

OPERATING MANUAL

Digital Hot-plate/Stirrers

WH420



WIGGENS
THE MAGIC MOTION

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Congratulations!

You have made an excellent choice.

WIGGENS thanks you for the trust you have placed in us.

This operating manual has been designed to help you gain an understanding of the operation and possible applications of our instruments. For optimal utilization of all functions, we recommend that you thoroughly study this manual prior to beginning operation.

Unpacking and Inspecting

Please unpack the device carefully. Check that the package is right-side-up and then open it. Check that model of the product is one that you ordered. Check that there is no damage. If there is any damage, file a damage claim with the carrier. In the case of any damage a damage report should be requested immediately. These instructions must be followed fully for us to guarantee our full support of your claim for protecting against loss from concealed damage. The form required for filing such a claim will be provided by the carrier.

Changes without prior notification reserved

Important: keep operating manual for future use

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1. SAFETY PRECAUTION & INFORMATION

It is your responsibility to carefully read and understand the contents of this manual before attempting to use this device. Check on the back of the unit and verify that the unit is rated for the proper voltage in your region.

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

Do not immerse unit for cleaning.

Do not remove or modify grounded power plug. Use only properly grounded outlets to avoid shock hazard. The AC power cord must be changed only at a qualified service shop only. Not rated for use in hazardous environment.

To avoid electrical shock, do not open the unit. Refer servicing to qualified personnel only.

Do not plug or unplug power cord with wet hands. Such action can cause electric shock.

Appropriate safety clothing, glasses, gloves and coats should be worn when operating hot plates, stirrers and stir plates.

Always use appropriate hand and eye protection when handling hazardous chemicals.

Do not use with flammable or combustible chemicals; the top surface and elements can reach the "Flash Point Temperature" of many chemicals.

These hot-plate stirrers are NOT EXPLOSION PROOF. Device contains components which may ignite Fires or explosions.

Always switch off and unplug the power cord from the wall whenever it is not in use.

The construction of this instrument complies with safety regulations currently in force. If not withstanding this, improper use could lead to hazards for the user or a third-party, and/or adverse effects on the laboratory, factory or other equipment. Therefore, the operating instructions must be read and understand by the persons involved before using it.

The following symbol may be used in the product and the corresponding explanation serves as an additional information and safety instruction that you should be aware of:










Warning!

This symbol is intended to alert you of a potential hazard to your personal safety of information stated is not adhered to or procedures are executed incorrectly



CAUTION!

This symbol is intended to alert you of a potential hazard to your personal safety of information stated is not adhered to or procedures are executed incorrectly

	<p>Content indicated inside the "△" mark is intended to alert users to take precaution in such actions. For instance, symbol in left is intended to alert you to the presence of un-insulated "dangerous voltage" within the product's enclosure shock to persons</p>
	<p>Users should avoid actions indicated within the "○" mark. For instance, symbol on left indicates users should not attempt to disassemble the device.</p>
	<p>User must follow instructions indicated within the "○" mark. For instance symbol on left indicates that the device must be unplugged.</p>
	<p>This symbol is intended to alert to the presence of 'Hot surface' and may have a possibility of personal injury if you come in contact with a surface during use or for a period of time after use.</p>
	<p>Do not place device close to inflammable substances. The device may cause dangerous flash fire, sparks, flame and explosion.</p>
	<p>Do not place the device near heating equipment, close to open flames or in direct sunlight. Failure to follow this advice may cause device deformation, fire and malfunction.</p>
	<p>This indicates the connection of the line, in case of the terminal block machine.</p>

This operating manual must always be stored in a place accessible to all people working with this equipment.

If you have questions, which are not or insufficiently answered in this operating manual, please contact your authorized supplier. They will be glad to assist you.

2. INTRODUCTION

Thank you for buying the WIGGENS digital hot-plates / stirrers series. These are general, purpose heating and stirring devices intended for laboratory use for temperatures 50°C to 350°C, stirring speeds to 1500 rpm.

This manual is written for the following WIGGENS digital models:

Model	Heating power	Hot plate dimension	Numbers of Position
WH420	1000W	320×310mm	4

For more detailed information, please refer to the Specifications section

Read this manual thoroughly before attempting to operate the unit. All persons operating this equipment should review the safety precaution & information section in this manual.

he products of WIGGENS ensure safe operation when installed, operated, and maintained according to common safety regulations. This section explains the potential dangers that may arise when operating the instrument and also specifies the most important safety precautions to preclude these dangers as far as possible.

