

User manual



Digital orbital shaker DOS-20M

ELMI Ltd.
21-133 Aizkraukles Str.
Riga, LV-1006, Latvia
T.: +371 67558743
T.: +371 67551934
E: info@elmi-tech.com
W: www.elmi-tech.com



	Page
Introduction	1
Technical specifications	2
Delivery package	2
Safety.....	3
Preparation to use.....	3
The device	4
Control description.....	5
Using the device(main menu)	6
Orbital rotation mode.....	7
Auto reverse mode.....	7
Reciprocal mode	8
Vibration mode	8
Programming menu.....	9-10
Additional modes	11
Disinfection and cleaning.....	12
Transportation and storage	12
Warranty statements	12
Certificate of approval	13
Certificate of sale	13

Dear user!

Congratulations, you have acquired an ELMI shaker - product of advanced technology and high quality!

DOS-20M shaker is easy to use and reliable in operation. We ask you to carefully read the user manual and observe all maintenance and operation requirements, as this will ensure long and flawless use of the device.

The shaker is designed to mix up components in different kind of test tubes, flat bottom laboratory dishes , flasks, Petri dishes, etc.

Technical specifications

Size of working platform, mm	355x235
Speed of rotation, RPM	10-300
Amplitude of platform movement, mm	20
Maximum load, kg	5
Working modes	4
Type of platform movement	orbital
Timer,	1 minute – 9 hours 59 minutes
Environmental temperature, °C	+4 up to +45
Relative moisture of atmosphere (at 20°C temperature)	not more than 80%
Voltage and frequency	110-220 V, 50-60Hz
Power supply adapter:	24VDC – 1A
Maximal power consumption, W	24
Size of the device, mm	360x280x100
Net weight, Kg	6,3

Delivery package

Item	Quantity
Shaker.....	1
Power supply adapter	1
Magnetic clips.....	6
User manual	1
Packaging.....	1

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.

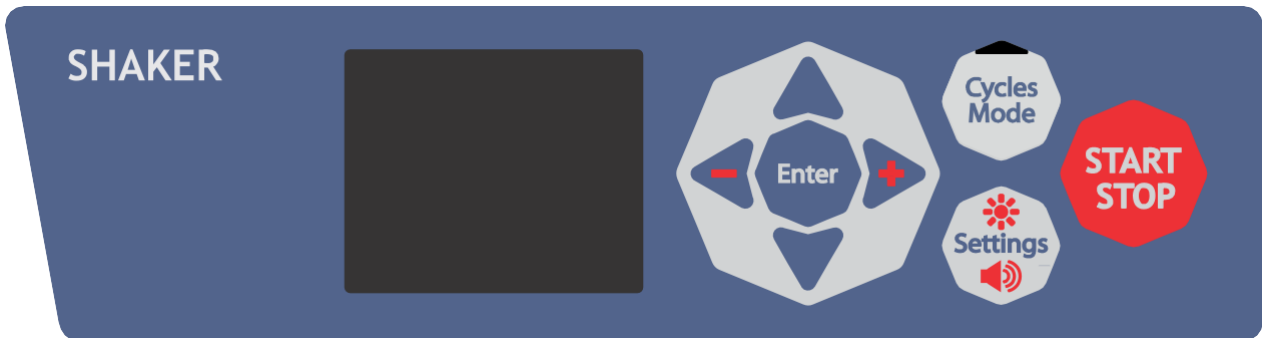
Preparation to use

- 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.



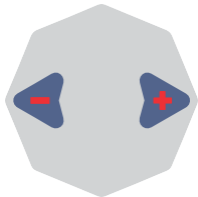
- 1 - Network switch
- 2 - Power plug
- 3 - Working platform
- 4 - Casing
- 5 - Control panel



Control panel



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

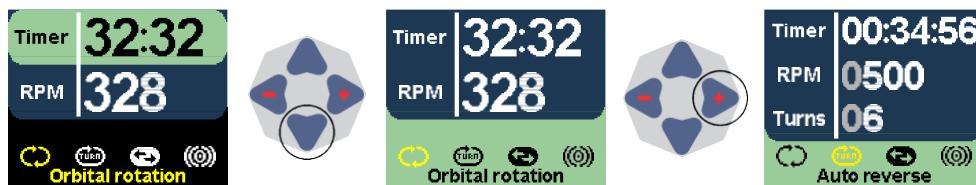


Entering and exiting key to programming mode

Main menu

In the main menu you can choose and set the needed working mode.

Choosing the working mode

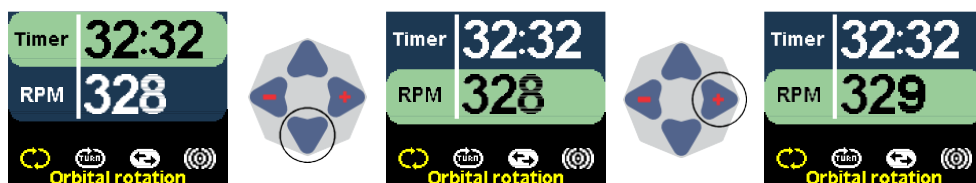


The shaker has 4 working modes:

- 1) Orbital rotation
- 2) Auto reverse
- 3) Reciprocal
- 4) Vibration

To choose a mode go to the lowest level of the main menu and select the desired mode using the right or left navigation keys.

