Digital ultrasonic generator

Operate Manual

【Be sure to comprehend the contents before operation】

Contents

Preface

Thank you for using the HZ-2000 digital ultrasonic generator. This is an ultrasonic automatic chasing generator independently developed by our company. It uses automatic frequency tracking, real-time energy monitoring, power digital display, and touch screen interface control. Make the operator be familiar with the generator soon.

In order to operate and maintain this product correctly, and ensure your safety, please read this manual carefully before using it. Pay special attention to the description of this graphic symbol ⚠ in the text, and please save it properly and check it later. This will help to provide you with a comprehensive service.

Any operate not been trained by our company can't debug and maintain this generator. Any improper operation will cause the machine to operate abnormally, malfunction or damage, or even cause an accident!

This manual including the description and operation of the HZ-2000 digital ultrasonic generator. If you can't solve the problem during operating , please contact our company for solution. Our email: sales@xingultrasonic.com. We will reply

you in 24 hours.

Attentions

1. Before making any electrical connection, please make sure that the power supply is off. Use a grounded power socket to prevent electric shock.
2. The ultrasonic generator will generate high voltage, non-professionals do not open the casing!
3. Do not switch on the machine when the horn is loose, to avoid abnormality when opening it. When the machine under abnormal conditions, do not turn it on again before the problem solved!
4. Do not put your hand under the welding horn, the downward pressure and the high frequency vibration may cause a safety accident!
5. Do not make ultrasonic test when the external cable (the high frequency line) is not connected!
6. Do not place your hands between the welding horn and the mold during working or testing. This machine must be operated by one person during the horn adjustment, debugging, or production, prohibit multiple people operating and debugging at the same time!

7. During the ultrasonic test, do not test with loading to avoid frequency search inaccurate and machine alarm!
8. The generator installed power protection fuse inside. Note: When replacing the fuse, firstly disconnect the input power. Please replace the fuse with the same specification.
9. Frequency suggestion

   15K horn frequency: 14.70K± (300HZ)

   20K horn frequency: 19.75K± (300HZ)
10. Pay attention to high temperature, high humidity and waterproof

Model information

Power input specification: AC220V 50/60Hz

Output power: 800W, 1000W, 1500W, 2500W, 3500W, 4500W 5000W big power need customize

Frequency of use: 15KHz, 20KHz, 28KHz, 30KHz, 35KHz 40KHz(optional)

Dimensions: 430*200*130 (length * width * height)

Gross weight: 6Kg.

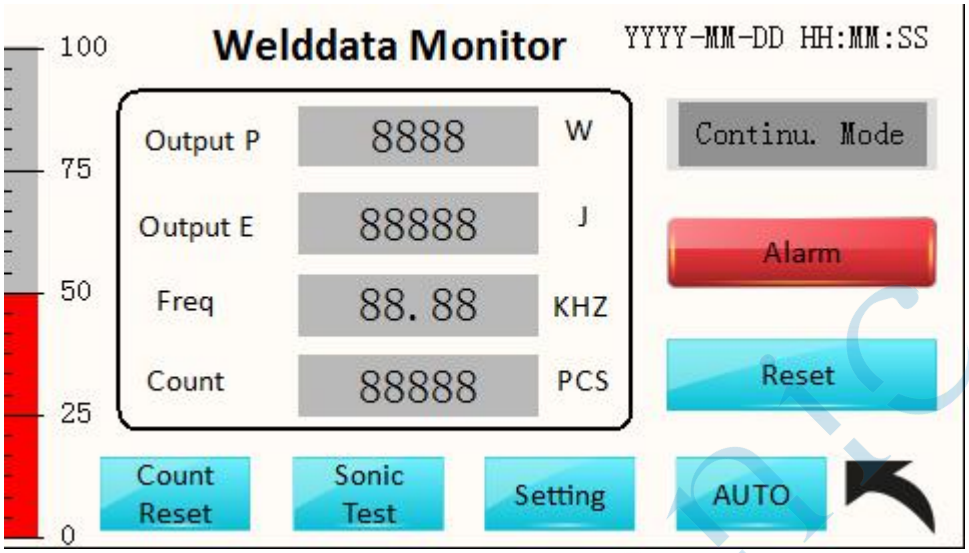
Working principle

The ultrasonic generator generates the signal frequency required by the ultrasonic transducer, and then uses the thermoplasticity of the plastic to generate heat at a very high speed between the molecules by using high-frequency friction between the working surfaces. When the heat is sufficient to melt, the ultrasonic wave is stopped. Vibration, at this time the workpiece joint is solidified by melting, complete the processing procedure! The traditional ultrasonic generator is manually frequency-modulated, and HZ-2000 digital ultrasonic generator realizes automatic frequency tracking, real-time power display, and friendly communication of human-machine interface!