- The operator is responsible for the qualification of the personnel operating the instrument.
- The personnel operating the instrument should be regularly instructed about the dangers involved with their job activities as well as measures to avert these dangers.
- Make sure all persons tasked with operating, installing, and maintaining the instrument have read and understand the safety information and operating instructions.
- When using hazardous materials or materials that could become hazardous, the instrument must be operated only by persons who are absolutely familiar with these materials and the instrument. These persons must be fully aware of possible risks.
- Only qualified personnel are authorized to perform configuration, installation, maintenance and repairs of the instrument.
- Routine operation can also be carried out by untrained personnel who should however be instructed by trained personnel.

If you have any questions concerning the operation of your instrument or the information in this manual, please contact us.

2.1. Disposal



At the end of its service life the instrument is to be disposed of in accordance with the local regulations specified for the disposal of electronic industry waste in an environmentally friendly manner.

2.2. CE Conformity



The products described in the operating instructions conform to the requirements of the following European guidelines:

Low voltage regulations with respect to legal harmonization of the member countries concerning electric devices for use within certain voltage limits.

EMC guideline with respect to legal harmonization of the member countries concerning electromagnetic compatibility.

APPROVALS European	EN61326-1: 2013, 2014/30/EU
	EN61010-1: 2010, 2014/35/EU
	EN50581: 2012, 2011/65/EU

3. UNPACKING AND INSTALLATION

Upon receipt of WIGGENS digital hot-plates, examine the exterior carton for damages. In the event of shipping damage, a claim must be filed with the transportation carrier immediately. Save all packaging for inspection by the carrier.

Carefully unpack the unit and check for completeness. Included in the carton should be the following:

- WIGGENS digital hot-plates /stirrers
- Power cord
- Instruction manual
- QC report
- PT100
- PT100 sensor support set (include holder and support rod)
- Stirring bar

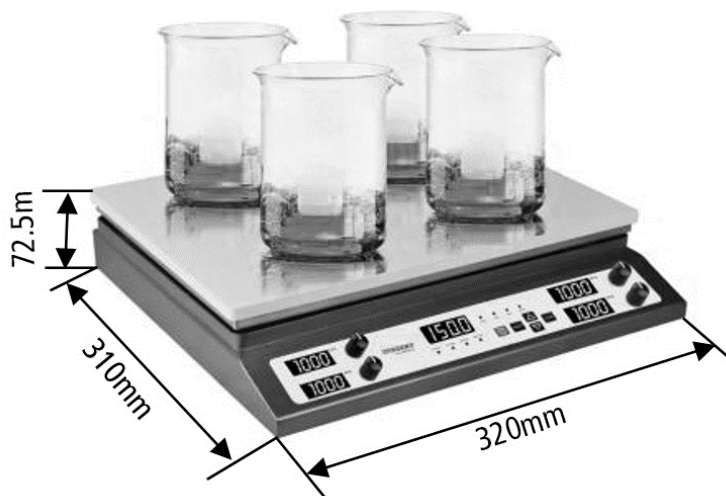
Original packaging until the unit has been shown to be operating properly.

Check on the back of the unit and verify that the unit is rated for the proper voltage in your region.

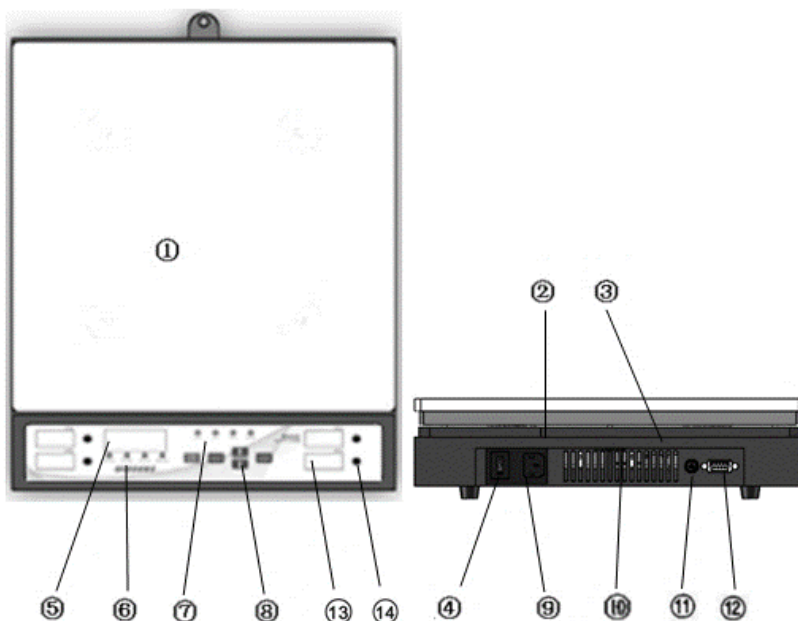
Check that the proper power cord has been received. Locate the serial number and record it in the space provided at the back of this manual

