

ULTRASONIC GENERATOR

(JYD-1500E SERIES)

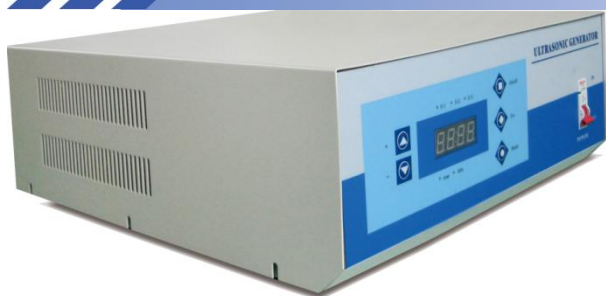
使用说明书

User Manual

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01. Overview



The newly ultrasonic generator was officially launched to the ultrasonic cleaning industry in 2007. The Company established R&D team in the development center of Hunan University in 2006, invested abundant human resources and materials to make the revolutionary modification to old ultrasonic cleaner and it has successfully developed the latest ultrasonic control technology, which has achieved ideal effects after related tests were conducted in relevant manufacturers with a year of R&D and experiment.

Main features of the generator: it adopts international advanced figure pulse for driving; compared with traditional auto-excitation type control technology, it's advantages like small in size, light in weight, powerful in power, stable and reliable in operation, continuous and adjustable in power and flexible in control have gained approval from many experts. Frequency scanning more ensured the machine can be at its best working state from the beginning to the end, which can express the potential of ultrasonic transducer to its maximum. It has perfect protection function: over-current protection, output short-circuit protection and integrated the functions of digital ampere meter, frequency and PLC remote control.



1500E type machines and tools possess auto frequency conversion function and can select 2-3 frequencies according to client requirements to realize different ultrasonic frequency cleaning to the same cleaning product, reduce client's cost and enhance the cleaning efficiency of client.

02. Main Parameters

Product model	Driving power	Power control	Working frequency	Working voltage	Maximum output current	Ambient temperature
JYD-1500E	600-1200W	0-100%	28KHz/40 KHz	220V ± 10% 50Hz/60Hz	4A	0-40℃
JYD-1500E	600-1200W	0-100%	40KHz/80 KHz	220V ± 10% 50Hz/60Hz	4A	0-40℃
JYD-1500E	600-1200W	0-100%	26KHz/45 KHz/ 120 KHz	220V ± 10% 50Hz/60Hz	4A	0-40℃
JYD-1500E	600-1200W	0-100%	40KHz/80 KHz/ 120 KHz	220V ± 10% 50Hz/60Hz	4A	0-40℃
JYD-1500E	600-1200W	0-100%	40KHz/80 KHz/ 100 KHz	220V ± 10% 50Hz/60Hz	4A	0-40℃

