

Orbit™ Digital Shakers

Instruction Manual

Catalog Numbers:

S2020-P4-B

S2020-P4-B-230V

S2030-300-B

S2030-300-B-230V

S2030-1000-B

S2030-1000-B-230V

S2040-1900

S2040-1900-230V



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1.0 Introduction

Labnet's Orbit™ Digital Shakers are intended for shaking microliter plates, tubes, bottles, flasks, dishes and other laboratory vessels. The shakers are driven by asynchronous motors, which enable silent operation and constant shaking speed independent of the load or power supply fluctuations.

Each shaker device consists of two main components:

- ▶ Motor with eccentric mechanism
- ▶ Control electronics

The motor drives the shaker's eccentric mechanics and generates shaking effect. The electronics control the motor RPM, TIME and keyboard functions.

2.0 Specifications

The casings of Orbit P4, 300 and 1000 models are made of plastic. Bottom cover and upper plate are made of steel plate varnished with high resistant polyurethane lacquer.

The housing of Orbit 1900 is made from a high-grade cold rolled steel plate and painted with a highly resistant polyurethane lacquer.

▶ Orbit P4 Model

| | |
|-------------------------------|--|
| Electric Power Supply | 230V ± 10%, 50/60Hz or 120V ± 10%, 50/60Hz |
| Motor Power | 15W |
| Fuse | 2 x 0.25AT (230V) 2 x 1AT (120V) |
| RPM Regulation | Digital, load independent, from 100 to 1,200 rpm (1,400 rpm – 120V version) in 10 rpm steps |
| Shaker Orbit | 3 mm |
| Timer | 30 sec. to 99 min. 50 sec. in 10 sec. steps, under 10 min. in 1 sec. steps, timer HOLD function |
| Maximum Load | 0.66 lbs. (0.3 kg) |
| Dimensions (W x D x H) | 7.4 x 11.8 x 5.9 in. (18.8 x 30 x 15 cm) |
| Weight | 9.5 lbs. (4.3 kg) |

▶ Orbit 300 Model

| | |
|-------------------------------|--|
| Electric Power Supply | 230V ± 10%, 50/60Hz or 120V ± 10%, 50/60Hz |
| Motor Power | 15W |
| Fuse | 2 x 0.25AT (230V) 2 x 1AT (120V) |
| RPM Regulation | Digital, load independent, from 100 to 1,200 rpm in 10 rpm steps |
| Shaker Orbit | 3 mm |
| Timer | 30 sec. to 99 min. 50 sec. in 10 sec. steps, under 10 min. in 1 sec. steps, timer HOLD function |
| Maximum Load | 4.4 lbs. (2 kg) |
| Dimensions (W x D x H) | 10.3 x 13.3 x 5.1 in. (26.2 x 33.7 x 13 cm) |
| Weight | 12.35 lbs. (5.6 kg) |

▶ Orbit™ 1000 Model

| | |
|-------------------------------|---|
| Electric Power Supply | 230V ± 10%, 50/60Hz or 120V ± 10%, 50/60Hz |
| Motor Power | 15W |
| Fuse | 2 x 0.25AT (230V) 2 x 1AT (120V) |
| RPM Regulation | Digital, load independent, from 20 to 300 rpm in 1 rpm steps |
| Shaker Orbit | 19 mm |
| Timer | 30 sec. to 99 min. 50 sec. in 10 sec. steps, under 10 min. in 1 sec. steps, timer HOLD function |
| Maximum Load | 9 lbs. (4 kg) |
| Dimensions (W x D x H) | 10.3 x 13.3 x 5.1 in. (26.2 x 33.7 x 13 cm) |
| Weight | 16 lbs. (7.1 kg) |

