

Rotator PTR-60

Operating instructions

For version V.2GY



Contents

1	Safety	3
2	General Information	4
3	Getting Started	6
4	Operation of PTR-60	7
5	Program setting	9
6	Specifications	11
7	Guarantee and service	12
8	Declaration of Conformity	13

1. Safety

The following symbol means:



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

GENERAL SAFETY

- ☞ Use only as specified in the operating instructions 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.

ELECTRICAL SAFETY

- ☞ Connect only to a power supply with a voltage corresponding to that on the serial number label.
- ☞ Use only the external power supply unit provided with this product.
- ☞ Do not plug the unit into the main outlet without grounding, and do not use extension lead without grounding.
- ☞ Ensure that the external power supply connector is easily accessible during use.
- ☞ Before moving 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.

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.

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

Rotator PTR-60 provides:

- Orbital rotational motion,
- Reciprocal motion,
- Vortexing motion of the platform in different planes, according to the microprocessor protocol.

The protocol allows to set a program for realisation of not only separate mixing motions but also for the consecutive realisation of different motion types on the cyclical principle.

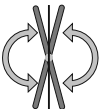
There are options for setting:

Orbital rotational motion



speed and time of ordinary orbital rotational motion (360°) of the platform for a time period 0 - 250 sec, or non-stop, 1 - 100 rpm.

Reciprocal motion



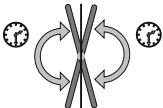
segment of reciprocal motion when the direction of platform orbital rotational motion from the vertical plane is changing in turns within the limits of the set segment (turning angle 1 - 90° for a time period 0 - 250 sec, or non-stop) at preset speed of orbital rotational motion;

Vibro motion



segment and time of vibro motion of the platform (turning angle 0 - 5° for a time period 1 - 5 sec) run on the borders of reciprocal motion segment. It is available only when the reciprocal motion is ON;

Pause



pause duration for temporary platform motion stops (1 - 5 sec) when the vibro motion is off (the turning angle of vibro motion is set to zero) run on the borders of reciprocal motion segment. It is available only when the reciprocal motion is ON;

Working period from 1 min to 24 hours, or non-stop.

Apart from the unique operation modes the Rotator PTR-60 has an attractive design with a very small footprint, saving bench space, it offers user-friendly interface, which provides options not only for changing the program during the operation, but also for simultaneous control over different steps of mixing protocol realisation.

Rotator PTR-60 will undoubtedly provide increased methodical means to researchers working in the field of modern molecular and cell biology and the developing biodiagnostics technology based on the use of magnetic particles, where rotating, mixing and shaking for maximum suspension of particles in the reactants are essential.

Rotator PTR-60 is designed for mixing biological solutions, cell suspensions, magnetic particles conjugated with specific antibodies as well as incubation and cultivation of biological liquids according to the operator set program.

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

3. Getting started

3.1 Unpacking

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

3.2 Rotator PTR-60 set includes:

- Rotator PTR-60 with platform1 piece
- External power supply unit.....1 piece
- Operating Instructions; Declaration of Conformity1 copy

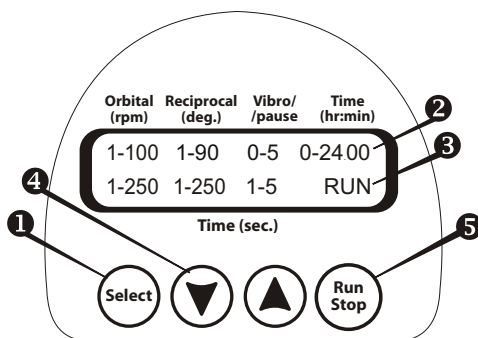
3.3 Set up

- 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 replacement

Screw out two fixing screws on the platform. Replace the platform and install the new platform securing it with the screws. Fix the screw tightly.

4. Operation of PTR-60



Recommendation during operation

When loading use even number of tubes arranged symmetrically to the rotation axis to give the unit even balance during operation.

- 4.1. Connect the external power supply to the grounded mains.
- 4.2. Place samples on the platform: microtubes up to the end; vacutainers and tubes with caps - halfsize.
- 4.3. Set the appropriate program and operation time (see part 5. Program Setting) according to the method prescribed.
- 4.4. Press **Run/Stop** key (Fig.1/5) to start the program.
- 4.5. The platform motion begins and the corresponding indication (RUN (Fig.1/3) and the changing time values) is shown on the display.
- 4.6. If the operation time is not set and the timer indicator (Fig.1/2) shows 0:00, pressing **Run/Stop** key cause continuous work of unit until the **Run/Stop** key is pressed again.
- 4.7. If the operation time is set then rotator stops after the set time interval is expired (flashing indication STOP on the display) and gives a sound signal about the end of operation (press **Run/Stop** key to stop the signal).
- 4.8. For the repeated operation according to the set program press **Run/Stop** key.

