



Instruction Manual

Analog Shaker, Light Duty, SHLD0415AL

Digital Shaker, Light Duty, SHLD0403DG

Digital Shaker, Light Duty, SHLD0415DG

Digital Shaker, Light Duty, Microplate, SHLDMP03DG

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PACKAGE CONTENTS

Digital Orbital Shaker or Digital Microplate Shaker or Analog Shaker
 Non-skid rubber mat (Orbital Shaker only)
 Power Cord
 Instruction manual
 Warranty card

SERVICE INFORMATION

If the troubleshooting section does not resolve or describe your problem, contact your authorized OHAUS service agent. For service assistance or technical support in the United States call toll-free 1-800-672-7722 ext. 7852 between 8:00 AM and 5:00 PM EST. An OHAUS product service specialist will be available to provide assistance. Outside the USA, please visit our web site, www.ohaus.com to locate the Ohaus office nearest you.

Serial Number: _____

Date of Purchase: _____

Supplier: _____

INSTALLATION

Upon receiving the Ohaus Orbital/Microplate Shaker, check to ensure that no damage has occurred during shipment. It is important that any damage that occurred in transport is detected at the time of unpacking. If you do find such damage the carrier must be notified immediately.

After unpacking, place the Orbital/Microplate Shaker on a level bench or table, away from explosive vapors. Secure to an immovable work surface by pressing down on the four (4) corners of the unit, creating a strong suction to the work surface (**DO NOT** place on a bench mat). Ensure that the surface on which the unit is placed will withstand typical heat produced by the unit. Always place the unit on a sturdy work surface.

The Orbital/Microplate Shaker is supplied with a power cord that is inserted into the IEC connector on the back of the unit first, then it can be plugged into a properly grounded outlet. The 120V unit plugs into a 120 volt, 50/60 Hz source. The 230V unit plugs into a 230 volt, 50/60 Hz source.

MAINTENANCE & SERVICING

The Orbital/Microplate Shaker is built for long, trouble-free, dependable service. No lubrication or other technical user maintenance is required. However at least every three (3) months you should:

- Unplug the unit.
- Remove any accumulated dirt from the base and tray.
- Check all accessible items to make sure they are properly tightened.

The unit should be given the care normally required for any electrical appliance. Avoid wetting or unnecessary exposure to fumes. Spills should be removed promptly. **DO NOT** use a cleaning agent or solvent on the front panel which is abrasive or harmful to plastics, nor one which is flammable. Always ensure the power is disconnected from the unit prior to any cleaning. If the unit ever requires service, contact your Ohaus representative.

ENVIRONMENTAL CONDITIONS

Operating Conditions: Indoor use only.

*For use in CO₂ environments, incubators or cold rooms.

*Temperature: -10 to 60°C (14 to 140°F)

Humidity: maximum 80% relative humidity, non-condensing

Altitude: 0 to 6,562 ft (2000 M) above sea level

Non-Operating Storage:

*Temperature: -20 to 65°C (-4 to 149°F)

Humidity: maximum 80% relative humidity, non-condensing

Installation Category II and Pollution Degree 2 in accordance with IEC 664.

* **Avoid cold starts:** Unit is not designed to start after being in a cold room environment. Bring unit into cold room from a room temperature environment, operate and remove unit from cold room as soon as operation is complete.

EQUIPMENT DISPOSAL

This equipment must not be disposed of with unsorted waste. It is your responsibility to correctly dispose of the equipment at life-cycle-end by handing it over to an authorized facility for separate collection and recycling. It is also your responsibility to decontaminate the equipment in case of biological, chemical and/or radiological contamination, so as to protect the persons involved in the disposal and recycling of the equipment from health hazards.



For more information about where you can drop off your waste of equipment, please contact your local dealer from whom you originally purchased this equipment. By doing so, you will help to conserve natural and environmental resources and you will ensure that your equipment is recycled in a manner that protects human health.

SAFETY INSTRUCTIONS

Please read the entire instruction manual before operating the Orbital/Microplate Shaker.



WARNING! DO NOT use the Orbital/Microplate Shaker in a hazardous atmosphere or with hazardous materials for which the unit was not designed. Also, the user should be aware that the protection provided by the equipment may be impaired if used with accessories not provided or recommended by the manufacturer, or used in a manner not specified by the manufacturer.

Always operate unit on a level surface for best performance and maximum safety.

DO NOT lift unit by the tray.



CAUTION! To avoid electrical shock, completely cut off power to the unit by disconnecting the power cord from the unit or unplugging from the wall outlet. Disconnect unit from the power supply prior to maintenance and servicing.