The frequencies commonly used for plastic processing are 15 kHz and 20 kHz, of which 20 kHz is outside the human hearing range, so it is called ultrasonic, but 15 kHz is still in the human hearing range.

Operating instructions

Open interface：



A. The following parameters can be monitored in real time

① Power：Real-time power

② Energy：Real-time welding energy

③ Time：Welding time

④ Frequency：Real-time frequency

⑤ QTY：Current processing quantity

⑥ Time model：Work model

B. The following functions can be adjusted

1： Touch（COUNT RESET）Cursor can zero the current processing quantity

2：Touch（Sonic Test）cursor can read the current frequency. When this button is pressed, the frequency is searched first and then waved! Note: You cannot press this button with-loading! In order to avoid frequency search deviation.

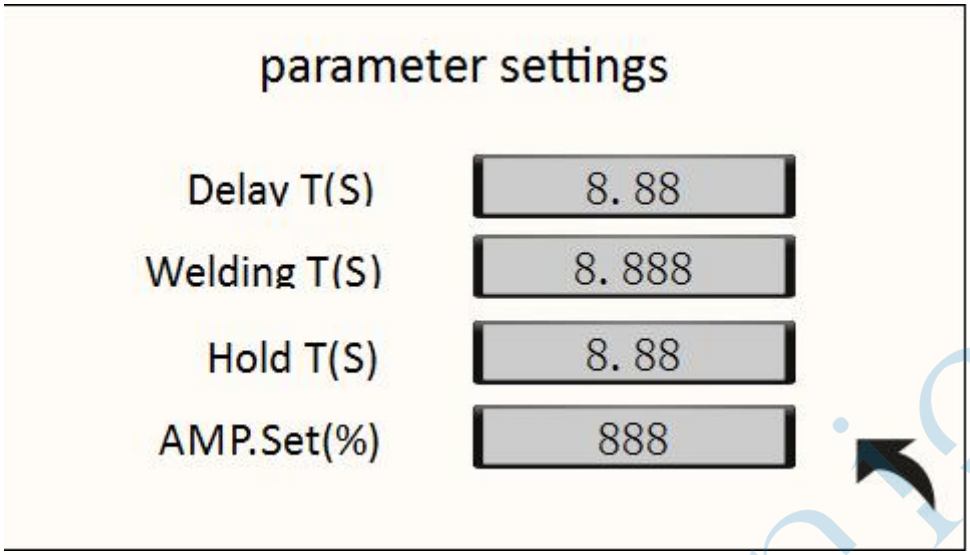
3：Touch（Auto）cursor can be switched to the mode adjustment state. Under this display, the machine is in the manual state, and the welding parameters cannot be adjusted! Can be used for horn adjustment! (Hint: When it is automatic, it can be adjusted when it is not working)

4： Touch（Reset）Cursor alarming remove. If the alarm can not be cleared when the overload occurs, or the search frequency cannot be searched, turn off the power and start it again after 3 minutes.

5： **Touch（Set）Cursor, settings interface appear**

- **This page is time model**

The following parameters can be adjusted according to the application.

