

OPERATING MANUAL

Overhead Stirrer

WOHS-10 Pro / WOHS-15 Pro



WIGGENS
THE MAGIC MOTION

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. Intended Use

To fulfill its principle task, reliable and accurate stirring process, the Overhead Stirrers WOHS-10 Pro / WOHS-15 Pro possess a brushless DC motor and latest micro-processor technology. It is easy to use and suitable for small batches, long-term experiments and programmable operations. Even large volume and medium viscosity samples are also appropriate to be used with the Overhead Stirrers. Voltage fluctuations are not a concern due to the universal power supply which offers 100-240 volts.

Furthermore, the bright digital display, smart and convenient on-touch control, the totally enclosed and compact metal casing, a spinning chuck protection, precise speed adjustment and time saving impeller adjustments are features of the Overhead Stirrers WOHS-10 Pro / WOHS-15 Pro.

2. Operator Responsibility

Use

For mixing/stirring liquids with low to medium viscosity by various stirring tools.

Range of use (indoor use only)

- Laboratories
- Pharmacies
- Schools
- Universities

This instrument is suitable for use in all areas except:

- Residential areas
- Areas that are connected directly to a low-voltage supply network that also supplies

Residential areas

The safety of the user cannot be guaranteed:

- If the instrument is operated with accessories that are not supplied or recommended by the manufacturer
- If the instrument is operated improperly or contrary to the manufacture's specifications
- If the instrument or the printed circuit board are modified by third parties.

The 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	EN61326-1: 2013, 2014/30/EU
European	EN61010-1: 2010/A1:2019, 2014/35/EU

2.3. Technical Specifications

Model	WOHS-10 Pro	WOHS-15 Pro
Order No.	W3042110	W3042115
Speed range [r.p.m]	40~2000	40~2000
Setting accuracy speed [r.p.m]	1	1
Deviation of speed measurement $n > 300\text{rpm}$	$3 \pm \%$	$3 \pm \%$
Speed Display	TFT display	TFT display
Clockwise or counterclockwise of stirring	Yes	Yes
Speed setting	Touch key and Turing knob	
Time setting range	0~99hr59min59sec	0~99hr59min59sec
Temperature measuring range	-10~350	-10~350
Temperature measurement resolution	0.1	0.1
Working status indicator	Standby (blue) , Running (green) , Alarm (red)	
Power [W]	30	60
Motor principle	Brushless DC motor	Brushless DC motor
Stirring element fastening	Keyless chuck, easily for install and replace the shaft	
Chuck range diameter [mm]	0.5~10	0.5~10
Hollow shaft, inner diameter [mm]	10.2	10.2
Fastening on stand	Extension arm	Extension arm
Housing material	Cast aluminum coating / thermoplastic polymer	
Power supply	100~240VAC,50/60Hz	100~240VAC,50/60Hz

All measurements have been carried out at the stated voltage, frequency, and an ambient temperature of 25°C.

Technical changes without prior notification reserved.







WIGGENS Order Numbers consist of the Basic Order Number (BON) and the Order Number Addition (ONA) which explains different characteristics of the product that can vary from country to country. Order Numbers as stated on the product label and box label are stated as Full Order Numbers (FON), consisting of the BON followed by the ONA. For a full explanation of the ONA of your product, please ask your local WIGGENS support or refer to the Order Number Guide in the WIGGENS General Catalog.

3. Safety Instructions



3.1. Explanation of Safety Notes







In addition to the safety warnings listed, warnings are posted throughout the operating manual. These warnings are designated by an exclamation mark inside an equilateral triangle. "Warning of a dangerous situation (Attention! Please





Symbol	Additional term / Description
	The danger is classified using a signal word. Read and follow these important instructions for averting dangers.
	Warning: Describes a possibly highly dangerous situation. If these instructions are not followed, serious injury and danger to life could result.
	Caution: Describes a possibly dangerous situation. If this is not avoided, slight or minor injuries could result. A warning of possible property damage may also be contained in the text.
	Notice: Describes a possibly harmful situation. If this is not avoided, the product or anything in its surroundings can be damaged.

3.2. For your protection

- Make sure you read and understand all instructions and safety precautions listed in this manual before installing or operating your instrument.
- Keep the operation instructions in a place where they can be accessed by everyone

	<p>Warning!</p> <p>-Because the options for combining products, tools, stirring vessel, experiment and medium are nearly endless, user safety cannot be ensured simply with design requirements on the part of the product. For this reason, it may become necessary for users to take other precautionary safety measures. For example, glass device or other stirring vessels that are sensitive to mechanical stress can be damaged or shattered by an imbalance, increasing the speed too quickly or too little distance between the stirring element and the stirring vessel. Users can suffer serious injury from glass breakage or from the freely rotating stirring element.</p> <p>-Uncontrolled reactions can be triggered by mixing the heated material insufficiently or by the energy generated by selecting a speed that is too high. In case of these and other increased operational hazards, users must take additional appropriate safety precautions (e.g. shatter protection). In any case, when using critical or hazardous materials in your processes, WIGGENS recommends to use additional appropriate measures to ensure safety in the experiment. For example, users can implement measures that inhibit fire or explosions or comprehensive monitoring equipment.</p> <p>-Make sure the product is checked for proper condition regularly (depending on the conditions of use). Regularly check (at least every 2 months) the proper condition of the mandatory, warning, prohibition and safety labels.</p> <p>-Connect the instrument to a power socket with earthing contact (PE-protective earth)!</p> <p>-The power supply plug serves as a safe disconnecting device from the line and must always be easily accessible.</p> <p>-Do not stay in the area below the instrument.</p> <p>-Never operate damaged equipment.</p>
	<p>Warning!</p> <p>-Never operate instruments with damaged mains power cables.</p> <p>-Observe all warning labels.</p> <p>-Never remove warning labels.</p> <p>-Repairs are to be carried out only by qualified service personnel.</p> <p>-Always turn off the instrument and disconnect the mains cable from the power source before performing any service or maintenance procedures, or before moving the instrument.</p>