▶ Orbit 1900 Model

| | |
|-------------------------------|---|
| Electric Power Supply | 230V ± 10%, 50/60Hz or 120V ± 10%, 50/60Hz |
| Motor Power | 50W |
| Fuse | 2 x 1AT (230V) 2 x 2AT (120V) |
| RPM Regulation | Digital, load independent, from 25 to 300 rpm in 1 rpm step |
| Shaker Orbit | 19 mm |
| Timer | 30 sec. to 99 min. 50 sec. in 10 sec. steps, under 10 min. in 1 sec. steps, timer HOLD function |
| Maximum Load | 22 lbs. (10 kg) |
| Dimensions (W x D x H) | 15.3 x 18.3 x 6.2 in. (39 x 46.5 x 16 cm) |
| Weight | 68.35 lbs. (31 kg) |

3.0 Safety Information

- ▶ Always plug the unit into a properly grounded and fused outlet.
- ▶ Do not use the device near water sources. Take care, that water will not fall on the device, especially during cleaning procedures.
- ▶ Do not use device in a caustic or explosive atmosphere.
- ▶ There are no user serviceable parts in the unit. Opening the unit may void the warranty. In case of a malfunction or liquid being spilled into the unit, unplug the device from its power outlet and contact Corning's service department.

NOTE: In the case that the device does not function properly even if you have exactly followed the instructions described in the User's manual, contact Corning's customer service department. If the equipment is used in a manner not specified by this manual, the equipment may become unsafe to operate, could harm the user or the device, and may void the warranty.

 **Do not shake flammable or explosive samples or use the unit in a flammable or explosive environment.**

4.0 Installation

4.1. Unpacking

Before starting installation, carefully examine the shaker for damage or missing parts.

- ▶ Open the box and lift the device together with inner packing, out of the box.
- ▶ Remove the inner packing and check that the shaker has not been visibly damaged during transportation. Keep the packing material until you are sure that the shaker works properly.
- ▶ Check information on the rear data label and verify the correct electrical rating:
 - Model
 - Serial Number
 - Electrical rating

Should any kind of damage have occurred during transportation, immediately notify the carrier. The carrier is responsible for correcting damage caused in shipment.

4.2. Device Placement

When selecting the right place for device, please consider following:

- ▶ Put the device on smooth, horizontal and stable place.
- ▶ Leave enough space beyond the device for normal air circulation, min. 10 cm.
- ▶ Leave enough space around the device, so it can be easily controlled and maintained.
- ▶ Don't use the device in surroundings where there are major temperature and humidity fluctuations. Also avoid locations in direct sun light or places near devices that produce heat.
- ▶ Avoid locations with excessive vibrations.

4.3. Attaching the Power Cord

Fit the main power cord, which is included in the package, into the power receptacle on the shaker. Connect the other end of the cord to a properly grounded wall outlet. To avoid interference from noise, surges and spikes, a dedicated line is preferred. If no such line is available, avoid lines to which powerful electric motors, refrigerators and similar devices are connected.



Take care when you plug the cord to a grounded wall socket. Do not touch plug with wet hands. Plug the cord to a grounded wall socket only with dry hand.

4.4. Environmental Requirements

The Orbit™ Digital Shakers have been built for operating in both cold and heated laboratory environments and in high humidity environments as follows:

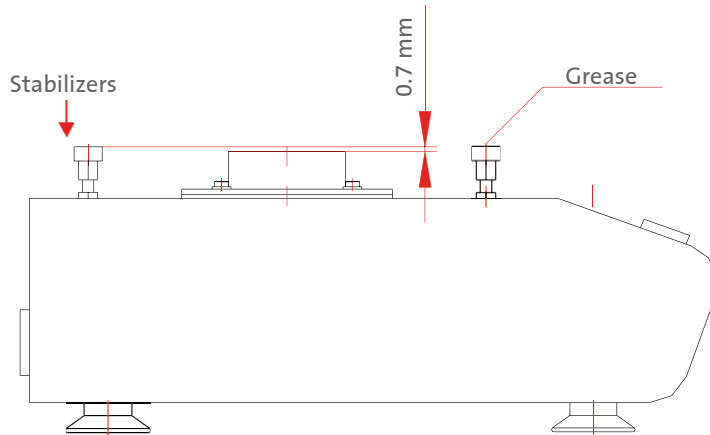
- ▶ At temperatures between 0°C and +60°C
- ▶ In humidity up to 85% (without condensation)

5.0 Installation of Shaker Platforms

► Orbit™ P4

Unit comes with the platform already installed.

