

MPS-1

High speed multi plate shaker



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

1.1.1. The current edition of instructions for use (IFU) applies to the following models:

Model and name	Version
MPS-1, high-speed multi plate shaker	V.4A01

1.1.2. Revision number: 4.02

1.1.3. Release date: June of 2026.

1.2. Symbols used in this IFU:

 **Caution!** Please pay special attention to sections marked by this symbol.

1.3. Revision changelog

Edition	Date	Changes
4.01	05/2024	Model version change
4.02	06/2026	Logo, display and key changes

2. Safety precautions

2.1. General warnings:

 **Caution!** Make sure you have fully read and understood the present instructions before using the equipment.

2.2. Icons used on the unit and packaging:

	CE marking, manufacturer affirms conformity with European health, safety, and environmental protection standards, see 12.1
	WEEE directive marking, see 12.1
	Polarity of the power connector
	Equipment uses direct current
	The automatic ball balancing system (ABBS) may produce a soft metal-like noise when the unit is moved or during platform acceleration and deceleration. This is normal and does not indicate a fault or loose part.

2.3. General safety

- Protection offered by this unit can be insufficient if the unit is not used as intended by the manufacturer.
- 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 external power supply with voltage corresponding to that on the serial number label.
- Ensure that the external power supply and plug are easily accessible during use.
- Do not plug the unit into an ungrounded power socket, and do not use an ungrounded extension lead.
- 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 impede the platform motion.
- Do not apply excessive pressure on platform sides to avoid damage to the unit.
- 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 use outside the laboratory rooms.
- Do not operate the unit if it is faulty or has been repaired incorrectly.
- Do not place a load exceeding the maximum load value mentioned in the **Specifications** section.

2.6. Biological safety

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

3. General information

3.1. Uses. MPS-1 provides adjustable mixing for microtest plates, PCR plates, deepwell plates, and tubes: shaking 0.2–2 ml tubes and vortexing any volume up to 50 ml. It includes a single-tube vortexing head, 300–3,200 rpm speed range, 3 mm orbit, mixing presets, and Pulse Mode for efficient resuspension.

3.2. Application fields. MPS-1 is suitable for molecular biology/PCR labs (genomics, molecular diagnostics), clinical diagnostic labs (DNA/RNA workflows), immunology/ELISA labs (immunodiagnosics), biotech and pharma R&D (high-throughput screening), and microbiology labs (sample or cell resuspension). It can operate in cold rooms or incubators at +4 °C to +40 °C. The 12 V external power supply improves electrical safety in humid environments.

3.3. Features. MPS-1 is compact, user-friendly, quiet at maximum speed, and highly stable. It includes a universal platform holder for deepwell and microtest plates, with optional platforms for semi- and unskirted 200 µl PCR plates and 0.2–2 ml tubes.

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.

 **Note.** The automatic ball balancing system (ABBS) may produce a soft metal-like noise when the unit is moved or during platform acceleration and deceleration. This is normal and does not indicate a fault or loose part.



4.2. **Complete set.** Package contents:

4.2.1. Standard set

- **MPS-1**, high-speed multi plate shaker (with vortexing head) 1 pce
- External power supply 1 pce
- Instructions for use, declaration of conformity 1 copy

4.2.2. Optional accessories, on demand

- Platform P-2/24 for 24x1.5-2 ml tubes 1 pce.
- Platform P-05/32 for 32x0.5 ml tubes 1 pce.
- Platform P-02/05 for 24x0.5 ml and 48x0.2 ml tubes 1 pce.
- Platform P-02-96 for 96x0.2 ml tubes or a PCR plate, semi- or unskirted 1 pce.