4. PRODUCT DESCRIPTION

4.1. Dimension



4.2. Name of parts



1. The upper board(the heating board)	6. LED State Indicator	11. Pt100 Temperature sensor input port
2. Heating protection board	7. LED Running State Indicator	12. RS-232 Communication board
3. Instrument housing	8. Operation key	13. LED speed Indicator
4. Power switch	9. Power socket and fuse holder	14. Knob
5. LED Temperature Indicator	10. Temperature sensor stand installation holes	

5. OPERATION

5.1. Before operation

Please check the product power code, control machinery power code is set firmly.

This product works well in rated power supply, frequency.



Please put ground connection into right place firmly

*It may cause an electronic shock in case of the malfunction or electrical leakage.

*Please ask to electrical manufacturing company in case there is not a ground connection in outlet

Please set the product in firm and flat place.

Do not set the product there is machinery generates high frequency noise around.

Please take an enough space for an easy test

Position the device at least 45 cm (12 inches) from combustible materials under any conditions.

Do not use solvents and flammables on or near the unit.

Always wear appropriate safety clothing, glasses, gloves and coats when operating hotplate stirrers. Suitable hand and eye protection should be worn when handling hazardous chemicals.

Not recommended for use in highly corrosive atmospheres. Corrosive spills and fumes will damage top and internal components.

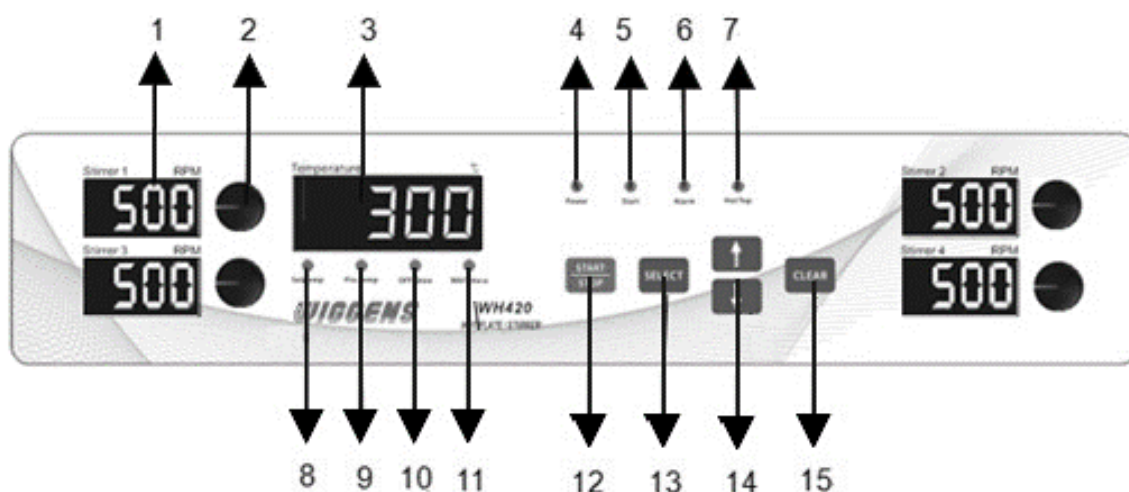
Service and repair must be performed only by qualified professional.



CAUTION!

The protection device may not be working when the machinery do not used in specified ambient environment.

5.2. Front panel functions



1 Front LED panel	6 Alarm Indicator	11 WAIT-Timer mode
2 Control key pad	7 Hot plate top Indicator	12 Start / stop switch
3 LED Indicator for temperature(°C)and timer(min)	8 Setting temperature mode	13 Working mode select key
4 Power Indicator	9 Display actual temperature	14 Adjustment for temperature and time
5 Running Indicator	10 OFF-time mode	15 Clear key for setting mode

