

Unlimited  
Combinations



Betriebsanleitung  
Operating instructions  
Notice d'instructions

Hei-SHAKE Orbital Core

 **heidolph**  
research made easy

# Contents

## Introduction

About this document.....	28
Typographic conventions.....	28
Copyright protection.....	28
Safety instructions in the official languages of the European Union .....	28

## General product information

Directives applied, product certification.....	29
Copyright notice .....	29
California Residents.....	29
Residual risk.....	29
Intended use.....	29
Compliant use.....	30
Reasonably foreseeable misuse .....	30
Transportation.....	30
Storage.....	30
Acclimatization .....	30
Permissible ambient conditions .....	30

## Safety

General safety instructions.....	31
Electrical safety.....	31
Interfaces.....	31
Data security .....	31
Operational safety .....	31
Occupational safety .....	32
Personal protective equipment (PPE).....	32
Environmental protection.....	32
Biohazard.....	32
Other regulations.....	32

## Device description

Mechanical design, control panel .....	33
Device connections and interfaces.....	34
Commissioning .....	35
Positioning the device .....	35
Power supply .....	35
Placing and attaching laboratory vessels .....	35
Operation.....	36

Switching the device on/off .....	36
Remote control status indicator .....	36
Menu navigation .....	36
Settings .....	37
Starting/deceleration ramp.....	37
Automatic restart .....	37
Setting the shaking intensity .....	38
Operating modes.....	38
Continuous operation .....	39
Timer mode.....	39
Remote mode.....	40
Device activation via PC .....	41
Device activation via server-based software.....	41
Operation behavior in remote operation.....	41

## Troubleshooting

Troubleshooting.....	41
Warning codes .....	42
Error codes .....	42

## Appendix



Technical specifications .....	43
Performance range/maximum load .....	43
RS232 (ASCII) interface commands .....	44
Scope of delivery .....	45
Accessories .....	45
Device service.....	45
General cleaning instructions.....	45
Repairs - Return of equipment.....	46
Maintenance.....	46
Disposal.....	46
Warranty statement.....	46
Contact details .....	47
Certificate of decontamination.....	48

## About this document

This operating manual describes the features and operation of platform shakers, Hei-SHAKE Orbital Core type. The operating instructions are an integral part of the described device!

## Typographic conventions

This document uses the following symbols, signal words, and highlights:

	Description
	Warning symbols in combination with a signal word indicate dangers: <b>DANGER</b> Indicates an immediate dangerous situation. Failure to respect the indications will result in death or serious injury. <b>WARNING</b> Indicates a potential danger. Failure to respect the indications will result in serious injuries. <b>CAUTION</b> Indicates a potential hazard which, if not avoided, damage to property and minor to moderate injuries can occur.
	Mandatory signs are used to indicate important and useful information on handling a product. This information is used to ensure operational safety and to maintain the value of the product.
[ ... ]	Square brackets identify labels of control elements on the device as well as labels and entries in software masks and user interfaces.
→	The arrow indicates specific instructions to be followed to ensure operational safety when handling the product.

## Copyright protection

This document is protected by copyright and is intended for use by the purchaser of the product only.

No transfer to third parties, reproduction in any form, including excerpts, and by any means, as well as utilization and/or disclosure of the contents is permitted without the prior written consent of Heidolph Scientific Products GmbH. Any violation is subject to compensation for damage.

## Safety instructions in the official languages of the European Union

A summary of all safety instructions in the official languages of the European Union can be found in our Safety Guide for the product group Hei-SHAKE (shakers and mixers, Ref. 01-005-006-99). This document is available for download on our homepage in the most up-to-date version.

## Directives applied, product certification



### CE marking

The device meets all requirements of the following directives:

- Machinery Directive 2006/42/EC
- EMC Directive 2004/108/EC
- RoHS 2 directive 2011/65/EU, including amendment 2015/863

## Copyright notice

The software implemented in this product is protected by copyright laws. The rights holder is Heidolph Scientific Products GmbH, Walpersdorfer Straße 12, 91126 Schwabach/Germany. Any open source software components in this software are excluded from our copyright. Further information is available in the service area on our website [www.heidolph.com](http://www.heidolph.com).

Violations of copyright (e.g. unauthorized use or modification of the software) may result in civil claims (e.g. omission, compensation for damages) and/or entail criminal penalties within the meaning of the legislation of the destination country.

## California Residents

Important information for California residents regarding Prop 65:  
Please visit [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov) for more information

## Residual risk

The device has been designed and manufactured in accordance with the state-of-the-art standards at the time of development and the recognized safety regulations. During mounting and use, as well as during maintenance, repair and cleaning work, there are nevertheless certain residual risks associated with the described device.