Vortexing head



P-2/24



P-05/32



P-02/05



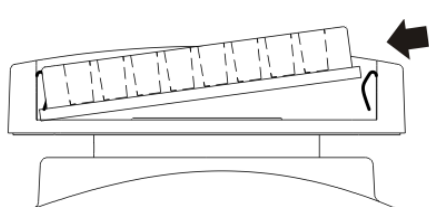
P-02-96

4.3. Setup.

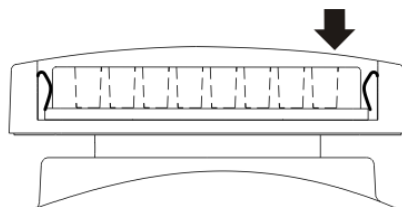
- Place the unit upon even horizontal non-flammable surface 30 cm away from any flammable materials;
- Remove protective film from the display;
- Plug the external power supply into the socket at the rear side of the unit;

4.3.1. **Platform or plate installation** (figure 1). Install the platform or plate by inserting longer side in the universal holder. Push the side of the platform/plate under the spring clamps and push down the opposite side of the platform/plate.

4.3.2. **Platform or plate removal** (figure 2). Remove the platform or plate by pushing the longer side of the platform/plate into spring clamps and lifting the opposite up.

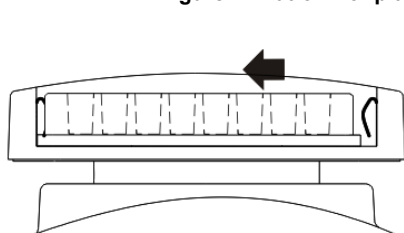


Push the plate under the clamp.

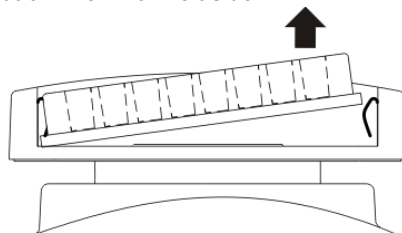


Press down the plate.

Figure 1. Platform or plate installation. View from left side.



Push back the plate



Lift the plate.

Figure 2. Platform or plate removal.

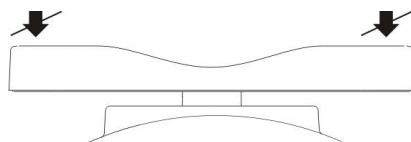
5. Operation

5.1. Recommendations during operation.



Caution! Please check the tubes/plates before using, be sure that they are properly sealed. Unsealed tubes or plates may spill the contents during operation causing potential health risks when working with infected material.

- It is recommended to fill the test tubes/plate wells up to 75% of the maximum fill volume for efficient mixing.
- To avoid damage to the unit, do not apply excessive pressure on platform sides.



5.2. Connect the external power supply to mains and turn on the power switch located on the rear panel of the unit (position I).

5.3. Place the plate or optional platform on the universal platform/plate holder (see 4.3). Insert the tubes into the sockets of the optional platform.

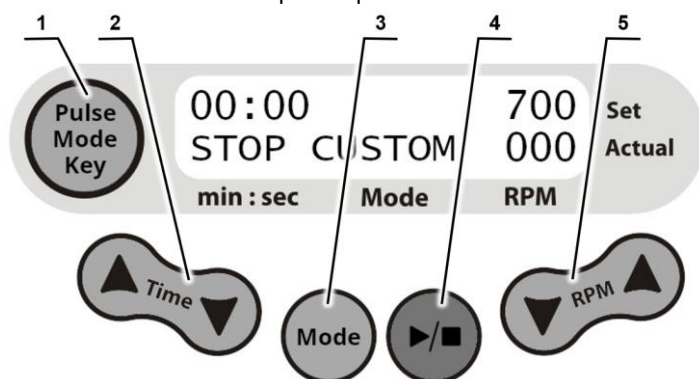


Figure 3. Control panel

5.4. **Setting the working mode.** Use the **Mode** key (fig. 3/3) to select the required mode shown on the display: CUSTOM, SOFT, MED. (medium), HARD, or VORTEX (for tubes).

5.4.1. SOFT, MED., HARD, and VORTEX use fixed, non-adjustable speed values (see 7.2), CUSTOM allows speed adjustment.



Caution! Please check advised mixing modes for your chosen plate or platform in section **How to choose the right mode of mixing**.