Spills should be removed promptly. **DO NOT** immerse the unit for cleaning.

DO NOT operate the unit if it shows signs of electrical or mechanical damage.







Earth Ground - Protective Conductor Terminal



Alternating Current

STANDARDS & REGULATIONS

Compliance to the following standards and regulations is indicated by the corresponding mark on the product.

Mark	Standards and Regulations
	OHAUS Corporation declares that the SHLD series shakers comply with directives 2011/63/EU, 2014/30/EU, 2014/35/EU and standards EN 50581, EN 61010-1, EN 61010-2-051, EN 61326-1. The full text of the EU declaration of conformity is available at the following internet address: www.ohaus.com/ce .
	This product complies with directive 2012/19/EU. Please dispose of this product in accordance with local regulations at the collecting point specified for electrical and electronic equipment. For disposal instructions in Europe, refer to www.ohaus.com/weee .
	EN 61326-1
	CAN/CSA C22.2 61010-1, CAN/CSA C22.2 61010-2-051 UL 61010-1, UL 61010-2-051

Global Notice

Warning: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

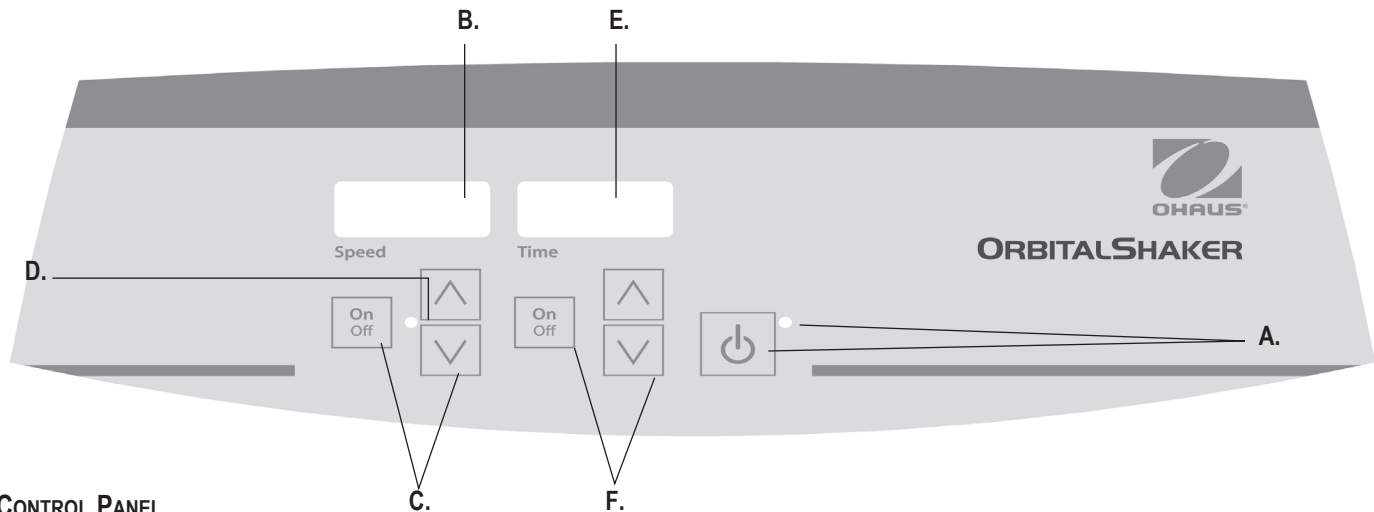
Canada Notice

This Class A digital apparatus complies with Canadian ICES-003.

FCC Notice

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Changes or modifications not expressly approved by Ohaus Corporation could void the user's authority to operate the equipment.



DIGITAL CONTROL PANEL

The front panel of the Orbital/Microplate Shaker contains all the controls and displays needed to operate the unit.

A. Standby button/standby indicator light: The standby indicator light will illuminate when the unit is plugged in. The unit will be in standby mode. Press the standby button to activate the speed and time functions. The standby indicator light will shut off and the speed display and time display will illuminate. Press the standby button again and the unit will once again be in standby mode.

B. Speed display: Displays the speed of the shaker. **C. Up/down arrows for set-point control.** On/off button starts/stops shaking function. **D.** The speed indicator light will be illuminated when the unit is shaking.

E. Time display: Displays accumulated time (continuous mode) or how much time is remaining (timed mode). The display range is from 0 to 9,999 minutes in one (1) second increments. The display will indicate minutes and seconds until the timer reaches 99 minutes and 59 seconds (99:59), then the display will automatically display minutes up to 9,999.