03. Specification on Panel Functions and Operation

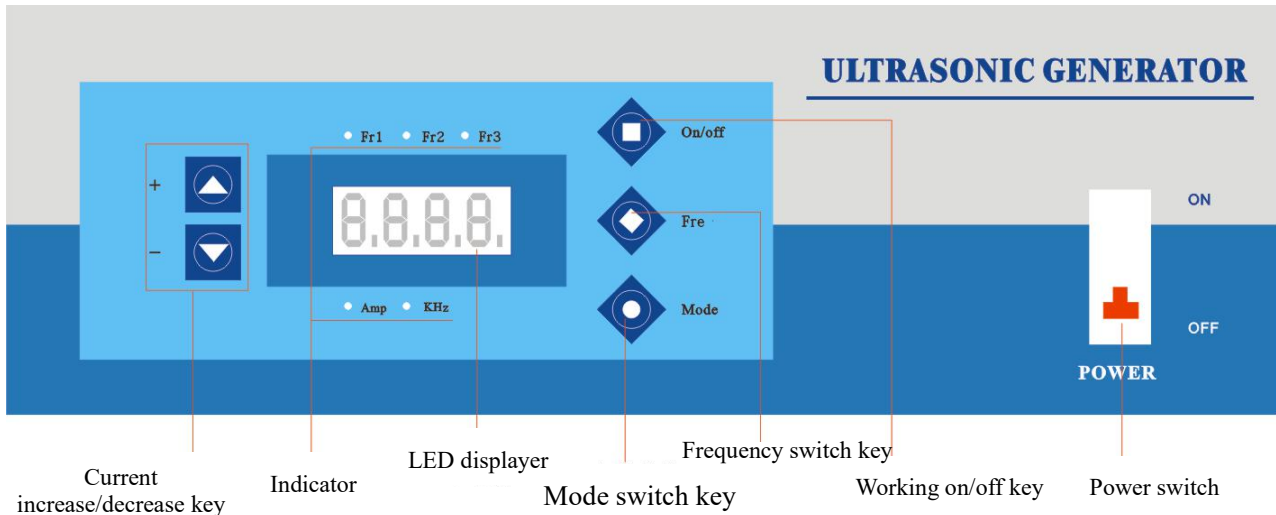
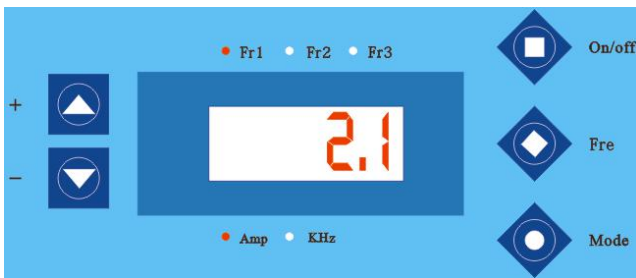


Figure 3.1

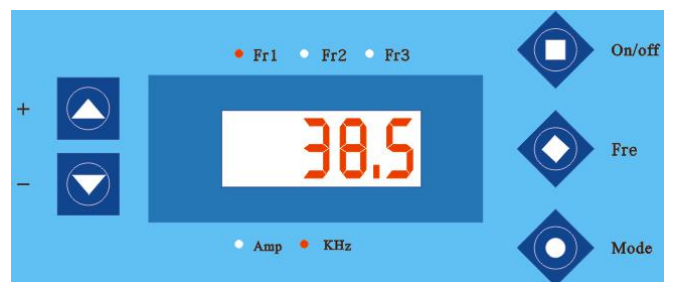
Name	Function specifications
Power switch	Power switch is general power switch for the whole machine, which is on and off when it is pushed and pressed respectively.
Working on/off key	It makes ultrasonic generator enter working or pause state.
Frequency switch key	It makes switch among three frequencies of Fr1, Fr2 and Fr3 while indicators corresponding to Fr1, Fr2 and Fr3 are on.
Mode switch key	The icon of ● is the Mode key for control on LED digital display modes which are able to display overall working current and ultrasonic working frequency respectively.
Current increase/decrease key	It makes modulation on working current of the whole machine by increase or decrease.

After booting, press the Mode key for control on LED digital display modes which are able to display overall working current and ultrasonic working frequency respectively.



Mode of current display

Figure 3.2



Mode of frequency display

Figure 3.3

Press the Fre key and you will be able to make a switch among different frequencies (Fr1/Fr2/Fr3)