These are identified and described at the appropriate points in this document.

## Intended use

The described platform shaker in this document has been specially developed for the following tasks:

- Shaking
- Mixing
- Emulsifying
- Suspending
- Separating
- Dissolving
- Staining

The areas of application of the described platform shaker include chemical, biological and environmental-analytical laboratory and research applications, applications of basic research and comparable facilities.

Due to its design, the device in its delivery condition may only be used in analytical processes or in laboratory-like conditions in the food, cosmetics, and pharmaceutical industries as well as other comparable industries that manufacture products intended for consumption by humans or animals, or for use on humans or animals.

Any other use of this device is not considered as intended!

## Compliant use

The compliance of each individual application must always be evaluated by the user. Any additional measures necessary to ensure compliance are always the responsibility of the user.

## Reasonably foreseeable misuse

Additional measures may be necessary for use under conditions or for purposes deviating from the intended use, and/or specific guidelines and safety regulations must be observed. Corresponding requirements must be evaluated and implemented by the operator in each individual case.

Compliance with and implementation of all relevant directives and safety measures for the respective field of application is the sole responsibility of the operator.

All risks resulting from improper use are borne solely by the operator.

The device may only be operated by authorized and instructed personnel. Training and qualification of the operating personnel as well as ensuring that the device is handled responsibly are the sole responsibility of the operator!

## Transportation

During transportation, avoid severe shocks and mechanical stresses that can cause damage to the device. Keep the original packaging in a dry and protected place for later use.

## Storage

Always store the product in its original packaging. To protect against damage and excessive material aging, store the device in an environment that is as dry, temperature-stable and dust-free as possible.

## Acclimatization

After each transportation and after storage under critical climatic conditions (e.g. high temperature difference between inside and outside), allow the device to acclimatize at room temperature for at least two hours to prevent possible damage due to condensation before commissioning it in the place of use. If necessary, extend the acclimatization phase if the temperature differences are very high.

Make all supply connections only after the device has been acclimatized!

## Permissible ambient conditions

The device is designed for indoor use only. The device is **NOT** suitable for outdoor use! The device is **NOT** suitable for use in potentially explosive areas!

When used in corrosive atmospheres, the service life of the device may be reduced depending on the concentration, duration and frequency of exposure.

### General safety instructions

Before commissioning and using the device, familiarize yourself with all the safety regulations and occupational safety guidelines applicable at the place of use and observe them at all times.

Only operate the device if it is in faultless technical condition. In particular, ensure that there is no visible damage on the device itself and, where applicable, on connected devices or the supply connections.

If there is missing or misleading information on the device or regarding occupational safety, contact the responsible safety specialist or our technical service.

Only use the device in accordance with the regulations for intended use.

### Electrical safety

Before connecting the device to the power supply, ensure that the voltage indicated on the rating plate matches the specifications of the local power utility company.

Ensure that the power supply circuit provided is protected by means of a residual-current device (RCD).

Always use the three-pole power supply cord provided with the device.

Prior to use, check that the device and the power supply cord are free of visible damage.

Have repairs and/or maintenance work on the system carried out exclusively by an authorized qualified electrician or by the manufacturer's technical service department (see "Contact details" on page 47).

Always switch the device off and disconnect it from the power supply before carrying out maintenance work, cleaning, or repairs.

### Interfaces

Safely isolate extra low voltage inputs and outputs via 25 V AC or 60 V DC according to EN 61140, or by double or reinforced insulation according to EN 60730-1 or DIN 60950-1.

Use only shielded connection cables. Connect the shield to the connector housing. Make sure that unused interfaces are always covered (covers on the front and back of the device) to prevent the penetration of liquids.

### Data security

The user is responsible for ensuring data security when transferring data between the described device and other devices.

Only use secure networks for the data transfer and avoid use of critical infrastructure.

Only use high-quality shielded data cables for the data transfer.

For data transfer via USB, an industrial standard USB hub should be preferably used to ensure the most stable connection possible.

### Operational safety

Operate the device under a closed ventilated fume hood when working with potentially hazardous substances (see EN 14175 and DIN 12924).

Do not make any unauthorized changes or modifications to the device!

Only use genuine spare parts and accessories, or those expressly approved by the manufacturer!

Rectify malfunctions or faults on the device immediately.

Switch off and disconnect the device from the power supply, preventing reconnection, if it is not possible to eliminate the malfunction or rectify the fault immediately.