F. Up/down arrows for set-point control. On/off button starts/stops the time function.

ORBITAL SHAKER SPECIFICATIONS



Overall dimensions (L x W x H):	16.3 x 10.3 x 4.3" (41.3 x 26.0 x 10.8cm)
Tray dimensions (L x W):	11.75 x 7.75" (29.9 x 19.7cm)
Electrical (50/60 Hz):	120 volts: 5 amps, 25 watts 230 volts: 5 amps, 25 watts
Fuses:	5mm x 20mm, 5 amp quick acting
Speed range:	100 to 1200rpm
Speed accuracy:	±2%
Timer:	1 second to 9999 minutes (increased in 1 second increments)
Orbit:	0.125" (3mm)
Maximum weight capacity:	~ 8lbs (3.6kg), up to 1000rpm ~ 5lbs (2.3kg), over 1000rpm
Controls:	see page 4
Tray material:	aluminum
Ship weight:	25lbs (11.4kg)

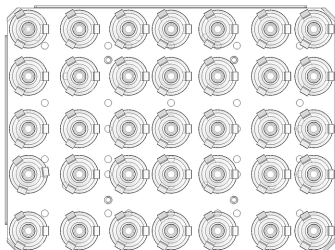
Digital Orbital Shaker with plasticware

ORBITAL SHAKER SET-UP

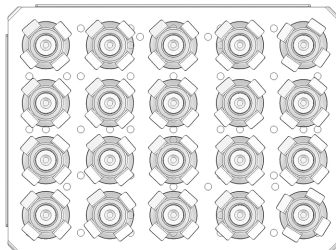
The Orbital Shaker is supplied with a tray designed to hold a variety of accessories.

1. Flat containers can be shaken by placing them on the non-skid rubber mat provided with the unit.
2. The tray also has mounting holes ready for use with flask/media bottle clamps or test tube racks. See below for tray configurations.