	<p>Warning!</p> <p>This is not an explosion proof stirrer. Do not use with any highly flammable or explosive materials.</p>
	<p>Warning!</p> <p>The stirrer must be securely fixed to a stable support, mounted to a stand using a heavy duty clamp, which must be provided by WIGGENS. If other stands or clamps are used, ensure that they are stable so that it will not fall down.</p>
	<p>Warning!</p> <p>-Spinning paddles or impellers can cause serious personal injuries. Operators must take extreme care and good judgment when mixing at any speed. All mixing paddles and impellers must be in good condition with straight shafts. If the stirrer vibrates at high speed, check the paddle shaft for damage and repair or replace it.</p> <p>-Also, extreme care must be taken when mixing chemicals, to ensure that no chemicals are splashed outside the mixing vessel, and when changing to faster mixing speeds.</p>
	<p>Warning!</p> <p>-Ensure that the mixing impeller does not contact the containment vessel.</p> <p>-Keep the unit dry and do not immerse any part, except the mixing paddle into any liquids.</p> <p>-Protect yourself from splashes.</p>
	<p>Warning!</p> <p>-Ensure that no loose clothing, jewelry, or hairs are entangled in any rotating parts. A fast spinning chuck can cause injury to the operator.</p> <p>-Only process media that will not react dangerously to the extra energy produced through processing. This also applies to any extra energy produced in other ways, e.g. through light irradiation.</p> <p>-Process pathogenic materials only in closed vessels under a suitable fume hood.</p> <p>-When in an emergency, disconnect the main power plug.</p> <p>-The voltage stated on the type plate must correspond to the mains voltage.</p> <p>-Please observe the permitted speed for the stirring element. Never set higher speed.</p> <p>-Make certain that the unit is set at the lowest speed before commissioning; otherwise, the unit will begin running at the speed set in last operation. Gradually increase the speed.</p>
	<p>Warning!</p> <p>The operation of a free rotating shaft end is dangerous.</p>

	<p>Warning!</p> <p>Wear your personal protective equipment in accordance with the hazard category of the medium to be processed, otherwise there is a risk of:</p> <ul style="list-style-type: none"> - splashing of liquids - projectile parts - body parts, hair, clothing and jewelry getting caught.
	<p>Warning!</p> <p>Beware of the risk of:</p> <ul style="list-style-type: none"> - flammable materials - glass breakage as a result of mechanical shaking power. <p>Reduce the speed if:</p> <ul style="list-style-type: none"> - the medium splashes out of the vessel because the speed is too high - the instrument is not running smoothly - the instrument begins to move around because of dynamic forces - an error occurs.
	<p>Warning!</p> <p>Do not touch rotating parts during operation!</p>
	<p>Warning!</p> <ul style="list-style-type: none"> -There may be electrostatic activity between the medium and the output shaft which could cause a direct danger. -After an interruption in the power supply or a mechanical interruption during a stirring process, the unit does not restart automatically. -It is important to note that the surfaces of the motor (cooling fins) and certain parts of the bearing may get very hot during operation. -Never cover the cooling fins on the motor or on the instrument. -Avoid knocking and impacting on the lower end of the shaft and the chuck gear teeth. Even minor, invisible damage can lead to imbalance and uneven shaft action -Imbalance of the output shaft, the chuck and in particular the stirring tools can lead to uncontrolled resonant vibrational behavior of the instrument and the whole assembly. Glass apparatus and stirrer containers can be damaged or shattered by this. It can cause injury to the operator, also can damage the rotating stirring tool. In this case exchange the stirring tool for one without imbalance or remedy the cause of the imbalance. If there is still imbalance, return it to the dealer or the manufacturer along with a description of the fault. -If the instrument is operated too long in overload or if the ambient temperature is too high, the instrument will stop running for a period of time.

3.3. For protection of the equipment

- All operators must be familiar with the stirrer and should read this entire manual.
- You have received a product designed for industrial and experimental use. Nevertheless, avoid strikes to the housing, vibrations, damage to the operating-element panel, and contamination.
- Make sure that the mains power supply has low impedance to avoid any negative effects on instruments being operated on the same mains.
- Do not expose the unit to sunlight
- Sudden drops may cause damage in the interior of the instrument.
- Transport the instrument with care.
- Press the power button to interrupt the stirrer, rather than disconnect the main power plug directly.

4. Operating Procedures

4.1. Environmental Operating Conditions

The Overhead stirrer must operate in the following conditions:

- Indoors
- Altitudes up to 2000 meters
- Temperatures from +5°C to +40°C
- Maximum relative humidity 80% for temperatures up to +31°C, linear decrease down to 50% relative humidity at a temperature of +40°C
- Max. mains fluctuation of $\pm 10\%$ are permissible
- Over voltage category II

4.2. Installation

4.2.1. Installing the Stand and Stirring Unit

Installation Steps



- Install the overhead stirrer onto the stand. Make sure that the clamp is tightly fixed onto the support bar and that the shaft of the stirring unit is tightly fixed onto the clamp.
- Connect the stirrer to the WIGGENS power supply.
- Connect the power supply to a power socket with earthing contact.

4.2.2. Impeller Attachment

- Loosen the clamp connected to the support bar and raise the stirring unit to the far end of the support bar.
- Tighten the clamp again and use the chuck key to open up the chuck inlet.
- Insert the impeller shaft into the open chuck and adjust the impeller to the desired height. The hollow housing allows the impeller shaft to come through the top of the stirrer if necessary.
- Tighten the chuck manually until the impeller shaft hangs loosely in the chuck.
- Use the chuck key to gradually tighten the chuck from all sides and make sure that the impeller is as vertical as possible.
- If necessary adjust the height of the stirrer again by loosening the clamp connected to the support bar. Make sure to tighten the clamp as much as possible after adjusting the height and before operating the unit.

