



Medical–Biological
Research & Technologies

3D Sunflower Mini-Shaker



**Operating Manual
Certificate**

for version
V.2AW

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1. Safety precautions

The following symbols mean:



Caution!

Make sure you have fully read and understood the present Manual before using the equipment. Please pay special attention to sections marked by this symbol.

GENERAL SAFETY

- Operation of the unit must be carried out according to the given instruction manual.
- The unit should not be used if dropped or damaged.
- The unit must be stored and transported only in a horizontal position (see marking on the package).
- After transportation or storage keep the unit under room temperature for 2-3hrs before connecting it to the electric circuit.
- Use only cleaning and decontamination methods recommended by the manufacturer.
- Do not make modifications in design of the unit.

ELECTRICAL SAFETY

- Connect only to a power supply with voltage corresponding to that on the serial number label.
- Use only the external power supply unit provided with this product.
- Ensure that the power switch and the external power supply connector are easily accessible during use.
- Disconnect the unit from the electric circuit before moving.
- Turn off the unit by disconnecting the external power supply from the power socket.
- If liquid penetrates into the unit, disconnect it from the external power supply unit and have it checked by a repair and maintenance technician.
- Do not operate the unit in premises where condensation can form. Operating conditions of the unit are defined in the Specifications section.

DURING OPERATION

- Do not impede the platform motion.
- Do not operate the unit in environments with aggressive or explosive chemical mixtures. Please contact manufacturer for possible operation of the unit in specific atmospheres.
- Do not operate the unit if it is faulty or has been installed incorrectly.
- Do not use outside laboratory rooms.
- Do not place a load exceeding the maximum load value mentioned in the Specifications section of this Manual.

BIOLOGICAL SAFETY

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

2. General Information

The new 3D version is designed for reliable long-term operation. Use of direct drive and brushless motor allows continuous mixing during up to 7 days and guarantees reliable operation for more than 2 years.

3D Mini-Shaker provides adjustable three-dimensional smooth rotation of the platform. The platform is suitable for placing dimpled PDM mat for different size tubes. Non-slip thermoresistant silicone mat is situated on the platforms of Mini-shaker. It provides stable position of vessels during inclined rotation motion. Platform with non-slip silicone mat is included in standard set.

The Mini-Shaker is a compact device with low energy consumption.

The Mini-Shaker is designed for mixing blood samples, for minigel staining and destaining, sample washing, blot hybridization reaction.

3. Getting started

3.1. Unpacking.

Remove packing materials carefully and retain them for future shipment or storage of the unit.

Examine the unit carefully for any damage incurred during transit. The warranty does not cover in-transit damage.

3.2. Complete set. Package contents:

Standard set

- Sunfower Mini-Shaker 3D1 piece
- Bio PP-4S platform1 piece
- Non-slip thermoresistant silicone mat1 piece
- External power supply unit1 piece
- Operating Manual; Certificate1 copy

Optional accessory

- PDM dimpled maton request



**PDM
dimpled mat**



**Standard Bio PP-4S platform
with non-slip thermoresistant
silicone mat**

3.3. Set up:

- Place the unit on the horizontal even working surface;
- Plug the external power supply unit into the 12 V socket at the rear side of the unit.

3.4. Platform installation.

Install the platform to the movable base by inserting the pins on the underside of the platform into the holes on the movable base.

4. Operation

- 4.1. Connect the external power supply unit to the electric circuit.
- 4.2. Place samples on the unit platform (Fig. 1/1).
- 4.3. Switch **On** the **Power** switch (Fig. 1/2).
- 4.4. Use the speed control knob (Fig. 1/3) to adjust the shaking speed to the required setting.
- 4.5. After finishing the operation set the shaking speed to a minimum turning the regulator knob counterclockwise to the limit.
- 4.6. Switch **Off** the **Power** switch.
- 4.7. Disconnect the external power supply unit from electric circuit.

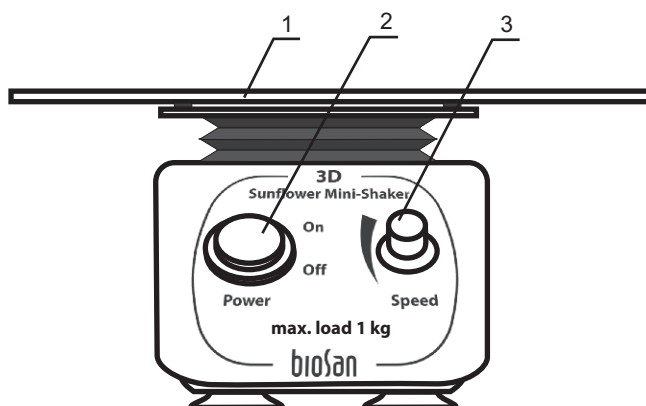


Fig.1 Control panel

5. Specifications

The unit is designed for operation in cold rooms, incubators and closed laboratory rooms at ambient temperature from +4°C to +40°C in a non-condensing atmosphere and maximum relative humidity 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C.