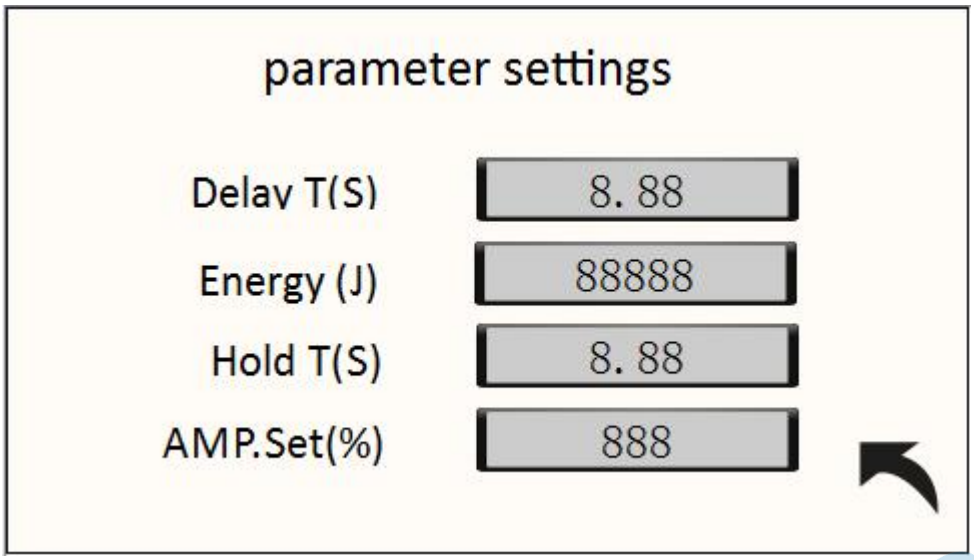


Description: Time model: when welding products, use melting time to control the welding time of the product

Noted： when the delay time is 0， the delay time will be no ultrasonic.

- **This page is energy model**

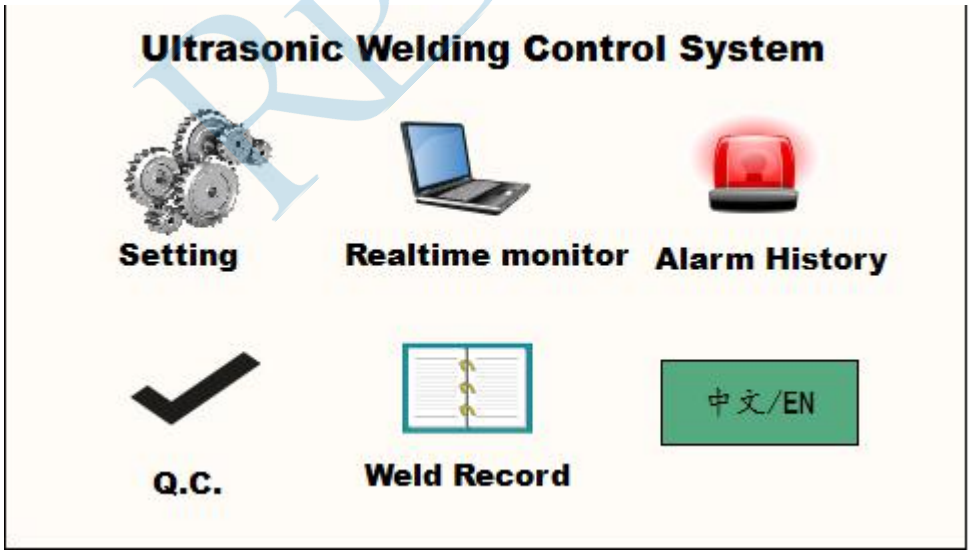
The following parameters can be adjusted according to the application.



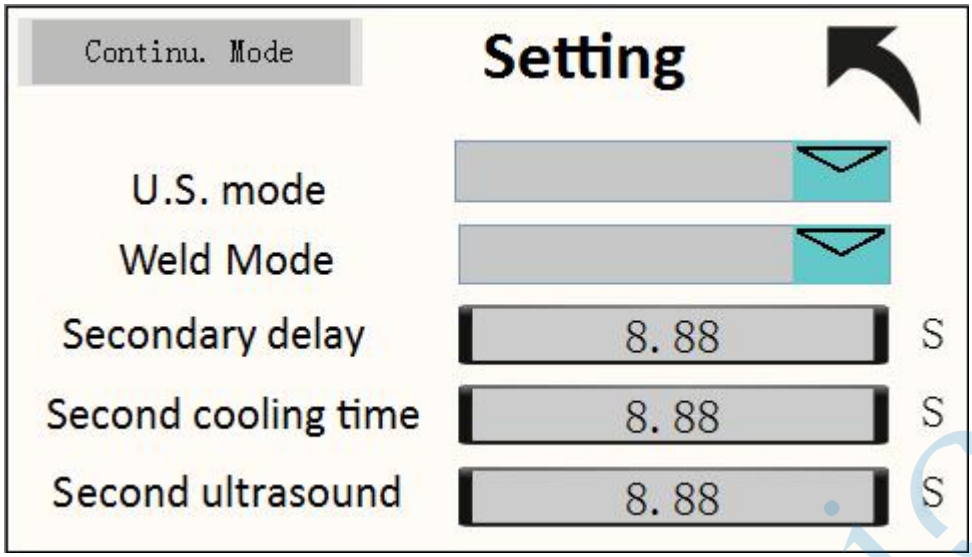
Energy model：when welding products, the delay time and the holding time are also be set. When welding the product, the welding is balanced by the currently energy. When the welding energy is reached, the ultrasonic is stopped.

