<table>
<thead>
<tr>
<th>Equipment Type</th>
<th>Pages</th>
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</thead>
<tbody>
<tr>
<td>Shakers &amp; rotators</td>
<td>3</td>
</tr>
<tr>
<td>• PSU-2T, Mini-shaker for immunology; MR-1, Mini-rocker Shaker; 3D, Sunflower Mini-Shaker; MR/12, Big Rocker Shaker; RS-24, Mini-rotator with timer for test tubes; RS-60, Rotator with mechanical timer for test tubes; OS-20, Orbital Shaker; OS-10, Orbital Shaker</td>
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<tr>
<td>Multi-Shakers (Combined movement type Shakers)</td>
<td>5</td>
</tr>
<tr>
<td>• Orbital Multi-Shaker Multi PSU-20 and Multi PSU-10; Multi Bio RS-24, Programmable rotator-mixer; Multi RS-60, Programmable rotator-mixer; Multi Bio 3D, Programmable “3D Sunflower” Shaker; Multi-3D-60, Multi Shaker</td>
<td></td>
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<tr>
<td>Shakers-Incubators, Thermo-Shakers for tubes and plates</td>
<td>7</td>
</tr>
<tr>
<td>• ES-20, Orbital Shaker-Incubator; TS-100, Thermo-Shaker for microtubes; PST-60HL, PST-60HL-4, Plate Shaker-Thermostats</td>
<td></td>
</tr>
<tr>
<td>Centrifuges &amp; vortexes, Multispin</td>
<td>9</td>
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<tr>
<td>• MSC-3000, Centrifuge/Vortex Multi-Spin; FVL-2400N, Mini-centrifuge/vortex Combispin; FV-2400, Mini-centrifuge/vortex Microspin; LMC-3000, Laboratory Medical centrifuge; V-1 plus, Single-tube mixing Personal Vortex; V-32, Multi-vortex</td>
<td></td>
</tr>
<tr>
<td>Thermostates, Cyclers</td>
<td>11</td>
</tr>
<tr>
<td>• TC-S, Thermal Cycler Biocycler; BWT-U, Universal water bath; WB-4 &amp; WB-4MS, Water bath; Bio TDB-100 and TDB-120, Dry Block thermostats; SC-2M, Sample cooler for molecular biology; CH-100, Heating/Cooling dry block; DL-12, Portable Temperature Datalogger</td>
<td></td>
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<tr>
<td>Stirrers</td>
<td>15</td>
</tr>
<tr>
<td>• MS-3000, Mini Magnetic Stirrer; MMS-3000, Magnetic Stirrer with a stand; MSH-300, Magnetic Stirrer with Hot plate; Multi Mixer MM-1000</td>
<td></td>
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<tr>
<td>Biosafety devices, Boxes for DNA, RNA deactivation</td>
<td>16</td>
</tr>
<tr>
<td>• UVR-M, UV-air flow Cleaner - Recirculator; DNA/RNA UV-cleaner boxes is plexiglass UVC/T, UVC/T-AR and solvent resistant UVC/T-M, UVC/T-M-AR and UVT-S-AR (big box)</td>
<td></td>
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<tr>
<td>Spectrophotometers</td>
<td>18</td>
</tr>
<tr>
<td>• DEN-1, Densitometer; Multi DEN-2, Multiphotometer</td>
<td></td>
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</table>
PSU-2T, Mini-shaker for immunology

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

The shaker can be used in a cold room or incubator, operating ambient temperature range +4 °C to +45 °C

- Speed range: 150-1000 RPM
- Digital timer from 1 min to 24 hours with automatic switch off
- 2 mm orbit
- Capacity: 2 microtest plates - standard platform IPP-2
- 4 microtest plates - optional platform IPP-4

<table>
<thead>
<tr>
<th>General characteristics</th>
<th>Overall dimensions</th>
<th>Weight, not more</th>
<th>Power supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall dimensions</td>
<td>220x205x90 mm</td>
<td>1.92 kg</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td></td>
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</tbody>
</table>

PSU-2T, Mini-shaker for immunology

MR-1, Mini-rocker Shaker

Mini-Rocker Shaker MR-1 provides regulated gentle rocking motion for mixing of different liquid components in vessels placed on the platform. MR-1 is an extremely quiet compact shaker fitting neatly in the limited workspace. Ideal for personal use. The shaker can be used for minigel staining and destaining, for Northern, Southern and Western blots, mixing test tubes, washes, rocking and agglutination cards.

The shaker can be used in a cold room or incubator, operating ambient temperature range +4 °C to +45 °C

- Speed range: 7.5-30 RPM
- Digital timer 1 min to 24 hours with automatic switch off
- Rocking motion
- Fixed tilt angle - 7°
- Non-slip mat supplied as standard
- For load up to 0.5 kg
- Platform working size 200x200 mm
- Optional adapter TP-26 for 26 tubes (up to 11 mm diameter)

<table>
<thead>
<tr>
<th>General characteristics</th>
<th>Overall dimensions</th>
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<th>Power supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall dimensions</td>
<td>220x205x120 mm</td>
<td>1.6 kg</td>
<td></td>
</tr>
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<td>Weight, not more</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Power supply</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3D, Sunflower Mini-Shaker

Mini 3D Shaker provides regulated three-dimensional rotation of the flat platform that can be equipped with the tube adaptor TP-26 for 26 tubes. It is a compact, personal use instrument with low energy consumption.

Shaker can be used for mixing blood samples, for minigel staining and destaining, washes, blot hybridization.

Shaker can be used in a cold room or incubator, operating ambient temperature range 4 °C to 45 °C.

- Speed range: 10-30 RPM
- Fixed tilt angle - 7°
- Non-slip mat supplied as standard
- Platform working size - 200x200 mm
- For load up to 0.5 kg

<table>
<thead>
<tr>
<th>General characteristics</th>
<th>Overall dimensions</th>
<th>Weight, not more</th>
<th>Power supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall dimensions</td>
<td>85x150x80 mm</td>
<td>1.0 kg</td>
<td></td>
</tr>
<tr>
<td>Weight, not more</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

MR-12, Big Rocker-shaker

Shaker provides regulated gentle rocking motion for mixing of different liquid components in vessels placed on the platform.

MR-12 is an extremely quiet compact shaker fitting neatly in the limited workspace. Designed for operation in semi-industrial laboratories.

Shaker can be used for minigel staining and destaining, for Northern, Southern and Western blots, rocking agglutination cards.

Shaker can be used in a cold room or incubator, operating by ambient temperature range +4 °C to +45 °C

Specifications:

- Regulated speed
- Regulated tilt angle
- Platform size
- Max load
- Digital timer
- Pause

<table>
<thead>
<tr>
<th>General characteristics</th>
<th>Overall dimensions</th>
<th>Weight, not more</th>
<th>Power supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall dimensions</td>
<td>400x480x250 mm</td>
<td>13 kg</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### RS-24, Mini-rotator with timer for test tubes

Mini-rotator provides vertical rotation of the platform. It is an ideal instrument for preventing blood coagulation, for extraction, diffusion and dialysing biological liquids in test tubes.