► Orbit 300



Before you attach the platform, make sure that the slide stabilizers are properly fastened, adjusted and lubricated with the included grease.

The flat mat platform has a circle cut-out in the rubber and screw holes in the center. Remove the cutout rubber circle and screw down the four screws onto the shaker. After attaching the platform, remove the non-adhesive backing paper on the rubber circle and paste it back into place.

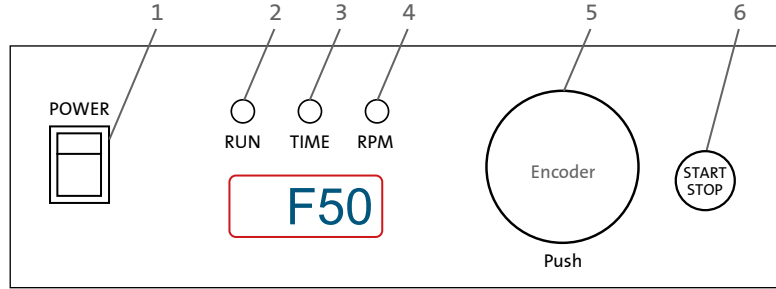
The grease which you use to lubricate the slide stabilizers is sufficient for 1000 working hours (1 year). After that time you should remove the shaking platform and clean, adjust, and re-grease the slide stabilizers. If they are worn out, you should replace them with new stabilizers and set to appropriate height.

► Orbit 1000 and Orbit 1900

The Orbit 1000 and Orbit 1900 model shakers have available a variety of platforms to meet most shaking needs. These platforms mount to the shakers via four mounting platforms which easily plug into four rubber mount points on the top of the shaker.

6.0 Operating Instructions

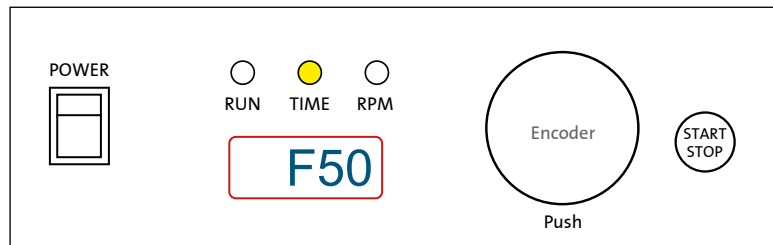
6.1. Control Panel



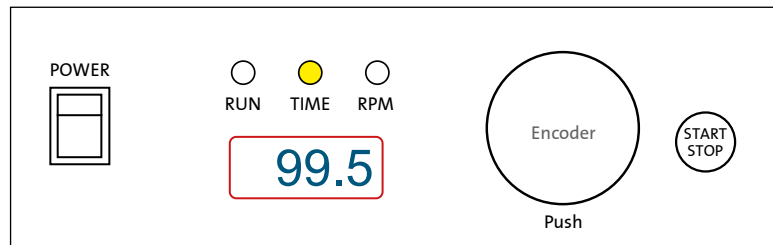
1. **POWER switch** – to turn the shaker ON (power switch illuminates) or OFF.
2. **RUN** – green signal light illuminated when the shaker is running.
3. **TIME** – yellow signal light illuminated when the shaker is set on time.
4. **RPM** – yellow signal light illuminated when the shaker is set on rpm.
5. **ENCODER** – by rotating the encoder right (+) or left (-) you can change the set TIME or RPM. Push the encoder to switch between TIME and RPM set values. If you rotate the ENCODER knob fast then values go up or down on display very quickly.
6. **START/STOP button** – START or STOP operating.

6.2. Basic Operation

- ▶ Press the POWER switch on control panel. The Orbit™ Digital Shaker automatically detects supply frequency of 50 or 60Hz, and displays F50 or F60.



Then the display switches to show the set time and illuminates the Time light.



