Kalstein

Ultrasonicator (Ultrasonic Processor)

Model YR05829

Instruction Manual

Thank you very much for purchasing our Kalsteins´s Ultrasonicator (Ultrasonic Processor) Model YR05829

Please read the “Operating Instructions” and “Warranty” before operating this unit to assure proper operation. After reading these documents, be sure to store them securely together with the “Warranty” at a hand place for future reference.

 Warning: Before operating the unit, be sure to read carefully and fully understand important warnings in the operating instructions.

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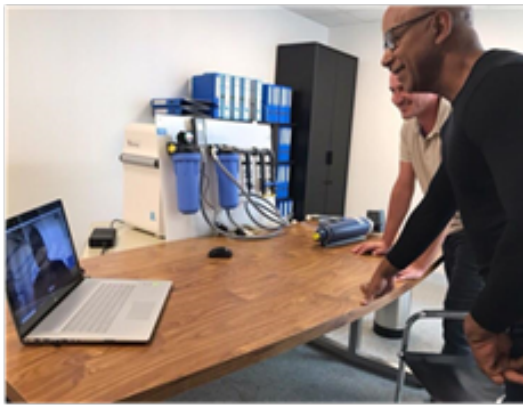

#Letsgivemore

Thanks to your purchase, a donation will be made to a non-profit foundation that fights against breast cancer and helps most vulnerable communities.

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Kalstein Worldwide

With more than 25 years growing with our customers, Kalstein's multiformat and modern content, is now present in more than 10 countries and increasing.

Contents

1- Overview

We are a professional manufacturer integrating research, design, production and sales of ultrasonic equipment. It is an enterprise centered on product quality. In addition to operating independent brand products, the company also cooperates with many well-known enterprises at home and abroad. Cooperation.

We have more than 14 years of experience in the production of ultrasonic equipment.

Production of various specifications of ultrasonic equipment and continuous development of new products have greatly improved the previously extremely annoying ultrasonic noise and improved the conversion efficiency of ultrasonic waves. The product categories are: Ultrasonic nano-processing preparation instrument, Ultrasonic processor, Laboratory desktop ultrasonic cleaner, Ultrasonic cell breaker, Ultrasonic emulsifier, Industrial ultrasonic cleaning, Ultrasonic transducer, Ultrasonic accessories, Ultrasonic equipment, etc. Its products are widely used in colleges and universities, research institutes, powder materials, chemicals, sewage treatment, environmental testing, optical industry, aerospace industry, hardware industry, automobile manufacturing and other industries. "High-tech, high-quality, high-quality after-sales service." The company has a team dedicated to the development, development and production of ultrasonic instruments; they will provide customers with professional experiments to production solutions and technical consulting, design, modification and upgrade, provide the best solutions and other technical services to ensure professional and perfect sales before,Sale and after-sales service. We will provide our customers with comprehensive ultrasonic equipment and services.

2- Working principle

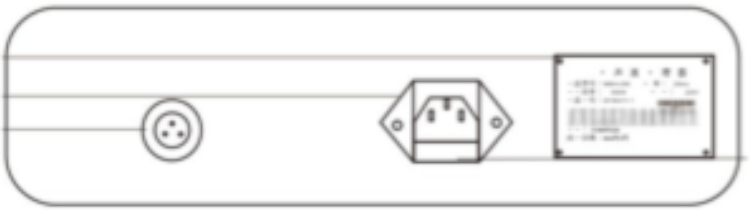
When the ultrasonic generated by ultrasonic transducer acts on thousands of liquids, the rupture of each bubble in the liquid will produce a shock wave with huge energy, which is equivalent to the instantaneous generation of high temperature of hundreds of degrees Celsius and thousands of atmospheres. This phenomenon is called "cavitation effect".

Ultrasonic cavitation is a unique physical process produced by strong ultrasound in liquid medium. It is accompanied by many wonderful phenomena and amazing effects.

The basic effects of cavitation include high temperature effect, discharge effect, luminescence effect, shock and pressure effect. People are using these unique effects to be widely used in medicine, biology, chemistry, physics and other fields.