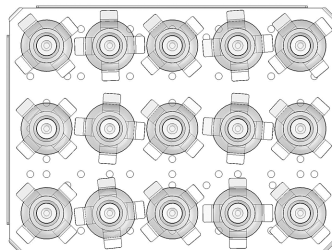
ORBITAL SHAKER TRAY CONFIGURATIONS



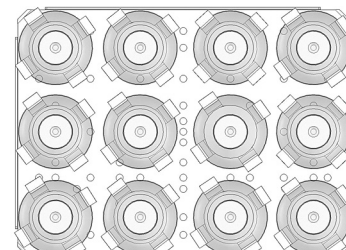
(35) 10mL Erlenmeyer Flask Clamps



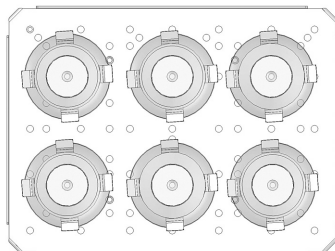
(20) 25mL Erlenmeyer Flask Clamps



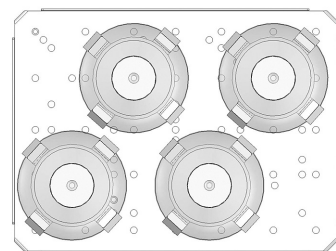
(15) 50mL Erlenmeyer Flask Clamps



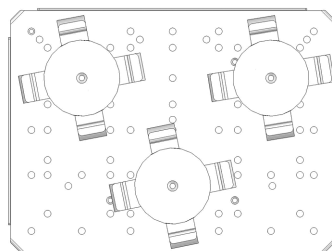
(12) 125mL Erlenmeyer Flask Clamps



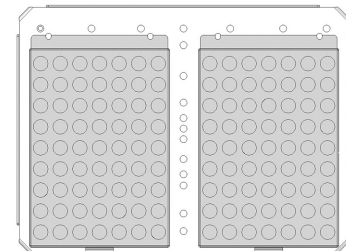
(6) 250mL Erlenmeyer Flask Clamps



(4) 500mL Erlenmeyer Flask Clamps



(3) 500mL Media Bottle Clamps



(2) Test Tube Racks

DIGITAL MICROPLATE SHAKER SPECIFICATIONS



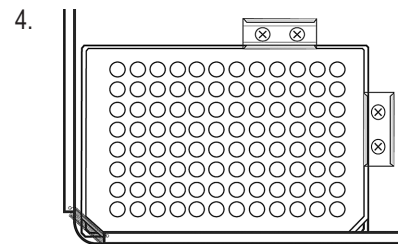
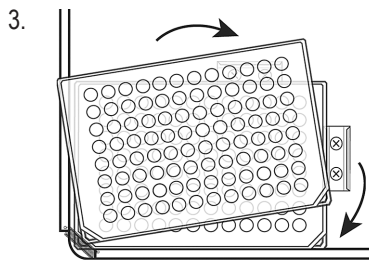
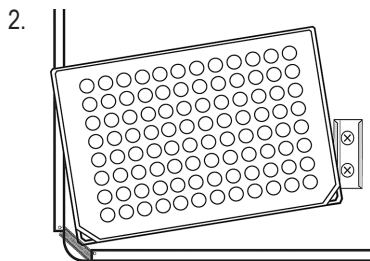
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Tray dimensions (L x W):	11 x 7.75" (27.9 x 19.7cm)	
Electrical (50/60 Hz):	120 volts:	5 amps, 25 watts
	230 volts:	5 amps, 25 watts
Fuses:	5mm x 20mm, 5 amp quick acting	
Speed range:	100 to 1200rpm	
Speed accuracy:	±2%	
Timer:	1 second to 9999 minutes (increased in 1 second increments)	
Orbit:	0.125" (3mm)	
Capacity:	4 microplates or 2 micro-tube racks	
Controls:	see page 4	
Tray material:	aluminum	
Ship weight:	25lbs (11.4kg)	

*Digital
Microplate Shaker
with microplates*

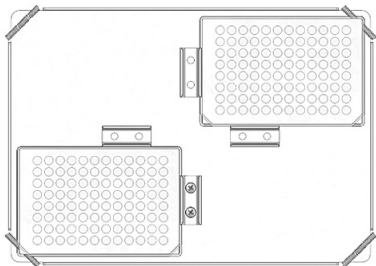
DIGITAL MICROPLATE SHAKER SET-UP

The Microplate Shaker is designed to hold two (2) or four (4) microplates, or two (2) Micro-Tube Racks.

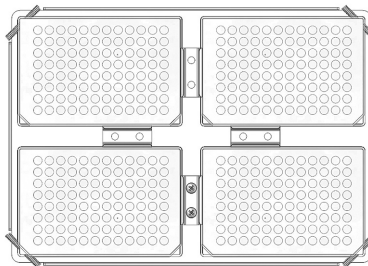
1. Place two (2) microplates or deep well blocks diagonally on the tray, or place four (4) microplates or deep well blocks on the tray. The plates/blocks do not have to be filled.
2. Place the corner of the plate/block under the spring located at each corner of the tray.
3. Slide plate/block into place. You are ready to use.



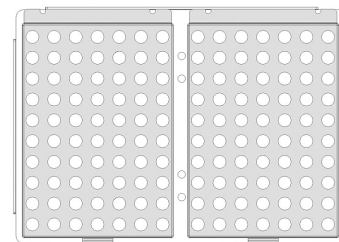
DIGITAL MICROPLATE SHAKER TRAY CONFIGURATIONS



(2) microplates



(4) microplates



(2) Micro-Tube Racks

NOTE: The tray on the Microplate Shaker is not designed to hold flask clamps.

DIGITAL ORBITAL/MICROPLATE SHAKER OPERATING INSTRUCTIONS

The Orbital/Microplate Shakers have been designed for the speed and time functions to work independently of one another. The speed can be reset without resetting the timer and the timer can be stopped and started without interrupting the shaking function.

1. Getting ready:

- a. Plug the power cord into a properly ground outlet. The standby indicator light will illuminate, verifying power to the unit.
- b. Press the standby button to move the unit from standby mode. The standby indicator light will turn off and the speed and time displays will illuminate, displaying previously used settings.



2. Setting speed:

- a. Press the up/down arrows below the speed display until you reach the desired speed. When you release the button, the display will blink off and then on indicating the new set speed has been accepted.
- b. Press the on/off button to start the shaking function. The indicator light below the speed display will illuminate to indicate the shaking function is in use and remain lit until shaking has ceased. The microprocessor controlled ramping feature slowly increases speed until the set-point is reached which helps to avoid splashing, and provides excellent low end control.
- c. Speed adjustments can be made without interrupting shaking by using the up/down arrows below the speed display. After the change has been made and you release the button, the display will blink off and then on indicating the new set speed has been accepted.
- d. To stop the shaking function, press the on/off button below the speed display. The speed indicator light will turn off.