Observe all other applicable regulations such as laboratory and workplace guidelines, recognized safety technology rules and special local regulations.

## Occupational safety

Always use the prescribed personal protective equipment (PPE) such as protective clothing, safety goggles, protective gloves, safety shoes, etc.

Do not operate any other devices in the immediate vicinity of the device ...

- which can generate electromagnetic fields in the frequency range between  $9 \times 10^3$  Hz to  $3 \times 10^{11}$  Hz,
- which generate emission or radiation sources in the frequency range  $3 \times 10^{11}$  Hz to  $3 \times 10^{15}$  Hz (in the optical spectral range wavelengths from 1,000  $\mu\text{m}$  to 0.1  $\mu\text{m}$ ),
- which generate ultrasonic or ionizing waves.

Do not process any substances that could release energy in an uncontrolled manner (e.g. self-ignition).

Do not process substances in which the energy input through mixing poses a danger.

Wipe off any liquid that may have spilled on the device immediately.

## Personal protective equipment (PPE)

The operating company must determine and provide the necessary PPE, depending on the respective application and the media and chemicals used.

The required instruction of the personnel is solely within the operating company's responsibility.

## Environmental protection

When processing environmentally hazardous substances, take appropriate measures to avoid hazards to the environment.

The evaluation of appropriate measures such as the marking of a hazardous area, their implementation, and the training of the relevant personnel is the sole responsibility of the operator!

## Biohazard

When processing biohazardous substances, take appropriate measures to prevent hazards to persons and the environment, including:

- Instruction of the personnel regarding the necessary safety measures.
- Provision of personal protective equipment (PPE) and instruction of the personnel in its use.
- Marking of the device with the biohazard warning symbol.

The evaluation of appropriate measures such as the marking of a hazardous area, their implementation, and the training of the relevant personnel is the sole responsibility of the operator!

## Other regulations

In addition to the notes and instructions in this document, observe all other applicable regulations such as laboratory and workplace guidelines, hazardous substances ordinances, recognized rules of safety engineering and occupational medicine as well as particular local regulations!

Noncompliance will invalidate any warranty claims against Heidolph Scientific Products GmbH.

The operator is solely liable for all damage resulting from unauthorized changes or modifications to the device, from the use of unapproved or non-genuine spare parts and accessories, or from disregarding the safety instructions and hazard warnings or the manufacturer's instructions!



## Mechanical design, control panel



Designation	Function
1 Shaking platform	Surface for placing laboratory vessels; different variants can be selected, see scope of delivery and accessories.
2 Display	Display of the operating parameters and messages.
3 [Standby] button	Used to activate or switching the device into standby mode: <ul style="list-style-type: none"> <li>The LED assigned to the button lights up green briefly when the operating voltage is applied and changes then to permanent white: status indicator [device in standby mode].</li> <li>Press the button once to activate the device: the LED changes to permanent green, status indicator [device in normal operation].</li> <li>Press the button again to switch the device back to standby mode: LED switches back to permanent white.</li> </ul>
4 Push-and-rotary control	<ul style="list-style-type: none"> <li>Rotary function: select menu items, adjust operating parameters.</li> <li>Push function: confirm entries.</li> </ul>
5 [Menu] button	Use this button to switch between the Start screen and the Home screen with the various sub-menus.
6 [Timer] button	Pushbutton to activate the [program timer] function: The setpoint display changes to orange. In this operating state, the device timer can be programmed with the push-and-rotary control in a range from 1 min – 999 h 59 min. When the value is confirmed by pressing the button again, the assigned LED lights up.
7 [Start/Stop] button	Pushbutton to activate/deactivate the shaking function. The button LED lights up when the shaking function is activated.

## Device connections and interfaces



Designation	Function
1 Shaking platform	Surface for placing laboratory vessels; different variants can be selected, see scope of delivery and accessories.
8 RS232 interface (Sub-D, 9-pin)	The RS232 interface of the Hei-SHAKE Orbital Core can be used for maintenance and service purposes (e.g. firmware update) as well as for controlling the device and for reading out device data. Please observe the information given in section "Remote mode" on page 40 and "RS232 (ASCII) interface commands" on page 44. If required, contact our technical service, see "Contact details" on page 47.
9 Appliance inlet	Power supply connection
10 Rating plate	Device and manufacturer data, serial number.

## Positioning the device



### CAUTION

Improper positioning of the device may result in direct and indirect damage to property due to falling and/or spilling of fluids!

Observe the instructions for the correct positioning of the device.

Observe the generally valid rules for the safe positioning of work equipment.

