

PSU-2T

Mini-shaker for immunology



If you have any feedback on our products or services, we would like to hear from you.
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1. About this edition of the instructions

1.1 The current edition of the user instructions applies to the following models:

Model and name	Version
PSU-2T, mini-shaker for immunology	V.2AW

1.2 Edition 2.07 – February of 2023

2. Safety precautions

2.1 Symbols used in these user instructions:



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

2.2 Icons used on the unit and packaging:

	CE marking, manufacturer affirms conformity with European health, safety, and environmental protection standards, see 11.1
	WEEE directive marking, see 11.1
	Polarity of the power connector
	Equipment uses direct current

2.3 General safety

- Protection offered by this unit can be insufficient if the unit is not used as intended by the manufacturer.
- Save the unit from shocks or falling.
- Store and transport the unit as described in section **Storage and transportation**.
- 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.

2.4 Electrical safety

- Connect only to the mains with voltage corresponding to that on the serial number label.
- Use only the external power supply provided with this product.
- Ensure that the power plug is easily accessible during use.
- Disconnect the unit from the mains before moving.
- If liquid penetrates into the unit, disconnect it from the mains 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.

2.5 During operation

- 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 leave the operating unit unattended.
- Do not impede the platform motion.

2.6 Biological safety

- The user is responsible to carry out appropriate decontamination if hazardous material spills on or penetrates into the equipment.

3. General information

Mini-Shaker PSU-2T is designed for immunoassays. The device provides adjustable mixing of reagents in microplates and ensures smooth movement of the platform even at low speeds.

Shaker is a compact and user-friendly device. It takes up little space on a desk and is ideal for personal use. The use of direct drive and brushless motor allows continuous mixing up to 7 days and ensures reliable, trouble-free operation for more than 2 years. Display of the device switches between time and speed values.

Shaker can be used in cold rooms or incubators, operating at ambient temperature range +4°C to +40°C.

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 1 pce
- IPP-2, platform for 2 microplates 1 pce
- External power supply 1 pce
- Operating instructions, declaration of conformity 1 copy

4.2.2 Optional accessories:

- IPP-4, platform for 4 microplates 1 pce



IPP-2



IPP-4

4.3 **Setup.** Place the unit on horizontal even working surface. Remove the protective film from the display. Connect the external power supply unit into the socket at the rear side of the unit. Position the unit for an easy access to the external power supply and the power switch.

4.4 **Platform installation.** Install the platform to the movable base by inserting the pins on the underside of the platform into the holes on the supporting platform on the movable base.

5. Operation

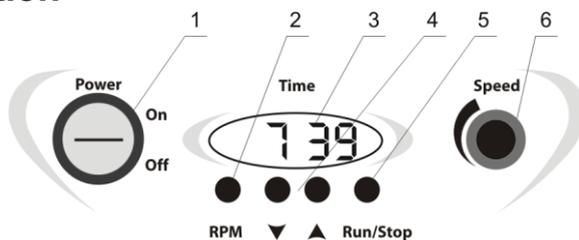


Figure 1. Control panel

- 5.1 Connect external power supply to a grounded power socket.
- 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 (the switch and the display, fig.1/3, lights on). In standby mode, the display shows set time or set 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.
- 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. 1/5). The platform will start shaking and the timer will start counting the operation time.
- 5.7 The display shows actual time. When it is 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.
- 5.8 After the set time expires, platform shaking will stop and the set working time will be shown on the display.
- 5.9 The shaker can be stopped before the set time elapses if necessary, by pressing the **Run/Stop** key. For 2 seconds, the display will be showing the time the shaker has worked, and after that – the set time.
- 5.10 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.
- 5.11 After finishing the operation, set the **Power** switch in position **Off** and disconnect the external power supply from electric circuit.

6. Specifications

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

6.2 Shaking specifications

Speed setting range, accurate within $\pm 10\%$

Platform IPP-2.....250–1200 rpm

Platform IPP-4.....150–1000 rpm

Orbit.....2 mm

Digital time setting range 1 min–24 hrs / non-stop (increment 1 min)

Maximum continuous operation time168 h

Maximum load0.3 kg

6.3 General specifications

Display.....LED

Dimensions.....255x255x100 mm

Weight, accurate within $\pm 10\%$ 2 kg

Operating voltage12 V=

Operating current280 mA

Power consumption.....3.4 W

External power supplyinput 100–240 V~, 50/60 Hz, output 12 V=

6.4 Workroom requirements.

Workroom description	Cold rooms, incubators (except CO ₂ incubators) and closed laboratory rooms
Temperature range	+4 °C ... +40 °C
Humidity requirements	Maximum of 80% RH at 31 °C, decreasing linearly to 50% RH at 40 °C. Non-condensing atmosphere.
Operating height, maximum	2000 m ASL

7. Ordering information

7.1 Models and versions available:

Model	Version	Catalogue number
PSU-2T, Mini-shaker for immunology	V.2AW	BS-010155-AAG

7.2 To inquire about or order the optional accessories or the replacement parts, contact Biosan or your local Biosan representative.

