

Orbital shaker PSU-10i

Operating instructions

For version V.3GW



Contents

1	Safety	3
2	General Information	5
3	Getting Started	6
4	Operation of PSU-10i	7
5	Specifications	8
6	Guarantee and service	10

1. Safety

1.1 Caution symbol









Caution! Read these operating manual fully before use and pay particular attention to sections containing this symbol.

1.2 Safety features







The PSU-10i is constructed so as to meet the requirements of international safety standard IEC61010-2-51:2003 safety requirements for electrical equipment for measurements, control and laboratory use – part 2: particular requirements for laboratory equipment for mixing and stirring.

A copy of the Declaration of Conformity with CE requirements is included at the back of this manual.

1.3 GENERAL SAFETY

-  Use only as specified in the operating manual provided.
-  The unit should be saved from shocks or drops.
-  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 the supply voltage.
-  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 design of the unit.

1.4 ELECTRICAL SAFETY

-  Connect only to an external power supply with a voltage corresponding to that on the serial number label.
-  Use only the external power supply unit provided with this product.
-  Ensure that the external power supply is easily accessible during use.
-  Before moving the unit, disconnect it from the mains.
-  To turn off the unit, disconnect the external power supply from the power outlet.
-  If liquid is spilt inside the unit, disconnect it from the external power supply and have it checked by a competent person.

1.5 DURING OPERATION

- ☞ Do not impede the platform motion during operation.
- ☞ 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.
- ☞ Do not use outside laboratory rooms.
- ☞ Do not place a load exceeding maximum loading mentioned in p. Specifications.

1.6 BIOLOGICAL SAFETY

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

2. General Information

PSU-10i is the new orbital shakers in multi-functional mixing device range. New design, Direct drive system, Brushless motor (service life up to 35000 hours), Automatic loading balancing system makes the new series even more reliable especially for the long non-stop operation and expands the product specifications in the both high and low value ends.

Safe and energy efficient - powered by external 12V AC/DC power supply.

Easy to use and setup - two-line LCD display shows both actual and set parameter values while microprocessor control allows making corrections in the program without stopping operation.

These very quiet and reliable shakers can provide stable continuous mixing up to 7 daynights.

PSU-10i with its wide speed range, loading up to 3 kg and extensive choice of platforms is applicable in different laboratories in microbiology, chemistry, immunology, biochemistry and molecular biology:

- | | |
|--------------------------------|--|
| Biotechnology and microbiology | - for microorganism cultivation and extraction of biologically active substance; |
| Immunology and biochemistry | - for agglutination and precipitation assay; |
| Gene engineering | - for washing off electrophoretic gel; |
| Molecular and cell biology | - for cultivation of biological liquids. |

Orbital Shaker PSU-10i provides:

- Soft, but intensive rotational stirring of the samples;
- Smooth regulation, stabilisation and indication of rotation speed;
- Even amplitude throughout the shaker platform;
- Indication and setting of the operating time;
- Interruption of the operation at any moment;
- The display of the current operation time.

3. Getting started

3.1 Unpacking

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

3.2 The PSU-10i set includes:

Standard set

- Orbital shaker PSU-10i (no platform)1 piece
- External power supply unit1 piece
- Operating Instructions; Declaration of conformity1 copy

3.3 Optional accessories

- Platform PUP-12 ①on request
- Platform Bio PP-4 ②on request
- Platform P12-100 ③on request
- Platform P6-250 ④on request
- Platform P16-88 ⑤on request
- Additional holding bar HB-200 ⑥on request



①



③



⑤



②



④



⑥

3.4 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.

3.5 Platform installation.

Install the platform by inserting the pins on the underside of the platform into the holes on the supporting platform on the unit.

