

1. Overview

— USA35 series Ultrasonic Intelligent Processor is a multi-functional and multi-purpose instrument that uses the ultrasonic to generate cavitation effect in liquid and ultrasonically treats the material. It is equipped with a fully digital intelligent ultrasonic generator, which greatly improves the instrument work. Stability and reliability. The instrument can be used for the crushing of various animal and plant cells and virus cells, and can be used for emulsification, separation, homogenization, extraction, defoaming, washing and accelerating chemical reactions. It is widely used in biochemistry, microbiology, medicinal chemistry, surface chemistry, physics, zoology and other fields.

— Features and advantages:

△ Soundproof box with electric lifting table —— Safe and convenient for experimental operation

△ Soundproof box with lighting device —— Convenient observation of experimental results

△ Ultrasonic generator and soundproof box are integrated —— Save lab space

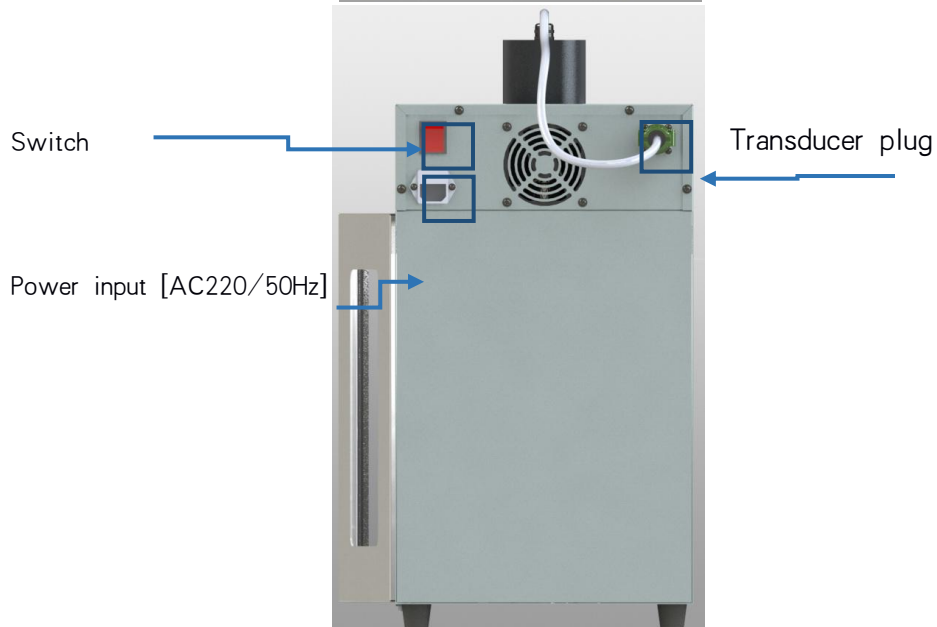
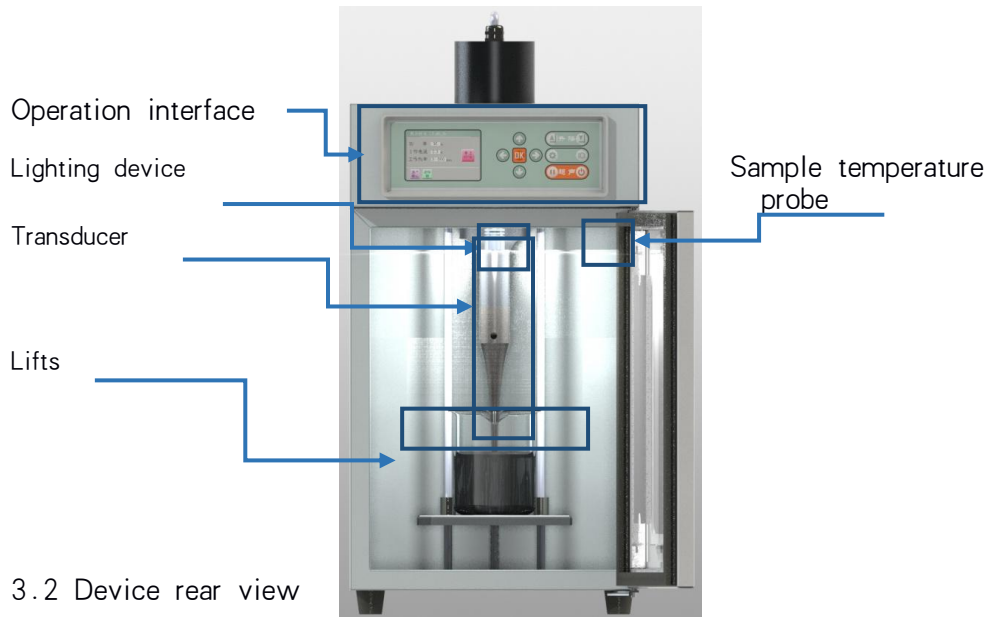
△ Host selects digital intelligent ultrasonic generator (embodied by core technology)