Keypad/display	Function/description
LED indicator for temperature and timer	Display the setting temperature, actual temperature, setting time, and remaining time of timer in different working modes.
START/STOP Switch	To start or stop rotation operation in AUTO mode.
Working mode select key	To select the operating mode, switching among Set Temp, Pro. Temp, OFF-Time, and WAIT-Time, the LED light indicator will change according to each press of this key.
Adjustment for temperature and time	To increase or decrease the temperature or time value in the setting modes.
Clear key for setting mode	Clear the value (temperature or time) in current setting mode.
Setting temperature mode indicator	Can set the temperature set point when lighted on
Actual temperature	Lighted on when the actual temperature of the hot plate, in the case PT-100 sensor is connected, the current solution temperature measured by the PT-100 sensor is displayed.
OFF-time	Lighted when setting the OFF-time.
WAIT-time	Lighted when setting the WAIT-time.
Power indicator	Lighted when the power is turned on
Running indicator	Lighted when heating

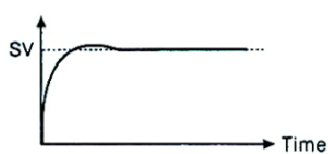
Alarm indicator	Flashing when there is an alarm signal, together with an alarm sound
Hop top indicator	Flashing when temperature of the hot plate top is higher than 60°C.
Speed Display	Display the set speed
Speed Control Knob	Set speed

5.3. Timer functions

The product has three types of working modes, OFF mode, OFF-time mode, and WAIT-time mode. Please check the chart on next page for the concept of the operation modes. When the timer is setting to zero, the display of time will display "OFF". The maximum time can be set is 99:59, the left two numbers indicate hour, and the right two numbers indicate minute.

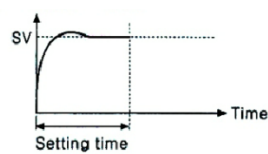
1. When both OFF-time and WAIT-time are in "OFF" state, the unit is working in continuous heating mode: Use the Start/Stop Switch to start and stop heating, the hot plate will get to the set point controlled by PID program running in the microprocessor in the machine.
2. When the WAIT-time is set to "OFF", and the OFF-time is not zero. The machine will operate at the OFF-time mode. It starts to heat when the start key is pressed, and stops when the time reaches the setting time of OFF-time.
3. When the WAIT-time is not zero, regardless of whether the OFF-time is OFF or not, the machine will operate at the WAIT-time mode, which will count time from the point the temperature reach 2K less than the set point temperature, and keep on calculating the time when the temperature is stable at the set point. When the set time is reached, the heating will stop automatically.

1. OFF



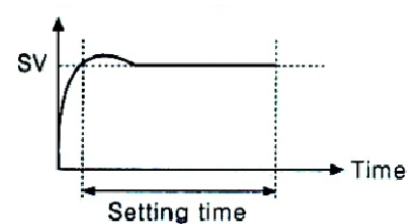
It starts the drive and controls at the same time and keeps this work until the power is cut off.

2. OFF-Time



It starts the drive and controls at the same time, stops the control during the setting time and it stops the control after the setting time.

3. WAIT-Time



5.4. With external temperature sensor

Sensor switching function:

This product can control the temperature with standard of inner and external temperature sensor (option).

In a standard state, it is controlled by standard temperature sensor of the inner hotplate

When the external temperature(option) is used, please connect it when the power supply is turned off

In case of connecting the external temperature sensor(option) the temperature control is committed by the external temperature sensor. (It cannot be controlled by the inner temperature sensor.)

In case of taking off the external temperature sensor, the inner temperature sensor controls the temperature.






The inner and external temperature sensor cannot be used at the same time, In case of using at the same time, the external temperature sensor controls the temperature.





Please see the figure given below for the concept of external temperature control (the figure is with model WH420 with magnetic stirrer).



5.5. Pt100 temperature sensor calibration (Suitable for WH420)

The Pt100 temperature sensor can be connected to measure and control the heated liquid temperature. The sensor has been calibrated in factory. If the measured temperature is slightly different from the temperature standard you are using, a calibration is also possible with the following steps.

1. Plug in the PT100 sensor, then turn on the main power, press  10 times to enter the calibration model (All LED lights under the digital display will be lighted up), and digital display panel displays "S1", "S1" means Set 1(The first setting temperature for calibration).
2. Put the PT100 sensor in the temperature environment of T1, waiting for the temperature equilibrium, press the  , set the value of T1, press and hold the  button, observe the value change on the display, release the button when fluctuation is less or equal to ± 1 .
3. Press the  on the operation panel, the display shows "S2".