- 5.1. Speed control range5–60 rpm
- 5.2. Fixed tilt angle7°
- 5.3. Maximum continuous operation time168 hrs
- 5.4. Maximum load.....1 kg
- 5.5. Platform working area200x200 mm
- 5.6. Dimensions with platform installed (WxDxH)235x235x140 mm
- 5.7. Input current/power consumption.....12V, 260 mA/3.1 W
- 5.8. External power supply input AC 100-240 V 50/60Hz, output DC 12V
- 5.9. Weight*1.2 kg

* Accurate within $\pm 10\%$.

Optional accessory	Description	Catalogue number
PDM	Dimpled mat for fixation of different size tubes	PDM

Replacement parts	Description	Catalogue number
Bio PP-4S	Detachable platform with non-slip thermoresistant silicone mat	BS-010125-AK

Biosan is committed to a continuous programme of improvement and reserves the right to alter design and specifications of the equipment without additional notice.

6. Maintenance

- 6.1. If the unit requires maintenance, disconnect the unit from the mains and contact Biosan or your local Biosan representative.
- 6.2. All maintenance and repair operations must be performed only by qualified and specially trained personnel.
- 6.3. Standard ethanol (75%) or other cleaning agents recommended for cleaning of laboratory equipment can be used for cleaning and decontamination of the unit.

7. Warranty and Claims

- 7.1. The Manufacturer guarantees the compliance of the unit with the requirements of Specifications, provided the Customer follows the operation, storage and transportation instructions.
- 7.2. The warranted service life of the unit from the date of its delivery to the Customer is 24 months. Contact to your local distributor to check availability of extended warranty.
- 7.3. If any manufacturing defects are discovered by the Customer, an unsatisfactory equipment claim shall be compiled, certified and sent to the local distributor address. Please visit www.biosan.lv, Technical support section to obtain the claim form.
- 7.4. The following information will be required in the event that warranty or post-warranty service comes necessary. Complete the table below and retain for your records.

Model	3D Sunflower Mini-Shaker
Serial number	
Date of sale	

8. Declaration of Conformity

Declaration of Conformity

Equipment name:	3D
Type of equipment:	Sunflower Mini-Shaker
Directive:	EMC Directive 2004/108/EC Low Voltage Directive 2006/95/EC RoHS 2011/65/EC WEEE 2002/96/EC & 2012/19/EU
Manufacturer:	SIA BIOSAN Ratsupites 7, build.2, Riga, LV-1067, Latvia
Applied Standards:	EN 61326-1: Electrical equipment for measurement, control and laboratory use EMC requirements. General requirements EN 61010-1: Safety requirements for electrical equipment for measurement, control and laboratory use. General requirements EN 61010-2-051: Particular requirements for laboratory equipment for mixing and stirring

We declare that this product conforms to the requirements of the above Directive(s)



Signature
Svetlana Bankovska
Managing director



Signature
Aleksandr Shevchik
Engineer of R&D

12.06.2013

Date

12.06.2013

Date

ES-20/60
(with heating)



PSU-20i



PSU-10i

- Applications:
- Microbiology
 - Extraction
 - Cell growing

ES-20
(with heating)



MR-12

- Applications:
- Agglutination
 - Extraction
 - Gel staining/
destaining

Multi RS-60



Bio RS-24



NEW

RTS-1C



Multi Bio RS-24



- Applications:
- Microbiology
 - Extraction
 - Cell growing

V-1



MSV-3500



- Applications:
- DNA-analysis
 - Genome sequence

MR-1



Multi Bio 3D



- Applications:
- Agglutination
 - Extraction
 - Blot hybridisation
 - Gel staining/destaining



PST-60HL-4
(with heating)



PST-100HL
(with heating)



NEW
TS-DW



PST-60HL
(with heating)



- Applications:
- ELISA analysis
 - Hybridization

PSU-2T



NEW

MPS-1



NEW

CVP-2



TS-100 (with heating)
TS-100C (with heating
and cooling)



V-32



$10^0 \dots 10^{-3}$ ml

PCR plates, microtest plates
and Eppendorf type tubes

Level of liquid

$10^3 \dots 10^2$ ml

Erlenmeyer flasks and
Cultivation flasks

10^1 ml

Petri dishes, vacutainers
and tubes up to 50 ml