6：Touch  to return to the home page

- **This is the home page**



A. Parameter Setting



- **Ultrasonic model**

Item	Data	Model
0	0	Directly ultrasonic
1	1	Scan ultrasonic
2	2	Positional ultrasonic

Directly ultrasonic: Ultrasonic model directly

Scan ultrasonic: Frequency scan + ultrasonic model

Positional ultrasonic: Reset+frequency scan+ultrasonic model

- **Welding model**

Item	Data	Model
0	0	Time model
1	1	Energy model
2	2	Continue model

Time mode: welding time as to control ultrasonic welding time of the product

Energy mode: When welding products, the same delay time and

hardening time are used. When welding products, the set energy is used to control the ultrasonic. When the welding energy is reached, the ultrasonic is stopped.

Continuous mode: When this mode is selected, the machine is long-vibration ultrasonic with no delay time and hardening time. Tips: The latter two modes are used in special cases, it is recommended to use the time mode!)

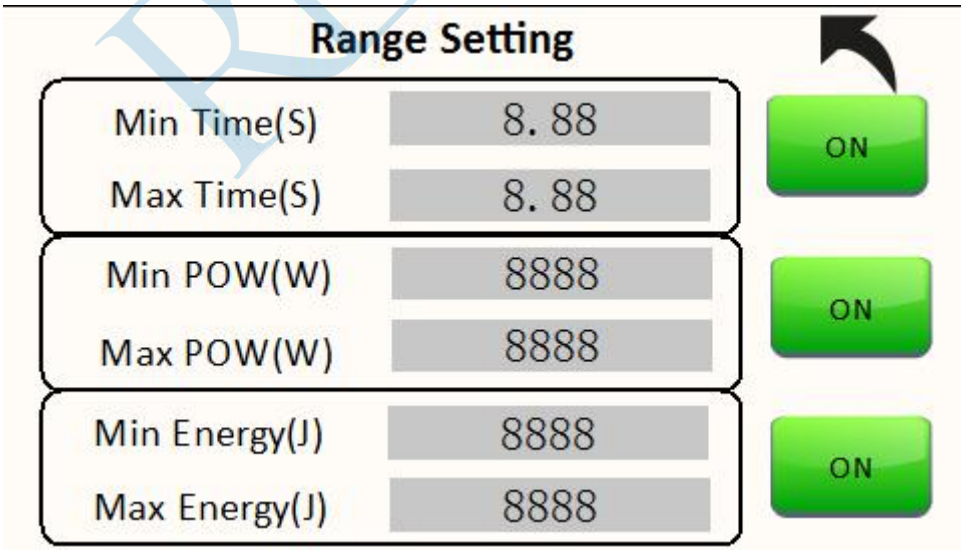
Secondary delay: secondary delay time setting

Secondary ultrasound: secondary ultrasound time setting

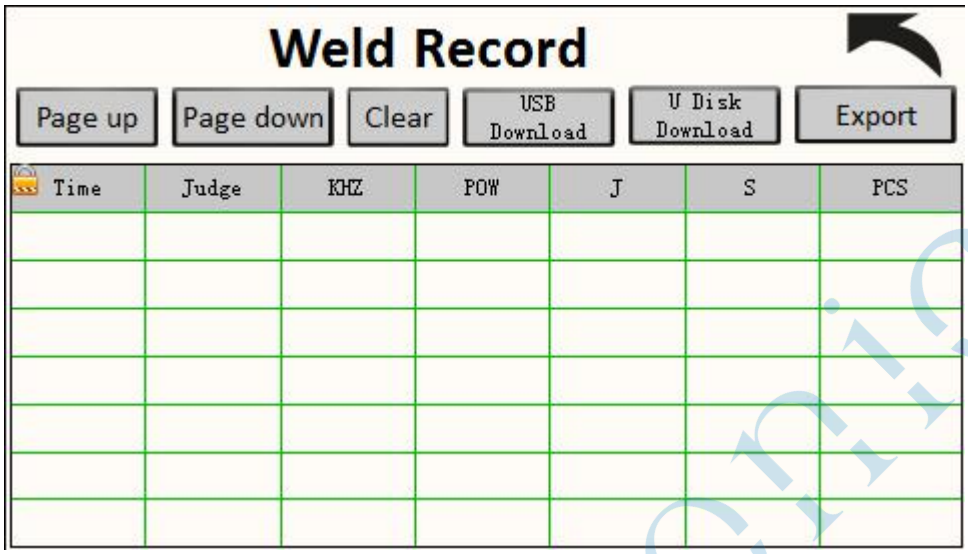
Secondary pressure holding: secondary pressure holding time setting