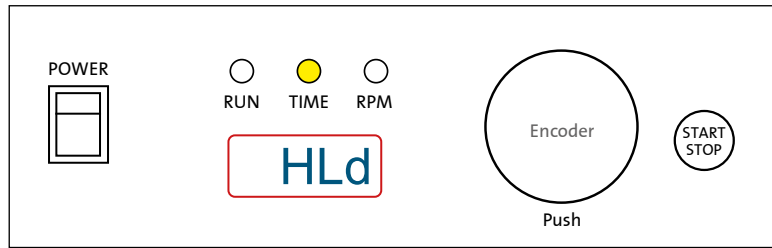
- ▶ Time signal light is on. By rotating the encoder right (+) or left (-) the set time can be selected from 30 sec. to 99 min. 50 sec.:

99.5 = 99 min. 50 sec.

9.59 = 9 min. 59 sec.

0.30 = 30 sec.

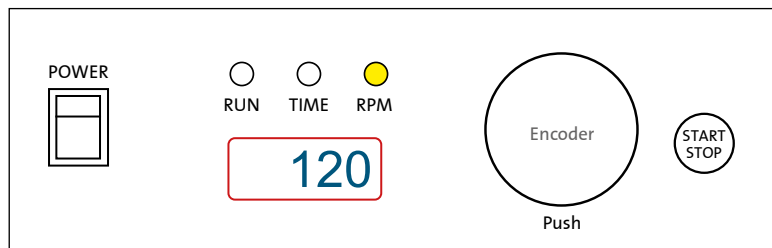
If you want to set the timer to hold turn the knob left or right until “HLd” is displayed. You can reach the “HLd” function by setting to under 0.30 or above 99.5.



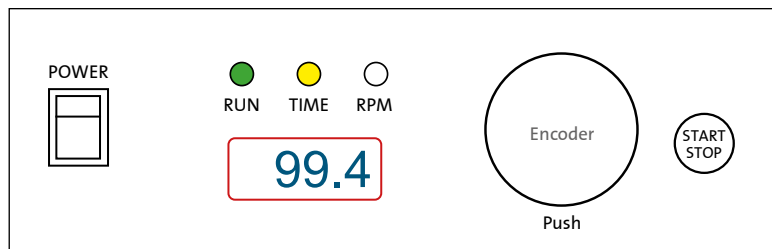
- Push down on the encoder knob to switch modes between time set mode and RPM set mode. RPM signal light is on. By rotating the encoder right (+) or left (-) the desired RPM can be selected:

34 = 340 rpm

120 = 1,200 rpm



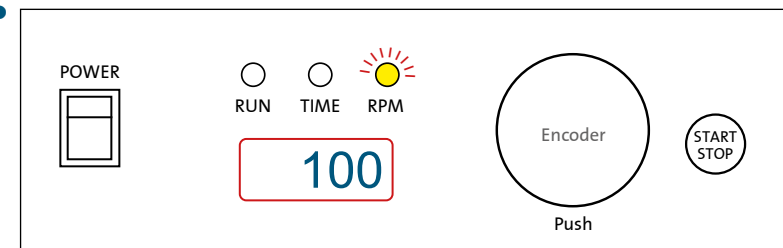
- Press START/STOP button to start operation. RUN and TIME signal lights. Shaker runs and counts down time from set value.



NOTE: You can not modify the set time during shaking, however, you can stop the unit with the START/STOP button and then reset the time.

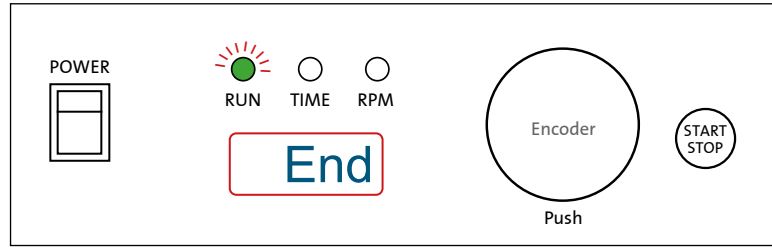
Changing the RPM during shaking

- Push the encoder knob to put the shaker into RPM set mode (RPM signal light will be on).



- Rotate the encoder right (+) or left (-) to set the desired value. In the meantime RPM signal light will flash.
- When you stop rotating the encoder knob the signal light for RPM will stop flashing after 2 sec.