We recommend using CUSTOM mode (adjustable speed) before mixing to determine the optimum efficiency. Do not use HARD and VORTEX modes for microtube platforms and deepwell plates.

5.5. Setting the parameters. Press and hold the key for more than 3 s to increase the value changing rate. Set parameters are shown at the top of the display.

5.5.1. Set the required working time interval in minutes and seconds (increment 15 s) using the **Time ▲** and **▼** keys (fig. 3/2).

5.5.2. When using the CUSTOM working mode, set the required speed (increment 100 RPM) using the **RPM ▲** and **▼** keys (fig. 3/5).

5.6. Operation in the CUSTOM, SOFT, MED., HARD, VORTEX modes.

5.6.1. Set the working mode and parameters: time and speed (CUSTOM only).

5.6.2. Press the **▶/■** key (fig. 3/4). The platform starts motion, and display shows countdown of the timer, in the upper line of the display.



Note.

Shaking speed may be adjusted in the CUSTOM mode during platform rotation using the **RPM ▲** and **▼** keys.

5.7. Operation in the PULSE mode.

5.7.1. Set the required operation parameters, time and mixing mode.

5.7.2. Press the **Pulse Mode Key** (fig. 3/1). The platform starts the following cycle: acceleration – short mixing (duration 3 s) – slowdown. Display shows the **▲▲▲▲** indication and the timer countdown.

5.8. After finishing the program (after the set time elapses) the platform motion stops and display shows the flashing indication STOP, accompanied by one short sound signal (if the set time was less than 1 min) or repetitive sound signal (if the set time was greater than 1 min). Press the **▶/■** key to turn off the signal.

5.9. The unit can be stopped before the set time elapses, if necessary, by pressing **▶/■** key. The program resets, the platform stops, the display shows the flashing indication STOP and the set time interval. Depending on the operation mode, press either the **▶/■** key or the **Pulse Mode Key** to repeat the operation with the same working time and speed.

5.10. If the working time is set to zero and the display shows 00:00, pressing either **▶/■** key or **Pulse Mode Key** starts continuous operation of the unit until the **▶/■** key is pressed.

5.11. After finishing the operation, turn the unit off using the power switch at the rear panel (position **O**) and disconnect the external power supply from the mains.

6. How to choose the right mode of mixing

6.1. Before mixing, we recommend using CUSTOM mode with adjustable speed in order to determine the optimum efficiency.



Caution! Do not use HARD and VORTEX modes for tube platforms or deep well plates.

6.2. The available standard mixing modes for different platform/plate combinations are given in the table below.

- ☒ – Efficient mixing
- ☐ – Not recommended (increased sound level)
- ☐ – Forbidden

Plates or platforms	Modes		
	Soft 1000 RPM	Medium 1800 RPM	Hard 2600 RPM
Deep well plate (full), height 44 mm, volume 2000 µl	●		
Deep well plate (full), height 29 mm, volume 500 µl	●	●	
Immunoplate (full), height 15 mm, volume 300 µl	●	●	●
Skirted PCR plate (full), height 15 mm, volume 200 µl	●	●	●
Platform P-2/24 (1,5 ml tubes), 24 x 1.5 or 2 ml	●	●	
Platform P-05/32 (full), 32 x 0.5 ml	●	●	○
Platform P-02/05 (full), 24 x 0.5 ml and 48 x 0.2 ml	●	●	○
Platform P-02/96 (full), 96 x 0.2 ml or PCR plate	●	●	○

Tubes, ml	Tube vortex, 3200 RPM
0.5–50	●



Note. Recommended tube fill level – 75% of maximum volume.