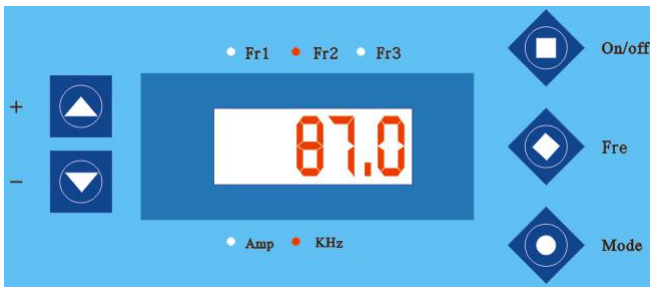


Figure 3.4



Figure 3.5

04. Specification on Connection Port

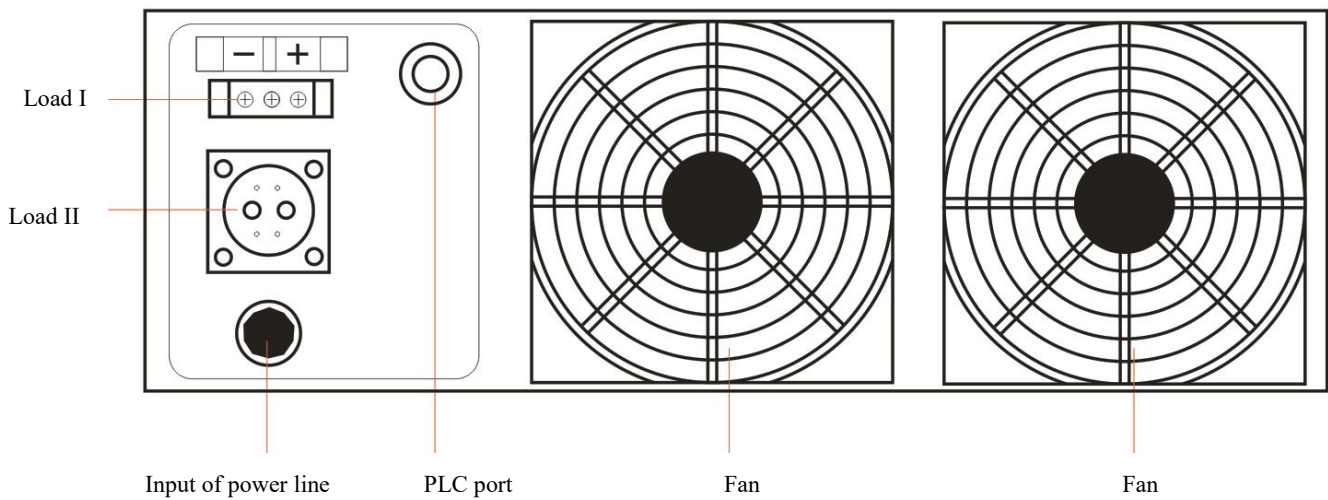
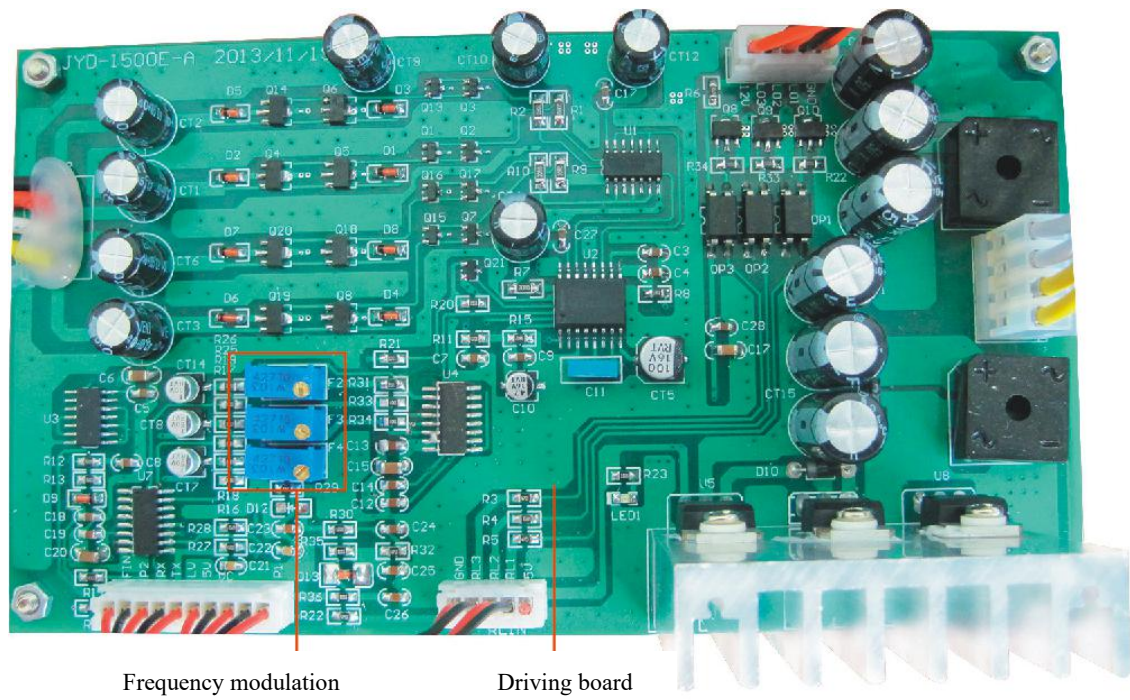