2. Technical Parameters

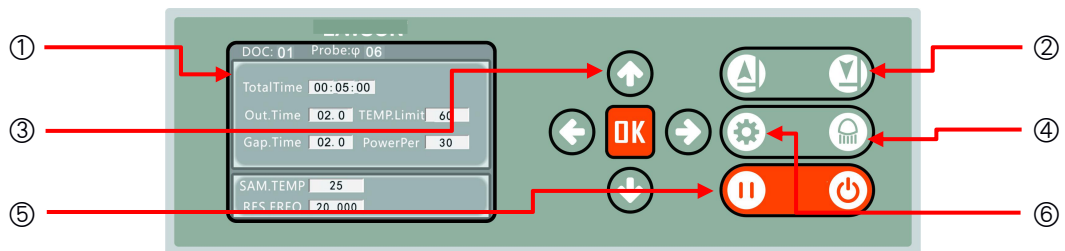
- Working frequency: 19~25KHz, automatic search range up to $\pm 450\text{Hz}$
- Generator output power: 250W (max); 650W (max)
- Host matching: full digital intelligent ultrasonic generator (performance requirements)
 - Automatic search frequency up to $\pm 450\text{Hz}$ when booting, users can verify by themselves
 - The automatic tracking frequency can reach $\pm 450\text{Hz}$ during ultrasonic operation, and the user can verify it by himself.
 - Real-time display of operating frequency / resonant frequency
 - Frequency tracking accuracy of 1Hz, and real-time display
- Control mode: automatic
- Power adjustment range: 1~99% continuously adjustable
 - Pulse: 0.1~99.9 s adjustable (gap / work)
 - Total working time setting: 1~999min
 - Ultrasonic time setting: 0.1~99.9s
 - Gap time setting: 0.1~99.9s
- Diameter of the end of the horn: standard $\Phi 3$ or $\Phi 6\text{mm}$, optional $\Phi 8, 10, 12, 15\text{mm}$
- Processing volume: 0.5~100 ml; 0.5~500ml
- Working voltage: 110V ~ 220VAC $\pm 5\%$, 50Hz / 60Hz
- Working environment: 0 ~ 32 °C, RH80, 760 \pm 30mmHg
- Display mode: 3.5 inch LCD display color screen
- Store documents: 18 groups
- Intelligent soundproof box Workbench with electric lift + lighting
- Material over temperature protection
 - Temperature setting: 0~99 °C
 - Stop the ultrasonic when the material temperature reaches the set value, and automatically resume the ultrasonic work when the material temperature is lower than the set value of 2°C.
- The host size: 280 \times 280 \times 600mm
- Weight: The generator is about 10kg; the transducer assembly is about 2kg.

3. Brief operation instructions

3.1 Front view of the device



4. Operation interface description



① 3.5-inch full color display

- ② Jog lift: Lift up button Lift down button
- ③ Navigation keys: Up button & add key
 Down key & minus key
 Left shift key
 Right shift key
 OK button
- ④ Lighting button: Lights on & off
- ⑤ Ultrasonic action button: Ultrasonic start/stop button
 Ultrasonic pause/continue button
- ⑥ Settings button: Enter parameter settings and system settings

5. Screen and operation

5.1 Boot interface

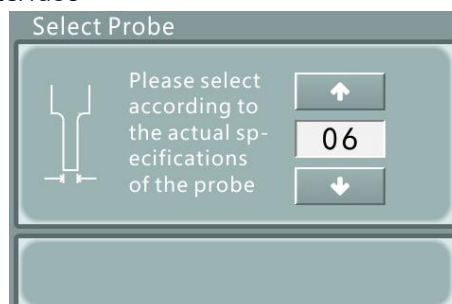


5.2 Document selection interface



Press to select the desired document by key in the data box, the document parameters are displayed.
 Press button to select the document

5.3 Horn selection interface

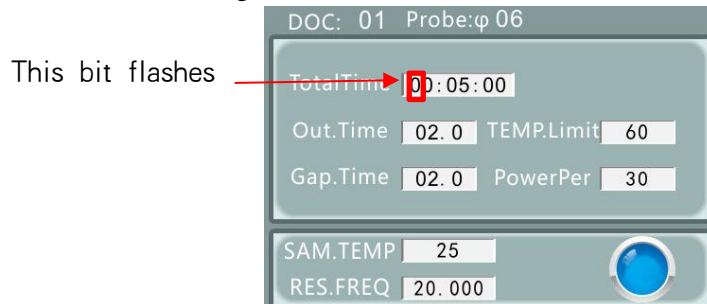


Press to select probe specifications
 in the data frame, the horn power and throughput are displayed.
 Press Button to determine probe specifications