- The surface must be even, non-slip, proper and sufficiently stable.
- The device must be freely accessible at all times.
- Make sure that a sufficient safety distance to moving components (platform) can be maintained on all sides.



The professional mounting and positioning of the device including the supplied accessories is within the sole responsibility of the operator!

Heidolph Scientific Products GmbH shall under no circumstances be liable for any personal injury or damage to property resulting from failure to observe the instructions for the correct installation and positioning of the device.

## Power supply



### DANGER

Observe the instructions in section "General safety instructions" on page 31, in particular Electrical safety.

## Placing and attaching laboratory vessels

For placing and attaching your laboratory vessels, use the various Heidolph attachments which are available as an option. For detailed information on the available accessories, see [www.heidolph.com](http://www.heidolph.com) → Products → Platform shakers → Accessories, as well as the Heidolph Assembly Instructions Hei-SHAKE, Ref. 01-005-007-13.



At low shaking frequencies, vessels such as Petri dishes can also be placed without using any kind of attachment on the non-slip contoured rubber mat.

- Always place individual vessels in the center of the shaking platform.
- Always distribute several vessels evenly on the shaking platform.

## Switching the device on/off

When the mains voltage is applied, the device is in standby mode (the [STANDBY] button LED lights up white).

Briefly press the [STANDBY] button to activate the device: The button LED changes to permanent green (see also section "Mechanical design, control panel" on page 33).

The manufacturer logo appears briefly on the display, followed by the start screen with the following values:

- Setpoint and actual speed [1]
- Timer value [2]
- On time [3] in [hhh:mm:ss]



Press the [STANDBY] button again to deactivate the device: The button LED changes back to white.

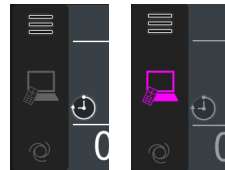
Unplug the device to de-energize it! When de-energized, the [STANDBY] button LED goes out.

## Remote control status indicator

When the device is connected to a remote controller via the RS 232 interface, the remote status is indicated on the home screen as follows:

- Remote icon gray: device is controlled locally, no input signal.
- Remote icon magenta-coloured: device operates in remote mode and is controlled by input signals. In this operating state, the LED ring of the push-and-rotary control also lights up magenta-coloured.

For more information, see "To stop the timer function, press and hold the [Timer] button for two seconds. The LED is switched off." on page 40.

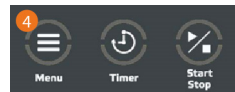


## Menu navigation

Press the [Menu] button [4] on the control panel below the display to display the menu bar.

The individual menu items are selected by turning the push-and-rotary control: The selected menu item is highlighted. Press the push-and-rotary control to open the selected menu.

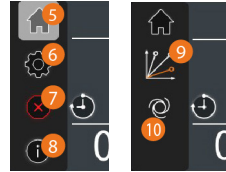
- [5]: [Home] button, opens the home screen from each view.
- [6]: Menu item [Device settings], for more information see section "Settings" on page 37.
- [7]: Menu item [Error list], opens the list of all recorded errors; for more information, see section "Troubleshooting" on page 41.
- [8]: Menu item [Info], touch this function button to open the info menu with the following options: Serial number, HMI version, micro-controller version, QR code for further information and technical documents.



## Settings

Expand the menu bar as described in the section "Menu navigation" on page 36 and open the [Device Settings] menu, [6].

In the device settings, you can define the starting and braking behavior of the device [9] and activate/deactivate the [Automatic restart] function [10], see the following sections.



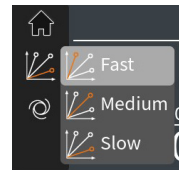
### Starting/deceleration ramp

This parameter defines the starting and deceleration behavior of the device when the shaking movement is switched on or off.

- In the [Device Settings] menu, use the push-and-rotary control to highlight [Starting/Deceleration Ramp], [1] and press the push-turn knob.

The following options are available:

- [Fast]: The speed is increased or decreased as quickly as possible to the set value.
  - [Medium]: The speed is increased or decreased at normal speed to the set value.
  - [Slow]: The speed is gradually increased or decreased to the set value.
- Use the push-and-rotary control to highlight the desired mode and confirm the selection by pressing the push-and-rotary control: The icon associated with the selected mode is displayed in the menu bar area.



The setting remains active even if the power supply is interrupted!

In general, the actual start-up behavior depends on other parameters such as the total load and the load distribution on the shaking platform. The ideal setting must be determined and defined by the user in individual cases. It is not possible to give a general manufacturer recommendation for the different scenarios due to the application-specific parameters.