Figure 4

05. Debug Methods and Steps

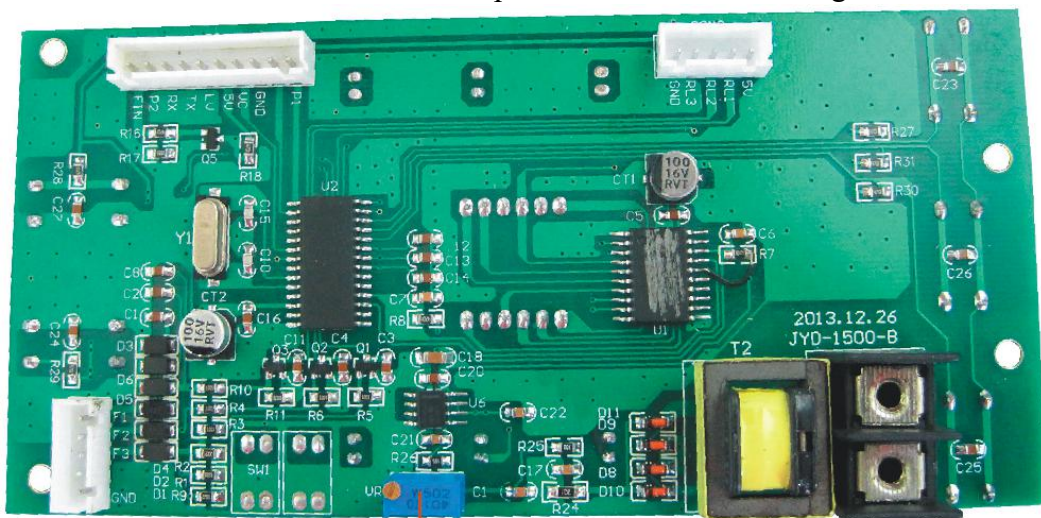
1. Open the machine cover, connect it with power line and turn on power switch.
2. Press the Mode key, modulate display mode to the mode of frequency display and press the Fre key to observe whether working frequencies of the generator are consistent with those of transducer. In case of inconsistency, please adjust the potentiometer shown in Figure 5.1 and modulate working frequency to be in consistency with that of the transducer. (In Figure 5.1, from top down is Fr1 frequency modulation potentiometer, Fr2 frequency modulation potentiometer and Fr3 frequency modulation potentiometer.)
3. Connect load (transducer) to output port of the generator (Figure 4). Note: please make correct connection as per + and -. Press working on/off key to make the generator in working state, meanwhile, frequency indicator is flashing.



Frequency modulation Driving board

Figure 5.1

4. Press the Mode key and modulate display mode to the mode of current display. Modulate power increase/decrease key and make working current of ultrasonic generator reach working requirements for load. In case of inconsistency between current value displayed and actual current value, modulate current rectification potentiometer shown in Figure 5.2.