4.2.3. The dimensions of the Overhead stirrer



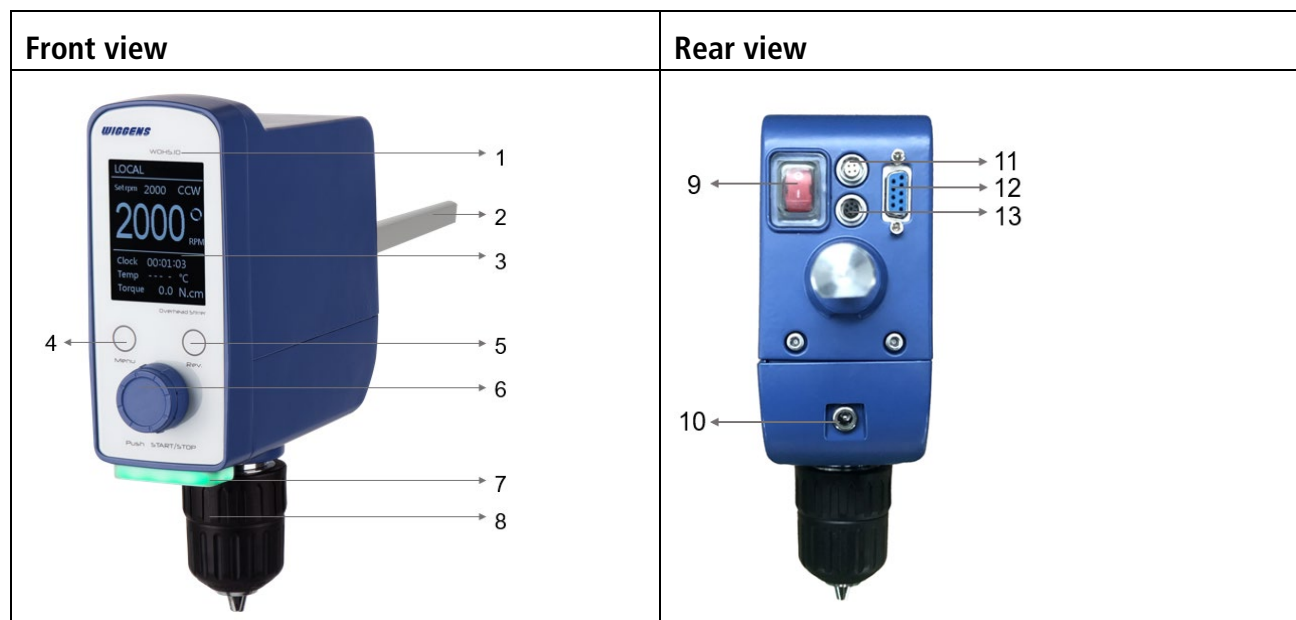
Caution:

- Operating a freely rotating impeller shaft through the top of the stirrer is not safe. Do not allow the impeller shaft to touch or extend through the rubber gasket while the motor is powered on, the gasket is for sealing purposes only. Tighten the chucks outer ring by hand and fasten it.
- If the chuck is removed without the supplier's permission, any damage will be excluded from the warranty.

5. Operating procedures

5.1. Overall introduction

Overhead stirrer



1	Model name	WOHS-10 Pro or WOHS-15 Pro
2	Extension arm	In order to fix the stirrer to the support
3	Display screen	TFT display with vivid luminance is easy to read, even from a long distance.
4	Menu Key	Use this key to switch from working mode, speed setting and stirring direction
5	Rev. Key	Reset the torque at the current speed
6	Turning knob	Pressing the knob: Start or stop the overhead stirrer. Turning the knob: To adjust the parameters and control mode.
7	Working status indicator	Standby (blue) , Running (green) , Alarm (red)
8	Keyless chuck	allow to quickly and easily remove the stirring shaft without any tools. Clamping range: 0.5-10mm
9	Main switch	
10	Power supply	
11	Socket for temperature measurement	
12	Interface RS232 / RS485	
13	Socket for Analog Input / Output	

5.2 Power connection



Caution:

- Only connect the unit to a power socket with earthing contact (PE – protective earth)!
- The power supply plug serves as safe disconnecting device from the line and must be always easily accessible.
- Never operate equipment with damaged mains power cables.
- Regularly check the mains power cables for material defects (e.g. for cracks).
- We disclaim all liability for damage caused by incorrect line voltages!

5.3 Switching on the Overhead stirrer

Switching on:

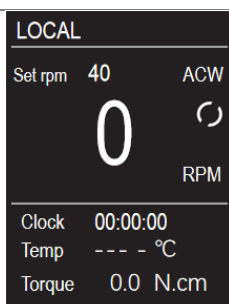
- Turn on the mains power switch.



The unit performs a self-test.

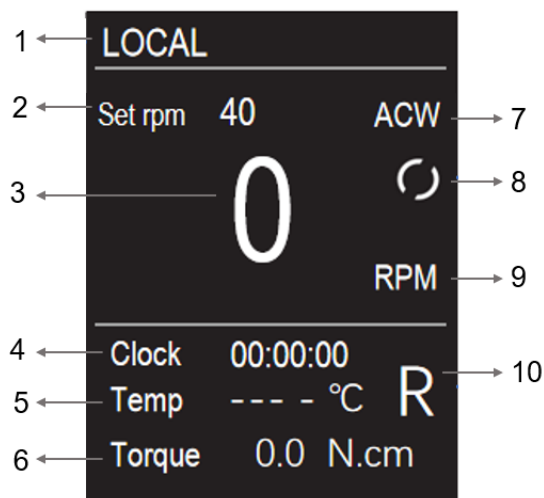
Then the software version (example: V 2.0) appears.


The display "OFF" indicates the unit is ready to operate.



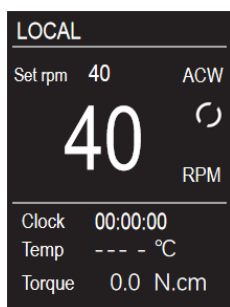
The left interface indicates the unit is ready to operate.