4. Put the PT100 in the temperature environment T2, waiting for the temperature equilibrium, press the  , set the value of T2, press and hold the , set the value of T2, press and hold the  button, observe the value change on the display , release the button when fluctuation is less or equal to ± 1 .
5. Press the  on the operation panel, complete calibration.



CAUTION!

Before the calibration, please make sure you can provide two temperature standard points between 20 to 200 °C, and the difference between the two points should be larger than 50°C.

5.6. Using the RS-232 communication connection

The product provides a RS-232 connection for temperature monitor, the actual temperature data will be output through the RS-232 interface every 3 seconds. The data can be obtained with the Hyper terminal software in Windows PC or any other software which can acquire data with the RS-232 connection.

5.7. Stirring functions

Models WH420 are digital multi-position (4-positions respectively) stirrers with heating function.

1. The unit main power can be turned on by the switch on the back side of the unit.
2. The LED display should show the previous using value for each position.
3. Place beaker(s) with liquid (with magnetic bar immersed) onto the selected plate position.
4. Turn the Speed Control Knob to set the stirring speed.
5. Press the Speed Control Knob again to start stir. When the stirrer is running, the small lighting point on the LED will be rolling from left to right.
6. The rotation speed can also be adjusted by turning the Speed Control Knob when the stirrer is running.
7. Repeat the procedures until all positions are set properly. Each position can be set separately.
8. Press the Speed Control Knob when it is working, it will stop stirring.
9. Press and hold the Speed Control Knob for 5 second while the stirrer is on will turn off the stirrer of the position. Press and hold the Speed Control Knob for 5 second when the stirrer is off will turn on the stirrer.

6 CARE AND MAINTENANCE



Warning!

Disconnect the unit from the power source before attempting any cleaning or maintenance procedures. The hot-plate should be cooled first before attempting to clean it.

After each use, make sure the unit is powered off completely.

If not used for some time, unplug the unit from the main power supply.

During and after heating operation, check the safety lights and temperature reading to ensure no one gets burned accidentally.

After each use, wipe the unit with a soft cloth. Do not immerse or pour liquid over the unit as electrical shock may occur. Clean up any spills immediately.

7. TROUBLE-SHOOTING GUIDE

Problem	Checking/handling
Power supply does not working	Please check the blackout, breaker etc and the electricity coming to the power outlet. Please check the power plug is put into the outlet firmly. Please check the power switch on the body is ON.
Unit shows no sign of heating and /or stirring	Switch on the power supply. Switch on the unit. Replace fuse.
The setting of temperature does not work	Please check the temperature range when using different sensors, when using the internal sensor, the upper limit of the hot plate temperature is 300°C, when using the external temperature sensor, the upper limit of the liquid temperature is 300°C.
The temperature Control does not working	When the external sensor is used, please check the sensor position is set properly. Please check each setting value and timer and the mode the unit is working in. Please check there is machinery generates high frequency noise around the product.
It cannot be Communicated well.	Please check the connection of the RS-232 is firm. Please check the RS-232 cable. Please check the software you are using is working properly, you can check it with the Windows Hyper terminal at any time when the unit is running.
Power switched ON but no stirring action.	Turn the control knob clockwise to increase rotation speed. Return unit. Contact dealer or refer to section "Guidelines for Returning Units for Repair".

If it cannot be repaired with the above guide, please stop the using, unplug the power plug and request to the purchasing agent.

8. SPECIFICATIONS

Name	WH420
Power supply	220V AC 50/60Hz
Allowable voltage range	(90~110% of the power supply)
Current consumption	Max. 1100 VA
Heater capacity	Approx. 1000W
Indication method	LED digital indication and Knob LED state and warming indication
Input specifications	Thermocouple K(CA):Inner sensor PT 100 probe: External sensor
Set range of temperature	50~300°C for Surface temperature control 40~300°C for External sensor control (setting resolution 1°C)
Control method	ON/OFF control, PID control
Interface	RS-232
Indicating accuracy	F.S \pm 1%
Safety device	Thermostat, Circuit protection
Setting method	Front panel key board
Proportional band width(P)	0.0~100.0%
Integral time(I)	1~9959min
Differential time(D)	1~9959min
Sampling cycle	0.5sec
Speed range (rpm)	150 to 1500
Number of Stirring Positions	4
Maximum stirring volume for each position	50 to 2000mL
Top plate dimension (mm)	(160×155mm) × 4
Top plate material	Aluminum coated with ceramic
Overall dimensions(mm)L×W×H	405×320×80
Ambient temperature	5~35°C
Storage temperature	-10~50°C(at non-freezing status)
Ambient humidity	35~85%RH
Weight	7.8Kg

The specification and dimensions can be change without previous notice in order to improve the product.

