

ELMI

USER MANUAL

Digital Orbital Shaker DRS-12



Orbital
Rotation



Rocking
Platform



Reciprocal
Wave



Autoreverse
Rotation



Vibration



Incubation



elminorthamerica.com

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■ Introduction

Dear user!

Shaker DRS-12 is simple and reliable device. We ask you to consider technical requirements of exploitation to provide the use of the equipment without problems for a long period of time.

General information

Universal shaker DRS-12 is designed for mixing liquids in different kinds of laboratory flasks by means of angular shaking of the platform. Electronic system controls all parameters and displays them on LED indicators. The shaker DRS-12 is quiet, and provides variable angles and speeds of platform rocking.

■ Technical specifications

Size of working space of platform: mm	257 x 307
Tilt angle, degree:	1 - 12
Speed of fluctuation of the platform, RPM:	1 - 50
Timer:	1 minute – 9 hours 59 minutes
Maximum load, kg	5 total / 2 on edge
Environmental temperature, °C	from +4 to + 45
Relative moisture of atmosphere (at the temperature of 20 °C)	no more than 80 %
The recommended pulley block:	24VDC - 1 A
Voltage and frequency:	110-240V 50/60Hz
Maximal power consumption, W	24
Size of the device (length x width x height) mm	275x310x110
Weight, kg	3,6

■ Delivery Package

Item	Quantity
Shaker DRS-12.....	1
Power supply adapter 24V - 1 A.....	1
Anti slip mat	1
User manual	1
Packaging	1

■ Safety

General safety

- Use only as directed in the operating instructions provided.
- The unit should not be used if it has encountered a physical shock or has been dropped.
- The unit must be stored and transported in a horizontal position (see package label).
- After transport or storage allow the unit to dry out (2–3 hrs) before connecting to mains power. Use only original accessories provided by the manufacturer and ordered specifically for this model.

Electrical safety

- Connect to the mains only with a voltage corresponding to that on the serial number label. Ensure that the switch and plug are easily accessible during use.
- Do not plug the unit into the main outlet without grounding, and do not use extension lead without grounding.
- Before moving the unit, disconnect it from the mains. To turn off the unit, disconnect the power plug from the mains outlet.
- It is the user's responsibility to carry out appropriate decontamination if hazardous material is spilt on or inside the equipment. If liquid is split inside the unit, disconnect it from the mains and have it checked by a competent person.

During operation

- Do not block the platform movement.
- Do not leave the operating unit unattended.
- Do not operate the unit in environments with aggressive or explosive chemical mixtures.
- Do not operate the unit if it is faulty or been incorrectly installed.
- For indoor use only.
- Before using any cleaning or decontamination method except those recommended by the manufacturer, check with the manufacturer that the proposed method will not damage the equipment.
- Do not make modifications to the unit.

