶表面活性剂
燃料	水溶表面活性剂

- 没有列出的材料，请先咨询制造商售后服务部门。
- 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。
- 清理时，请戴上防护手套。



- 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)

仪器结构符合以下电磁兼容标准：

EN 61326-1

## 9. 技术参数

项目	参数	
	标准款	LED 数显款
电压 [VAC]	100-240	100-240
频率 [Hz]	50/60	50/60
电机输入功率 [W]	16	16
电机输出功率 [W]	10	10
运转方式	线性/圆周	线性/圆周
周转直径 mm	20	20
承载量 [kg]	3	3

项目	参数	
	标准款	LED 数显款
电机类型	直流电机	直流电机
速度范围 [rpm]	0-200	40-200
运行方式	连续运转	定时或连续运转
定时时间	-	1min-19h59min
外形尺寸 [mm]	330×270×105	330×270×105
重量 [kg]	3.1	3.1
允许环境温度 [°C]	5-40	5-40
允许相对湿度	80%	80%
DIN EN60529 保护方式	IP21	IP21

# 10.订货信息

## 配件信息

	产品编号	描述
	18900025	SK180.1 通用夹具，用于各种容器
	18900026	SK180.2 空白钉板，与锥形瓶夹具配套，适用于锥形瓶
	18900038	SK180.3 纵向滚轴夹具，用于各种容器
	18900039	SK180.4 培养皿托架，带胶垫
	18900029	25ml 锥形瓶夹具，与空白钉板配套使用
	18900030	50ml 锥形瓶夹具，与空白钉板配套使用

	18900031	100ml 锥形瓶夹具，与空白钉板配套使用
	18900032	200/250ml 锥形瓶夹具，与空白钉板配套使用
	18900033	500ml 锥形瓶夹具，与空白钉板配套使用
	18900037	黑色容器固定棒，用于SK180.1 通用夹具，1 个，带两端螺栓