- 4.9. If necessary unit can be stopped at any time during operation before the set time is expired by pressing **Run/Stop** key. In this case platform motion stops when the platform achieves horizontal position. Pressing **Run/Stop** key again will start the program from the beginning (countdown timer will be restarted).



Note! Step motor is used in this model. It is allowed to stop the platform with hand for a moment this would not damage the mechanical nodes of the unit. If the platform is stopped with hand during the operation, the program does not stop and the platform motion is automatically resumed after the platform is released.

- 4.10. Unplug the external power supply from the mains outlet to turn off the unit.

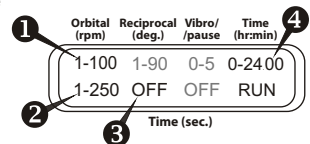
5. Program setting

When setting program parameters for operation with higher loads please mind that the unit may not perform at highest settings in reciprocal and vibration modes.

- 5.1. Press Select key (Fig.1/1) to choose the parameter to change (each pressing of Select key consecutively activates the parameters). The active parameter is flashing.
- 5.2. Use ▲ and ▼ keys (Fig.1/4) to set the necessary value (when the key is pressed down for longer time the increment becomes bigger).
- 5.3. The program can also be changed during the operation controller automatically enters the last changes into the memory as the working program.
- 5.4. The countdown timer is used to control the operation time. The timer can be set for the period from 1 min to 24 hours (timer increment - 1 min).
- 5.5. The examples below show separate motion types and their available combinations in cycles. The data on the right-hand side show the possible parameter values for each type.

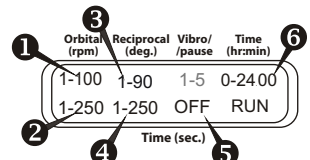
5.5.1. Orbital

Set the speed (❶ 1-100 RPM), time of Orbital rotation different from zero (❷ 1 - 250 sec) and time for Reciprocal motion to zero (❸ OFF). Switch off the Vibro motion (set the time of Vibro motion to 0 (OFF)). Set the general timer (❹ 0:00 time set cause continuous operating).



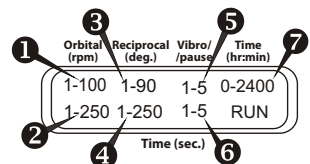
5.5.2. Orbital + Reciprocal

Set the speed (❶ 1-100 RPM) and time (❷ 1 - 250 sec) of Orbital rotation. Set the turning angle (❸ 1-90° from the vertical plane) and time (❹ 1 - 250 sec) for Reciprocal motion. Switch off the Vibro motion (❺ set the time of Vibro motion to 0 (OFF)). Set the general timer (❻ 0:00 time set cause continuous operating).



5.5.3. Orbital + Reciprocal + Vibro

Set the speed (❶ 1-100 RPM) and time (❷ 1 - 250 sec) of Orbital rotation. Set the angle (❸ 1-90° from the vertical plane) and time (❹ 1 - 250 sec) for Reciprocal motion. Set the turning angle (❺ 0-5°) and time (❻ 1 - 5 sec) for Vibro type motion.

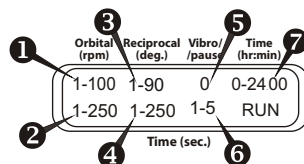


Note that if the set time of Reciprocal motion is shorter or

equal to the set time of Vibro motion then the Reciprocal motion will be omitted (Orbital + Vibro). Set the general timer (7 0:00 time set cause continuous operating).

5.5.4.Orbital + Reciprocal + Pause

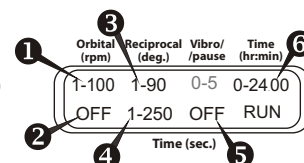
Set the speed (1 1-100 RPM) and time (2 1 - 250 sec) of Orbital rotation. Set the turning angle (3 1-90° from the vertical plane) and time (4 1 - 250 sec) for Reciprocal motion. Set the angle of Vibro type motion to zero (5). Set the time for Vibro/pause mode (6 1 - 5 sec) - this is the time of pause duration. Set the general timer (7 0:00 time set cause continuous operating).