RS-24 is a compact device suitable for convenient use in small laboratories.

**Rotator can be used in a cold room or incubator, operating ambient temperature range 4 °C to 45 °C**

- Vertical orbital motion
- Speed range: 5-30 RPM
- Digital timer for 24 hour work
- Standard platform for 24 microtubes up to 14 mm diameter (1.5 ml, 2 ml, 15 ml tubes)
- Optional platform P-RS-8/50 for 8 tubes up to 30 mm diameter (50 ml tubes)
- Universal rubber clamps for tubes

<table>
<thead>
<tr>
<th>General characteristics</th>
<th>Overall dimensions</th>
<th>Weight, not more</th>
<th>Power supply</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>255x145x130 mm</td>
<td>2.1 kg</td>
<td>External power supply: 12 V, 500 mA</td>
</tr>
</tbody>
</table>

### RS-60, Rotator with mechanical timer for test tubes

Rotator provides vertical rotation of the platform. It is equipped with a platform for 48 tubes (1.5 l, 2 ml, 15 ml tubes, diam. up to 14 mm) as standard. Optional platform P-RS-10/18 for 10 tubes up to 30 mm diameter (50 ml tubes) and 18 tubes up to 14 mm diameter (1.5 ml, 2 ml, 15 ml tubes) can be installed whenever necessary.

**Rotator can be used in a cold room or incubator, operating ambient temperature range 4 °C to 45 °C**

- Vertical orbital motion
- Speed range: 5-60 RPM
- Timer range 0-60 min.
- Timer has two modes: continuous (up to 24 hrs) and timed (up to 60 min)
- Universal rubber clamps for tubes

<table>
<thead>
<tr>
<th>General characteristics</th>
<th>Overall dimensions</th>
<th>Weight, not more</th>
<th>Power supply</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>395x245x185 mm</td>
<td>6.2 kg</td>
<td>220/240 V, 50/60 Hz</td>
</tr>
</tbody>
</table>

### OS-20, Orbital Shaker

OS-20 is a powerful variable shaker which provides efficient orbital motion. Speed and time is under microprocessor control. Two operation modes are provided: 1) timed (1-999 min) and 2) without timer, but no longer than 24 hours of continuous mixing. Four interchangeable platforms (see page 7) make the shaker applicable in different laboratories: in microbiology, chemistry, immunology, biochemistry, and molecular biology.

**Shaker can be used in a cold room or incubator, operating ambient temperature range 4 °C to 45 °C**

- Digital speed control
- Speed range: 50-250 RPM
- 20 mm orbit
- Digital timer 1 - 999 min
- Interchangeable platforms (see page 7; UP-12, P-12/100, P-6/250, PP-4)
- Maximum load capacity - 2.5 kg

<table>
<thead>
<tr>
<th>General characteristics</th>
<th>Overall dimensions</th>
<th>Weight, not more</th>
<th>Power supply</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>220x190x70 mm</td>
<td>4.3 kg</td>
<td>External power supply: 12 V, 800 mA</td>
</tr>
</tbody>
</table>

### OS-10, Orbital Shaker

OS-10 is the next, more modern development of OS-20 and therefore is usually used in the same laboratories. The main differences are informative display and modern elegant design.

Shaker provides continuous operation of up to 96 hours.

**LCD display indicates two rows of values: the set and actual values of speed and time.**

**Shaker can be used in a cold room or incubator, operating ambient temperature range 4 °C to 45 °C**

- Speed range: 50-350 RPM (increment 10 RPM)
- 10 mm orbit
- Digital speed control
- Digital timer for 1 min - 96 hr
- Universal platform, flat platform or platforms with clamps (see page 7)
- Maximum load capacity - 3.0 kg

<table>
<thead>
<tr>
<th>General characteristics</th>
<th>Overall dimensions</th>
<th>Weight, not more</th>
<th>Power supply</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>270x260x85 mm</td>
<td>4.7 kg</td>
<td>External power supply: 12 V, 500 mA</td>
</tr>
</tbody>
</table>
Multi PSU-20 is an orbital shaker that belongs to the new generation of multifunctional mixing devices. It is an ideal instrument for different biopharmaceutical and biomedical profile laboratories.

1. Extremely quiet and reliable shaker that can provide stable continuous mixing up to 7 days/night.
2. Powerful - for loads up to 15 kg. Universal detachable platform UP-400 can accommodate laboratory glassware of different shape. Two fixation levels are provided for low and high glassware. Platform size 460x400 mm. Optional flat platform PP-20 with a non-slip rubber mat can accommodate different low profile containers. Platform size 480x380 mm.
3. Safe and energy efficient - powered by external AC/AC power supply (220V/12V, 830 mA).
4. Easy to use and setup - microprocessor control allows making corrections in the program without stopping operation.
5. Multifunctional - provides three motion types, that can be realized separately, in combinations of two and all three consequently in repeatable cycle. Specifications of the basic motion types:

### A) Orbital motion
Simple orbital motion with an option of shifting direction (clockwise/anti-clockwise) after set time
- Regulated speed 0 - 250 RPM
- Motion timer 0 - 250 sec (for switching to the next motion in the cycle or for changing direction on the opposite)
- General operation timer 1 min - 96 hours (increment 1 min)

### B) Reciprocating Rotation motion
Orbital motion with shifting direction of rotation
- Regulated speed 0 - 250 RPM (same as in Orbital motion)
- Motion timer 0 - 250 sec (for switching to the next motion in the cycle)
- Regulated turning angle 0° - 360° (increment 30°)
- General operation timer 1 min - 96 hours (increment 1 min)

### C) Vibration mode
Low amplitude mixing - standing wave
- Regulated shift amplitude 0° - 6° (increment 1°)
- Motion timer 0 - 5 sec (for switching to the next motion in the cycle)
- General operation timer 1 min - 96 hours (increment 1 min)

---

**Multi PSU-10, Orbital Multi-Shaker**

The application of Multi PSU-10 is similar to that of Multi PSU-20. The main difference is more compact dimensions of the shaker and replaceable universal platform that allows fitting it neatly on the limited space (40 cm) of laboratory bench. In the core it is a multi-wave mixing device that reflects our intentions to introduce a universal shaker that has orbit from 2 mm to 20 mm.

### Specifications:
- Regulated speed 30 - 250 RPM (Orbital and reciprocating motion)
- Turning angle (reciprocating motion) 0° - 360° (increment 30°)
- Turning angle (Vibration motion) 0° - 5° (increment 1°)
- Orbit diameter 20 mm
- Timer 0 - 250 sec (Orbital and reciprocating motion)
- Timer 0 - 5 sec (Vibration motion)
- Operating temperature range +4°C - +45°C
- Maximum load 10 kg
- General operation timer 1 min - 96 hours

---

**Multi PSU-20**

- Overall dimensions: 485x520x140 mm
- Weight, not more: 19.3 kg
- Power supply: External power supply, AC 12 V, 830 mA

---

**Multi PSU-10**

- Overall dimensions: 400x480x250 mm
- Weight, not more: 17 kg
- Power supply: AC/DC: 12 V, 830 mA
- Platform dimensions UP-300: 310x430 mm
Multi-Shakers

Multi-Rotator Multi Bio RS-24 is an ideal instrument for small laboratories. Standard platform for Multi Bio RS-24 can accommodate 22 tubes up to 15mm diameter (1.5ml, 2ml, 15ml tubes). Optional combined platform PRS-4/12 - 4 tubes up to 30 mm diameter (50ml tubes) and 12 tubes up to 15 mm diameter (1.5ml, 2ml, 15ml tubes).