3- Overall structure name

3.1 Front panel



3.2 Rear panel

①Heart cable ②Sleeve ③Transducer ④Amplifier ⑤LCD controller

⑥Instrument case ⑦Output socket (connecting transducer)

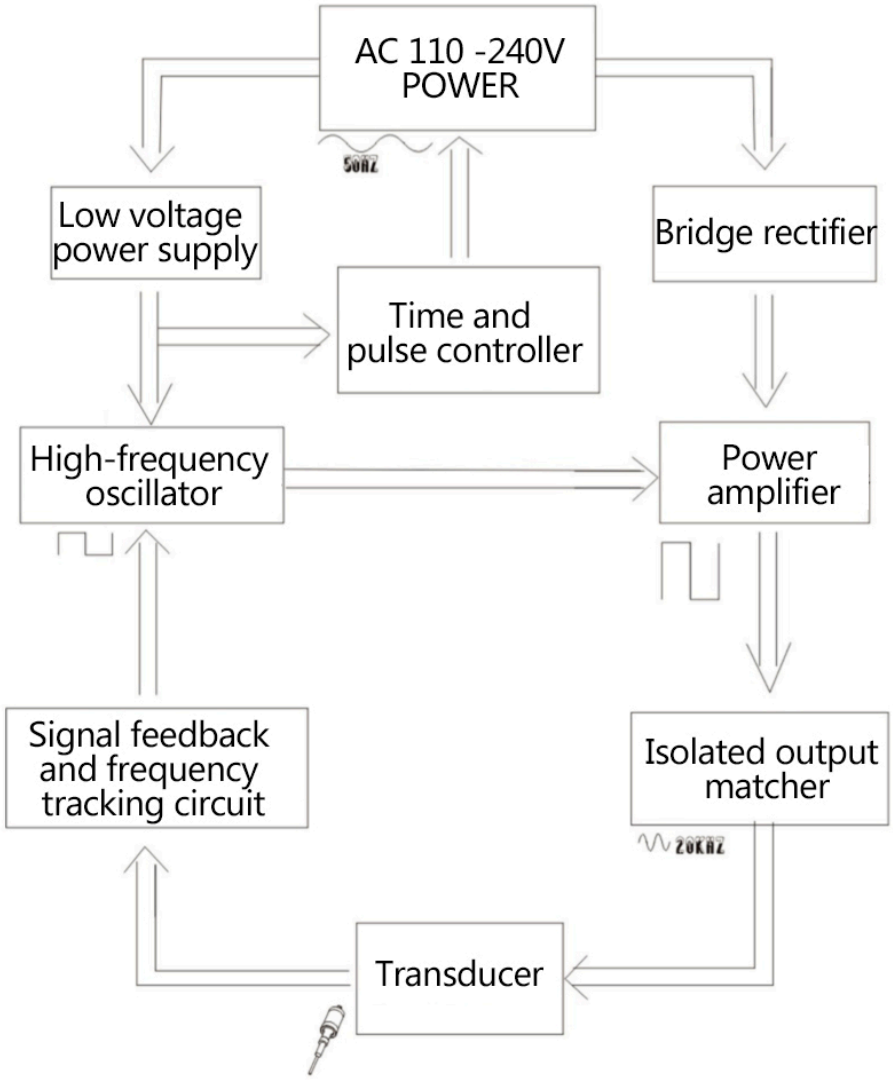
⑧Instrument indicators and contact information of the manufacturer

⑨Fuse holder ⑩Power switch

4- Electrical principle

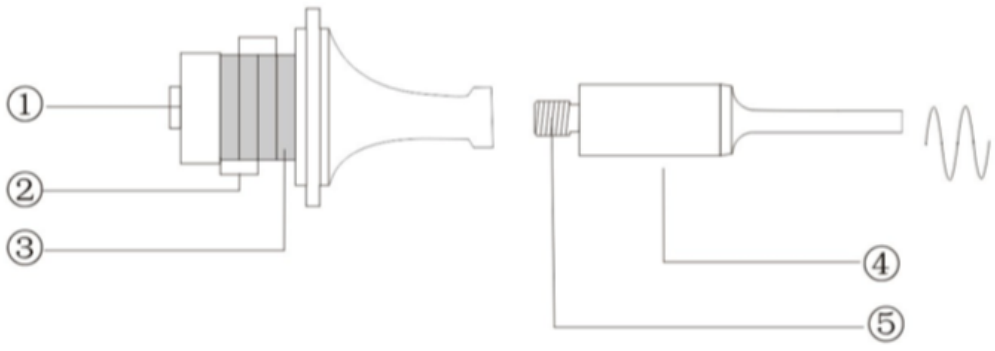
4.1 Generator

Schematic diagram of the generator: Ultrasonic circuit structure



4.2 Transducer

The piezoelectric transducer used is a sandwich single stud structure. Different types and power transducers are equipped with different specifications and quantities of piezoelectric ceramic plates.



①Special fastening screw for high strength transducer ②Electrode plate

③Piezoelectric ceramic sheet ④Amplitude transformer ⑤Connecting screw

Disassembly and Assembly of The Horn:

Place the transducer assembly on a chair with a soft object (such as a towel), place the 14 wrench in the wrench slot of the horn, and place the 15 wrench in the wrench slot of the transducer. When placing the 15 and 14 wrenches, they must be horizontally oriented.