9. GENERAL INFORMATION

9.1. Warranty

WIGGENS Labortechnik GmbH supplies this equipment with 2-year warranty against manufacturing defects from the date of purchase. This warranty is valid only if the unit has been used in accordance with the instructions in this manual and for its intended Purpose. WIGGENS Labortechnik GmbH shall not be responsible for consequential damage, or damage resulting from the abuse or misuse of this equipment. WIGGENS Labortechnik GmbH liability shall be limited to the repair or replacement of the unit or refund of the purchase price at Wiggens 's discretion.

If repair or adjustment is necessary and has not been the result of abuse or misuse within the warranty period, please return, freight prepaid, and a correction will be made without charge.

Out of warranty items will be repaired on a charge basis.

For your own records, please fill in the following information. This information will be required in the event that service becomes necessary:

MODEL NO:

SERIAL NO:

DATE OF PURCHASE:

9.2. Exclusions To Warranty

The warranty shall not apply and not be limited to defects resulting from:

Improper or inadequate maintenance by the customer;

Repair made to product by a person other than WIGGENS Labortechnik GmbH or its duly authorized service representative;

Use of replacement parts that are obtained from a party who is not an authorized dealer of WIGGENS Labortechnik GmbH

Misuse (including use inconsistent with written operating instructions for the product), mishandling, contamination, overheating, unauthorized modification or alteration of the product by any customer or third party;

Operation outside of the environmental pollution, natural disasters, such as fire, lightning, earthquake, tsunami, and other acts of God;

Inaccurate or insufficient information on warranty card or loss of warranty card

In no event shall WIGGENS Labortechnik GmbH be liable to any party for any direct, indirect, special, incidental, or consequential damages, or for any damages resulting from loss of use or profits, anticipated or otherwise, arising out of or in connection with the sale, use or performance of any products, whether such claim is based on contract, tort (including negligence), any theory of strict liability or regulatory action.

9.3. Guidelines for Returning Units for Repair

A return Authorization Number must be obtained from WIGGENS Labortechnik GmbH or its Authorized Distributor before returning the items for any reason. When applying for authorization, please include data regarding the reason the items are to be returned.

Packing the instrument for repair should be done using original packaging or materials, with information about any fault identified.

Shipment damage as a result of inadequate packing is your or your distributor's responsibility, whoever is applicable.

9.4. Disclaimer

Due to continuing improvements, product specifications are subject to changes.

All information and specifications listed in this manual are current at the time of typesetting and are subject to change without notice. Any change will be incorporated into future editions.

While the information and data are correct to the best of our knowledge and belief, they are not guaranteed to be so. We will not guarantee that reliance on such information and data will ensure compliance with any applicable laws and regulations.

9.5. Contact /Technical Service

If your device is not working properly:

⇒ Please inform *WIGGENS* Instruments by using our contact information.

You have contacted *WIGGENS* Instruments?

⇒ Copy and complete the Confirmation of condition of unit from these operating instructions.

⇒ Please repack the device appropriately for transport and send to *WIGGENS* Instruments together with the Confirmation of condition of unit.

Our contact details

WIGGENS GmbH

Add: Gässlesweg 22-24, 75334 Straubenhardt, Germany

Tel.: 0049 7248 4529088

Wiggens Co., Ltd.

Room 426, Hall A, Office Building M8, No.1 Jiuxianqiao East Road, Chaoyang District, Beijing 100015, China

Tel: +86 400-809-2068

Fax: +86 400-809-2068-112

info@wiggens.com

service@wiggens.com

www.wiggens.com

Confirmation of condition of unit

In the case of repair, copy and complete the Confirmation of condition of unit and send it to *WIGGENS* Instruments.

1. Details about the unit

Product number

Serial number

Reason for repair

2. Has the device been cleaned, decontaminated/sterilized?

Yes

No

3. Is the unit in a condition which does not represent any health threats for the staff of our service department?

Yes

No

If not, which substances has the unit come into contact with?

4. Legally binding declaration

The customer is aware of being legally liable to *WIGGENS* Instruments for any damages arising from incomplete and incorrect information.

Date

Signature

Company stamp

Please Note

The shipper is responsible for the return of the goods in well-packed condition, suitable for the mode of transport.

Sender information

Name

Company

Department, research group Street

Zip code, city

Country

Phone

E-mail



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