Several options in 1 instrument: 1.Rotation, 2.Reciprocal rotation 3/Vibro

- Speed range of vertical and reciprocation rotation mode 5 - 60 rpm
- Turning angle (Reciprocation motion) 0° - 360° (increment 30°)
- Turning angle of vibro mode 0-0° (increment 1°)
- Platform tilt angle 7°
- General timer of device operation 1 min - 24 hours (increment 1 min)
- Maximum loading 0.4 kg

Specifications:
- Number of cycle repetitions 0 - 125 times
- Optional adapter TP-26 for 26 tubes (up to 11 mm diameter)(see photo on p.5)
- Timer for Vibro motion 0 - 5 sec
- Timer for Orbital and reciprocation motion 0 - 5 sec
- Orbit diameter 22 mm
- Platform tilt angle 22 mm
- Turner angle of vibro mode 0-0° (increment 1°)
- General timer of device operation 1 min - 24 hours (increment 1 min)
- Maximum loading 0.4 kg

It is more efficient to use Multi RS-60 in the analytic laboratories with higher capacity.

Standard platform for Multi RS-60 can accommodate 48 tubes up to 15mm diameter (1.5ml, 2ml, 15ml tubes). It also has two optional platforms:
- PRS-8022 for 8 tubes up to 30 mm diameter (50ml tubes) and 22 tubes up to 15 mm diameter (1.5ml, 2ml, 15ml tubes)
- PRS-14 for 14 tubes up to 30 mm diameter (50ml tubes)

Several options in 1 instrument: 1.Rotation, 2.Reciprocal rotation 3/Vibro

- Speed range of vertical and reciprocation rotation mode 5 - 60 rpm
- Turning angle (Reciprocation motion) 0° - 360° (increment 30°)
- Turning angle of vibro mode 0-0° (increment 1°)
- Platform tilt angle 7°
- General timer of device operation 1 min - 24 hours (increment 1 min)
- Maximum loading 0.8 kg

Specifications:
- Number of cycle repetitions 0 - 125 times
- Optional platform PRS-8/22 for 8 tubes up to 30 mm diameter (50ml tubes) and 22 tubes up to 15 mm diameter (1.5ml, 2ml, 15ml tubes)
- Optional platform PRS-14 for 14 tubes up to 30 mm diameter (50ml tubes)

It is more efficient to use Multi RS-60 in the analytic laboratories with higher capacity.

Standard platform for Multi RS-60 can accommodate 48 tubes up to 15mm diameter (1.5ml, 2ml, 15ml tubes). It also has two optional platforms:
- PRS-8022 for 8 tubes up to 30 mm diameter (50ml tubes) and 22 tubes up to 15 mm diameter (1.5ml, 2ml, 15ml tubes)
- PRS-14 for 14 tubes up to 30 mm diameter (50ml tubes)

Several options in 1 instrument: 1.Rotation, 2.Reciprocal rotation 3/Vibro

- Speed range of vertical and reciprocation rotation mode 5 - 60 rpm
- Turning angle (Reciprocation motion) 0° - 360° (increment 30°)
- Turning angle of vibro mode 0-0° (increment 1°)
- Platform tilt angle 7°
- General timer of device operation 1 min - 24 hours (increment 1 min)
- Maximum loading 0.8 kg

Specifications:
- Number of cycle repetitions 0 - 125 times
- Optional platform PRS-8/22 for 8 tubes up to 30 mm diameter (50ml tubes) and 22 tubes up to 15 mm diameter (1.5ml, 2ml, 15ml tubes)
- Optional platform PRS-14 for 14 tubes up to 30 mm diameter (50ml tubes)

Multi Bio 3D, Programmable “3D Sunflower” Shaker

Microprocessor control on Multi Bio 3D allows realizing not only orbital 3D rotation of the platform, but also soft vibrating rocking and reciprocal 3D motion (ping-pong type). These 3 motions can be used separately, in combinations by two, and in cycles for consecutive realization of three motions.

Speed range (Orbital and reciprocating motion) 5 - 30 RPM
Turning angle (Reciprocating motion) 0° - 360° (increment 30°)
Turning angle (Vibro motion) 0° - 6° (increment 1°)
Platform tilt angle
Orbit diameter 40 mm
Timer for Orbital and reciprocating motion 0 - 250 sec
Timer for Vibro motion 0 - 5 sec
Number of cycle repetitions 0 - 125 times
Optional adapter TP-26 for 26 tubes (up to 11 mm diameter)(see photo on p.5)

Specifications:
- Number of cycle repetitions 0 - 125 times
- Optional adapter TP-26 for 26 tubes (up to 11 mm diameter)(see photo on p.5)
- Timer of vertical and reciprocal rotation mode 0 - 250 sec
- Turning angle of vibro mode 0-0° (increment 1°)
- General timer of device operation 1 min - 24 hours (increment 1 min)
- Maximum loading 0.8 kg

Multi-3D-60, Multi Shaker

Multi-3D-60 is an industrial and therefore more powerful analogue of personal miniature mini-shaker Multi 3D. Microprocessor control on Multi-3D-60 allows realizing not only orbital 3D rotation of the platform, ut also rocking 3D motion (ping-pong type in the slanted plane). These 3 motions can be both be used separately, and combined consecutively in repetitive cycles. An option is provided for periodic automatic stopping and restarting of the platform motion (pause) during operation.

- Speed range (3D orbital and 3D reciprocating motion) 5 - 60 RPM
- Turning angle (Reciprocating motion) 0° - 360° (increment 30°)
- Platform tilt angle 7°
- Orbit diameter 40 mm
- Timer (3D orbital and 3D reciprocating motion) 0 - 250 sec
- General operation timer 0 - 24 hrs/non-stop
- Continuous operation time (max.) 24 hours
- Platform with non-slip rubber mat 480x380 mm
- Max load 6 kg

Specifications:
- Speed range (3D orbital and 3D reciprocating motion) 5 - 60 RPM
- Turning angle (Reciprocating motion) 0° - 360° (increment 30°)
- Platform tilt angle 7°
- Orbit diameter 40 mm
- Timer (3D orbital and 3D reciprocating motion) 0 - 250 sec
- General operation timer 0 - 24 hrs/non-stop
- Continuous operation time (max.) 24 hours
- Platform with non-slip rubber mat 480x380 mm
- Max load 6 kg
ES-20, Orbital Shaker-Incubator

ES-20 is a compact bench-top shaker-incubator. Built-in microprocessor thermocontroller provides constant temperature control in the incubator chamber. Forced heated air circulation inside the transparent plexiglass chamber guarantees even temperature distribution in the working volume of the incubator. ES-20 is capable of continuous operation up to 3 days/night. Demountable construction makes transportation easy.