### Automatic restart

The [Automatic restart] function can be activated and deactivated via this menu item.

When the [Automatic restart] function is activated, the device switches on automatically upon return of the power supply after a power interruption and the speed is augmented to the last set value. If the function is deactivated, the device must be activated by the operator from standby mode when the mains voltage returns, see also section "Switching the device on/off" on page 36.



#### WARNING

Before activating the function, take appropriate measures to make sure that, in case of a possible unmonitored restart, no hazard for persons or risk of damage to property can occur.

- In the [Device Settings] menu, use the push-and-rotary control to highlight [Automatic restart].
- Enable or disable the function by pressing the push-and-rotary control.

**Status display in the menu bar area:**

- Icon [Rotation] white: Function disabled. Press the push-and-rotary control to enable the function. The icon changes to orange.
- Icon [Rotation] orange: Function enabled. Press the push-and-rotary control to disable the function. The icon changes to white.



In the as-delivered condition, the [Automatic restart] function is disabled and has to be enabled manually.

The function can be activated and deactivated at any time, i.e. without interrupting a running process.

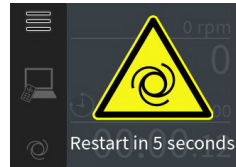
The evaluation of potential risks by a possible unmonitored automatic restart as well as of appropriate security measures is the sole responsibility of the user!

**Operating behavior when the [Automatic restart] function is activated**

When the power is restored after a power interruption, a warning signal is emitted, simultaneously the LED ring of the push-and-rotary control (yellow) and the warning symbol for the automatic restart are flashing for five seconds on the display (see figure on the right).

After this warning time has expired, the motor speed is increased again to the previously set value!

The timer is automatically restarted after each mains power interruption.



**Setting the shaking intensity**

The shaking intensity (speed) can be adjusted at any time using the push-and-rotary control without interrupting a running process:

- The setpoint value is displayed in [rpm] on the top line of the display.
- The actual value is displayed directly below the setpoint.



When adjusting the shaking intensity, the setpoint display is enlarged and changes from white to orange.

The new setting value is automatically applied after a waiting time of approx. three seconds. Alternatively, a setpoint change can be immediately accepted by pressing the push-and-rotary control without waiting time.

As soon as the value is accepted, the setpoint display returns to normal.

**Operating modes**

The device can be used in continuous operation or with a timer (timer mode). Regardless of the selected operating mode, observe the following specific safety instructions:



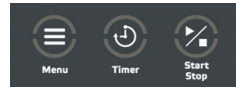
**WARNING**

- Whenever possible, use closed vessels for processing corrosive, toxic or biohazardous substances and seal them safely.
- Increase the speed only gradually to the desired shaking intensity, especially with open vessels, and observe the fluid movements.
- Please note the maximum lifting capacity of the platform of your device, see section "Performance range/maximum load" on page 43.
- Lower the shaking intensity or reduce the total load on the platform when the device starts to vibrate during operation.
- Always ensure that the vessels are evenly distributed on the platform.
- Pay particular attention to an even distribution of the weight load when vessels of different sizes and/or differently filled vessels are placed on the platform at the same time!
- Before switching on the device, make sure that all vessels are properly fixed on the platform.
- Use suitable attachments for the used vessels. Further information on available accessories can be found on our website at [www.heidolph.com](http://www.heidolph.com).
- Always use the necessary and appropriate personal protective equipment!

**Continuous operation**

In continuous operation, the shaking movement is started and stopped manually:

- To start or stop the shaking operation, press the [Start/Stop] button on the control panel of the device.



In continuous mode, the LED of the [Start/Stop] button and the LED ring of the push-and-rotary control light up white.



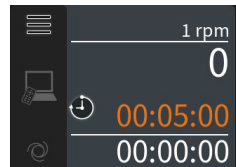
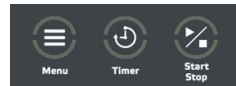
In continuous operation without a timer, the elapsed time since the start of the process is shown on the display. If the maximum run time of 999 hours, 59 minutes and 59 seconds is exceeded, the value [>999] is displayed permanently until the process is switched off.

**Timer mode**

In timer mode, a specific period of time can be set for a continuous shaking movement.

- To activate the timer function, briefly press the [Timer] button. The [Timer] setpoint changes to orange. In this state, the push-and-rotary control can be used to set a value in the range of 1 min – 999 h 59 min: To do this, turn the push-and-rotary control until the desired value is displayed (in this example: Five minutes).
- Briefly press the push-and-rotary control or the [Timer] button to accept the input value. The new value must be confirmed within three seconds, otherwise the entry will be discarded!