Accessories	Catalogue number
IPP-4, optional platform for 4 microplates, 266x170 mm	BS-010155-AK
IPP-2, replacement platform for 2 microplates, 184x132 mm	BS-010155-BK

8. Maintenance

8.1 Service.

8.1.1 If the unit is disabled (e.g., no platform movement, no reaction to key presses, etc.) or requires maintenance, disconnect the unit from the mains and contact Biosan or your local Biosan representative.

8.1.2 All maintenance and repair operations (except listed below) must be performed only by qualified and specially trained personnel.

8.1.3 Operating integrity check. If the unit follows the procedure described in section **Operation**, then no additional checks are required.

8.2 Cleaning and disinfection.

8.2.1 Use mild soap and water with a soft cloth or sponge for cleaning the exterior. Rinse remaining washing solution with distilled water. Wipe dry the excess water with clean, soft cloth or sponge.

8.2.2 To disinfect the plastic and metal parts, use 75% ethanol or DNA/RNA removing solution (e.g., Biosan PDS-250). After disinfecting, wipe the surfaces dry.

8.2.3 Platforms are autoclavable, at 121°C, for 15 min, the unit itself is not autoclavable.

8.3 **Disposal.** Disposal of the appliance requires special precautions and must be carried out at an appropriate disposal site, separate from normal household waste. To prevent pollution of the environment, all waste resulting from the disposal of the product must be collected and disposed of in the country of use, in accordance with the applicable requirements for the handling of electronic waste.

9. Storage and transportation

9.1 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%.

9.2 After transportation or storage and before connecting it to the electric circuit, keep the unit under room temperature for 2-3 hrs.

9.3 For extended storage, the unit does not require special procedures.

10. Warranty

- 10.1 The Manufacturer guarantees the compliance of the unit with the requirements of Specifications, provided the Customer follows the operation, storage and transportation instructions.
- 10.2 The warranted service life of the unit from the date of its delivery to the Customer is 24 months. For extended warranty, contact Biosan or your local Biosan representative.
- 10.3 Warranty covers only the units transported in the original package.
- 10.4 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 **Technical support** page on our website at link below.
- 10.5 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

- 10.6 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	Serial number	Date of sale
PSU-2T , Mini-shaker for immunology		

- 10.7 **Production date.** Production date is placed in the serial number, on the label of the unit. Serial number consists of 14 digits styled XXXXXYYMMZZZZ, where XXXXXX is model code, YY and MM – year and month of production, ZZZZ – unit number.

11. EU Declaration of conformity

11.1 Mini-shaker for immunology **PSU-2T** is conformity with the following relevant Union legislations:

LVD 2014/35/EU	LVS EN 61010-1:2011 Safety requirements for electrical equipment for measurement, control, and laboratory use. General requirements. LVS EN 61010-2-051:2015 Particular requirements for laboratory equipment for mixing and stirring.
EMC 2014/30/EU	LVS EN 61326-1:2013 Electrical equipment for measurement, control and laboratory use. EMC requirements. General requirements.
RoHS3 2015/863/EU	Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment.
WEEE 2012/19/EU	Directive on waste electrical and electronic equipment.

11.2 Declaration of Conformity is available for download on the page for the relevant model on our website by links below, in the **Downloads** section:



PSU-2T

how to choose

A PROPER SHAKER, ROCKER, VORTEX

bioSan

Medical-Biological
Research & Technologies

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

Erlenmeyer flask
and Cultivation flask



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-20/80,
Orbital Shaker-Incubator



Applications:

- Microbiology
- Extraction
- Cell cultivation



PSU-10i,
Orbital Shaker



ES-20,
Orbital
Shaker-Incubator

Applications:

- Agglutination
- Gel staining/destaining



MR-12,
Rocker-Shaker



Multi RS-60,
Programmable rotator

Bio RS-24,
Mini-Rotator



RTS-1 and RTS-1C,
Personal bioreactor



MR-1,
Mini Rocker-Shaker



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-60HL,
Thermo-Shaker



PST-100HL,
Thermo-Shaker

TS-DW,
Thermo-Shaker
for deep well
plates



Applications:

- ELISA Analysis
- Genomic Analysis
- Hybridization
- Immunology



MPS-1,
Multi Plate Shaker



PSU-2T,
Mini-Shaker



CVP-2,
Centrifuge vortex for PCR plates

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



V-32,
Multi-Vortex