Current rectification potentiometer

Figure 5.2

5. If current fails to reach requirements, turn off the power supply, loosen aluminum sheet of fixed matching inductance (in Figure 5.3, nut is loosened to top of screw), extract original matching gasket, turn on power switch, modulate frequency potentiometer (Figure 3.1), alter amplitude range of frequency (in terms of frequency, 28KHZ transducer and 40KHZ transducer shall be 26KHZ-31KHZ and 36KHZ-41KHZ respectively), maximize power and pull through magnetic core of matching inductance by hand, meanwhile, observe change in ampere meter. In the process of pulling through, there is a rise in the ampere meter. When it is

displayed on the ampere meter that current rises to maximum matching current value, then it will fall. And when the amplitude of the matching current value is the ideal value, pad the matching gasket on the matching inductance (Figure 5.3) till it reaches maximum matching current value (both sides of magnetic core shall be padded in a symmetrical way).

Note: In the process of debugging and application, current shall not exceed the maximum output current (i.e., working current) of the generator. Otherwise, it will result in damage on the generator. In debugging, rated current shall be calculated as per 0.13A for each transducer. Current can be reduced to 0.12A in calculation in a proper way in case of substantial transducers.

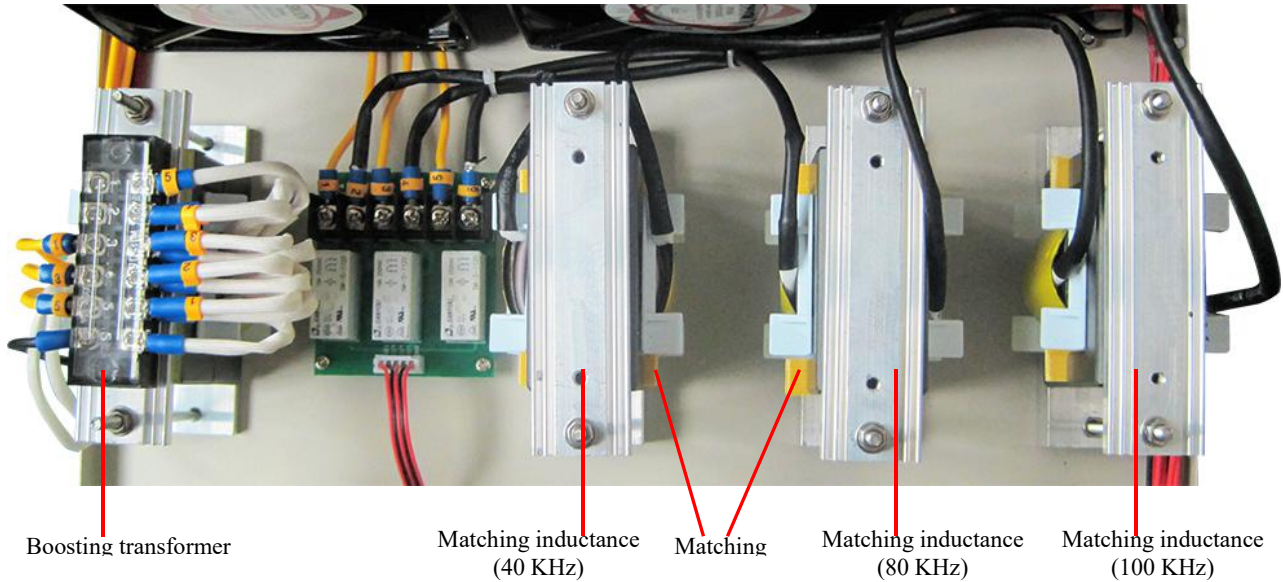


Figure 5.3

06. Common Faults and Maintenance Methods

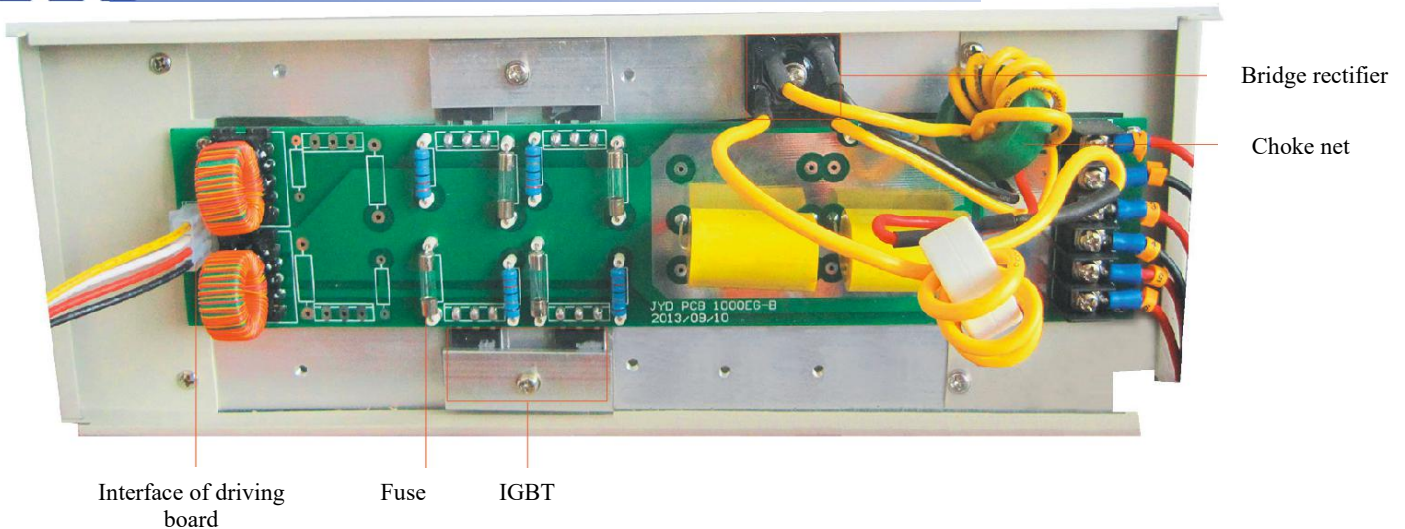


Figure 6

Fault specification	Maintenance method
<p>There is no ultrasonic and switch is automatically off when power switch is turned on.</p>	<p>(1) Remove the load (transducer) and turn on again. If generator fan runs and indicator on driving board is on, it will indicate that there is short circuit in load. Please check the load. If switch is still automatically off when load is removed (transducer) and power is switched on, please make further detection.</p> <p>(2) Open the machine cover to check whether there is damage on power switch and whether fuse on the power amplifier board (Figure 6) is burnt out. If it is burnt out, it will indicate that power tube is in breakdown. Please replace fuse, power tube and 22Ω resistance and detect whether bridge rectifier is burnt out. Way of detection: turn the multimeter to the gear of Ω resistance; connect black probe to anode of the bridge rectifier; connect red probe to two AC pins to check whether they are in breakover. If yes, replace the bridge rectifier.</p>