5.4 Display symbols and their meaning



1	>LOCAL<	Control model included LOCAL, ANA.U, ANA.I, FOOT, SF.RPM, LIGHT, AUTOSTART, BEEP, TIME, REMOTE and TR.CORRECTION mode
2	>Set rpm<	Set speed
3	>0<	Actual speed
4	>00:00:00<	Clock or timer
5	>---.-<	Sample temperature
6	>0.0 N.cm<	Torque
7	>ACW<	Stirring direction, ACW or CCW
8		Speed indicator
9	>RPM<	Unit of speed
10	>R<	Remote control

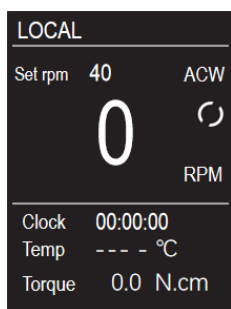
5.5 Switching on / Start – Stop



Start:

- Press the turning knob

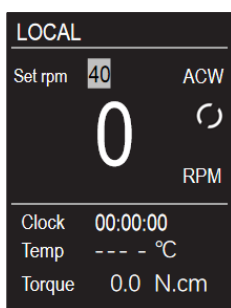
The actual incubator is displayed on the Touch Screen



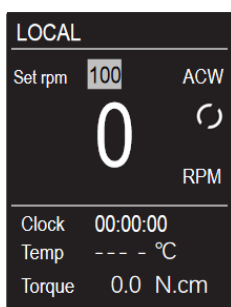
Stop:

- Press the turning knob again
The actual speed indicates "0"

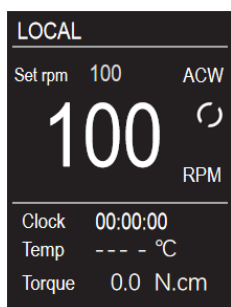
5.6 Setting speed



- Press Menu key for one time, Set speed is selected

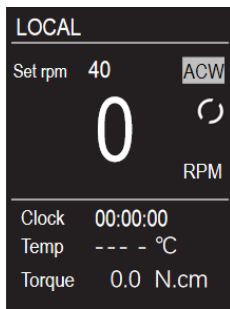


- Change the speed by turning the Knob

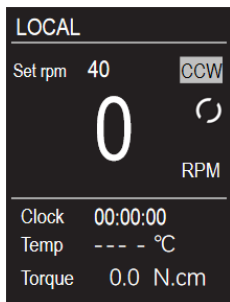


- Press the turning knob to start the stirring directly
- Back to the main interface after press Menu key for three times

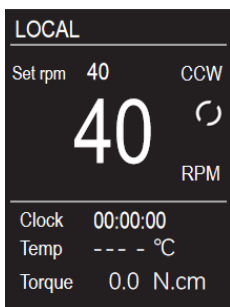
5.7 Setting the stirring direction ACW / CCW



- Press Menu key for two times, Stirring direction is selected



- Change the stirring direction by turning the Knob

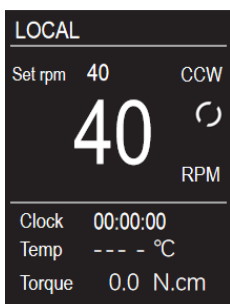


- Press the turning knob to start the stirring directly
- Back to the main interface after press Menu key for two times

5.8. Menu

5.8.1 Menu – LOCAL

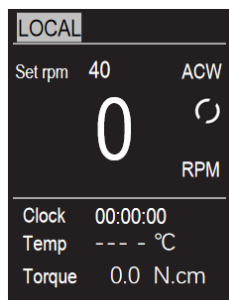
keypad control mode (manual operation)



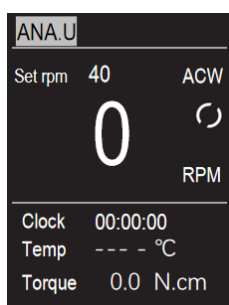
The default control mode is LOCAL after restart the unit

5.8.2 Menu – ANA.U

Remote control mode (operation via personal computer), voltage range from 0 to 10V, corresponding set speed from 40 to 2000RPM, and the speed can not be set via the keypad in this mode.



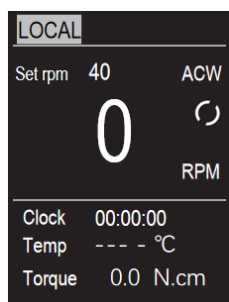
- Press Menu key for three times, working mode is selected



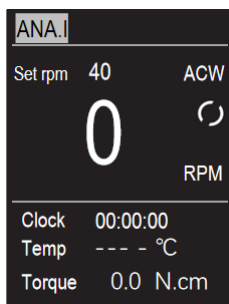
- Change to ANA.U by turning the Knob
- Back to the main interface after press Menu key for one time

5.8.3 Menu – ANA.I

Remote control mode (operation via personal computer), Current range from 0 to 20mA, corresponding set speed from 40 to 2000RPM, and the speed can not be set via the keypad in this mode.



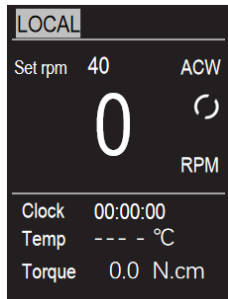
- Press Menu key for three times, working mode is selected



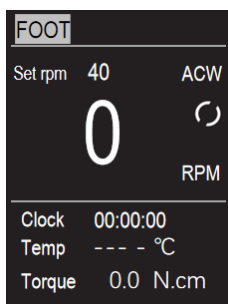
- Change to ANA.I by turning the Knob
- Back to the main interface after press Menu key for one time

5.8.4 Menu – FOOT

FOOT: Control via foot pedal (speed can't be set by the keypad in this mode) Corresponding set speed from 40 to 2000RPM.



- Press Menu key for three times, working mode is selected

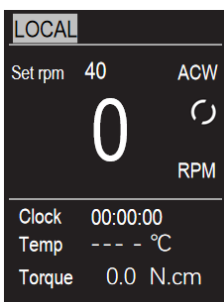


- Press Menu key for two times can be set speed
- Change the speed by turning the knob
- Back to the main interface after press Menu key for one time

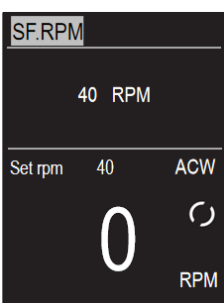
5.8.5 Menu – SF.RPM

SF.RPM: Set a safety speed value.

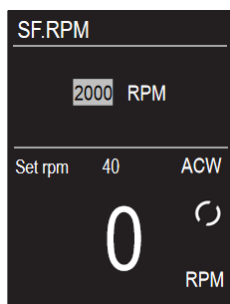
In all the modes (LOCAL, ANAV, ANAI), the set speed value will be limited below the safety speed value.