3. Setting time to zero (0:00) and continuous mode: Accumulated time.

- a. Press and hold the on/off button below the time display. After three (3) seconds the display will indicate the previous set time.

- b. Simultaneously press both the up and down arrows, the display will indicate zero (0:00). The unit time is now set to zero (0:00) minutes. Alternately, you can use the up/down arrows to get to zero (0:00).
- c. Press the on/off button below the time display. The display will indicate accumulated time. The up/down arrows will become inactive. To stop timer, press the on/off button again. **IMPORTANT:** This will **NOT** interrupt the shaking function. Press the on/off button below the speed display to interrupt the shaking function.
- d. To reset, press and hold the on/off button below the time display. After three (3) seconds the display will indicate the previous set time, which was zero (0:00).

4. Setting timed mode: Programmed time.

- a. Press the up/down arrows below the time display until you reach the desired time.
- b. Start this function by pressing the on/off button below the time display. The unit will run for the selected time, the up/down arrows will become inactive while the timer is running. The unit will stop shaking when the time display reaches zero (0:00). Four (4) audible beeps will indicate the count down function is complete. The time display will default back to the set time. To repeat for the same time, simply press the on/off button again.
- c. To interrupt an automatic timing cycle before it is completed, press the on/off button below the time display. The display will flash off and on to indicate the time function is on "hold". **IMPORTANT:** This will **NOT** interrupt the shaking function. Press the on/off button below the speed display to interrupt the shaking function. Restart the timer by pressing the on/off button below the time display. Unit will continue counting down to zero (0:00). When the display reaches zero (0:00), you will hear the four (4) audible beeps that indicate the count down function is complete and shaking function will cease.

DIGITAL OPERATING INSTRUCTIONS CONT'D

5. Turning unit off:

- a. To turn the unit off, press the standby button. The speed and time displays will be blank, the standby indicator light will illuminate. The Orbital/Microplate Shaker should be kept in standby mode when not in use. To completely cut off power to the unit, disconnect the power cord from the unit or unplug from the wall outlet.

OPERATING TIPS

As a safety feature, a built-in program will shut power off to the motor if the tray is prevented from rotating, or the unit is overloaded beyond its recommended weight capacity.

Built-in memory maintains the last used speed and time settings during a power interruption.

ANALOG ORBITAL SHAKER OPERATING INSTRUCTIONS

The Standard Orbital Shaker is used for general laboratory shaking needs.

Shaker, Light Duty, SHLD0415AL

1. Getting ready:

- a. The speed knob should be at their extreme counter-clockwise position or at the #1 on the dial.
- b. Make sure the rocker switch is in the off position.
- c. Plug the cord into a properly grounded outlet.

2. Setting speed:

- a. To run push rocker to the on or position. Set speed knob to desired setting and adjust if necessary. Unit will run until you move the rocker switch to the off position. The microprocessor speed control slowly ramps to set speed to avoid splashing.

3. Turning unit off:

- a. To stop shaking function, turn the speed knob to the extreme counter-clockwise position and push the rocker switch to the standby position. The shaker should be kept in the standby position when not in use. To completely cut off power to the unit, disconnect the power cord from the unit or unplug from the wall outlet.

OPERATING TIPS

Centering your sample and even weight distribution on the tray helps with balance and stability.

The shaker will automatically restart after a power interruption.

TROUBLESHOOTING

During operation, any rattling or ticking sounds may indicate a loose screw on the tray, a tray attachment or an accessory. All accessories should be sufficiently tightened in place before starting the unit.

<u>Error Code</u>	<u>Software Test</u>	<u>Cause</u>
E04	unit overloaded	maximum load exceeded loose foot (suction cup)*

Press the standby button to clear this error. Be sure the load is within the maximum load capacity before restarting the unit. If the E04 error persists, switch the unit off and contact your Ohaus representative for repairs.

<u>Error Code</u>	<u>Software Test</u>	<u>Cause</u>
E03	drive system failure	ceased bearing drive belt broken mechanical obstruction loose foot (suction cup)*

Press the standby button to clear this error and remove the mechanical obstruction. If the E03 error persists the reason may be a ceased bearing or broken drive belt and should **NOT** be addressed by the end user. Switch the unit off and contact your Ohaus representative for repairs.

*In the event a foot (suction cup) has come loose from the bench top, the unit will register an errant E04 or E03 error message due to the instability of the unit. Press the standby button to clear this error. Firmly press down on the four (4) corners of the unit, creating a strong suction to the work surface (**DO NOT** place on bench mat). Press the standby button to resume operation.



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