Adjusting the parameters of the mode

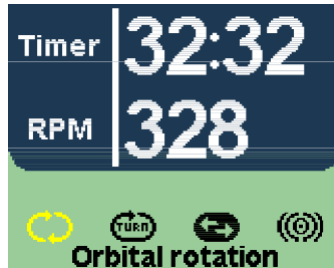


Using the navigation keys, select the desired mode and set required values for each parameter.

Press and hold the left or right navigation key to quickly change the value of a parameter.



Orbital rotation mode



Orbital rotation - clockwise classic platform motion mode with adjustable speed and time parameters.

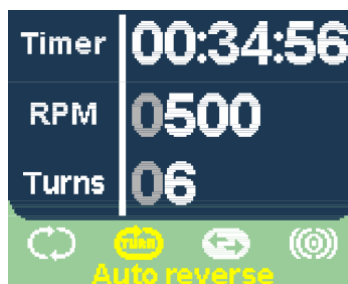
mode parameters:

TIMER: 1 minute - 99:59 minutes - continuous mode.

PRM: 15 - 300.



Auto reverse mode



Auto reverse mode - platform orbital motion mode with set and equal numbers of clockwise and counter-clockwise turns.

Adjustable RPM, time and the number of one-way rotations.

Options:

TIMER: 1 minute - 99.59 minutes - continuous mode.

PRM: 15 RPM - 300 RPM.

TURNS: 5 - 25.



Reciprocal mode



Reciprocal mode - provides changing direction motion with the choice of rotation angle of the platform, at a predetermined RPM and operating time.

Options:

TIMER: 1 minute - 99.59 minutes - continuous mode.

RPM: 07 - 20.

Angle: 10 ° - 360 °



Vibration mode



Vibration mode - reciprocating type of movement of the platform imitating shake.

Ability to customize the speed settings, time and amplitude of the shake-up.

Options:

TIMER: 1 minute - 99.59 minutes - continuous mode.

PRM: 07 - 20.

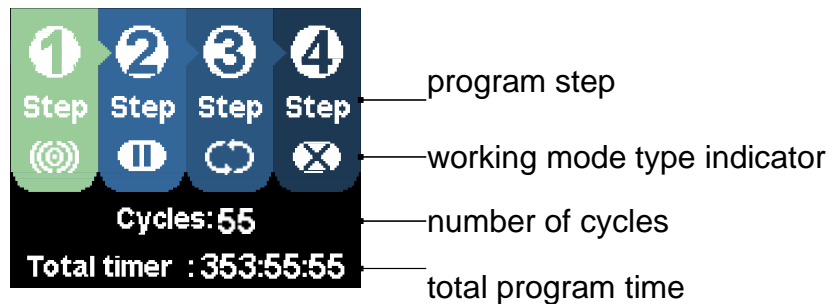
Amplitude: 1mm - 2mm

Programming menu

You can create a custom program using the programming menu. Create multiple steps to combine the various shaker working modes.

To enter and exit the programming menu use the “Cycles mode” key.

Creating program



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 can be used. Create a custom cycle program by adding four steps and a number of program repeat cycles as required.

All settings are made using the navigation keys. Enter and exit the programming step using "ENTER" key.

When setting the programming, you can assign the desired operating mode:

- 1) Orbital rotation mode
- 2) Auto reverse mode
- 3) Reciprocal mode
- 4) Vibration mode
- 5) Pause
- 6) Disable step

The number of repeat cycles can be set in the bottom line of programming main menu, ranges are from 1 to 99, plus continuous mode.

Example of custom program

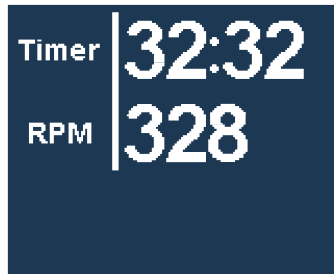


Enter the Cycle programming menu

- 1 Select the 1st step and press “ENTER” key.
 - 1.1 Go to the step menu’s bottom line, select orbital rotation mode; set the time for 5 minutes, RPM to 100 and press “ENTER”.
- 2 Select the 2nd step and press “ENTER” key.
 - 2.1 Go to the step menu’s bottom line and select the pause mode; set the time to 1 minute and press “ENTER” key.
- 3 Select the 3rd step and press “ENTER” key.
 - 3.1 Go to the step menu’s bottom line and select orbital rotation mode; set the time to 2 minutes, RPM to 200, 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 Go to the program menu bottom line and set the cycle value to 1.

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

Simplified menu



If you wish to use the device just as an orbital shaker and other modes are not needed, you can enable the simplified menu by holding the “Cycles mode” key and switching the network switch off and on again.

To return to the advanced menu, repeat the operation.



Interface adjustment menu

In the interface menu you can adjust the display brightness, sound volume, and select the interface language.

All settings are made using the navigation keys. To enter and exit the menu use the "SETTINGS" key.

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 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 DOS-20M N _____ 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.
21-133 Aizkraukles Str., Riga LV-1006
Tel: (+371) 6755 8743
Tel: (+371) 6755 1934
E-mail: info@elmi-tech.com
WWW: www.elmi-tech.com

Video instruction is available!



[youtube.com/elmimedia/videos](https://www.youtube.com/elmimedia/videos)



elmi Ltd.
laboratory equipment

ELMI Ltd.
21-133 Aizkraukles Str.
Riga, LV-1006, Latvia
T: +371 6755 8743
T: +371 6755 1934
E: info@elmi-tech.com
W: www.elmi-tech.com