(Special note: when the secondary delay time is set to 0, there will be no second welding**)**

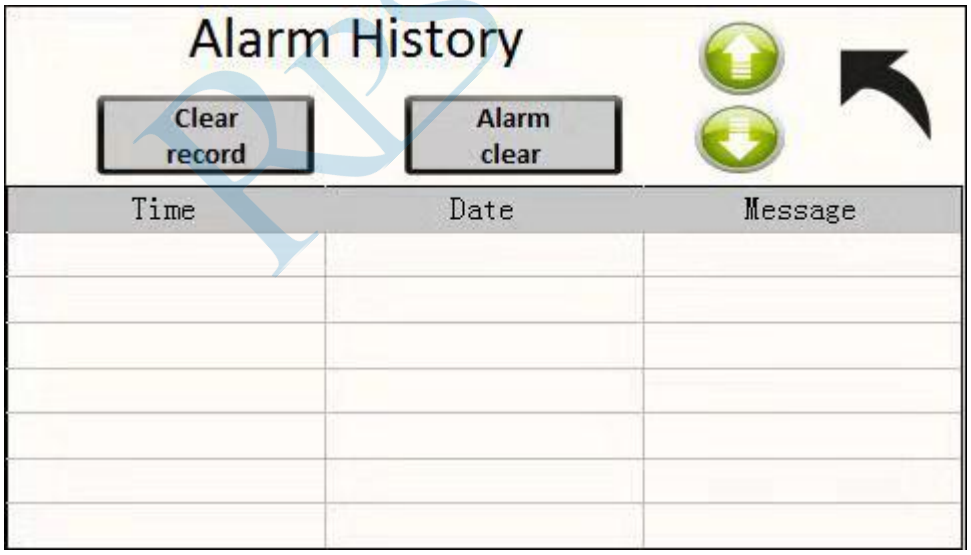
B. Judgment setting



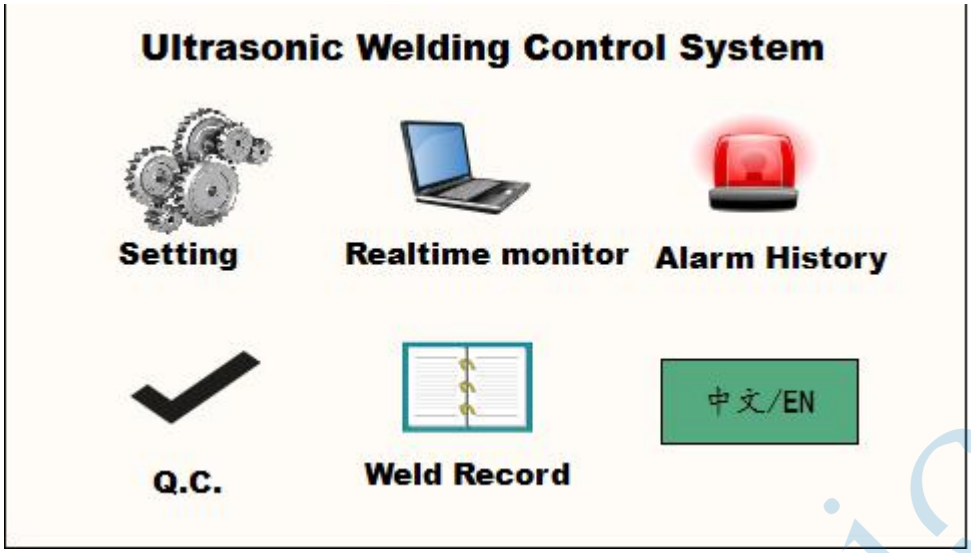