- Press Menu key for three times, working mode is selected



- Press Menu key for one times can be set safe speed
- SF.RPM: The Maximum safe speed range is 40-2000RPM

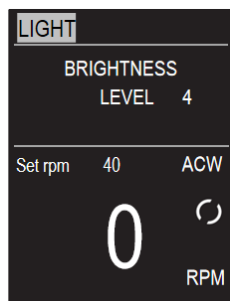


- Press Menu key for one times can be set safe speed
- Change the coefficient by turning the knob

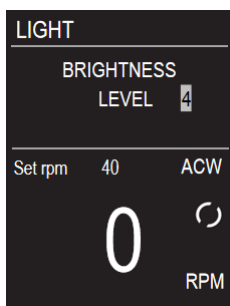
- Back to the main interface after press Menu key for one time

5.8.6 Menu – LIGHT

LIGHT:Adjust the brightness of working status indicator. There are 11 levels of this feature setting, each level represents a different level of brightness.



- Press Menu key for three times, working mode is selected

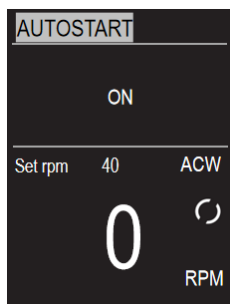


- Press Menu key for one times can be set
- Change level by turning the knob

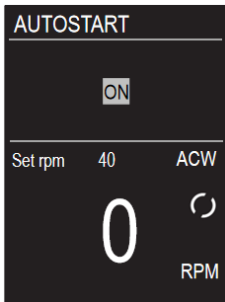
- Back to the main interface after press Menu key for one time

5.8.7.Menu – AUTOSTART

AUTOSTART:When the device runs unexpectedly and the power comes back, the device automatically starts and restores the previous working state. (The premise is that the function is turned ON)



- Press Menu key for three times, working mode is selected

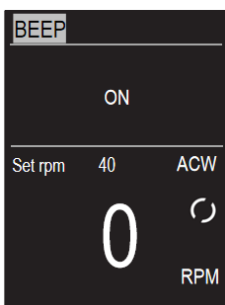


- Press Menu key for one times can be set
- Turn the button and adjust ON/OFF

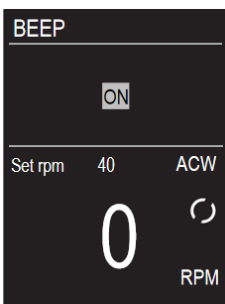
- Back to the main interface after press Menu key for one time

5.8.8.Menu – BEEP

BEEP: This function can set the button tone ON or OFF.



- Press Menu key for three times, working mode is selected

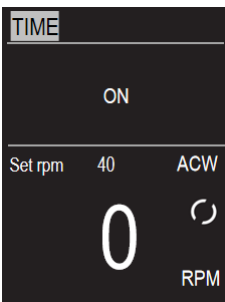


- Press Menu key for one times can be set
- Turn the button and adjust ON/OFF

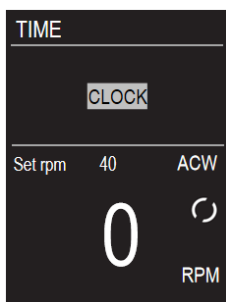
- Back to the main interface after press Menu key for one time

5.8.9.Menu – TIME

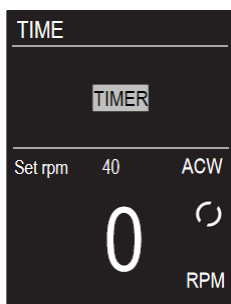
TIME: This mode has two functions, is CLOCK and TIMER



- Press Menu key for three times, working mode is selected



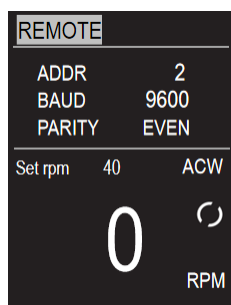
- **CLOCK:** This function is used for timing, that is, to record the time the device has been working
- Press Menu key for one time can be set
- It is visible on the main screen (LOCAL)



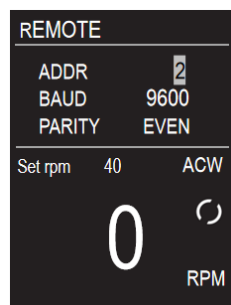
- **TIMER:** This function is used for timing, that is, set a running time for the device. (Time range: 00:00:00-99:59:59)
- Turn the knob for adjustment TIMER
- On the LOCAL screen, you can set the TIMER
- Press the Menu key three times to set the HOUR
- Press the Menu key four times to set the POINTS
- Press the Menu key five times to set the SECONDS
- Press knob is OK

5.8.10. Menu – REMOTE

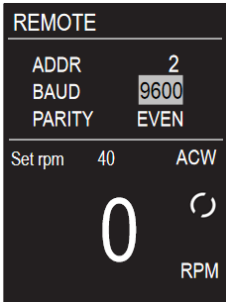
REMOTE: Remote control via RS232 or RS485 interface



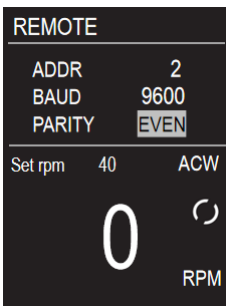
- Press Menu key for three times, working mode is selected



- **ADDR:** When remote communication, the equipment communication address. Address range 1-250
- Press Menu key for one time can be set address
- Change the address by turning the knob



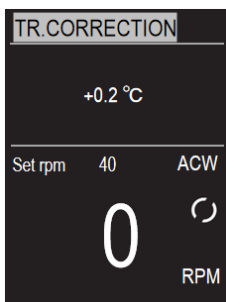
- BAUD:Communication Porter rate.(4800 9600 19200 38400)
- Press Menu key for one times can be set BAUD
- Change the BAUD by turning the knob.



