

# **Orbit™ DIGITAL SHAKERS**

## **INSTRUCTION MANUAL**

**Models P2, P4, M60, 300, 1000, 1900**

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## 1.0. GENERAL DESCRIPTION

### 1.1. DEFINITION

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.

### 1.2. PRINCIPLES OF OPERATION

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. TECHNICAL FEATURES

### 2.1. CONSTRUCTION

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

2.2. GENERAL SPECIFICATIONS: OPERATION RANGE: 4°C TO 65°C, 85%RH

## ORBIT P2, ORBIT P4, AND ORBIT M60 MODELS

POWER SUPPLY	230V ± 10% - 50Hz, 115V ± 10% - 50Hz/60Hz
MOTOR POWER	15W
FUSE	2 x 0.25AT, 230V 2 x 1 AT, 115V
RPM REGULATION	DIGITAL, load independent, from 100 to 1200 (1400 - 115V version) RPM in 10 RPM steps
SHAKER ORBIT	3 mm
TIMER	30 sec - 99min 50sec. in 10 sec. steps, under 10 min. in 1 sec. steps, timer HOLD function
LOAD	max. 0.3 kg
DIMENSIONS W x L x H	170mm x 275mm x 130mm
WEIGHT	4,3 kg

## ORBIT 300 MODEL

POWER SUPPLY	230V $\pm$ 10% - 50Hz, 115V $\pm$ 10% - 50Hz/60Hz
MOTOR POWER	15W
FUSE	2 x 0.25AT, 230V 2 x 1 AT, 115V
RPM REGULATION	DIGITAL, load independent, from 100 to 1200 RPM in 10 RPM steps
SHAKER ORBIT	3 mm
TIMER	30 sec - 99min 50sec. in 10 sec. steps, under 10 min. in 1 sec. steps, timer HOLD function
LOAD	max. 2 kg
DIMENSIONS W x L x H	255mm x 312mm x 130mm
WEIGHT	5,6 kg

## ORBIT 1000 MODEL

POWER SUPPLY	230V $\pm$ 10% - 50Hz, 115V $\pm$ 10% - 50Hz/60Hz
MOTOR POWER	15W
FUSE	2 x 0.25AT 230V 2 x 1 AT 115V
RPM REGULATION	DIGITAL, load independent, from 50 to 600 RPM in 10 RPM steps
SHAKER ORBIT	19 mm
TIMER	30 sec - 99min 50sec. in 10 sec. steps, under 10 min. in 1 sec. steps, timer HOLD function
LOAD	max. 4 kg
DIMENSIONS W x L x H	255mm x 312mm x 130mm
WEIGHT	7,1 kg

## ORBIT 1900 MODEL

POWER SUPPLY	230V $\pm$ 10% - 50Hz, 115V $\pm$ 10% - 50Hz/60Hz
MOTOR POWER	50W
FUSE	2 x 1 AT 230V 2 x 2 AT 115V
RPM REGULATION	DIGITAL, load independent, from 20 to 300 RPM in 1 RPM step
SHAKER ORBIT	19 mm
TIMER	30 sec - 99min 50sec. in 10 sec. steps, under 10 min. in 1 sec. steps, timer HOLD function
LOAD	max. 10 kg
DIMENSIONS W x L x H	390mm x 465mm x 160mm
WEIGHT	21 kg

## 3.0. INSTALLATION

### 3.1. 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.

### 3.2. SELECTING A SUITABLE LOCATION

When selecting a location for the shaker, please consider following:

- Put the device on a smooth, horizontal and stable surface.
- Leave enough space around 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.