Biological safety

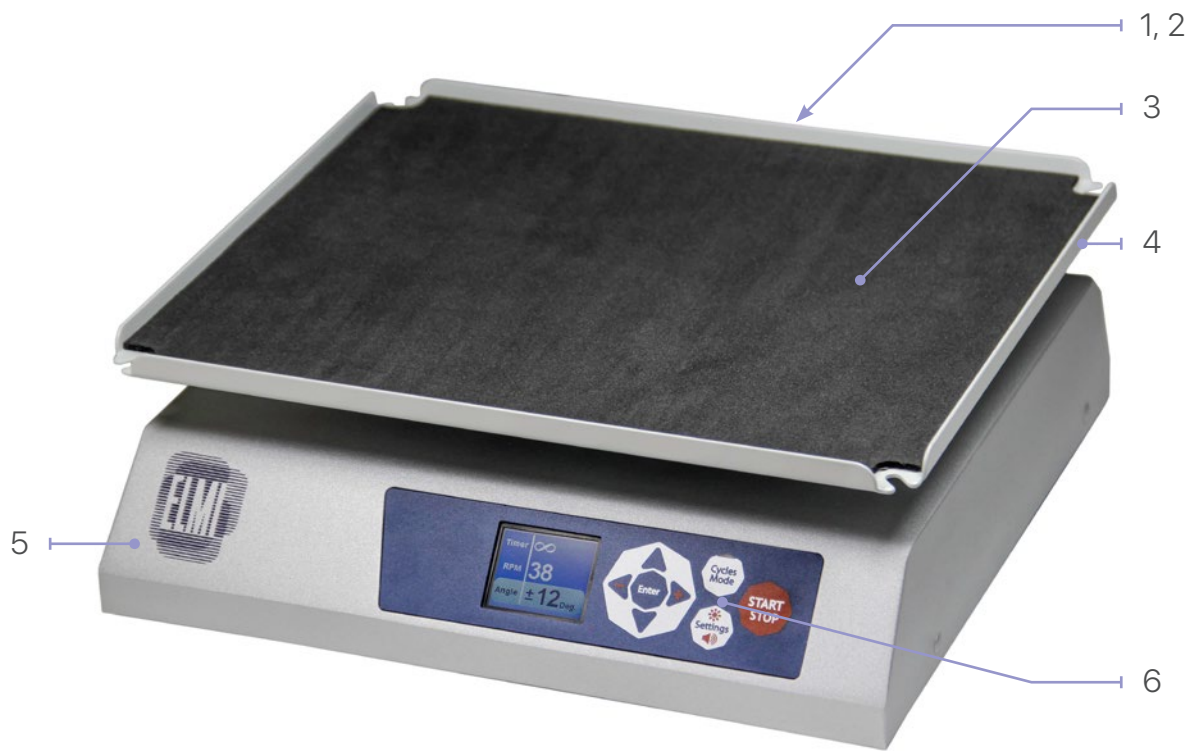
- It is the user's responsibility to carry out appropriate decontamination if hazardous material is spilt on or inside the equipment.

Preparation to use

- Unpack the device. Please keep the packaging material for transportation or storage purposes.
- If the machine was stored at a temperature below 0°C, make sure that it is kept at room temperature for at least two hours before turning it on.
- Place the shaker onto a level, horizontal surface.
- Examine the power adapter and appearance of device for damage.
- Connect the power cord to the centrifuge, insert the adapter in to the socket and press network switch at (I) symbol. Display will light up on the control panel.
- Check the platform. Try rotating it by hand. There should be no noise or obstacles to smooth running.
- Check the surrounding of device. Safety distance of 30cm must be observed around the device during operation.
- Check for other signs of damage or malfunction.

ATTENTION !

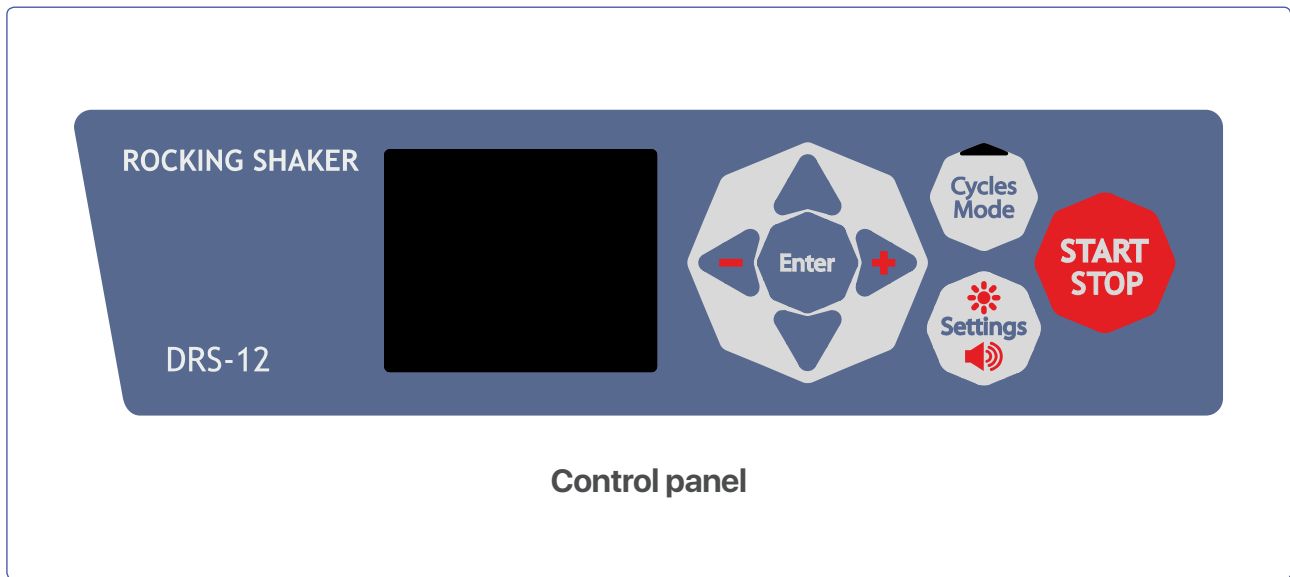
If there is any apparent damage or malfunction, DO NOT TURN ON the shaker without consulting a specialist.