4. Operation of PSU-10i

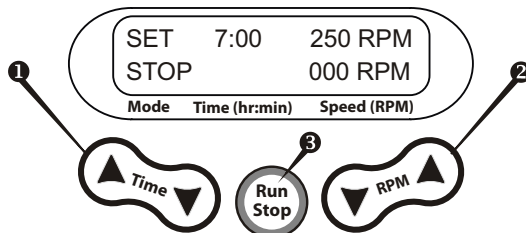


Fig.1 Control panel

- 4.1. Connect the external power supply unit to the mains socket.
- 4.2. Place samples on the unit platform.
- 4.3. With the help of “▲” and “▼” **Time** keys (Fig. 1/1) set the required working time interval in hours and minutes (increment - 1 min). If the key is pressed more than 2 sec the increment becomes bigger. The set time is displayed in the upper line of the display.
- 4.4. With the help of “▲” and “▼” **PRM** keys (Fig. 1/2) set the required shaking speed (increment 10 RPM). If the key is pressed more than 2 sec the increment becomes bigger. The set speed is displayed in the upper line of the display.
- 4.5. Press the **Run Stop** key (Fig. 1/3). The platform will start rotation (indication “RUN”) and the timer indicator will start counting up the time interval in the lower line of the display.
- 4.6. At the end of the program (after the set time elapses) the platform motion stops and in the lower line of the display shows the flashing reading “STOP” accompanied by the repetitive sound signal until the **Run Stop** key is pressed.
- 4.7. If necessary the unit can be stopped before the set time elapsed by pressing **Run Stop** key. The Time control indicator will show the set time interval. To repeat the operation with the same working time and speed press **Run Stop** key.
- 4.8. If the working time is not set (or deleted) and the display shows “OFF”, pressing the Run Stop key will cause the unit to operate continuously until the **Run Stop** key is pressed.
- 4.9. The platform motion can be stopped at any time by pressing the **Run Stop** key. In this case the program is halted, platform motion stops and the unit enters the STOP mode.
- 4.10. At the end of operation disconnect the external power supply unit from the mains outlet.

5. Specifications

The product is designed for operation indoors in a laboratory at altitudes up to 2000 m, with ambient temperature from +4°C to +40°C and maximum relative humidity 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C. Installation category I (transient voltages). Pollution degree 2 in accordance with IEC 664.

- Speed setting range50 - 450 RPM
(max. speed depends on the shaking load and flask shape)
- Orbit.....10 mm
- Digital time setting1 min - 96 hrs / non-stop
- Maximum continuous operation time168 hrs
- Maximum loading3 kg
Do not operate this product above 350 rpm for loads between 0.5 - 2.0 kg and not above 250 rpm for loads exceeding 2 kg.
- Dimensions without platform (WxDxH)220x205x90 mm
- Input current/power consumption12V, 800 mA / 9.6 W
- External power supplyinput AC 100-240 V 50/60Hz, output DC 12V
- Weight with power supply, w/out platform not more4.0 kg

Optional accessories	Description
PUP-12	Universal platform with adjustable bars for different types of flasks, bottles and beakers with non slip rubber mat, dimensions 285x215 mm, working area 270x195 mm
Bio PP-4	Flat platform with non-slip rubber mat for Petri dishes, culture flasks, agglutination cards, dimensions 255x255 mm, working area 230x230 mm
P12-100	Platform with clamps for flasks, 100-150ml (12 places), dimensions 250x190 mm
P6-250	Platform with clamps for flasks, 250-300 ml (6 places), dimensions 250x190 mm
P16-88	Platform with spring holders for up to 88 tubes up to 30 mm diameter (e.g.10 ml, 15 ml, 50 ml tubes)
HB-200	Additional holding bar for UP-12

Grant is committed to a continuous program of improvement, specifications may be changed without notice.

6. Guarantee and Service

6.1 Guarantee

When used in laboratory conditions and according to these working instructions, this product is guaranteed for TWO YEARS against faulty materials or workmanship.

6.2 Service

For service, return for repair to our Service Department in the UK or, in other countries, to our distributor.

6.3 Cleaning & Disinfection

Standard ethanol (75%) or other cleaning agents recommended for cleaning of laboratory equipment can be used for cleaning and disinfection of the unit

Declaration of Conformity

Manufacturer:	BIOSAN LTD. Ratsupites 7, build.2, Riga, LV-1067, Latvia
Equipment name/type number:	PSU-10i
Description of Equipment:	Orbital shaker
Directives:	EMC Directive 2004/108/EC Low Voltage Directive 2006/95/EC

Applied Standards	
Harmonized Standards:	<u>EN61326-1:2006</u> Electrical equipment for measurement, Control and laboratory use - EMC requirements <u>Part 1: General requirements</u> <u>EN 61010:</u> Safety requirements for electrical equipment for measurement, control and laboratory use. <u>EN 61010-2-051:2003</u> Particular requirements for laboratory equipment for mixing and stirring

I declare that this apparatus conforms to the requirements of the above Directive(s)


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Svetlana Bankovska
Executive Director
Biosan Ltd.

Dated: 07.09.2010

Grant bio

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