Four interchangeable platform types allow using the shaker for:
- growing cell cultures in flasks and other laboratory glassware;
- extracting tissue samples at physiological temperatures;
- other sample preparation processes.

- 10 mm orbit
- Electronic speed control with soft start
- Speed range: 50-250 RPM
- Digital timer 1 - 999 min
- Temperature range 25-42°C
- Temperature stability 0.1°C
- Maximum load capacity - 2.5 kg
- Plexiglass chamber (7 mm thick walls)
- Universal platform, platform with clamps or flat platform available (see below)

Platforms for ES-20

<table>
<thead>
<tr>
<th>Platform Type</th>
<th>Dimensions w/d</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>UP-12</td>
<td>270x195 mm</td>
<td>Universal platform with adjustable bars for different types of flasks, bottles and beakers</td>
</tr>
<tr>
<td>PP-4</td>
<td>220x220 mm</td>
<td>Flat platform with non-slip rubber mat for Petri dishes, culture flasks, agglutination cards</td>
</tr>
<tr>
<td>P-12/100</td>
<td>250x190 mm</td>
<td>Platform with clamps for flasks, 100-150 ml (12 places)</td>
</tr>
<tr>
<td>P-6/250</td>
<td>250x190 mm</td>
<td>Platform with clamps for flasks, 250 - 300 ml (6 places)</td>
</tr>
</tbody>
</table>

TS-100, Thermo-Shaker for microtubes

Thermo-Shaker TS-100 is an ideal instrument for intensive mixing of samples in the regulated temperature conditions. Mixing and heating modes can be used both simultaneously and independently i.e. the device can work as a shaker and as a thermostat. TS-100 is applicable for DNA analysis, extraction of lipids and other cell components, DNA library creation.

- Microprocessor controlled time, speed and temperature
- 2 mm orbit
- Speed range: 250-1400 RPM
- Digital timer 1 min - 96 hr
- Temperature range +25° - +100°C
- Simultaneous display of set and actual temperature, time and speed
- Two standard interchangeable blocks for Eppendorf microtubes:
  - SC-18: 20x0.5 ml microtubes + 12x1.5 ml microtubes
  - SC-20: 20x1.5 ml microtubes
- Other non-standard block are available upon request:
  - SC-02/32: 20x0.2 ml microtubes + 12x1.5 ml microtubes
  - SC-20N: 20x2 ml microtubes

General characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall dimensions</td>
<td>205x230x130 mm</td>
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<tr>
<td>Weight, not more</td>
<td>4 kg</td>
</tr>
<tr>
<td>Power supply</td>
<td>External power supply 12 V, 4 A</td>
</tr>
</tbody>
</table>
**PST-60HL / PST-60HL4, Thermo-Shaker for microtest plates**

Thermo-shaker is designed for shaking 1-4 standard 96-well microplates in the thermostating mode. Thermo-Shaker was designed using the multi-system principle, which allows using it as three independent devices:

1. incubator for lasting incubation without shaking of micro quantities (insect, plant cell cultures, etc.) in immunoplates;
2. microplate shaker for operation in the cold room or other conditions, which do not require temperature stabilisation;
3. microplate thermo-shaker for immunochemistry and molecular diagnostics, where the requirements to the result reproducibility and thus to the precise method regulation are particularly high.

A distinctive feature of BioSan thermo-shakers PST-60HL and PST-60HL4 is the patented two-side heating of microtest plates that allows achieving exact correspondence of the set and actual temperature in wells of the microtest plates.

**Specifications**

- Temperature regulation range: +25°C ... +60°C
  (Thermo-shaker provides stable thermoregulation when the set temperature is at least 5°C higher than the ambient temperature)
- Nominal regulation accuracy: ±0.1°C
- Temperature uniformity over the platform: 0.2°C
- Orbit: 2 mm
- Speed regulation: 250-1200 RPM (increment 10 RPM)
- Independent timer with sound signal: 0-96 hrs (increment 1 min)
- Time of thermoblock heating from RT till 37°C: 15-20 min
- Display: 16x2 signs, LCD

**General characteristics**

<table>
<thead>
<tr>
<th></th>
<th>PST-60HL</th>
<th>PST-60HL4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall dimensions</td>
<td>270x260x125 mm</td>
<td>380x390x140 mm</td>
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<tr>
<td>Platform dimensions</td>
<td>250x150 mm</td>
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</tr>
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<td>Weight, not more</td>
<td>7 kg</td>
<td>9 kg</td>
</tr>
<tr>
<td>Number of microtest plates</td>
<td>2 pcs.</td>
<td>4 pcs.</td>
</tr>
<tr>
<td>Power supply</td>
<td>External power supply: 12 V, 4.16 A</td>
<td>External power supply: 12 V, 4.16 A</td>
</tr>
</tbody>
</table>

The graph on the left shows speed of thermo-shaker heating inside microtest plate from room temperature 19°C to 37°C in 20 min to 60°C in 21 min.

Thermo-Shaker PST-60HL / PST-60HL4 provides:

- Gentle or vigorous shaking of samples;
- Regulation, stabilisation and indication of rotation speed;
- Even shaking amplitude throughout Thermo-Shaker platform;
- Setting and indication of the required operation time;
- Automatic stop of platform movement after the set time expires,
- Indication of the current operation time,
- Setting and indication of the required temperature on the platform.

The device can be used in:

- cytotechnology for in situ reactions;
- immunochemistry for immunofermentative reactions;
- biochemistry for enzyme and protein analysis;
- molecular chemistry for matrix analysis.

Thermo-shaker is designed for shaking 1-4 standard 96-well microplates in the thermostating mode.
**MSC-3000, Centrifuge/Vortex Multi-Spin**

Centrifuge/vortex Multi-Spin is a product of many year evolution of **spin-mix-spin technology** that is intended for collecting microvolumes of reagents on the microtube bottom (first centrifugation spin), following mixing (mix) and collecting the reagents again from the walls and cover of the microtube (second spin). We named this repetitive algorithm of operation that is aimed at reducing the mistakes during sample preparation in PCR analysis a "sms(algorithm)."  
- Multi-Spin is a fully automatic device for reproducing sms-algorithm for 12 tubes at one time, that allows saving time considerably.  
- A must-have instrument for PCR-analysis.  
- Multi Spin is four devices combined in one:  
  1. Centrifuge (till 1000 g; regulated time and rotation speed);  
  2. Vortex (3 mixing modes - soft, medium, hard; regulated time)  
  3. Centrifuge/vortex;  
  4. SMS-cycler for realization of the sms-algorithm.  
- Spin regulation 1000 - 3500 RPM (increment 100 RPM)  
- Spin timer 1 sec - 99 min  
- Mixing strength soft, medium, hard  
- Mixing time 0-20 sec (increment 1 sec)  
- SMS-cycle regulation 1-999 cycles  
- Two rotors included:  
  - R-1.5 rotor for 12 x 1.5 ml microtubes  
  - R-0.5/0.2 rotor for 12 x 0.5 ml and 12 x 0.2 ml microtubes  
- other rotor types are available including rotor for strips (see below).