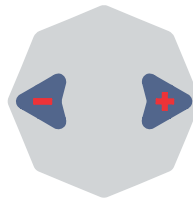
■ Device

- 1 Network switch
- 2 Power plug
- 3 Anti slip mat
- 4 Working platform
- 5 Casing
- 6 Control panel

■ Control description



Up and down navigation keys



Left, right navigation keys and increasing, decreasing parameter value keys.



Entering and exiting key in programming mode to set the step parameter.



Start stop key.



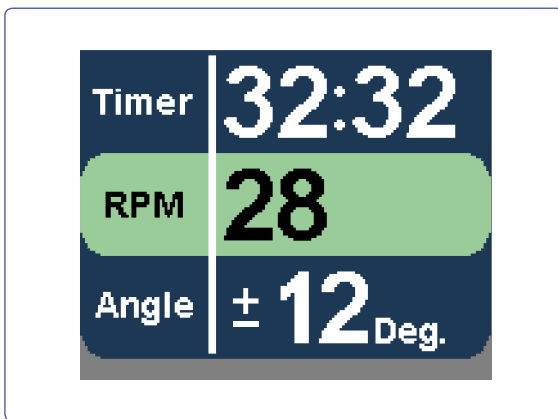
Setting key to manage the interface of device.



Entering and exiting key cycle mode.

■ Using the device

Main menu



Set the desired working mode parameters: time, RPM and tilt angle using the navigation keys on the control panel. To launch the operation, press start key.

Last minute on the timer is counted in seconds, if you wish to enable non stop operation set the maximum time value, a corresponding symbol will be shown on the display.

Mode parameters:

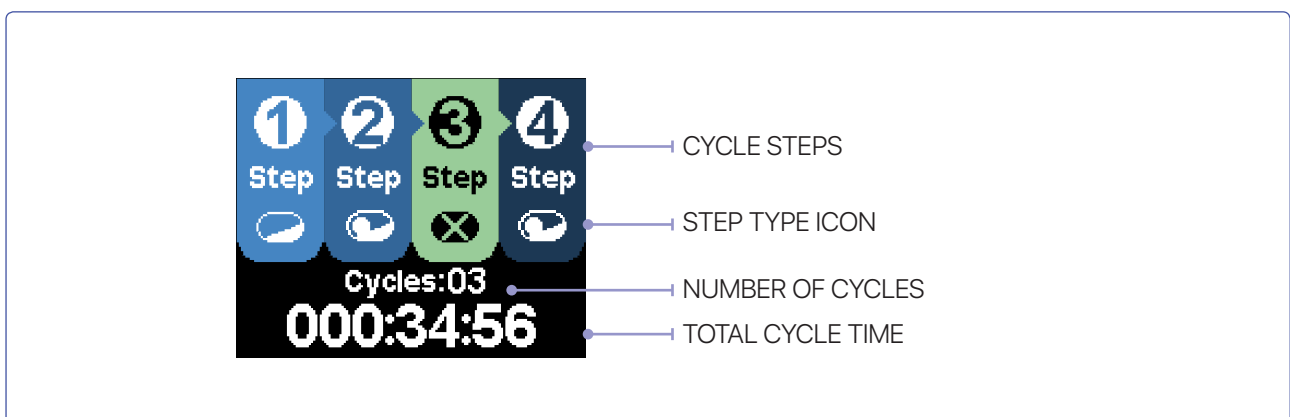
- TIMER: 1 minute - 99:59 minutes - continuous mode.
- PRM: 1 - 50.
- Angle: 1-12

Cycles menu

You can create a cycle program using the cycle menu. Combine the various shaker working modes in multiple steps. To enter or exit cycles mode press the cycles mode button.