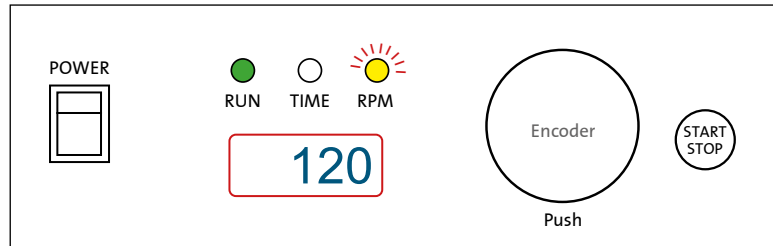
7. When the run time has elapsed or when you press the START/STOP button, the display will show “End” and the Run light will flash.



When shaker completely stops the set speed and time will return to the last programmed values.

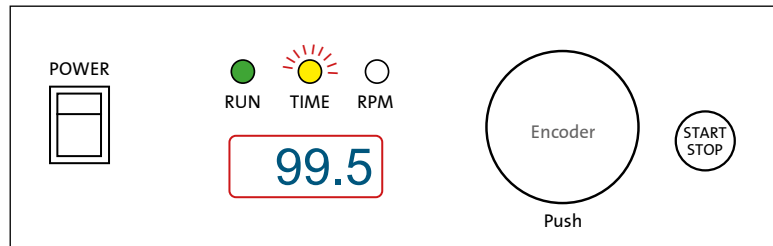
6.3 Additional Operations

- ▶ If you want to view the set value for RPM during shaking, rotate the encoder knob for ONE CLICK right (+) or left (-). RPM signal light will then flash for 2 sec. and the display will show the set RPM and the light will stop flashing.



NOTE: Shaker must be in RPM mode – RPM signal light must be on.

- ▶ If you want to view the set value for TIME during shaking, rotate the encoder knob for ONE CLICK right (+) or left (-). Time signal light will then flash for 2 sec. and the display will show the set TIME and the light will stop flashing.



NOTE: Shaker must be in TIME mode — TIME signal must be on.

7.0 Troubleshooting

| Problem | Explanation/Solution |
|--|--|
| POWER switch does not light | <ul style="list-style-type: none">▶ Check the power source▶ Check fuses |
| Shaker stalls – Message Er1 | Power unit down, then restart |
| <ul style="list-style-type: none">▶ Display does not light▶ Message Er2, Er3, or Er4 on display | Contact Labnet’s Service Department |

Should you have a question about the operation of the Labnet Orbit™ Digital Shakers or if service is required, contact your Corning representative. Do not send in a unit for service without first calling to obtain a repair authorization number. Should the unit require return to Corning for service, it should be properly packed to avoid damage. Any damage resulting from improper packaging shall be the responsibility of the user.

8.0 Maintenance and Cleaning

- ▶ With the exception of the occasional maintenance described in Section 5. of this manual, no scheduled maintenance is normally required. However, an experienced technician should regularly check the device operation at least once a year to make sure it is operating correctly.
- ▶ Regular cleaning of the housing is recommended.

8.1. Cleaning

The housing of the shaker unit can be cleaned with special cleaners for polyurethane plastic surfaces. A damp (not wet) cloth is recommended.

NOTE: Do not use any aggressive or abrasive cleaners (acetone, nitro, polish etc.) because the surface can get permanently damaged.



Prior to any cleaning or maintenance of the device, unplug the power cord from the wall socket.