**FVL-2400N, Mini-centrifuge/vortex Combispin**

Mini centrifuge/vortex Combispin FVL-2400N is especially designed for genetic engineering research (for PCR-diagnostics experiments). It can be used in microbiological, biochemical, clinical laboratories and industrial biotechnological laboratories. Combi-Spin ensures possibility for the simultaneous mixing and separation of the samples, using centrifuge and mixing modules, located on the common spin-module. It is provided with protection mechanism that stops the rotor motion when the lid is opened.  
- Rotation speed (constant) - 2400 RPM  
- Autostop when the lid open  
- Max Rcf - 700 x g  
- Continuous and impulse working modes  
- Rotors R-1.5 and R-0.5/0.2 are supplied with CombiSpin (R-1.5 - rotor for 12 x 1.5 ml microtest tubes, R-0.5/0.2 - rotor for 12 x 0.5 ml and 12 x 0.2 ml microtest tubes), other rotor types are available including rotor for strips (see below).

**Rotors for FVL-2400N, FV-2400, MSC-3000**

**Standard:**  
- R-1.5  
  - rotor for 12 x 1.5 ml microtest tubes  
- R-0.5/0.2  
  - rotor for 12 x 0.5 and 12 x 0.2 ml microtest tubes  
**Optional:**  
- R-2/0.5  
  - rotor for 8 x 2.0 ml + 8 x 0.5 ml microtest tubes  
- R-2/0.5/0.2  
  - rotor for 6x2.0 ml + 6x0.5 ml + 6x0.2 ml microtest tubes  
- SR-16  
  - rotor for 2 x 8-section 0.2 ml microtube strips

**FV-2400, Mini-centrifuge/vortex Microspin**

Mini centrifuge/vortex Microspin FV-2400 is especially designed for genetic engineering research (for PCR-diagnostics experiments). MicroSpin ensures possibility for the simultaneous mixing and separation of the samples, using centrifuge and mixing modules, located on the common spin-module. FV-2400 is an "open type" centrifuge (without lid), that increases the speed of centrifugation and resuspension operations.  
- Rotation speed (constant) - 2400 RPM  
- Max Rcf - 700 x g  
- Continuous and impulse working modes  
- Rotors R-1.5 and R-0.5/0.2 are supplied with CombiSpin (R-1.5 - rotor for 12 x 1.5 ml microtest tubes, R-0.5/0.2 - rotor for 12 x 0.5 and 12 x 0.2 ml microtest tubes), other rotor types are available including rotor for strips.
Multi - Vortex V-32 is a modern successor of the previous product Vortex F/S-16. Multi - Vortex V-32 is intended for intensive stirring of bacterial and yeast cell, washing from the culture medium and extraction of metabolites and enzymes from cells and cell cultures. Vortex is applicable for:
- performing various DNA operations- deproteinisation of DNA/ protein complexes;
- purification of low- molecular DNA/RNA fragments in PCR- diagnostic.

Universal Vortex with various tips. Device is supplied with a 32- socket universal platform for Eppendorf type tubes up to 15 ml (1.5/0.5/0.2 ml - 16/8/8 sockets) and a tip for mixing single tube up to 15 ml.

Multi -Vortex has two operation modes:
1) continuous operation;
2) impulse operation (activated by pressing the cap with the tube bottom).

- Speed range: 500-3000 RPM
- Acceleration time: 3 sec.
- Orbit: 2 mm

V-1 plus, Personal Vortex

Ideal instrument for gentle mixing to vigorous resuspension of cells and biological and chemical liquid components. Vortex has two modes:
1) continuous operation
2) impulse operation (activated by pressing the cap with the tube bottom)

- Speed range: 250-3000 RPM
- Mixing module for tubes from 1.5 to 50 ml
- Maximum mixing volume 30 ml.
- Eccentric mixing principle

V-32, Multi - Vortex

Multi - Vortex V-32 is a modern successor of the previous product Vortex F/S-16. Multi - Vortex V-32 is intended for intensive stirring of bacterial and yeast cell, washing from the culture medium and extraction of metabolites and enzymes from cells and cell cultures. Vortex is applicable for:
- performing various DNA operations- deproteinisation of DNA/ protein complexes;
- purification of low- molecular DNA/RNA fragments in PCR- diagnostic.

Universal Vortex with various tips. Device is supplied with a 32- socket universal platform for Eppendorf type tubes up to 15 ml (1.5/0.5/0.2 ml - 16/8/8 sockets) and a tip for mixing single tube up to 15 ml.

Multi -Vortex has two operation modes:
1) continuous operation;
2) impulse operation.

- Speed range: 500-3000 RPM
- Acceleration time: 3 sec.
- Orbit: 2 mm

LMC-3000, Laboratory Medical Centrifuge

LMC-300 is a modern benchtop laboratory medical centrifuge useful for sedimentation of cells, bacteria, yeast, formed blood elements. It provides operation with tubes and microtest plates. LMC-300 is designed for safe work (metal protecting housing), easy maintenance and wide application range in medical, biochemical, industrial and other type laboratories.

Specifications:
- Speed: 1000 - 3000 RPM (increment 100 RPM)
- Working diameter: 335 mm
- Timer: 0 - 30 min (increment 100 RPM)
- Display: LCD

General characteristics
- Overall dimensions: 460x395x200 mm
- Weight, not more: 10 kg
- Power supply: 230 V, 50/60 Hz, 100 W

Rotors
1. R-12 for 12 x 10 ml tubes
2. R-2 for 2 x standard 96-well microtest plates
Comparison of two thermal cyclers - BioCycler TC-S (Lab4you) and a reference thermocycler (one of the most wide spread thermocyclers)

Kindly presented by PhD Maris Lazdinjsh, Latvian University

Settings:
Target for amplification:
NADH dehydrogenase Gene of Zymomonas mobilis
PCR product contains 3` part of NADH dehydrogenase Gene
Predicted length of PCR product (entrez access Nr AF180145)-833 bp

Primers:

NADH1c  5'-CCAGAACCATGATTGCTC-3'
NADH1d  5'-ACGAAGCTTTAGGGCGTAACATGC-3'
(with 5` extension)

PCR conditions:
Each reaction (20 µl) contains:
1x PCR buffer, 2 mM MgCl₂, 0.2 mM each of dNTP, 0.75 U recombinant Taq Pol (MBI Fermentas), 12 pmol of each primer (BMC), 100 ng (2 µl) of genomic DNA (laboratory extraction). All reactions were fully premixed together. Before adding of genomic DNA for negative control 18 µl of mix was taken to a new tube and 2 µl of water was added. Amplification performed in 0.2 ml tubes without mineral oil (hot lid approach).

Thermal profile:
Initial heating: 1 min for 94°C;
40 cycles of steps: 40 sec for 95°C, 40 sec for 60°C, 60 sec for 72°C;
final extension 5 min for 72°C.