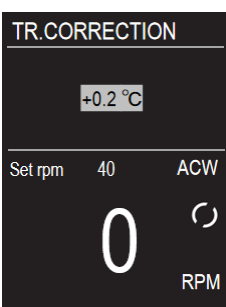
- PARITY:verification mode. (NONE ODD EVEN)
- Press Menu key for one times can be set PARITY
- Change the PARITY by turning the knob
- Back to the main interface after press Menu key for one time

5.8.11.Menu – TR.CORRECTION

TR.CORRECTION:This display interface only appears when the Pt100 is inserted.



- TR.CORRECTION:Temperature sensing calibrator.(Range -10 °C -- +10°C)



- Press Menu key for one times can be set temperature
- Change calibration value by turning the knob
- Back to the main interface after press Menu key for one time



Caution:

Make sure the stirrer is securely mounted as specified in the installation instructions. Ensure the mixing paddle or impeller is securely attached to the desired position. The stirrer is now ready for use to mix liquids and liquid/solid solutions. Appropriate impeller and container specifications must be determined by the operator, ensuring that all safety instructions are followed.

5.9 Sample temperature measurement

The shield of the connecting cable is electrically connected to the plug housing and the sensor tube.

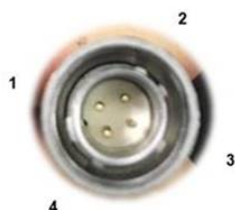


Notice:

Use shielded cables only.

The shield of the connecting cable is electrically connected to the plug housing

Resistance measurement of external temperature sensor



Resistance between Pin 1 and Pin 2 is about $107\ \Omega$ (at 20.0°C)

Resistance between Pin 1 and Pin 4 is about $107\ \Omega$ (at 20.0°C)

Pin 3 is free

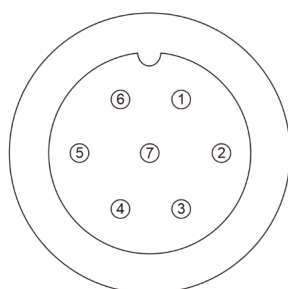
5.10. External Control

Besides the on-touch control, the WOHS-10 PRO / WOHS-15 PRO can also be remotely controlled.

For remote control there are two operating methods available:

5.10.1. Analog Input / Output Control:

Use 0-20mA or 0-10V signal to drive the stirrer (It can also be connected to a pedal switch). Please refer to the pin assignment as following (this port is only for testing and calibration):



1: Input ground

2: Input 4-20mA (0-2000 RPM)

3: Input 0-10V (0-2000 RPM)

4: Input Foot

5: Output 0-10V (0-2000 RPM)

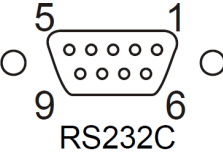
6: Output 0-10V (0-200 N·cm)

7: Output 0-10V (-50°C-350°C)

5.10.2. RS-232 communication control:

Communication with a PC or a superordinated data system allows the device's operating status to be viewed on the screen. The instrument can be connected to a PC through 9-pin port (DB-9), it can be plug directly to the PC's available USB connection. The RS-232 interface ports are available at the same time which provide a connection for the device to a personal computer or terminal.

Pin allocation

	RS232
	2:Tx
	3:Rx
	5:GND

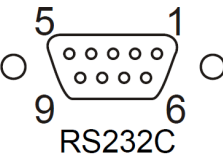
RS-232 Control:

Item	Input / output	Content of "#"	Meaning	Remarks
Set the equipment parameters				
Set speed	out_sp_01 ##### └─┐ 			

5.10.3. RS-485 communication control:

Communication with a PC or a superordinated data system allows the device's operating status to be viewed on the screen. The instrument can be connected to a PC through 9-pin port (DB-9), it can be plug directly to the PC's available USB connection. RS-485 interface ports are available at the same time which provide a connection for the device to a personal computer or terminal.

Pin allocation

	RS485
	7:A
	8:B
	9:GND

Function code: 03 (read from read-write register)

04 (read from read-only register)

Device address • Function code • Starting address Hi • Starting address Lo • No. of register Hi • No. of register Lo • CRC Lo • CRC Hi

Device returns: Device address • Function code • No. of Data Hi • No. of Data Lo • Data 1 Hi • Data 1 Lo • CRC Lo • CRC Hi

Function code: 06 (written to the read-write register)

Device address • Function code • Starting address Hi • Starting address Lo • Data Hi • Data Lo • CRCL • CRCH

Device returns: Device address • Function code • No. of Data Hi • No. of Data Lo • Data 1 Hi • Data 1 Lo • CRC Lo • CRC Hi

Device address: 01~7F

Parameter address: 9C41、9C42、9C43、7531、7532(The first three is read-write register address, after two is read-only register address)

9C41: start/stop (0 means stop; 1 means start)

9C42: out_mode_08# (0 means normal calibration; 1 means single point calibration)

9C43: set speed RPM min ~ max (speed range)

7531: current speed

7532: current torque

Number of query parameters: read contiguous address 00 01~00 04

For example: assuming that the current device address is 01

01 06 9C 41 00 01 CRCL CRCH:

The parameters of the address 9C 41 are written as 00 01, you can only write one parameter at a time

01 06 9C 43 03 64 E8 CRCL CRCH:

The parameters of the address 9C 43 are written as 03 E8, you can only write one parameter at a time. The set speed is 1000RPM

01 04 75 31 00 01 CRCL CRCH:

read the next one parameter from begin of the address 75 31, reading current speed from device

01 04 75 31 00 02 CRCL CRCH:

read the next contiguous two parameters from begin of the address 75 31, reading current speed and torque from device

5.10.4. List of Commands for External Control

out commands: The command is ended by the Carriage return, the data format following the command is ASCII, the number 1234 indicate the setting speed, is a decimal number.

Command	Parameter	Response of equipment
out_sp_01	1234	Setting the rotating speed.
out_mode_05	0	Stop running
out_mode_05	1	Start running
out_mode_06	0	Setting the rotating direction CCW
out_mode_06	1	Setting the rotating direction ACW

in commands: Asking for parameters or sending parameters periodically.

Command	Parameter	Response of equipment
Spd	None	The speed value Spd XXX is sending every one second automatically. Unit: RPM (rotation per minute)
Tor	None	The torque value Tor XXX is sending every one second automatically. Unit: N.mm



Caution:

Mixer adopts servo motor control and soft start and safety control, the structure of the mixer design and operation is very safe.

