

PSU-2T

Mini-shaker for immunology



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1. About this edition of operating manual

The current edition of operating manual applies to the following version of mini-shaker for immunology:

- **PSU-2T** V.2AW

2. 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

- Save the unit from shocks or falling.
- Store and transport the unit in a horizontal position (see package label) at ambient temperatures between -20°C and +60°C and maximum relative humidity of 80%..
- After transportation or storage, keep the unit under room temperature for 2-3 hrs before connecting it to the mains.
- Before using any cleaning or decontamination methods except those recommended by the manufacturer, check with the manufacturer that the proposed method will not damage the equipment.
- Do not make modifications in design of the unit.

ELECTRICAL SAFETY

- Connect only to external power supply with voltage corresponding to that on the serial number label.
- Use only the external power supply provided with this product.
- Ensure that the external power supply is easily accessible during use.
- Disconnect the unit from the mains 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 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.

3. General Information

PSU-2T Mini-shaker provides regulated shaking for two or four 96-well microtest plates. It is a compact instrument with low profile and small footprint for personal application including immunoassays and colouration tests.

The current upgraded model provides reliable continuous operation and smooth platform motion at lower speed. Non-stop mode up to 7 days and over 2 years of trouble-free operation are guaranteed due to direct drive mechanism and brushless motor.

PSU-2T Mini-shaker provides:

- Gentle shaking of samples
- Smooth regulation and stabilization of rotation speed
- Even shaking amplitude throughout shaker platform
- Setting and indication of the necessary working time
- Automatic stop of platform movement after the set time expires
- Indication of the current operation time.

The unit is applicable in all the areas of the medicine, biotechnology and microbiology laboratory research.

4. Getting started

- 4.1. **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. Warranty covers only the units transported in the original package.
- 4.2. **Complete set.** Package contents:
- 4.2.1. Standard set
- PSU-2T Mini-Shaker for Immunology with IPP-2 platform ❶ 1 pce
 - external power supply 1 pce
 - Operating Manual; Certificate..... 1 copy
- 4.2.2. Optional accessories
- IPP-4 platform for 4 immunoplates ❷on request



- 4.3. Setup. Place the unit on the horizontal even working surface. Remove protective film from the display. Plug the external power supply into the 12 V socket at the rear side of the unit.
- 4.3.1. Install the platform to the movable base by inserting the pins on the underside of the platform into the holes on the supporting platform on the movable base.

5. Operation

- 5.1. Connect the external power supply to the mains.
- 5.2. Place the microtest plates on the platform and fix them with the two screws. When using the IPP-4 platform, fix the microtest plates with the special holder by pressing it against the microtest plates with two screws.
- 5.3. Turn the **Power** switch (fig. 1/1) into **On** position, located on the front panel of Shaker (the display, fig.1/3, lights on). In standby mode, the display shows set time or set speed (when **RPM** key is pressed). In run mode, the display shows operation time or actual speed (when **RPM** key is pressed).
- 5.4. Using the ▼ and ▲ keys (fig. 1/4) set the operation time using the display readings. The set time is indicated on the display in hours and minutes (hh:mm).
- 5.5. Set the shaking speed with the Speed knob (fig. 1/6) using set speed readouts on the display. Speed readouts are indicated on the display while the Speed knob is being turned.
- 5.6. Press the **Run/Stop** key (fig. 1/2). The platform will start shaking and the timer will start counting the operation time.

The display shows actual time: less than 1 hour - in minutes and seconds (mm:ss), after 1 hour - in hours and minutes (hh:mm). Press and hold the **RPM** key while platform is shaking to display the actual speed of the platform motion on the display.

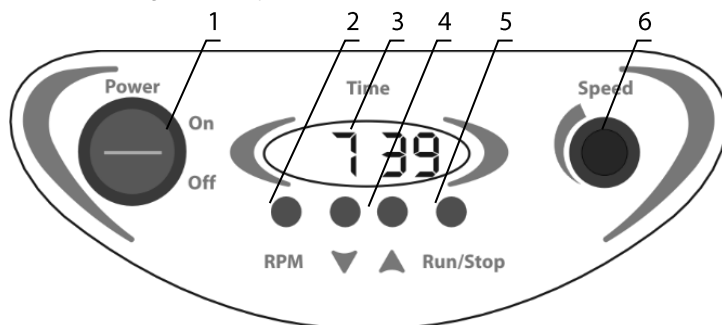


Figure 1. Control panel

- 5.7. After the set time expires, platform shaking will stop and the set working time will be shown on the display.
- 5.8. The shaker can be stopped before the set time elapses if necessary by pressing the **Run/Stop** key (fig. 1/5). For 2 s the display will be showing the time the shaker has worked, and after that the set time.
- 5.9. If the working time is not set and the display shows 0:00, pressing the **Run/Stop** key will start time count up and will cause the shaker to operate non-stop until the **Run/Stop** key is pressed. The timer will be counting up until 99 hrs 59 min and then will restart from 0:00.
- 5.10. After finishing the operation turn the **Power** switch into **Off** position.
- 5.11. Disconnect the external power supply from the mains.

6. 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.