A light indicator will light up when entered.

Creating cycle

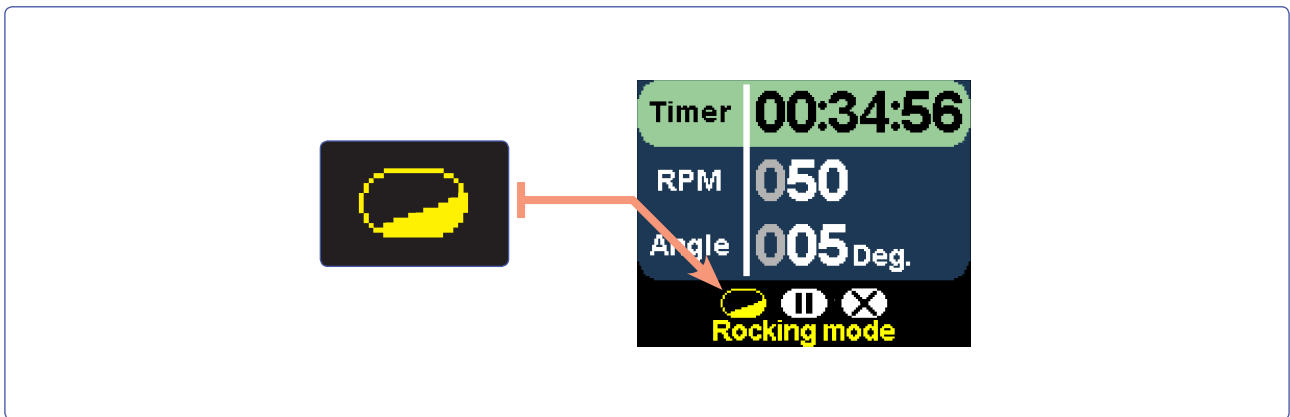


Create a custom cycle by adding up to four steps and a number of repeat cycles as required. You can set the number of repeat cycles on the bottom line of the programming menu. Ranges are from 1 to 99, or continuous mode. Total cycle time is show on the bottom line of cycle menu.

You can assign the desired operating mode to the cycle step:

1.  Rocking mode
2.  Rock and hold
3.  No operation

Rocking mode

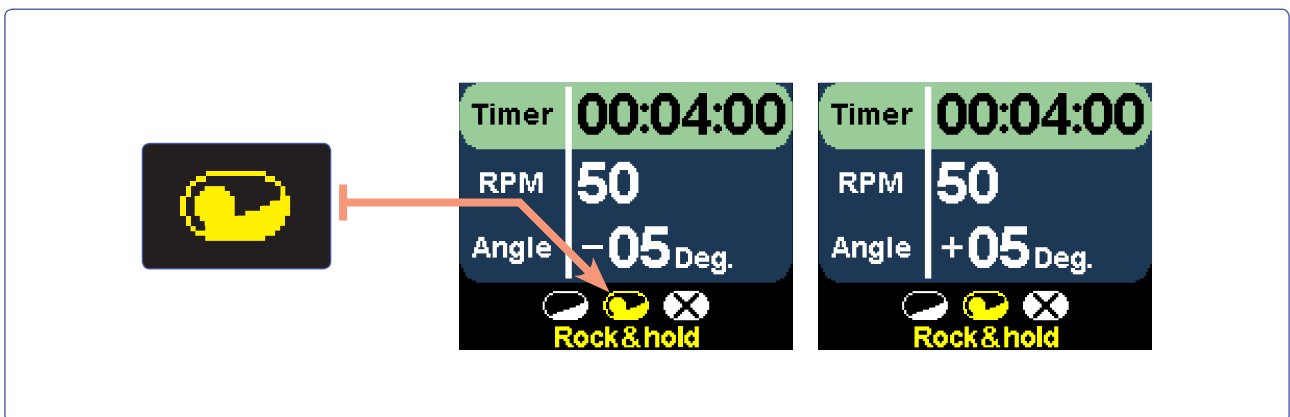


Rocking mode - classic platform rocking motion mode with adjustable speed and time parameters.