Results:
Duration:
Duration of PCR with BioCycler TC-S (Lab4you) - 2 hrs 10 min
Duration of PCR with a reference thermocycler (one of the most wide spread thermocyclers) - 2 hrs 15 min

Specifications:
Number of sockets in the combined block 25 pcs x 0.2 ml tubes
16 pcs x 0.5 ml tubes
Temperature control range +4° - +99 °C
Heated lid temperature +50° - +105 °C
Temperature increment 0.1 °C
Temperature precision 0.2 °C
Uniformity over the block up to 95 °C ± 0.5 °C
up to 72 °C ± 0.3 °C
up to 65 °C ± 0.2 °C
Ramping speed up to 3 °C/sec
Number of programmable files 100 files
File settings:
- Number of steps in a file 1 - 9
- Number of steps in a cycle 1 - 7
- Number of cycle repetitions 0 - 99
- Step time 1 sec - 99 min

BioCycler TC-S, Programmable thermostat

Thermal cycler BioCycler TC-S - for DNA probes multiplication

TC-S (lid closed)

TC-S (lid open)

Figure 1. PCR products separated on the 0.8% agarose gel (12x6 cm, 0.5xTAE). On the gel was loaded 5 µl of PCR products. Lanes 1-15 - BioCycler TC-S, PCR products 1-15 respectively. Lane 16 - 100 bp. DNA Ladder Plus (MBI Fermentas), 0.2 µg loaded, only bands 3 000 - 500 are visible.

Figure 2. PCR products separated on the 0.8% agarose gel (12x6 cm, 0.5xTAE). On the gel was loaded 5 µl of PCR products. Lanes 1-12 - BioCycler TC-S, PCR products 1-15 respectively. Lane 16 - a reference cycler, PCR products 26-28 respectively (28 - negative control, tube 27 has a reduced volume [10 µl instead 20 µl]). Lane 13 - 100 bp. DNA Ladder Plus (MBI Fermentas), 0.2 µg loaded, only bands 3000 - 1031 are visible.

Figure 3. Comparison of temperature ramping between a reference thermocycler (one of the most wide spread thermocyclers) and BioCycler TC-S (Lab4you) acquired by Temperature Datalogger (Lab4you, see page 14)
**BWT-U, Universal water thermostat**

Thermostat BWT-U provides stable temperature maintaining in the range from +30° to +100° with 0.1°C precision. The digital display switches between actual and set temperature readings. Thermostat can be equipped with a flowing water cooler for extending the temperature range till +20°. For use in medical, ecological monitoring and food control laboratories as well as in scientific research and microbiology laboratories.

- Constant mixing for even temperature distribution in the working volume and increased heat transfer
- Temperature range up to +100°C
- LED display
- 8 l stainless steel bath (other on request)
- Optional lifting platform with adjustable height LP-1

**General characteristics**

<table>
<thead>
<tr>
<th>Overall dimensions</th>
<th>280x390x270 mm</th>
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<tr>
<td>Weight, not more</td>
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<tr>
<td>Power supply</td>
<td>220/240 V, 50/60 Hz ; max. 1 kW</td>
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</tbody>
</table>

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**WB-4 & WB-4MS, Water thermostat-bath**

Water thermostat-bath WB-4 and WB-4MS are designed for chemical, pharmaceutical, medical and biological laboratory research. WB-4 does not have active mixing, while model WB-4MS provides increased temperature stabilization (up to 0.1°C) due to built-in magnetic stirrer (regulated speed 300 - 1000 rpm).

- Temperature range +30° - +100°C
- Temperature stability 0.1°C (WB-4MS), 1°C (WB-4)
- 4 l stainless steel bath
- Temperature setting: digital
- Temperature display: LED
- Quiet operation

**General characteristics**

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<td>Power supply</td>
<td>220/240 V, 50/60 Hz ; max. 600W</td>
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**Bio TDB-100, Dry block thermostat**

Bio TDB-100 is a compact easy-to-use dry-block thermostat designed for long incubation processes at various temperatures. The universal aluminum block can accommodate 3 most popular Eppendorf tube types.

- Elegant design.
- Temperature regulation range +25°C ... +100°C
- Setting resolution 0.1°C
- Nominal regulation accuracy ± 0.5°C
- Independent timer with sound signal 1 min - 96 hrs
- Display: LCD
- Simultaneous display of set and actual temperature and time
- Block capacity 24 x 2/1.5 ml, 15 x 0.5 ml, 10 x 0.2 ml microtubes
- Block diameter/depth 130/45 mm

**General characteristics**

<table>
<thead>
<tr>
<th>Overall dimensions</th>
<th>210x230x110 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight, not more</td>
<td>3.1 kg</td>
</tr>
<tr>
<td>Power supply</td>
<td>220/240 V, 50/60 Hz; 200 W</td>
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</table>
Using the latest technology in the field of electronic data transmission Lab4you has developed a system of multi-channel temperature control.

The system can be easily adapted for the conditions required by the client and offers an elegant solution for continuous temperature control in laboratory premises, deep-freezers, refrigerators and incubators. In standard version probes are intended for work in extreme conditions from -50° C to +125° C. It is possible to purchase probes that will work in -200° - +500° temperature range. Data recording rate can be programmed in the range 1 sec - 24 hr.

Data storage on the hard disk of a PC allows accumulating data for a long period of time (for example for 1.5 years). The operation of the system can be described as follows: the probes installed in the controlled objects continuously scan the temperature and transfer it to DataLogger via cables. Further, the information is transferred to a computer, where it is processed by the appropriate software, saved in the memory and displayed on the monitor in a graphic / table format. Graphing of temperature against time and textual reports can be printed out or saved for the client's convenience.

**Program Features:**

- simultaneous display of data from all probes and timed data recording into the database
- copying produced graphs to clipboard or saving in .jpg format
- setting maximum and minimum alarm temperatures for each probe
- display of maximum, minimum and average temperature in the graphs and textual reports
- real time readings for each probe displayed as a table

When the temperature is higher or lower than the set critical temperature (outside the set allowed range) an alarm message is shown immediately on the PC display accompanied with a sound signal. If the PC is connected to the Internet it is possible to send a message to the user’s e-mail. With a minor modification to the program Alarm signal can be send to the user’s mobile phone.

**Complete set for DL-12**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DL-12</td>
<td>Datalogger (12 channels) including external 12V power supply unit</td>
</tr>
<tr>
<td>TD-DL-002</td>
<td>Temperature sensors with cables standard version</td>
</tr>
<tr>
<td>SDL-003</td>
<td>Software Windows 95/98/2000/XP compatible User-friendly interface</td>
</tr>
<tr>
<td>B-12</td>
<td>External extension block (12 channels) (on request)</td>
</tr>
</tbody>
</table>
**DL-12, Portable Temperature Datalogger**

Using the latest technology in the field of electronic data transmission Lab4you has developed a system of multi-channel temperature control.

The system can be easily adapted for the conditions required by the client and offers an elegant solution for continuous temperature control in laboratory premises, deep-freezers, refrigerators and incubators.

In standard version probes are intended for work in extreme conditions from -50° C to +125° C. It is possible to purchase probes that will work in -200° - +500° temperature range. Data recording rate can be programmed in the range 1 sec - 24 hr.

Data storage on the hard disk of a PC allows accumulating data for a long period of time (for example for 1.5 years).