The WOHS-10 PRO / WOHS-15 PRO adopt servo motor control and soft starting safety control. Even in heavy load situations it can still be able to maintain the set speed. When the instrument is started, the last used speed will be displayed on the TFT screen.

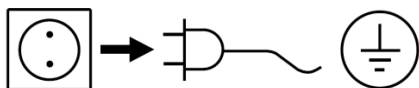
If the torque is too heavy, it is necessary to reduce the weight of the load and to restart the stirrer.

6. Cleaning and Maintenance

6.1. Routine Cleaning

The device is maintenance-free.

Cleaning



For cleaning disconnect the main plug.

Only use cleansing agents which have been recommended by WIGGENS

Use to remove:

Dyes isopropyl alcohol

Construction materials isopropyl alcohol/water containing surfactant

Cosmetics isopropyl alcohol/water containing surfactant

Foodstuffs water containing surfactant

Fuels water containing surfactant

- Do not allow moisture to get into the appliance when cleaning.
- Wear protective gloves when cleaning the instruments.
- Electrical instruments may not be placed in the cleansing agent for the purpose of cleaning.
- Before using another than the recommended method for cleaning or decontamination, the user must ascertain with WIGGENS that this method does not destroy the instrument.



Note:

Do not use chlorine bleach, chlorine-based cleanser, abrasives, ammonia, steel wool or scouring pads with metal content or similar harsh solvents or abrasives. These may damage the surface of the instrument.

6.2. Maintenance

Do not attempt to service or repair a WIGGENS overhead stirrer. If the overhead stirrer housing is opened the warranty becomes void. Contact WIGGENS for return authorization and return instructions.

Ordering spare parts

When ordering spare parts, please give:

- Machine type
- Manufacturing number, see type plate
- Item number and designation of the spare part.

Repair

Please only send devices in for repair that have been cleaned and are free of materials which might present health hazards. For this, use the "certificate of compliance" form which you can obtain from WIGGENS. If your appliance requires repair, return it in its original packaging. Storage packaging is not sufficient when sending the device - also use appropriate transport packaging.

7. Transport and Storage

- Clean the overhead stirrer so that it is free from any materials which may be harmful to the health. Provide a material safety data sheet where appropriate.
- Place the overhead stirrer unit and its parts into the original packing or a container with necessary protection to prevent damage during transport. Seal the original packing or container with packing tape.
- Store the packed unit in a dry place.

**Caution:**

Failure to clean, maintenance, and handle the stirrer as outlined can lead to damages or be harmful to the health.

8. Accessories and Spare Parts

8.1 Stainless Steel Impellers

Pivoting Blade Impeller

For mixing media from coarse to liquid, for mid-speed stirring, and for mid to low viscosity mixtures.

Blade Height: 18 mm

Oder No.	Rotor Ø(mm)	Shaft Ø(mm)	Length(mm)
9603	50	8	300
9604	50	8	400
9605	50	8	500



Straight 2-Blade Impeller

For mixing media from coarse to liquid, for mid-speed stirring, and for mid to low viscosity mixtures.

Blade Height: 12 mm

Oder No.	Rotor Ø(mm)	Shaft Ø(mm)	Length(mm)
9703	50	8	300
9704	50	8	400
9705	50	8	500



Straight 4-Blade Impeller

For mixing media from coarse to liquid, for mid-speed stirring, and for mid to low viscosity mixtures.

Blade Height: 12 mm

Oder No.	Rotor Ø(mm)	Shaft Ø(mm)	Length(mm)
9053	50	8	300
9054	50	8	400
9055	50	8	500
9056	100	10	300
9057	100	10	400
9058	100	10	500



3-Hole Blade Impeller

For mixing media from coarse to liquid, for mid-speed stirring, and for mid to low viscosity mixtures.

Oder No.	Rotor Ø(mm)	Shaft Ø(mm)	Length(mm)
9403	50	8	300
9404	50	8	400
9405	50	8	500
9406	100	10	300
9407	100	10	400
9408	100	10	500

**6-Hole Blade Impeller**

For mixing media from coarse to liquid, for mid-speed stirring, and for mid to low viscosity mixtures.

Oder No.	Rotor Ø(mm)	Shaft Ø(mm)	Length(mm)
9503	50	8	300
9504	50	8	400
9505	50	8	500
9506	100	10	300
9507	100	10	400
9508	100	10	500

**Pitched Leaf Impeller and Pitched Blade Impeller**

Employs small shearing force. Used for mixing media in an upto-down axial flow, for mid- and high-speed stirring, for mid to low viscosity mixtures.

Blade Height: 12 mm

Oder No.	Rotor Ø(mm)	Shaft Ø(mm)	Length(mm)
9003	50	8	300
9004	50	8	400
9005	50	8	500
9009	100	8	300
9010	100	8	400
9011	100	8	500
9012	70	8	500
9013	100	10	650
9014	100	10	800



Pitched Leaf Impeller and Pitched Blade Impeller

Employs small shearing force. Used for mixing media in an up-to-down axial flow, for mid- and high-speed stirring, for mid to low viscosity mixtures.

Blade Height: 12 mm

Oder No.	Rotor Ø(mm)	Shaft Ø(mm)	Length(mm)
9103	50	8	300
9104	50	8	400
9105	50	8	500
9109	70	8	300
9110	70	8	400
9111	70	8	500
9112	100	10	300
9113	100	10	400
9114	100	10	500
9111	70	10	650
9116	100	10	800



Pitched Leaf Impeller and Pitched Blade Impeller

Employs small shearing force. Used for mixing media in an up-to-down axial flow, for mid- and high-speed stirring, for mid to low viscosity mixtures.

Blade Height: 12 mm

Oder No.	Rotor Ø(mm)	Shaft Ø(mm)	Length(mm)
9210	90/15	8	400
9211	90/15	8	500
9212	90/15	10	300
9213	90/15	10	400
9214	90/15	10	500
9215	90/15	10	650



Anchor Impeller

Produces tangential flow and strong shearing force. Used for slow-speed stirring, for high viscosity mixtures.