### 3.3. ATTACHING 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.**

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### 3.4. 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 4°C and +65°C
- In humidity up to 85% (without condensation)

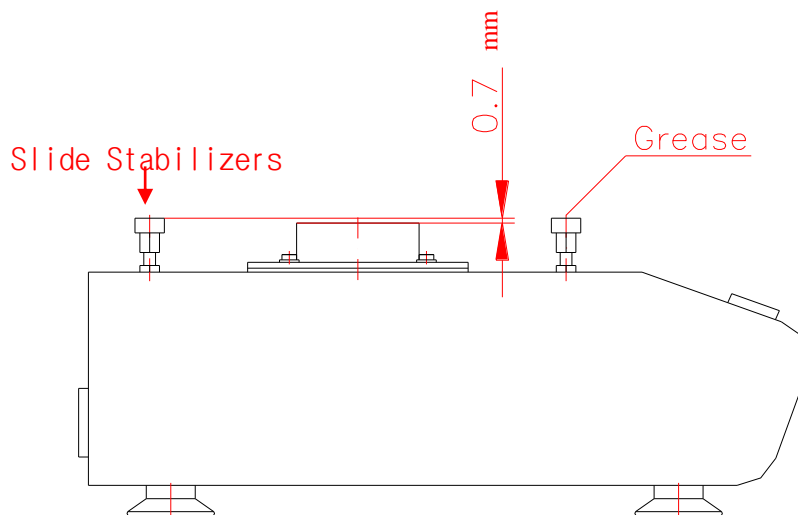
## 4.0. INSTALLATION OF SHAKER PLATFORMS

### 4.1. ORBIT M60, ORBIT P2 AND ORBIT P4 MODELS.

Each of these models comes with the platform already installed.

### 4.2. ORBIT 300 PLATFORM INSTALLATION.

The Orbit 300 digital shaker requires the installation of the selected platform. Please follow the instructions below for installing the platform.



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.

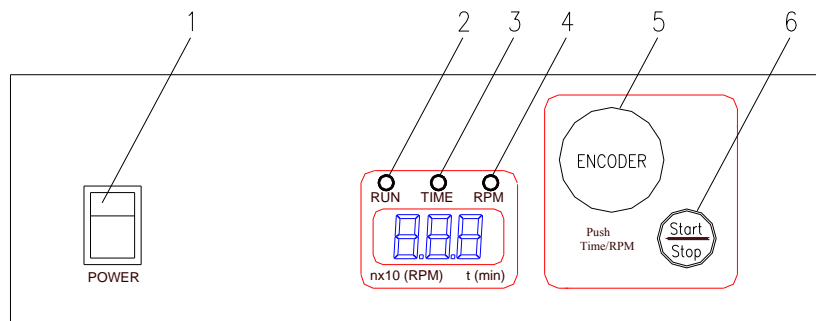
The grease used to lubricate the slide stabilizers is sufficient for 1000 working hours (1 year). After that time you should remove the shaking platform and clean, adjust, and re-grease the slide stabilizers. If they are worn out, you should replace them with new stabilizers and set to appropriate height.

### 4.3. ORBIT 1000 AND ORBIT 1900 PLATFORM INSTALLATION.

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.