After the input has been accepted, the set value display of the timer is reduced again and displayed in white font.



### Status indicator

As soon as the timer is programmed and set, the timer icon will appear in orange on the display.

### Starting shaking mode with timer

To start or stop the shaking operation, press the [Start/Stop] button on the control panel of the device.

The timer starts automatically, the LED of the [Start/Stop] button and the LED ring of the push-and-rotary control light up permanently white.

The remaining time until the expiration of the programmed time period is shown as [hh:mm:ss].



When the shaking mode stops, the timer is also stopped and reset.

When the timer expires, the LED ring of the push-and-rotary control flashes white and the device emits an acoustic signal. Press the push-and-rotary control to reset. In this state, a new process can be started with the last set value in timer mode.

### OR

To stop the timer function, press and hold the [Timer] button for two seconds. The LED is switched off.

## Remote mode



### WARNING

Secure the device in remote mode with a clearly visible warning sign and, if necessary, take further ambient-specific protective measures that protect against damage to property and injuries in the event of unexpected/unmonitored starting of the device.

To activate the remote access of the device, a message of type "SetTargetSpeed" or "SetMotorState" has to be sent. Afterwards, the remote symbol appears on the display and remote commands are executed normally.



The transmission of the messages is made via ASCII strings. The protocol is active after the start. By a defined ADIP "Connect" command, you can switch to the ADIP mode.

### RS232 interface parameters

- 9600 Baud
- Parity: none
- Data: 8 Bit
- Stop: 1 Bit

### Command termination

All ASCII strings have to be finished with `\r\n` (0x0D 0x0A):

- ...`\r\n`

For further information on interface handling, please contact our technical service, see "Contact details" on page 47.



## Device activation via PC

The device can be addressed via the integrated RS232 interface via an external control. The data interface enables activation of the device and recording of the process data in remote mode. This requires suitable software such as Hei-PROCESSING Solutions of Heidolph Scientific Products GmbH, which supports the set of commands stored in the device.

## Device activation via server-based software

The device can be addressed via the integrated RS232 interface via a server-based software. If required, contact an authorized dealer or our technical service, see section "Contact details" on page 47.

## Operation behavior in remote operation

In remote mode, the individual menus of the device control can be opened as described and the parameters/values can be read out, but not changed.

It is also not possible to increase or decrease the shaking intensity on the device (push-and-rotary control without function).

If necessary, remote operation can be terminated by the operator by pressing the [Standby] button.

## Troubleshooting

Failure	Cause	Possible remedy
Display remains dark after switching on	No mains voltage	Check the power supply cord for damages/correct connection
	Power supply cord defective	Check building fuses
LED of the [Start/Stop] button does not light up when the function is activated	Display defective	Contact Heidolph Sales or Service
	Button LED defective	Contact Heidolph Sales or Service
Shaking movement stops	Motor overheat protection has tripped	Wait about 20 minutes and reduce the load on the shaking platform
	Electrical fault (no engine noise)	Contact Heidolph Sales or Service
	Mechanical defect (engine noise audible)	Contact Heidolph Sales or Service



In case of recurring errors please contact the responsible sales department or our technical service (see section "Contact details" on page 47).

## Warning codes

Code	Description	Device behavior, remedy
W100B	Permissible PCB temperature exceeded	The device changes to a safe operating state - let it cool down, restart the process.
W100A	Permissible motor temperature exceeded	
W100C	Overvoltage	Device changes to a safe operating state - restart the process.
W100D		
W100E		
W100F		
W1010	Undervoltage	Device changes to a safe operating state - restart the process.
W1011		
W1012		
W1013		
W1014		
W1015	Engine blockage	Device changes to a safe operating state - restart the process.

## Error codes

Code	Description	Device behavior, remedy
E8001	Internal memory error	Device changes to safe operating state - restart the device.
E8006	Motor error	
E8007		
E8008		
E8009	Undervoltage	Unit switches off, contact technical service.
----	HMI communication error	



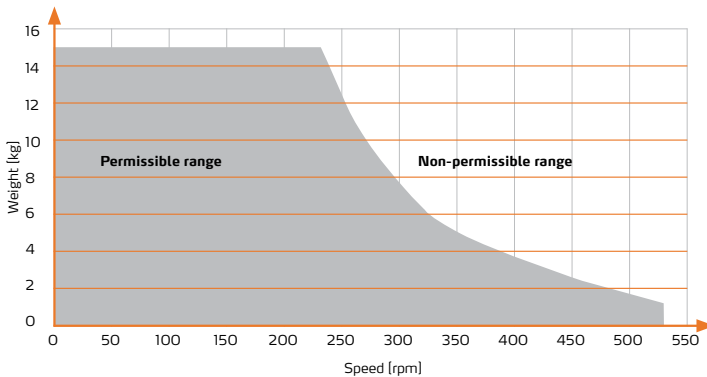
- Pending error messages are displayed in orange font.
- Acknowledged error messages are displayed in white font.