Oder No.	Rotor Ø(mm)	Shaft Ø(mm)	Length(mm)
9610	70	8	500
9611	90	10	650
9612	140	10	800



Turbine Impeller

Creates shearing force. Used for mixing media in an up-to-down axial flow, for mid and high-speed stirring, for mid to low viscosity mixtures.

Oder No.	Rotor Ø(mm)	Shaft Ø(mm)	Length(mm)
9025	45	7	400
9026	65	7	400
9025A	45	8	400
9026A	65	8	400

**Radial Flow Impeller**

Creates a strong flow and shearing force. Used for mixing media in an up-to-down axial flow, for mid-speed stirring, for mid viscosity under 500mpas. Especially useful for aerating.

Oder No.	Rotor Ø(mm)	Shaft Ø(mm)	Length(mm)
9030	50	7	400
9031	50	8	400

**Multi-Purpose Impeller**

Can generally be used in low to high viscosity mixtures. Even with slow stirring speed, it will produce a very good radial stirring outcome.

Oder No.	Rotor Ø(mm)	Shaft Ø(mm)	Length(mm)
9020	80	10	500
9021	120	10	500



8.2 Stirring Seals

Universal stirrer seal

Material : PTFE (Polytetrafluoroethylene)

Oder No.	Joint size	Shaft Ø(mm)	Height (mm)
KA22-02	24/40	8	60
KA22-03	29/42	8	60
KA22-04	34/45	8	60



Universal stirrer guides

Universal stirrer guides for use with standard taper ground glass joints can be used with PTFE Shaft Stirrers, glass and metal shaft stirrers. Unique features of the design are a permanently loaded Composite PTFE/PEEK Seal and a Glass Ball-Bearing for rigidity and smoothness of operation.

Oder No.	Joint size	Shaft Ø(mm)	Height(mm)	Guide(mm)
5.101.1.7	19/20	6	96	45
5.102.7	24/40	6	96	45
5.104.7	24/40	8	96	45
5.105.7	24/40	10	96	45
5.106.7	29/42	10	96	45
5.108.7	29/42	12	110	55

**High performance stirrer guides**

This product is designed to provide an effective guide for Glass and Metal Shaft stirrers over a range of temperatures without shedding particles from the seal, whilst maintaining a vacuum. The seal is manufactured from a specially formulated PTFE-PEEK composite and is permanently pressure loaded.

Oder No.	Joint size	Shaft Ø(mm)	Height(mm)	Guide(mm)
5.0.0619	19/22	6	60	42
5.0.0624	24/40	6	60	42
5.0.0819	19/38	8	60	42
5.0.0824	24/40	8	60	42
5.0.1024	24/40	10	60	42
5.0.1029	29/42	10	60	50
5.0.1034	34/45	10	60	50
5.0.1045	45/50	10	60	58
5.0.1229	29/42	12	70	50
5.0.1945	45/50	19	70	58

**High vacuum stirrer guides**

The newest design of mechanical stirring seals with all parts that are in contact with liquid or vapor being made of PTFE, RULON, or PEEK material. It doesn't harm the stirring rod and is highly chemical resistant. It can be used with vacuum of up to 1 Torr. The highest recommended stirring speed is 400 rpm.

Oder No.	Joint size	Shaft Ø(mm)	Replace O-ring
8050-02	24/40	10	7859-526
8050-04	29/42	10	7859-534
8050-14	29/32	10	7859-534
8050-10	#15 thred	10	7859-530
8050-12	#25 thred	10	7859-534



9. Service

9.1. Trouble-Shooting

Cause	Remedy
After switching on the unit, the display shows no light and the stirrer does not react to any input	<ol style="list-style-type: none"> 1. Ensure that the mains electricity plug is plugged into a working socket outlet and check if the main switch is in the "on" position 2. Use a circuit meter to check if there is DC36V electricity running from the adapter output port 3. If the malfunction cannot be determined this way, please contact the WIGGENS support
After switching on the unit, the display lights up but shows the error message "OH"	Please contact the WIGGENS support



WIGGENS reserves the right to carry out technical modifications with repairs for providing improved performance of the instrument.

9.2. Warranty

- In accordance with WIGGENS warranty conditions, the warranty period is 24 months. For claims under the warranty please contact your local dealer. You may also send the machine direct to our works, enclosing the delivery invoice and giving reasons for the claim. You will be liable for freight costs. The warranty does not cover wearing parts, nor does it apply to faults resulting from improper use or insufficient care and maintenance contrary to the instructions in this operating manual.
- WIGGENS reserves the right to decide the validity of any warranty claim. In case of faults arising either due to faulty materials or workmanship, parts will be repaired or replaced free of charge.
- Any other compensation claims, such as consumables, damages caused by corrosion or accidental breakage, are excluded from this guarantee.
- This warranty may only be altered by a specifically published amendment. No individual has authorization to alter the provisions of this warranty policy or its amendments.

9.3. Contact/Technical Service

Please send in instrument for repair only after it has been cleaned and is free from any materials which may constitute a health hazard. For repair, please request the “**Decontamination Certificate**” form WIGGENS.

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 Conformation 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: Wiescher Str. 11a, 42277 Wuppertal Germany
Tel.: +49 202 373 29 58-0
info@wiggens.com

WIGGENS China

Room 426, Hall A, Office Building M8, No.1 Jiuxianqiao
East Road, Chaoyang District, Beijing 100015, China
Tel: +86 400-809-2068
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. Has the device been cleaned, decontaminated/sterilized?	Yes	No
---	-----	----

4. Is the unit in a condition which does not pose any health threats to the staff of our service department?	Yes	No
If not, which substances has the unit come into contact with		

5. Legally binding declaration	
The customer is aware of being legally liable to WIGGENS Instruments for any damages arising from incomplete and incorrect information.	
Signature	
Date	
Company stamp	

Please note!	
The shipper is responsible for the return of the goods in well-packed condition, suitable for the mode of transport.	
Name	
Company	
Department, research group Street	
Zip code, city	
Country	
Phone	
E-mail	

**WIGGENS GmbH**

Wiescher Str. 11a, 42277 Wuppertal Germany

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