Take the 14-hand wrench in the left hand and the 15-wrench in the right hand. Use both hands at the same time to force the screw down. Loosen the wrench in the left hand and the 14-hand wrench in the right hand. Use both hands to tighten the force. Be sure to tighten the horn, otherwise the ultrasonic effect will be attenuated or the transducer will be damaged.

5- Features

5.1 Automatic resonance point and power control, without frequent manual adjustment of energy.

5.2 99 hours process control timer controls total working time; from 1 second to 99 hours 99 minutes 99 seconds.

5.3 The working time display is cumulative.

5.4 The ON / OFF pulse timer can be set arbitrarily from 1 second to 99 hours 99 minutes 99 seconds to ensure high-intensity processing (temperature sensitive) samples.

5.5 Automatic amplitude compensation to ensure that the amplitude of the probe does not change due to load changes during the ultrasound process.

5.6 Easy operation,Ensure that probe amplitude is not entered directly during ultrasound.

6- Requirements for use

6.1 Ambient temperature: 0 ~ 40 ° C

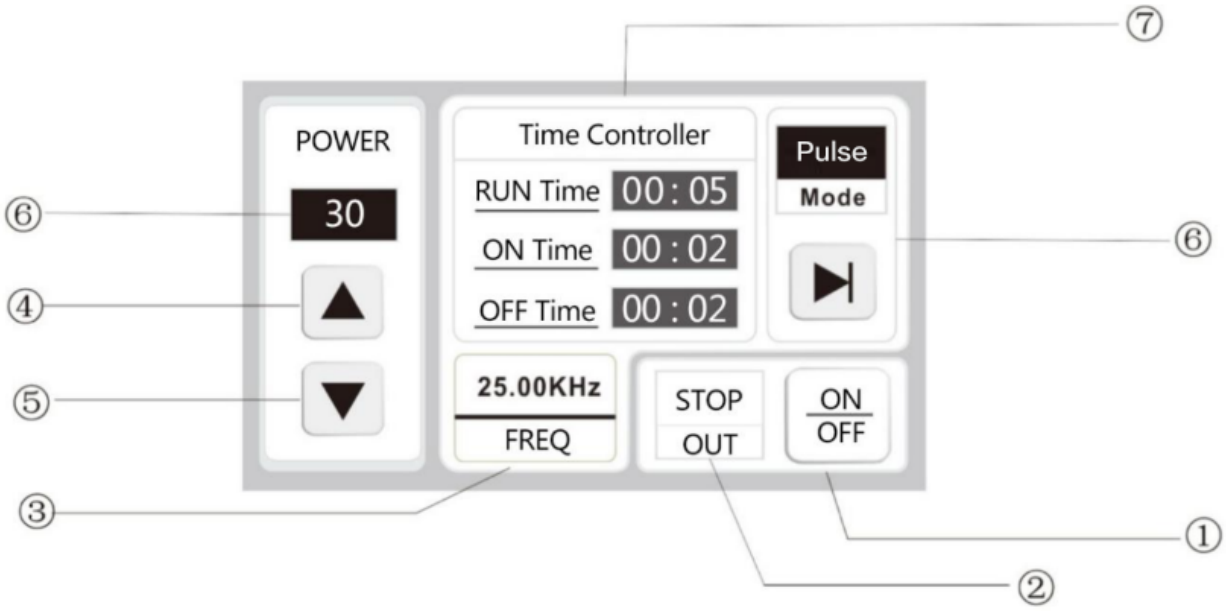
6.2 Relative humidity: not more than 85% (T = 20 ° C)

6.3 Power supply: 110-240V / 50 Hz ± 10%

6.4 Transducer temperature: 0 ~ 120 ° C

6.5 Processing object: solution or mixed solution of solution (Not recommended for handling viscous samples)

7- Installation operation guide



7.1 Operation panel

①ON / OFF ②Pause ③Product frequency ④Power UP ⑤Power DOWN

⑥Time-Pulse mode switching（*Pulse mode is generally recommended） ⑦Time control

7.2 Operation Procedures

The time controller is designed and manufactured with digital circuit and microcomputer control technology. It has the characteristics of high accuracy, good reliability, strong anti-interference ability and memory function. Its full-scale time control range is from l second to 99 hours 99 minutes 99 seconds. The user can set it at will.