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

- 6.1. Stable speed control range¹ 150-1200 rpm
(150-1000 rpm using the IPP-4 platform)
- 6.2. Orbit 2 mm
- 6.3. Digital time setting 1 min - 24 hr / non-stop
- 6.4. Maximum continuous operation time 168 hrs
- 6.5. Maximum load 0.3 kg
- 6.6. Dimensions 220x205x90 mm
- 6.7. Input current/power consumption 12V, 280mA / 3.4W
- 6.8. External power supply in AC 100-240V 50/60Hz; out DC 12V
- 6.9. Weight¹ 2.0 kg

Optional accessories	Description	Catalogue number
IPP-4	Platform for 4 microtest plates, dimensions 266x170 mm	BS-010102-AK

Replacement parts	Description	Catalogue number
IPP-2	platform for 2 microtest plates, dimensions 184x132 mm	BS-010102-BK

7. Maintenance

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

¹ Accurate within $\pm 10\%$

8. Warranty

- 8.1. The Manufacturer guarantees the compliance of the unit with the requirements of Specifications, provided the Customer follows the operation, storage and transportation instructions.
- 8.2. The warranted service life of the unit from the date of its delivery to the Customer is 24 months. For extended warranty, see **8.5**.
- 8.3. Warranty covers only the units transported in the original package.
- 8.4. If any manufacturing defects are discovered by the Customer, an unsatisfactory equipment report shall be compiled, certified and sent to the local distributor address. To obtain the claim form, visit section **Technical support** on our website at link below.
- 8.5. Extended warranty. For **PSU-2T**, the *Basic Plus* class model, extended warranty is a paid service. Contact your local Biosan representative or our service department through the **Technical support** section on our website at the link below.
- 8.6. Description of the classes of our products is available in the **Product class description** section on our website at the link below.

Technical support



biosan.lv/en/support

Product class description



biosan.lv/classes-en

- 8.7. 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	PSU-2T, Mini-Shaker for immunology
Serial number	
Date of sale	

9. EU Declaration of conformity

EU Declaration of Conformity

Unit type	Rockers, shakers, rotators, vortexes
Models	MR-1, MR-12; 3D, Multi Bio 3D, PSU-10i, PSU-20i, MPS-1, PSU-2T; Bio RS-24, Multi Bio RS-24, Multi RS-60; V-1 plus, V-32, MSV-3500
Serial number	14 digits styled XXXXXYYMMZZZZ, where XXXXXX is model code, YY and MM – year and month of production, ZZZZ – unit number.
Manufacturer	SIA BIOSAN Latvia, LV-1067, Riga, Ratsupites str. 7/2
Applicable Directives	EMC Directive 2014/30/EU LVD Directive 2014/35/EU RoHS2 2011/65/EU WEEE 2012/19/EU
Applicable Standards	<u>LVS EN 61326-1: 2013</u> Electrical equipment for measurement, control and laboratory use. EMC requirements. General requirements. <u>LVS EN 61010-1: 2011</u> Safety requirements for electrical equipment for measurement, control, and laboratory use. General requirements. <u>LVS EN 61010-2-051: 2015</u> Particular requirements for laboratory equipment for mixing and stirring.


We declare that this product conforms to the requirements of the above Directives



Signature
Svetlana Bankovska
Managing director

19.07.2016.

Date



Signature
Aleksandr Shevchik
Engineer of R&D

19.07.2016

Date

HOW TO CHOOSE

A PROPER SHAKER, ROCKER, VORTEX

biosan

Medical-Biological
Research & Technologies

Sample volume $10^3 \dots 10^2$ ml

Erlenmeyer flasks and
Cultivation flasks



Sample volume 10^1 ml

Petri dishes, vacutainers
and tubes up to 50 ml



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

PCR plates, microtest plates
and Eppendorf type tubes



PSU-20i, Orbital Shaker



ES-20/60, Orbital
Shaker-Incubator



PSU-10i,
Orbital Shaker



ES-20, Orbital
Shaker-Incubator



MR-12,
Rocker-Shaker

Applications:
Microbiology
Extraction
Cell cultivation

Multi RS-60,
Programmable rotator



Bio RS-24,
Mini-Rotator



NEW

RTS-1 and RTS-1C,
Personal bioreactors



MR-1,
Mini Rocker-Shaker



Applications:
Agglutination
Gel staining/
destaining

Multi Bio 3D, Mini Shaker



Applications:
Agglutination
Extraction
Blot hybridisation
Gel staining/destaining

Multi Bio RS-24,
Programmable
rotator



Applications:
Microbiology
Extraction
Cell cultivation
Hematology



V-1 plus,
Vortex

MSV-3500,
Multi Speed Vortex



Applications:
Nucleic acid Analysis
Molecular Analysis
Protein Analysis
Genomic Analysis



PST-60HL-4,
Thermo-Shaker



PST-100HL,
Thermo-Shaker

TS-DW, Thermo-
Shaker for deep
well plates



PST-60HL,
Thermo-Shaker



Applications:
ELISA Analysis
Genomic Analysis
Hybridization
Immunology

MPS-1,
Multi Plate Shaker



PSU-2T,
Mini-Shaker

NEW



CVP-2, Centrifuge
vortex for PCR
plates

TS-100, TS-100C, Thermo-Shakers



V-32, Multi-Vortex