The operation of the system can be described as follows: the probes installed in the controlled objects continuously scan the temperature and transfer it to DataLogger via cables. Further, the information is transferred to a computer, where it is processed by the appropriate software, saved in the memory and displayed on the monitor in a graphic / table format.

Graphing of temperature against time and textual reports can be printed out or saved for the client's convenience.

Program Features:

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- copying produced graphs to clipboard or saving in .jpg format
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If the PC is connected to the Internet it is possible to send a message to the user's e-mail. With a minor modification to the program Alarm signal can be send to the user's mobile phone.

**Complete set for DL-12**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DL-12</td>
<td>Datalogger (12 channels) including external 12V power supply unit</td>
</tr>
<tr>
<td>TD-DL-002</td>
<td>Temperature sensors with cables standard version</td>
</tr>
<tr>
<td>SDL-003</td>
<td>Software Windows 95/98/2000/XP compatible User-friendly interface</td>
</tr>
<tr>
<td>B-12</td>
<td>External extension block (12 channels) (on request)</td>
</tr>
</tbody>
</table>
**MS-3000, Mini Magnetic Stirrer**

MS-3000 is a compact magnetic stirrer with the stainless steel working surface. It provides liquid stirring with the rotation speed of magnetic element up to 3000 RPM. Strong magnets hold the driven magnetic element firmly in the magnetic clutch. MS-3000 stirs without undesirable heat and noise. It is an ideal instrument for PH-metering, extraction and dialyzing with the small quantities of substances.

- **Speed range:** 250-1250 RPM
- **Stirring volume up to:** 2 l
- **Temperature range:** 30-330°C
- **Working plate heating till:** 330°C in 20 min
- **Continuous operation max.:** 12 hrs
- **Working plate size:** 110x110 mm
- **Consumed power (mixing mode):** 8.5 W
- **Consumed power (heating mode):** 600 W

**General characteristics**

<table>
<thead>
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<th>Overall dimensions</th>
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<tr>
<td>Power supply</td>
<td>External power supply 12 V, 300 mA</td>
</tr>
</tbody>
</table>

**MMS-3000, Magnetic Stirrer with a stand**

Magnetic stirrer MMS-3000 is a medium size magnetic stirrer with the stainless steel working surface. It provides liquid stirring with the rotation speed of magnetic element up to 3000 RPM. MMS-3000 is equipped with a detachable stand that allows inserting different sensors (temperature, pH etc.) inside the liquid.

- **Speed range:** 0-3000 RPM
- **Stirring volume up to:** 5 l
- **Stainless steel working plate**
- **Working plate size:** 150x150 mm

**General characteristics**

<table>
<thead>
<tr>
<th>Overall dimensions</th>
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<tr>
<td>Power supply</td>
<td>External power supply 12 V, 300 mA</td>
</tr>
</tbody>
</table>

**MSH-300, Magnetic Stirrer with Hot plate**

Magnetic stirrer MSH-300 is designed for simultaneous mixing and heating of chemical reagent solutions. Massive heating plate of aluminum provides even heat transfer to the working surface and stable temperature maintenance. (Attention! Alkali can damage aluminium surfaces).

Convenient and easy to use magnetic stirrer with heating for routine procedures in organic synthesis, environmental laboratories, and general type laboratory work.

- **Speed range:** 250-1250 RPM
- **Stirring volume up to:** 2 l
- **Temperature range:** 30-330°C
- **Working plate heating till:** 330°C in 20 min
- **Continuous operation max.:** 12 hrs
- **Working plate size:** 150x150 mm
- **Consumed power (mixing mode):** 8.5 W
- **Consumed power (heating mode):** 600 W

**General characteristics**

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<tr>
<td>Power supply</td>
<td>220/240 V, 50/60 Hz</td>
</tr>
</tbody>
</table>

**Multi Mixer MM-1000, Overhead Stirrer**

Overhead Stirrer Multi Muxer MM-1000 (Bioforma design) is designed for stirring liquids up to 20 liters. Quiet and reliable mixer that can provide stable continuous mixing up to 7 daynights. It can realize three types of motion: 1) Rotational, 2) Reciprocal and 3) Vibration. MM-1000 perform separate (mono-) (1; 2; 3), consecutive binary cycles (c) (1-2) x c; (1-3) x c and (2-3) x c and complex tri-cycles (1-2-3) x c.

Speed, angle and time of stirrer rotation is under microprocessor control. Multi-mixer can be used for stirring solutions up to the “medium viscosity” range. It is an ideal instrument for biotechnology, organic synthesis, analytical laboratories. The innovative combination of three motion types provides high level of homogeneity due to consecutive combination of laminar and turbulent flows that cause substances to dissolve faster.

Electrically safe and energy efficient - powered by external AC/AC power supply (220/12V, 830 mA)

- **Rotation**
  - Speed regulation range: 4 - 1000 RPM
  - Time: 0 - 250 sec
- **Reciprocal motion**
  - Turning angle: 0° - 360° (increment 30°)
  - Time: 0 - 250 sec
- **Vibro motion**
  - Turning angle: 0° - 5° (increment 1°)
  - Time: 0 - 5 sec
  - General timer of device operation: 0-96 hrs (increment 1 min)

**Accessories:**

- MP-1 Paddle stirrer (70 x 70 mm)
- MP-3 Propeller stirrer, 3 blades (Ø 50 mm)
- MP-2 Propeller stirrer, 2 folding blades (Ø 60 mm)
- MA-1 Anchor stirrer (Ø90 mm, height 48 mm)
- MC-1 Centrifugical stirrer (Ø50 mm)

**General characteristics**

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<td>Power supply</td>
<td>External power supply, AC 12 V, 830 mA</td>
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</tbody>
</table>
UVR-M is applicable for UV disinfection of air in different type premises including biomedical research laboratory rooms, operating rooms in clinics, waiting rooms in outpatients departments, veterinary stations, production premises in food industry. It is effective tool for protection during influenza and other virus respiratory diseases epidemics.

- Cleaning effectiveness - 90% per cycle (constant work)
- 15 W UV lamp, ozone free, bactericidal (Philips)
- Productivity 25 m³/hr
- Convenient placement on walls
- Full protection from direct UV-light

### General characteristics

<table>
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<tr>
<th>Feature</th>
<th>UVR-M</th>
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<tr>
<td>Power supply</td>
<td>220/240 V, 50/60 Hz</td>
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</tbody>
</table>

### UVC/T, UVC/T-AR DNA/RNA UV-cleaner box

Bench top model, constructed from metallic skeleton and Plexiglas has painted steel working place (chemicals resistant powder coating) and digital timer for control of UV exposure. Two UV-lamps disinfect the working volume and the working area during 15-30 min of exposure. One white lamp provides local illumination of the working place and ensures good conditions for visual control of operation.

- 2 UV-lamps (15W) - ozone-free & 1 white lamp (15W)
- Long living UV lamps (up to 8000 hrs)
- Digital timer 0 - 24 hrs/non-stop
- Can be equipped with a flowing bactericidal air recirculator (model UVC/T-AR), which provides constant decontamination inside the box (see below). Recommended for operation with dangerous infectious and viral materials.