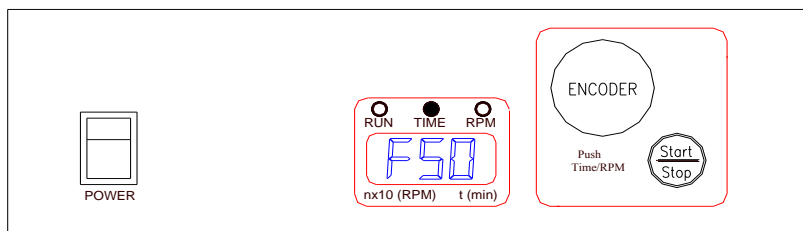
## 5.0. OPERATING INSTRUCTIONS

### 5.1. INTRODUCTION

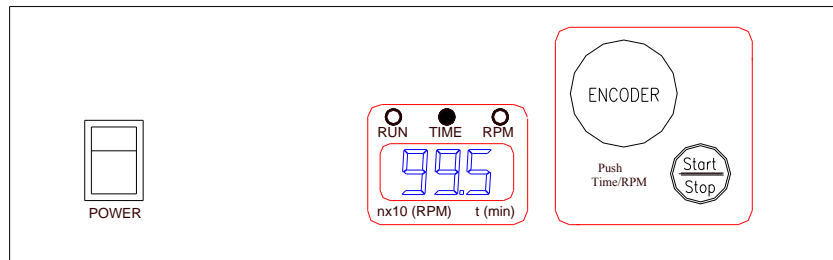


1. POWER switch – switches shaker ON (light on) or OFF.
2. RUN green signal light – lit when the shaker is running.
3. TIME yellow signal light – lit when the shaker is set on time.
4. RPM yellow signal light – lit when the shaker is set on rpm.
5. ENCODER – by rotating the encoder right (+) or left (-) 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 – press to START or STOP operation.

### 5.2. BASIC OPERATION



- Press the POWER switch on control panel. The Orbit™ 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.

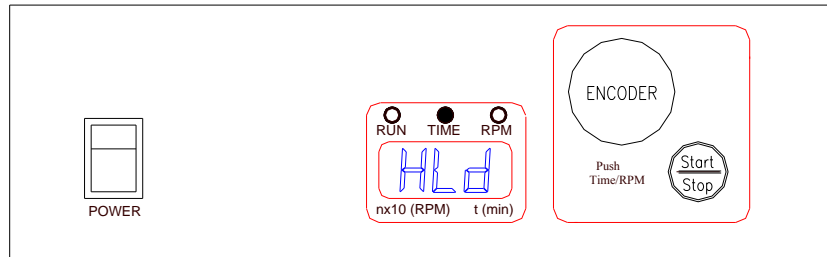


- Time signal light is on. By rotating the encoder right (+) or left (-) the set time can be selected from 30 sec to 99 min 50 sec :

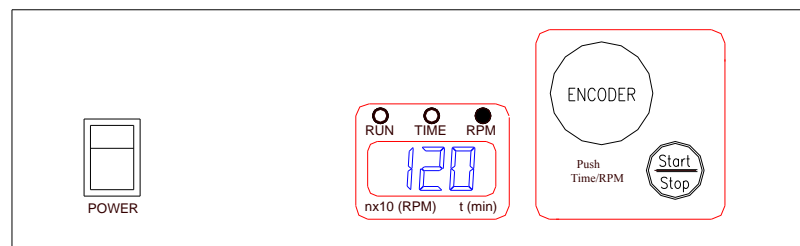
99.5  $\Rightarrow$  99 min 50 sec

9.59  $\Rightarrow$  9 min 59 sec

0.30  $\Rightarrow$  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.



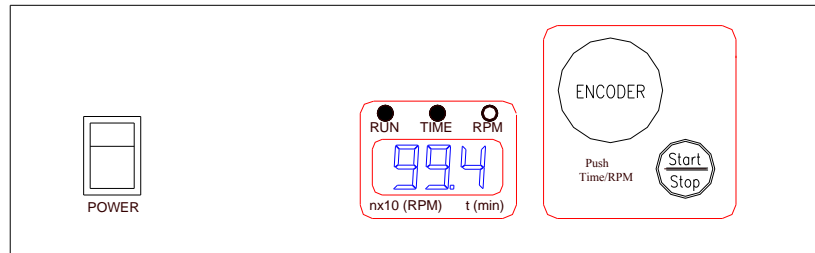
- RPM signal light is on. By rotating the encoder right (+) or left (-) the desired RPM can be selected :