C. Data record



D. Alarm record

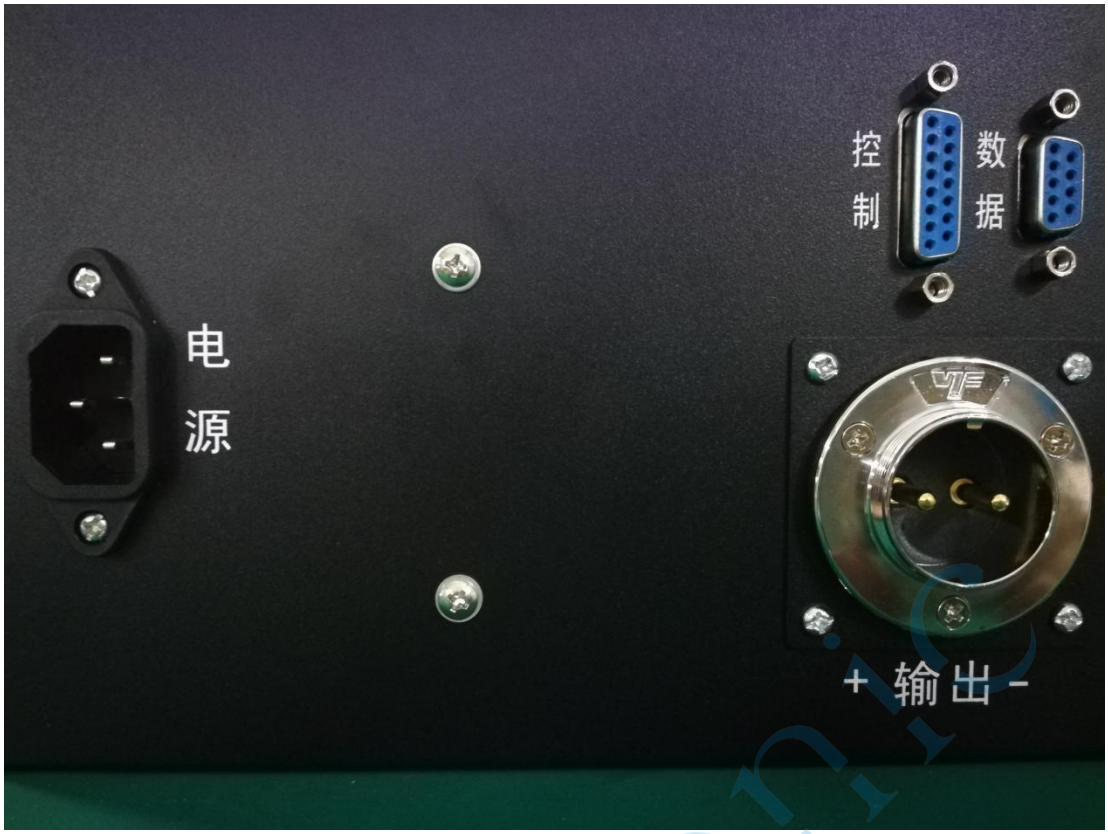


E. language selection



There are only Chinese and English version, if you required , the Chinese can be removed also.