## Technical specifications

### Hei-SHAKE Orbital Core

Dimensions (W × H × D)	356 × 129 × 403 mm
Weight	approx. 14 kg
Permissible load	max. 15 kg
Usable area (W × D)	294 × 263 mm
Motion	orbital
Orbit	20 mm
Speed range	1 – 530 rpm
Drive	EC motor
Protection class	IP32 (acc. to EN 60529)
Protection class	I Ⓢ
Acoustic pressure	< 85 dB (A), in accordance with IEC 61010
Rated voltage	100 – 240 V, 50/60 Hz
Power input	90 W
Operating and storage temperature	5 °C – 31 °C at up to 80 % rel. humidity 32 °C – 40 °C at up to 50 % rel. humidity (decreasing linearly)
Installation altitude	up to 2,000 m asl

## Performance range/maximum load



The displayed values were determined with flat weight blocks and without further superstructures on the shaking platform and are only used for orientation. The actual maximum possible speed must be determined and defined by the user in an appropriate manner, depending on the process in each individual case. It is not possible to give a general manufacturer recommendation for the different scenarios due to the application-specific parameters.

## RS232 (ASCII) interface commands

### Generic commands

Send	Receive	Description
identical\x\n"	"< Name > < Material No. > < Serial No. > < Production Order > \x\n"	Read identification numbers
"SW-VERS\x\n"	"MC X1.Y1.Z1:X2.Y2.Z2, HMI A1.B1.C1:A2.B2.C2\R\n"	Read all software versions
"STATUS\x\n"	"STATUS X\x\n"	Read actual status
"IN_SP_ALL\x\n"	"SP_3 = X, SP_10 = Y, SP_11 = Z\R\n"	Read all setpoints
"IN_PV_ALL\x\n"	"PV_5 = X, PV_12 = Y S\x\n"	Read all actual values
"CC_ON\x\n"	"CC_ON\x\n"	Set connection control
"CC_OFF\x\n"	"CC_OFF\x\n"	Reset connection control
"RESET\x\n"	"RESET X\x\n"	Reset Communication

### Speed control commands

Send	Receive	Description
"OUT_SP_3 X\x\n"	"OUT_SP_3 X\x\n"	Set target speed (rpm)
"OUT_SP_12 X\x\n"	"OUT_SP_12 X\x\n"	Set maximum motor torque
"IN_PV_5\x\n"	"IN_PV_5 X\x\n"	Get actual speed (rpm)
"START_2\x\n"	"START_2\x\n"	Start movement
"STOP_2\x\n"	"STOP_2\x\n"	Stop movement
"OUT_MODE_10 0\x\n"	"OUT_MODE_10 0\x\n"	Select Speed Controller Mode

### Position control commands

Send	Receive	Description
"OUT_SP_10 X\x\n"	"OUT_SP_10 X\x\n"	Set target position (degrees)
"OUT_SP_12 X\x\n"	"OUT_SP_12 X\x\n"	Set maximum motor torque
"OUT_SP_13 X\x\n"	"OUT_SP_13 X\x\n"	Set Maximum Speed for Positioning (rpm)
"IN_PV_12\x\n"	"IN_PV_12 X\x\n"	Get actual position / Get absolute position
"START_2\x\n"	"START_2\x\n"	Start movement
"STOP_2\x\n"	"STOP_2\x\n"	Stop movement
"OUT_MODE_10 1\x\n"	"OUT_MODE_10 1\x\n"	Select Position Controller Mode

## Scope of delivery

Item	Quantity	Product no.
Hei-SHAKE Orbital Core	1	546-11400-00
Power supply cord	1	country specific
Warranty registration	1	01-006-002-78

## Accessories



Further information on available accessories can be found on our website at [www.heidolph.com](http://www.heidolph.com).

## Device service

When carrying out service work on the device (cleaning, maintenance, repair), observe the general instructions and safety information described in this section.



### **DANGER**

Switch the device's main switch off and disconnect it from the power supply before carrying out maintenance work, cleaning, or repairs.

When cleaning, avoid the penetration of liquids.

Before replacing the fuses, switch off the device and disconnect the power supply cord.