- Plexiglass type - Polymethylmethacrylate, ALTUGLAS EX®
- Thickness of sides - 4 mm
- Thickness of upper front side - 8 mm
- Optical transmission (visible light) - 92%

### General characteristics

<table>
<thead>
<tr>
<th>Feature</th>
<th>UVC/T</th>
<th>UVC/T-AR</th>
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<td>Overall dimensions</td>
<td>690x515x555 mm</td>
<td>690x515x555 mm</td>
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<td>Weight, not more</td>
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<td>Power supply</td>
<td>220/240 V, 50/60 Hz</td>
<td>220/240 V, 50/60 Hz</td>
</tr>
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</table>

### UVC/T-M, UVC/T-M-AR DNA/RNA UV-cleaner box

Bench top model made of glass with UV-protection film, the frame and working area of stainless steel. Digital timer controls the time of UV exposure. Two UV-lamps disinfect the working volume and the working area during 15-30 min of exposure. One white lamp provides local illumination of the working place.

- 2 UV-lamps (15W) - ozone-free & 1 white lamp (15W)
- Long living UV lamps (up to 8000 hrs)
- Digital timer 0 - 24 hrs/non-stop
- Can be equipped with a flowing bactericidal air recirculator (model UVC/T-M-AR), which provides constant decontamination inside the box (see below). Recommended for operation with DNA viruses amplicons and prions, for which HEPA-filters show their ineffectiveness and even uselessness.

### General characteristics

<table>
<thead>
<tr>
<th>Feature</th>
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<td>220/240 V, 50/60 Hz</td>
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</tbody>
</table>

Both models of DNA/RNA UV-cleaner box (both made of Plexiglass and shock-resistant glass with UV-protecting coating) can be equipped with an additional UV-air flow cleaner (AR - UV cleaner-recirculator) for additional DNA decontamination to protect the user from direct UV-light during operation inside the box. AR - UV cleaner-recirculator consists of a UV lamp, fan and dust filters organized in a special box. Recirculator increases the maximum density of UV-light leading sufficiently to effective DNA/RNA inactivation. UV-recirculator generates 100 m³ per 1 hour air flow exchange providing aseptic conditions inside the Box. Boxes AR plus (with recirculator) are patented by Biosan.
**UVT-S-AR, Big DNA/RNA UV-cleaner box, PCR - workstation**

This new model is designed for placement of more laboratory instruments and accessories on the base work area. The total working area of the box is twice as large as that of the traditional model UVC/T-M that allows more comfortable operation.

**UVT-S-AR** box includes the installed UV-air recirculator. This option additionally prevents unwanted amplification of contaminant DNA and protects the user from direct UV-light during manipulation.

**Specifications**
- **UV lamp**: 2 x 30 W, bactericidal (Philips)
- **Radiation type**: Ultraviolet (253.7 nm), ozone-free
- **UV-recirculator**: 1 x 30 W (efficiency >99% per cycle)
- **Daylight lamp**: 1 x TLD-30W for illumination of the working area
- **Glass type**: Euroglass (Germany)
- **Thickness of glass**
  - Sides: 4 mm
  - Upper front panel: 8 mm
- **UV-protection film type**: 4 MIL CLEAR
- **Optical transmission**: 95%
- **UV protection**: 96%
- **LED time controller of UV-exposure**: 0 - 24 hrs
- **Working place**: 1200x520 mm

**General characteristics**
- **Overall dimensions**: 1245x580x585 mm
- **Weight, not more**: 58 kg
- **Power supply**: 230 V, 50/60 Hz, 60 W
DEN-1, Densitometer (suspension turbidity detector)

DEN-1 is designed for measurement of cell suspension's turbidity in the range 0.0 - 5.0 McFarland units (0 - 150x10^6 cells/ml). DEN-1 provides the opportunity to measure solution turbidity in a wider range (5.0 - 15.0 McFarland units) however, it is necessary to remember that in this case the standard deviation values increase.

DEN-1 is used for determining concentration of cells (bacterial, yeast cells) in the fermentation process, for detection of susceptibility of microorganisms against antibiotics, for identification of microorganisms with various test-systems, for measuring optical density at fixed wavelength and for quantitative evaluation of concentration of dyed solutions that absorb green light.

The operation principle is based on measurement of optical density with digital presentation of the results in McFarland units. The unit is calibrated at the factory and keeps calibration without power supply. However, if necessary it is possible to calibrate the unit by 2-6 points in 0.5 - 5.0 McFarland unit range. Both commercial standards (e.g. produced by bioMerieux, Lachema, etc.) and the cell suspensions prepared in the laboratory can be used for calibration.

Specifications:
- Light source: Light diode
- Wavelength: \( \lambda = 565 \pm 15 \text{ nm} \)
- McFarland unit range: 0.0 - 15.0
- McFarland unit standard deviation:
  - 0.5 McF: 0.5 ± 0.1
  - 3.0 McF: 3.0 ± 0.1
  - 6.0 McF: 6.0 ± 0.2
  - =7.5 McF: =7.5 ± 0.2
- Precision: ± 3%
- Measurement time: 1 sec
- PC connection available on order
- Recommended external diameter of tube: 18 mm; 16 mm (when using D-16 adaptor)
- Sample volume: not less than 2 ml
- Data presentation: digital indicator

General characteristics
- Overall dimensions: 165x115x75 mm
- Weight, not more: 0.9 kg
- Power supply: External power supply 12 V, 300 mA

Multi DEN-2, Multiphotometer (Announcement)

Company BioSan presents a version of a miniature photometer designed for determination of absorption (optical density) of coloured solutions at given wave length. Optical density measurements are performed in disposable standard cuvettes supplied by producer (with optical path length 1.0 cm).

Set of interference filters supplied by producer allows to perform diagnostic technologies based on colorimetric reactions. Instrument provides precision of measurements 0.01, 0.02 optical units to meet the requirements of quantitative analysis.

Multi DEN-2 represents step-by-step implementation of idea of personal biotechnology laboratories developed by the company. We believe that the provided version of mini photometer is an ideal instrument not only for school and university laboratory exercises but also for realisation of scientific research projects in the field of biomedicine, biotechnology and ecology.

Intended scope of analysis: 1) concentration of cell suspensions 2) proteins according to Bradford method, 3.1) quantitative analysis for organic and 3.2) inorganic compounds 4) measurements of biochemical parameters 5.1) soil investigations, 5.2) ecological investigations and 5.3) geological laboratory analysis and field measurements.

Specifications:
- Measurement range: 0.00 - 4.00 OD units
- Measurement precision: 0.02 OD units
- Measurement time: 1 sec
- Detector: Photodiode
- Light source: Light diode - white
- Interference filters (nm): 400, 490, 540, 600, 630
- Standard filter: 540 nm
- Sample volume: 1 - 2 ml
- Filters for other wave lengths - on request
- Can be powered by accumulator battery (12V)

General characteristics
- Overall dimensions: 165x115x80 mm
- Weight, not more: 0.9 kg
- Power supply: External power supply 12V, 300 mA
- Standard cuvette dimensions: 12x12x45 mm