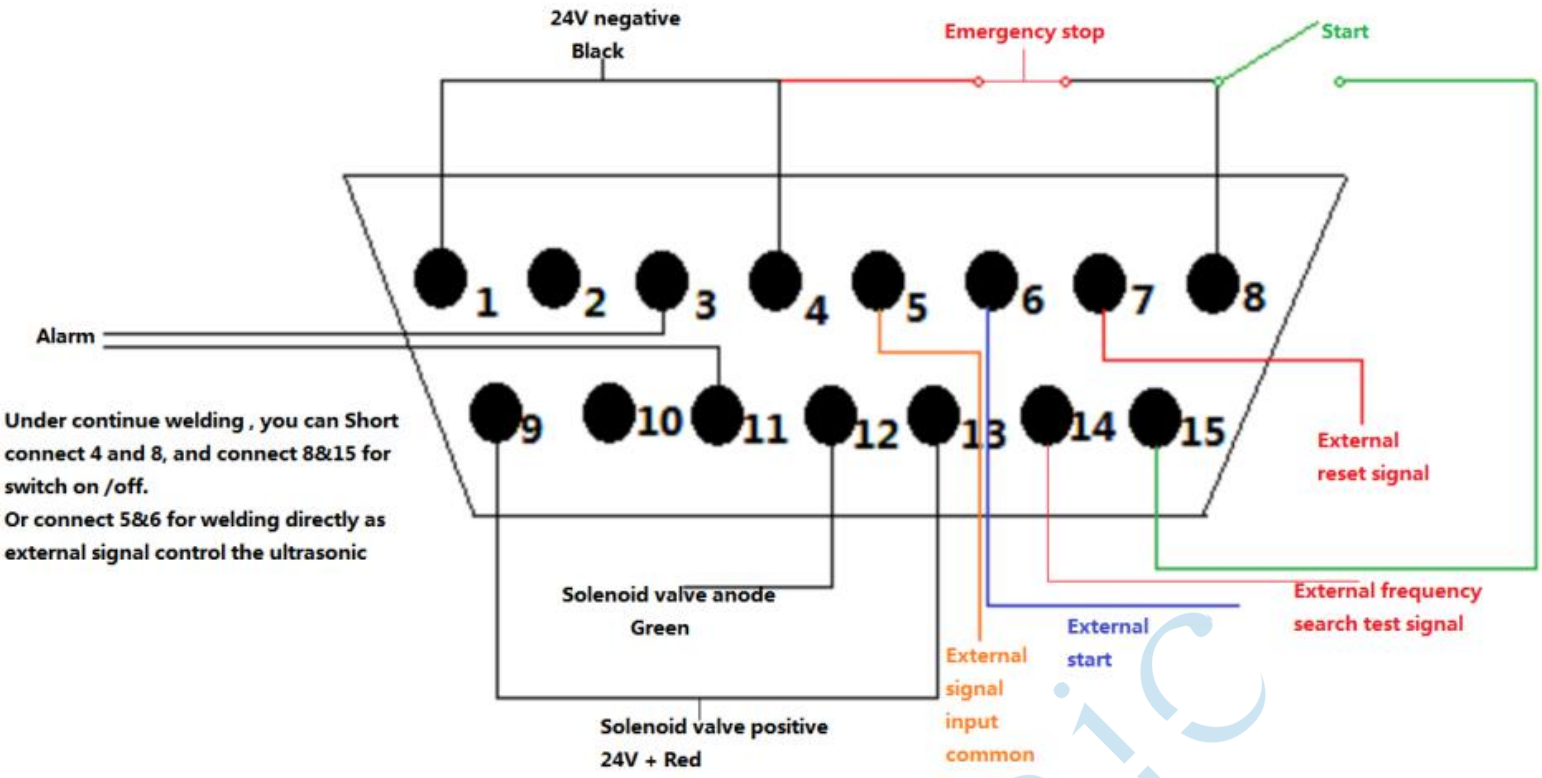
Ultrasonic generator rear panel schematic:



Power supply: 220V in stocks if you need 110V, 3days for customize

Control: Control wire output (including start stop wire, DC 24V solenoid valve wire, etc.).

The wiring connect explanation:



Input (Db9connect drawing)

Data: 232 communication output (communication port with devices such as touch screen).

2：TXD 3：RXT 5：GND

Output:

Positive: High frequency line positive output

negative: High frequency line negative output.

(Note: Do not reverse the positive and negative, prevent high voltage electric injury!)

Problem & Solution

First: When the frequency can not be searched, please first remove the h orn, check whether the frequency of the horn is within the scope of the machine search.

Second: When the machine alarms, please check whether there are crac ks,on the horn itself, and whether the power of the generator is exce eded when welding the adhesive parts of the horn, and replace the l arger power box.

Third: When the touch screen is poor communication, please check whet her the communication line is plugged. After plugging in the commun icate line, turn off the power for three minutes and restart it.

Fourth: When the horn is not available, Press ultrasonic test, the alarm or in big power percentage , or the frequency can not be searched, we can jud ge that there is a problem with the ultrasonic generator, please conta ct our company!

Fifth: When the ultrasonic effect not good, please check the following aspects:

1: Plastic material.

2: Whether the design of ultrasonic line is reasonable or not.

3: Accuracy of mode adjustment.

4: Whether the horn design is reasonable or not.

5: The amplitude of the horn.

6: Design of contact surface and interface.

7: Whether the shape and size of rubber parts are deformed or not.

8: Surface cleaning and treatment (as baking paint or electroplating).

9: Energy transferred to the adhesive.

10: Fusion of plastics of different materials.

Please pay attention to safety, prevent hand bruises! If you have any questions, contacts us anytime.