Always replace the two device fuses in pairs with original manufacturer fuses. Further information on available accessories can be found on our website at [www.heidolph.com](http://www.heidolph.com)!

After fuse replacement, check the device for a safe condition according to IEC 61010-1.

## General cleaning instructions

Wipe all surfaces and the control panel with a damp cloth if necessary. Persistent contamination can be removed with mild soapy water.



### **CAUTION**

Clean the device's surfaces with a soft, lint-free and only slightly moistened cloth.

Never use any aggressive or abrasive cleaning agents or aids.

## Repairs - Return of equipment

Repairs to the device may only be carried out by authorized experts! Unauthorized repairs during the warranty period will result in the loss of the warranty claim. Regardless of the warranty claim, the owner is solely liable for damage caused by unauthorized repairs.

- In case of repair and before returning your device, contact our technical service at the following e-mail address:
  - service@heidolph.de.
- In your message, please provide us with the following information in addition to an error description:
  - Item number
  - Serial no.

The required data can be found on the rating plate of the device.

A service representative will contact you as soon as possible to agree on the next steps.

Include the completed certificate of decontamination with every device return, see "Certificate of decontamination" on page 48.

## Maintenance

The device contains no user-serviceable components. If necessary (in the event of abnormal operating behavior such as excessive noise or heat generation, for example) contact our technical service.

## Disposal



- When disposing of the device, observe the provisions of the WEEE Directive 2012/19/EU and its transposition into national law in the country of use.
- When disposing of portable batteries, observe the provisions of the European Battery Directive 2013/56/EU and their implementation in national law in the country of use.
- Check the device and all components for residues of substances that are hazardous to health, the environment and biohazardous before disposal.
- Properly remove and dispose of residues of substances that are hazardous to health, the environment and biohazardous!

## Warranty statement

Heidolph Scientific Products GmbH provides a three-year warranty against material and manufacturing defects.

Glass and wear parts, transportation damage, and damage resulting from improper handling or non-intended use of the product are excluded from the warranty.

The warranty period for registered products begins on the date of purchase. Register the product with the enclosed warranty card or on our homepage [www.heidolph.com](http://www.heidolph.com).

For non-registered products, the warranty period begins with the date of the serial production (to be determined by the serial number).

In the event of material or manufacturing defects, the product will either be repaired or replaced free of charge within the warranty period.

## Contact details



### **Heidolph Scientific Products GmbH**

Technical service

Walpersdorfer Str. 12

D-91126 Schwabach/Germany

Email: [service@heidolph.de](mailto:service@heidolph.de)

### **Representations**

To find your local Heidolph distributor please visit [www.heidolph.com](http://www.heidolph.com)

## Certificate of decontamination

Enclose the certificate of decontamination, duly completed, with your device return. Submissions without a certificate of decontamination cannot be processed!

# CERTIFICATE OF DECONTAMINATION

IN CASE OF RETURNS



Please fill in the required fields.

**Note: The sender must package the goods properly and appropriately for transport.**

Heidolph Scientific Products GmbH

Walpersdorfer Straße 12  
91126 Schwabach

Phone: +49 (0) 9122 9920-380

**Fax: +49 (0) 9122 9920-19**

E-Mail: service@heidolph.de

### SENDER

Name \_\_\_\_\_ First name \_\_\_\_\_  
 Company/institution \_\_\_\_\_ Department \_\_\_\_\_  
 \_\_\_\_\_ Workgroup \_\_\_\_\_  
 Address \_\_\_\_\_  
 ZC/City \_\_\_\_\_  
 Country \_\_\_\_\_ Phone \_\_\_\_\_  
 Email \_\_\_\_\_

### DEVICE DETAILS

Article number \_\_\_\_\_ Serial no. \_\_\_\_\_

Ticket number \_\_\_\_\_

Reason for sending in \_\_\_\_\_  
 \_\_\_\_\_

**Has the device been cleaned, decontaminated/disinfected?** Yes No (Please mark as applicable)

If yes, which measures were carried out?  
 \_\_\_\_\_

**Does this device pose a risk to people and/or the environment due to the processing of substances that are hazardous to health, the environment and/or are biohazardous?** Yes No (Please mark as applicable)

If yes, with which substances did the device come into contact?  
 \_\_\_\_\_

### LEGALLY BINDING DECLARATION

The principal/consignor is aware that they are liable to the agent/consignee for losses or damage incurred due to incomplete and incorrect information.

\_\_\_\_\_  
 Date Signature Company stamp



Traduction de la notice originale  
Page 52 – 72

Zertifikate / Certifications