9.0 Accessories

| Description | Cat. No. | Qty/Pk |
|--|-----------|--------|
| Orbit™ 300 | | |
| Platform for four microplates | S2030-10 | 1 |
| Platform with non-slip rubber mat | S2030-12 | 1 |
| Spring loaded platform for flasks, bottles or tube racks | S2030-13 | 1 |
| Orbit 1000 | | |
| Flat platform with non-slip rubber mat (30 x 30 cm) | S2031-12 | 1 |
| Two stacked platforms with non-slip rubber mat (30 x 30 cm) | S2032-12D | 1 |
| Spring loaded platform for flasks, bottles or tube racks | S2031-13 | 1 |
| Flask clamp platform (clamps sold separately – see below) | S2031-18 | 1 |
| Orbit 1900 | | |
| Flat platform with non-slip mat (40 x 50 cm) | S2040-12 | 1 |
| Universal bar clamp platform for holding a variety of containers | S2040-15 | 1 |
| Platform for flask clamps are sold separately – see below) | S2040-18 | 1 |
| Clamps | | |
| Clamp for 25 mL Erlenmeyer flask Orbit 1000 (max. 16) Orbit 1900 (max. 28) | S2040-25 | 1 |
| Clamp for 50 mL Erlenmeyer flask Orbit 1000 (max. 16) Orbit 1900 (max. 28) | S2040-50 | 1 |
| Clamp for 125 mL Erlenmeyer flask Orbit 1000 (max. 16) Orbit 1900 (max. 28) | S2040-85 | 1 |
| Clamp for 250 mL Erlenmeyer flask Orbit 1000 (max. 9) Orbit 1900 (max. 20) | S2040-99 | 1 |
| Clamp for 500 mL Erlenmeyer flask Orbit 1000 (max. 5) Orbit 1900 (max. 10) | S2040-09 | 1 |
| Clamp for 1L Erlenmeyer flask Orbit 1000 (max. 4) Orbit 1900 (max. 6) | S2040-01 | 1 |
| Clamp for 2L Erlenmeyer flask Orbit 1900 (max. 5) | S2040-02 | 1 |

10.0 Limited Warranty

Corning Incorporated (Corning) warrants that this product will be free from defects in material and workmanship for a period of one (1) year from date of purchase. CORNING DISCLAIMS ALL OTHER WARRANTIES WHETHER EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE. Corning's sole obligation shall be to repair or replace, at its option, any product or part thereof that proves defective in material or workmanship within the warranty period, provided the purchaser notifies Corning of any such defect. Corning is not liable for any incidental or consequential damages, commercial loss or any other damages from the use of this product.

This warranty is valid only if the product is used for its intended purpose and within the guidelines specified in the supplied instruction manual. This warranty does not cover damage caused by accident, neglect, misuse, improper service, natural forces or other causes not arising from defects in original material or workmanship. This warranty does not cover motor brushes, fuses, light bulbs, batteries or damage to paint or finish. Claims for transit damage should be filed with the transportation carrier.

In the event this product fails within the specified period of time because of a defect in material or workmanship, contact Corning Customer Service at: USA/Canada 1.800.492.1110, outside the U.S. +1.978.442.2200, visit www.corning.com/lifesciences, or contact your local support office.

Corning's Customer Service team will help arrange local service where available or coordinate a return authorization number and shipping instructions. Products received without proper authorization will be returned. All items returned for service should be sent postage prepaid in the original packaging or other suitable carton, padded to avoid damage. Corning will not be responsible for damage incurred by improper packaging. Corning may elect for onsite service for larger equipment.

Some states do not allow limitation on the length of implied warranties or the exclusion or limitation of incidental or consequential damages. This warranty gives you specific legal rights. You may have other rights which vary from state to state.

No individual may accept for, or on behalf of Corning, any other obligation of liability, or extend the period of this warranty.

For your reference, make a note of the serial and model number, date of purchase, and supplier here.

Serial No. _____ Date Purchased _____
Model No. _____ Supplier _____

11.0 Equipment Disposal



According to Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE), this product is marked with the crossed-out wheeled bin and must not be disposed of with domestic waste.

Consequently, the buyer shall follow the instructions for reuse and recycling of waste electronic and electrical equipment (WEEE) provided with the products and available at www.corning.com/weee.

To request certificates, please contact us at www.labnetlink.com.

Warranty/Disclaimer: Unless otherwise specified, all products are for research use only. Not intended for use in diagnostic or therapeutic procedures. Corning Life Sciences makes no claims regarding the performance of these products for clinical or diagnostic applications.

For additional product or technical information, visit www.corning.com/lifesciences or call 800.492.1110. Outside the United States, call +1.978.442.2200 or contact your local Corning sales office.

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