<p>There is no ultrasonic, fan runs and indicator on driving board is on.</p>	<p>Check whether each connector on the generator is loosened or disconnected. If yes, weld. If not, make further detection.</p>
<p>There is no ultrasonic, fan runs and indicator on driving board is off.</p>	<p>Check whether there is damage on power supply for driving board. In case of damage, replace it.</p>
<p>There is ultrasonic and there is overcurrent, which is abnormal.</p>	<p>(1) Check whether there is internal short circuit in boosting transformer. If yes, replace it; if no, make further detection.</p> <p>(2) Check whether there are problems in load.</p>
<p>There is ultrasonic, ultrasonic sound is abnormal and poor in strength.</p>	<p>(1) Check whether output frequency is within working frequency range of transducer by frequency meter (in terms of frequency, 28KHZ transducer and 40KHZ transducer shall be 26KHZ-31KHZ and 36KHZ-41KHZ respectively). In case of too big difference, return to normal working frequency by modulating frequency potentiometer.</p> <p>(2) Observe the current in ampere meter. If current is overly smaller than rated current, first of all, check whether there is damage on ultrasonic transducer, such as transducer shedding, transducer wafer cracking, bonding glue fracture and whether there is short circuit in connection guide wire. Generally, if current fall is slight or there is no fall at all, sound is normal while ultrasonic strength declines in a fierce way, it will be likely that transducer bonding glue cracks. Its way of judgment is: observe the glue coating of the joint between transducer and steel plate, which shall be smooth surface in normal situation. In case of tiny crack, it will be likely that glue has cracked and it is necessary to disassemble the transducer to re-bond. If current declines in a fierce way, mainly check whether there is open circuit in guide wire or transducer wafer fracture.</p> <p>(3) Generally working voltage, cleaning object, water temperature and type of cleaning solution etc. will have impact on ultrasonic strength. In fierce stirring in particular, ultrasonic will weaken and it will not return to normal until tens of seconds later. Please pay attention to methods of usage.</p>