7.3 Power connection

The user must connect the ultrasonic transducer with the ultrasonic generator before use. The sleeve can be fixed by the bracket or held by the sleeve part of the transducer with your hand, but you cannot touch the transducer part, and the head of the horn is immersed in the solution for 10~25 mm. Turn on the power switch on the front panel of the chassis, and the LCD monitor works.

7.4 Power regulation

The "▲▼" key is the ultrasonic power value setting key. Press the "▲" key to increase the ultrasonic output power, and press the "▼" key to reduce the ultrasonic output power.

*Generally, it is not recommended to use more than 80%, and more than 90% will accelerate the loss and even damage the equipment.

7.5 Ultrasound time

① Fully digital electronic timer is 1 second~99 hours 99 minutes 99 seconds.

②The "▶I " key is equipped with the function of setting time and confirming memory.

③ Press Time to display the blank space, and use the increase, decrease, and shift keys to enter the desired timing. The timing (Total time process) is set.

④ Enter the required on-pulse ultrasound time by using the increase and decrease keys and the shift key.

⑤ The **ON / OFF** key has two functions. That is, the ultrasound is turned on and off. After starting the timing, the **SET** key has no effect (the time can be reset only after the timing is turned off). The **Stop** button can temporarily stop the current running task. Pressing the **Stop** button again can Continue the current running task.

⑥ The **MODEL** key is a mode switch key, which can set the ultrasound mode to continuous mode or pulse mode. When the ultrasound mode is switched from pulse mode to continuous mode, you must press the **ON / OFF** key to start (with timing) continuous mode, otherwise Ultrasound without any timed continuous mode. Press the **ON / OFF** key to turn off (with timing) continuous ultrasound. Press the **MODEL** key again to switch from continuous mode to pulse mode.

⑦ Please do not touch the ultrasonic horn during use, so as not to be burned by the heat generated by the ultrasonic. The user must turn off and cut off the power after use.

8- Maintenance & ★CUASITION★

8.1 It is forbidden to turn on the machine when there is no liquid in the cup, otherwise the transducer or ultrasonic generator will be damaged.

8.2 It is generally recommended to use Pulse mode, such as ON for 2 seconds, OFF for 2 seconds, and the total time can be 30 minutes or longer.

8.3 This equipment should be placed in a clean, dry and ventilated place. Handle the vibrator gently to prevent the vibrator from breaking.

8.4 Please pay attention to the temperature of the equipment when it is used for a long time. When the vibrator becomes hot, wait for it to cool before using it.

8.5 For the amount of various cells, the length of time, the size of the power, the user needs to determine according to various media, and choose the best value.

8.6 When ultrasonication is broken, the temperature of the liquid will rise rapidly due to the cavitation effect of the ultrasonic wave in the liquid, and the user should pay more attention to the temperature of various cells. It is recommended to use multiple breaks in a short period of time (**no more than 5 seconds each time**), plus an ice bath for cooling.

8.7 **Generally, it is not recommended to process the sample with viscometer. If necessary, please reduce the viscosity of the sample first. Otherwise, the equipment may be damaged.**

8.8 This equipment must work in the range of 110~220 V / 50Hz ± 10%.After use, unplug the power plug and cut off the power.

8.9 The instrument has reliable performance. If the equipment fails, you should contact the manufacturer in time, and you should not repair it blindly by non-professional technicians.

9- Technical Data Sheet

Models	☐ YR05829	☐ YR05830	☐ YR05831
Operating mode	Automatic, Manual		
Screen size	3.5 inch high definition large touch screen control		
Ultrasonic power(W)	5-150	5-250	5-400
Frequency(KHz)	19-25		
Duty ratio(%)	1~99%		
Handling capacity(ml)	0.1-50	0.5-100	0.5-300
Ultrasonic time(s/min)	1s~99m-99h-99s		
Random horn(φmm)	2	3	6
Temperature probe	Temperature probe(Optional)		
Power source	220V/ 50Hz(110V Can be customized)		
Optional horn(φ mm)	2,3	2,3,6	3,6,8
Mainframe Weight(kg)	4.2	4.2	4.5
Total weight(kg)	5.8	6.2	6.5

Main applications: It is used for liquid chromatography, supporting of agricultural residue detectors, animal and plant cell disruption, oil and water emulsification, homogeneous dispersion of materials, degassing before sample analysis, drug dispersion, etc., and also used for Chinese herbal medicine crushing extraction.

10- Instrument packaging list

No.	Item	Model specification	Quantity	Note
1	Intelligent ultrasonic generator		1	
2	Vibration system transducer assembly		1	
3	Transducer bracket		☐	
4	Soundproof box &Lifting platform		☐	
5	Power cord		1	
6	User's manual		1	