34  $\Rightarrow$  340 Rpm

120  $\Rightarrow$  1200 Rpm

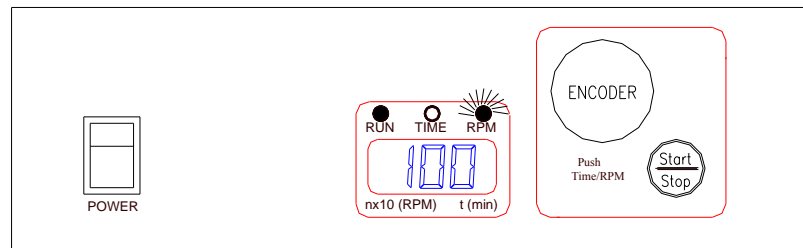
- Press START/STOP button to start operation



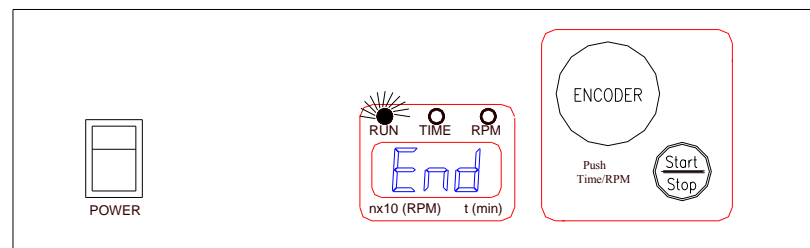


- RUN and TIME signal lights on. Shaker runs and counts down time from set value.

**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.**

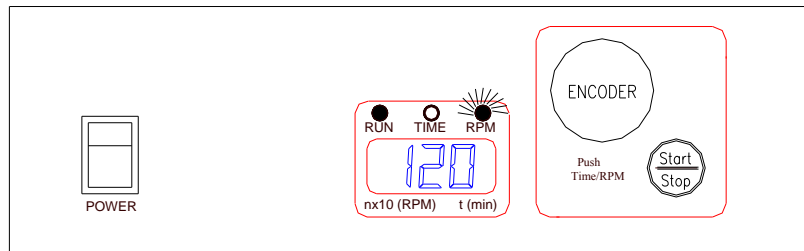


- If you want change the RPM during shaking, push the encoder knob to put the shaker into RPM set mode (RPM signal light will be on). Rotate the encoder right (+) or left (-) to set the desired value. In the meantime RPM signal light will flash. When you stop rotating the encoder knob the signal light for RPM will stop flashing after 2 sec.



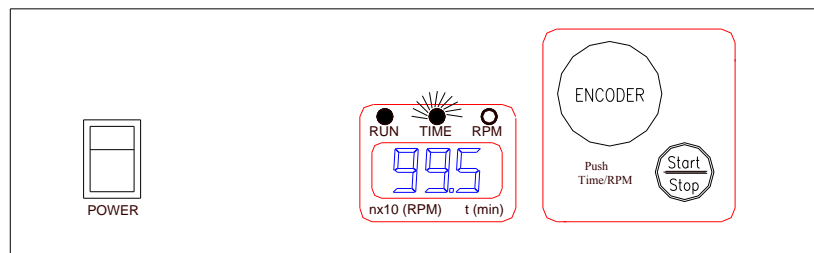
- When the run time has elapsed or when you press the START/STOP button, the display will show “End” and the RUN light will flash. When shaker completely stops the set speed and time will return to the last programmed values.

### 5.3. ADDITIONAL OPERATIONS



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

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

### 6.0. GENERAL PRECAUTIONS

- 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 Labnet'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 Labnet'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 inflammable or explosive samples or use the unit in an inflammable or explosive environment.**

## 7.0. TROUBLESHOOTING GUIDE

Problem	Explanation / Solution
POWER key does not light	Check the power source Check fuses
Shaker stalls – Message Er1	Power unit down, then restart
Display does not light	<b>Contact Labnet's Service Department</b>
Message Er2 on display	
Message Er3 on display	
Message Er4 on display	

## 8.0. REGULAR MAINTENANCE

- With the exception of the occasional maintenance described in 4.0 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 its surface can be permanently damaged.**



**Before cleaning the device, unplug main cord from wall socket.**