Note that if the set time of Reciprocal motion shorter or equal to the set time of Vibro/pause mode, the Reciprocal motion will be omitted (Orbital + Pause).

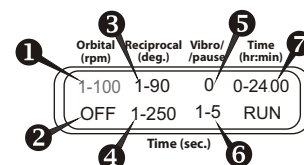
5.5.5.Reciprocal

Set the speed (1 1-100 RPM) for Orbital rotation. Set time for Orbital rotation to zero (2 OFF). Set the turning angle (3 1 - 90° from the vertical plane) and time (4 1 - 250 sec) of Reciprocal motion. Set the time for Vibro type motion to zero (5 OFF). Set the general timer (6 0:00 time set cause continuous operating).



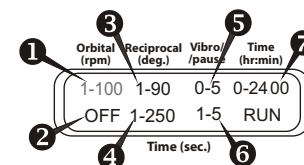
5.5.6. Reciprocal + Pause

Set the speed (1 1-100 RPM) of Orbital rotation. Set time of Orbital rotation to zero (2 OFF). Set the angle (3 1-90° from the vertical plane) and time (4 1 - 250 sec) of Reciprocal motion. Set the angle of Vibro type motion to zero (5). Set the time for vibro motion type (6 1 - 5 sec) - this is the time of pause duration. Set the general timer (7 0:00 time set cause continuous operating).



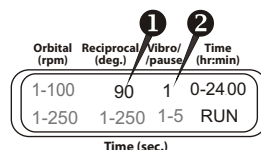
5.5.7. Vibro + Reciprocal

Set the speed (1 1-100 RPM) of Orbital rotation. Set the time of Orbital rotation to zero (2 OFF). Set the angle (3 1-90°) and time (4 1 - 250 sec) of Reciprocal motion. Set the angle (5 0 - 5°) and time (6 1 - 5 sec) of Vibro type motion.



Note that normally rotator performs soft vibration (Vibro motion). However there is a mode for hard vibration. Set the general timer (7 0:00 time set cause continuous operating).

To perform hard vibration set the turning angle of Reciprocal motion to 90° (1) and the angle of Vibro type motion to 1° (2 Hard Vibro).



Working with the unit in vibro motion mode for long period nonstop and using the platform with rubber clamps, choose the tubes not longer than 7 cm from cap till bottom.

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 and maximum relative humidity 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C.

Orbital rotational motion mode

- Speed control range1- 100 RPM
- Vertical rotation movement.....overhead, 360°
- Time setting range0 - 250 sec

Reciprocal motion mode

- Tilt angle range1° - 90° (increment 1°)
- Time setting range.....0 - 250 sec

Vibro/pause mode

- Tilt angle range0° - 5°(increment 1°)
- Time setting range.....1 - 5 sec

General

- Digital time setting1 min - 24 hours, or non-stop
- Maximum loading0,8 kg
- Dimensions430x230x230 mm
- Input current/power consumption24V, 750 mA / 18 W
- External power supply..... input AC 100-240 V 50/60Hz, output DC 24V
- Weight with external power supply, not more3,9 kg

Optional accessories	Capacity	Tube volume	Tube diameter
Platform PRS-8/22	8 / 22	max. 50 / 2-15 ml	up to 30 / 15 mm
Platform PRS-14	14	50 ml	up to 30 mm

Replacement parts	Capacity	Tube volume	Tube diameter
Platform PRS-48	48	from 2 to 15 ml	up to 15 mm

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

7. Guarantee and Service

7.1 **Guarantee**

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

7.2 **Service**

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

Declaration of Conformity

Manufacturer:

BIOSAN LTD.
Ratsupites 7, build.2, Riga, LV-1067, Latvia

Equipment name/type number:

PTR-60

Description of Equipment:

Rotator

Directive:

EMC Directive 2004/108/EC
Low Voltage Directive 2006/95/EC

Applied Standards

Harmonized Standards:

EN 61326-1:

Electrical equipment for measurement,
Control and laboratory use -
EMC requirements

Part 1: General requirements

EN 61010-1:

Safety requirements for electrical equipment
for measurement, control
and laboratory use.

Part 1: General requirements

EN 61010-2-051

Particular requirements
for laboratory equipment for mixing
and stirring

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


.....
Svetlana Bankovska
Executive Director
Biosan Ltd.

Dated 06.09.2011



**Grant Instruments
(Cambridge) Ltd**

Shepreth

Cambridgeshire

SG8 6GB

UK

Tel: +44 (0) 1763 260811

Fax: +44 (0) 1763 262410

Email: scientificsales@grantinstruments.com

www.grantinstruments.com