7. Specifications

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

7.2. Speed specifications

Speed control range	
Custom.....	300-3200 RPM (increment 100 RPM)
Preset shaking mode speed (fixed)	
Tube vortex	3200 RPM
Hard	2600 RPM
Medium	1800 RPM
Soft.....	1000 RPM
Pulse Mode	acceleration-mixing-stopping cycle
Acceleration time to maximum speed.....	5 s

7.3. General specifications

Vortexing tube volume range.....	0.2–50 ml
Maximum shaking volume	30 ml
Maximum load	0.3 kg
Orbit.....	3 mm
Digital timer	0–60 min. (increment 15 s) / non-stop
Noise level, not more.....	65 dBA
Maximum continuous operation time	8 h
Dimensions (DxWxH)	225x215x150 mm
Weight, accurate within ±10 %	5.1 kg

7.4. Electrical specifications

Operating voltage	12 V=
Operating current	800 mA
Power consumption	10 W
External power supply	in 100–240 V~, 50–60 Hz, out 12 V=

7.5. Workroom requirements

Workroom description	Indoors, incubators (except CO ₂ incubators), cold rooms 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
Overvoltage category	I
Pollution degree	2

8. Ordering information

8.1. Model and version available:

Model	Version	Catalogue number
MPS-1, high-speed multi plate shaker	V.4A01	BS-010216-A03
MPS-1, high-speed multi plate shaker (with all 4 platforms included)		BS-010216-A11

8.2. To inquire about or order the optional accessories, contact Biosan or your local Biosan representative.

8.2.1. Optional platforms.

Platform description	Catalogue number
P-2/24 , for 24 microtubes of 1.5-2 ml	BS-010216-AK
P-05/32 , for 32 microtubes of 0.5 ml	BS-010216-BK
P-02/96 , for 96 microtubes of 0.2 ml or a single PCR plate, semi- or unskirted	BS-010216-CK
P-02/05 , for 24 microtubes of 0.5 ml and 48 microtubes of 0.2 ml	BS-010216-DK

9. Care and maintenance

9.1. Service.

9.1.1. 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.

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

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

9.2. Cleaning and disinfection.

9.2.1. 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.

9.2.2. Optional platforms are made from ethylene-vinyl acetate (EVA) foam. To clean them, use mild soap and water with a soft cloth or sponge. Wipe excess water with an absorbent soft cloth or sponge.

9.2.3. 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.

9.2.4. The unit and its accessories are not autoclavable.

9.3. **Disposal of the unit.** The user is responsible for decontaminating the unit when it is taken out of service. Dispose of the unit as electronic equipment in accordance with the relevant national laws.

10. Storage and transportation

10.1. 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%.

10.2. Save the unit from shocks or falling.

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

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

11. Warranty and registration

11.1. The Manufacturer guarantees the compliance of the unit with the requirements of Specifications, provided the Customer follows the operation, storage and transportation instructions.

11.2. The warranted service life of the unit from the date of its delivery to the Customer is 24 months (excluding platforms mentioned in 8.2.1). For extended warranty, see 11.5.

11.3. Warranty covers only the units transported in the original package.

11.4. If any manufacturing defects are discovered by the Customer, an unsatisfactory equipment claim shall be compiled, certified and sent to the local distributor address. To obtain the claim form, visit **Technical support** on our website at link below.

11.5. Extended warranty. For **MPS-1**, a *Premium* class model, one year of extended warranty is available free of charge after registration, during 6 months from the date of sale. Online registration form can be found in section **Warranty registration** on our website at the link below.

11.6. 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

Warranty registration



biosan.lv/register-en

Product class description



biosan.lv/classes-en

11.7. 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	Serial number	Date of sale
MPS-1, High-speed multi plate shaker		

11.8. **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.

12. EU Declaration of Conformity

12.1. High-speed multi plate shaker **MPS-1** is in conformity with the following relevant Union legislations:

LVD 2014/35/EU	LVS EN 61010-1:2011 + A1:2019 Safety requirements for electrical equipment for measurement, control, and laboratory use. General requirements. LVS EN 61010-2-051:2021 + A11:2019 Particular requirements for laboratory equipment for mixing and stirring.
EMC 2014/30/EU	LVS EN 61326-1:2021 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.

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



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