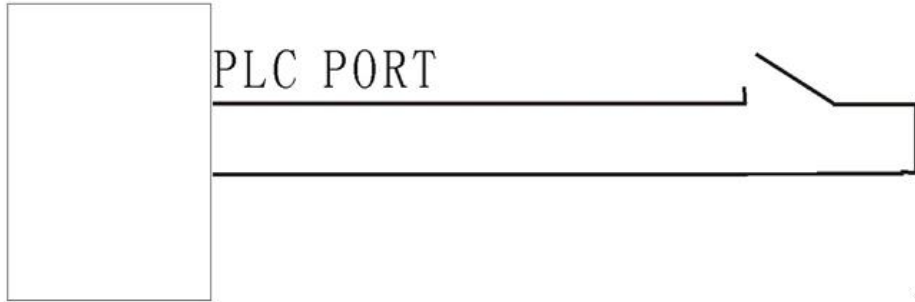
07. Precaution

Please place the machine in where it is dry and airy. Distance between the rear of the machine and screen shall be longer than 35mm for convenience in heat dissipation. Please contact maintenance personnel in case of abnormal operation. Please do not uncover arbitrarily so as to prevent injury.

There are 3 ways to change frequency of JYD-1500E .

Type 1 : Only can change frequency on generator's panel , the PLC port only can control on/off .

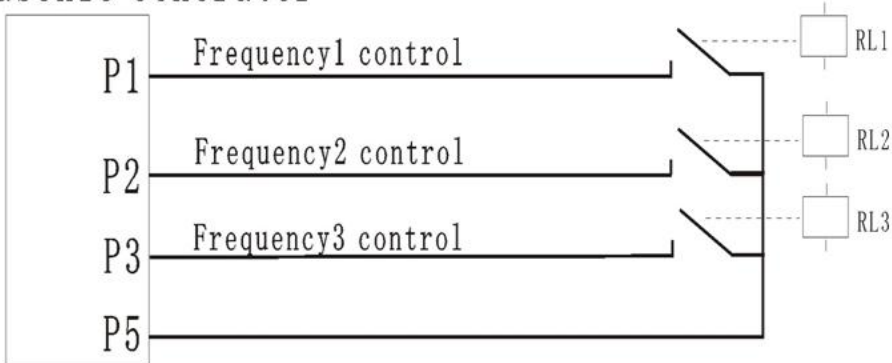
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Type 2 . Can change frequency on both panel and PLC port , PLC can control which frequency to work and the working time .

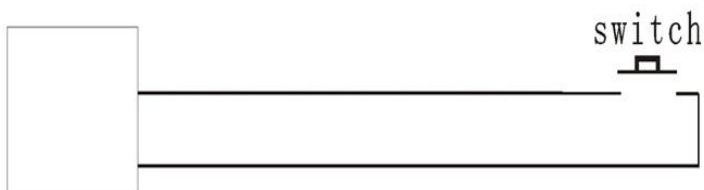
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PLC PORT

Type 3 , change frequency on generator's panel , generator inside also can control each frequency's working time , the longest working time of each frequency is 59: 59 . PLC only can control generator's on/off . once turn on the generator via PLC , the generator can work on frequency 1 ,and then change to frequency 2 automatically , and then change to frequency 3 automatically . (3 frequency work in turn,circulation) . the function of PLC is to start .

Ultrasonic Generator



PLC PORT

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