5.4 Working interface



5.5 Parameter setting interface (Press button to enter)



Press keys to adjust the flashing parameter
 Press to shift positions
 Press key to save parameters and return

5.6 System setting interface (in the work interface, enter after 2 seconds of long press)



Press to select a setting item
 Press button to enter the setting (the setting method is the same as 3.5)

★ Warning: Under normal circumstances, the user does not need to

modify this content during normal use. If the equipment is abnormal, please contact our company personnel. Non-professionals are not allowed to modify the system and hardware.

6. ★CUASITION★

6.1 The temperature protection set point must be 1–3 ° C higher than the room temperature or sample temperature.

6.2 It is strictly forbidden to turn on when the horn is not inserted into the liquid (no load), otherwise the instrument will be damaged.

6.3 For the amount of various cell disruptions, the length of time, the size of the power, the user needs to determine according to different cells, and choose the best value.

6.4 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 times of crushing in a short time (no more than 5 seconds each time), and cold cooling can be added. (It is recommended that the ultrasound work for 1–4 seconds and the gap works for 2–8 seconds).

★Warning: In the course of work, the varactor must be turned off before powering off. Please re-select the horn specifications after restarting, otherwise the horn may be damaged.

6.5 Insert the transducer into the soundproof box, select the container according to the sample size, pour the sample and put it into the lifting table inside the soundproof box. Adjust the height of the lifting platform so that the end of the horn is inserted into the sample level, typically 10–15mm and placed in the center of the container. The horn and the container should not hit the wall, and the end face of the horn and the bottom of the container should be larger than 4cm (instead, the ultrasonic power will cause no load), so the crushing effect is better, and the container is recommended to use an elongated container.

★Friendly Reminder:

– Practice shows that: a short time of multiple work, working time 1~3 seconds, gap time 1~3 seconds, better than continuous long-term work. To prevent liquid heat, set a longer gap time. In addition, uninterrupted long-term work is easy to form no-load, shortening the service life of the instrument.

7. Removal and installation horn Diagram 3

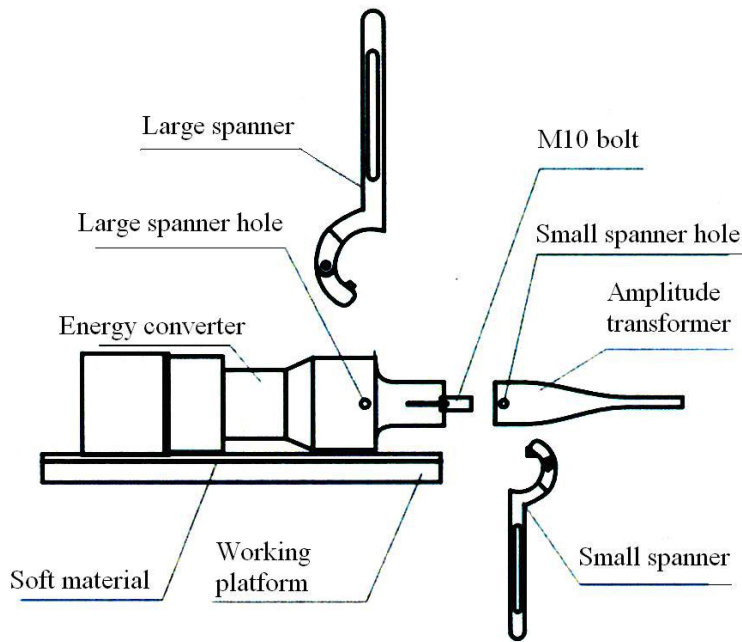


Diagram 3 Removal and installation horn

- Push the energy converter on the chair with soft materials (such as towel). Put the small spanner into the horn spanner hole and the large spanner into the transducer spanner hole. the large and small spanners shall be oriented to the left and right.
- You stand facing the horn, and hold the large spanner with left hand and small spanner with right hand. Tighten downward with both hands(must be tightened)

- When changing the horn, such as the M10 screw on the horn, remove the bolt out by hand, and then fasten the bolts on the transducer, and must be tightened. If the bolts on the horn, Hex wrench can not be twisted, you can knock the bolts on the wood materials for a few times then can twist

8.Unpacking list

8.1 Vibration System (Transducer Assembly)	1 set
8.2 Power cord	1 pcs
8.3 Instruction Manual	1 copy
8.4 Temperature probe (already installed)	1 pcs
8.5 Dismantling spanner	1 set