Mode parameters:

- TIMER: 1 minute - 99:59 minutes - continuous mode.
- PRM: 1 - 50.
- Angle: $\pm 1-12$

Rock and hold mode



Rock and hold - platform one way motion (forward or backward) mode with a pause at the lowest point of platform tilt for a set time. Adjustable RPM, pause time and the angle of platform tilt.

Mode parameters:

- TIMER: 1 minute - 99:59 minutes - continuous mode.
- PRM: 1 - 50.
- Angle: $\pm 1-12$

Custom cycle program example



Enter the Cycle programming menu

- 1 Select the 1st step and press "ENTER" key.
- 1.1 In step menu's bottom line select the rock and hold mode; set the parameters: time 5 seconds, 50 RPM, +12° angle and press "ENTER".
- 2 Select the 2nd step and press "ENTER" key.
- 2.1 In step menu's bottom line select the rocking mode; the parameters: time 5 seconds, 50 RPM, ±6° angle and press "ENTER".
- 3 Select the 3rd step and press "ENTER" key.
- 3.1 In step menu's bottom line select the rock and hold mode; set the parameters: time 5 seconds, 50 RPM, -12° angle and press "ENTER".
- 4 Select the 4th step and press "ENTER" key.
- 4.1 Go to the step menu's bottom line and select the "NO OPERATION" mode and press "ENTER".
- 5 In the program menu bottom line set the cycle value to 16. Total time for the program will be 4 minutes.

The program is ready! Press start button to run the program.

Disinfection and cleaning

Shaker and accessories must be cleaned once a week to avoid corrosion and changes to material. Disconnect the device from mains power supply and clean it separately. The platform, accessories and exterior of the shaker should be cleaned with a moist cloth. Only use neutral agents to clean these parts. To disinfect, use an alcohol-based disinfectant

(70% isopropanol/water mixture). If corrosive, toxic or radioactive liquids or pathogenic bacteria are spilled on the platform, shaker must be decontaminated thoroughly.

Transportation and storage

To ensure safety during transportation, the equipment should be packed in the original manufacturer's packaging or similar packaging substitute.

Equipment can be transported in any kind of closed transport; make sure that equipment is tightly fixed and transported accordingly to transportation regulations. Equipment should be stored in original manufacturers packaging in dry room with humidity not more than 80% and temperature range of +10°C up to +40°C. It is not recommended to store the equipment more than 36 month.

Warranty statements

- Warranty applies to 24 month period from the date of purchasing.
- Malfunctions that occur due to a fault of the manufacturer, during warranty period, are repaired free of charge.
- Warranty is is not valid in the following cases:
 - If the serial number label of the manufacturer is damaged.
 - If damage occurs as a result of incorrect operation, transportation or storage.
- These documents are necessary if applying for warranty repair:
 - User manual with serial number of the machine.
 - Officially signed report, describing the reasons and circumstances of the equipment malfunctions.
- Warranty repair can be performed only if the equipment is delivered in the original manufacturers packaging or equally safe packaging.
- Before returning for warranty repair ensure that the device is fully cleaned, decontaminated and does not present any kind of health risk to our staff.
- If the above warranty requirements are not met, repair charges are applied to the customer.
- For all further questions concerning usage and maintenance, please contact the manufacturer or product vendor.

Certificate of approval

Shaker DRS-12

N^o _____

has been inspected for the technical conditions and meets all regulations necessary for this class of device.

Quality control person _____ (name) (signature)

Date of manufacture _____

Place for stamp.

Certificate of sale Organization _____

Address _____

Phone _____

Vendor _____ (name) (signature).

Date of sale _____

Manufacturers' address.

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