Coronalab Ultrasonic

For 20KHz of Ultrasonic Transducer

UWG Series Digital Ultrasonic Generator

UWG-1500
Digital Ultrasonic Generator

USER'S MANUAL

(English)

Fuzzy software —— *Intelligent control*

Power transistor —— *I G B T*

Circuit control —— *MUC*

PLL automatic frequency tracking —— *DDS*

Attractive appearance —— *Compact configuration*

Modular configuration —— *Easy to maintenance*

Please refer to the manual in detail before installing, operating and debugging.

安 装 ， 操 作 或 调 试 设 备 前 ， 请 先 详 细 阅 读 本 说 明

1. INSTALLATION

2.1 COMPONENTS

主机正面
Generator front panel

主机背板
Generator rear panel
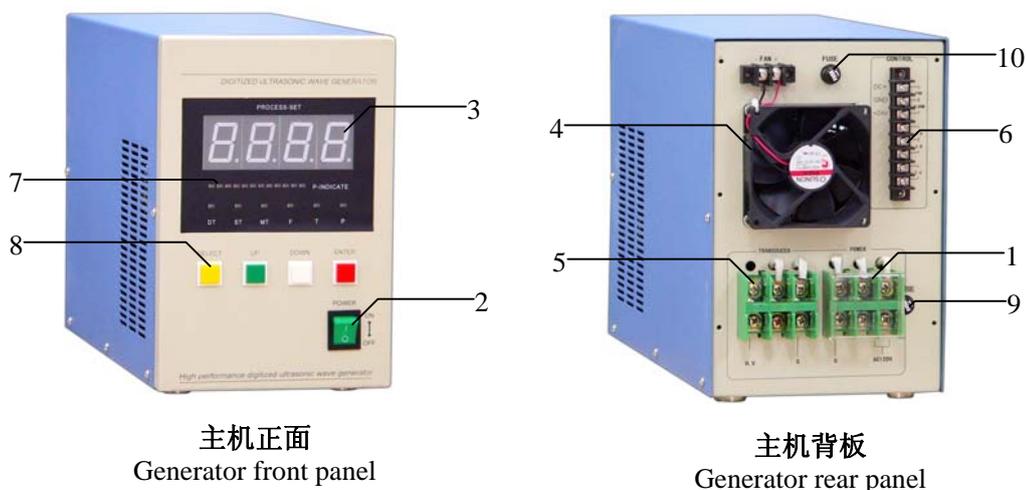
Figure 1. The Generator Front and Real Panel

1. Mian Power Junction box
2. Main Switch
3. Display
4. Fan
5. Junction box to output power

6. Junction box to contorlling
7. Current Indicator
8. Buttons for Setup
9. Input fuse
10. Fuse for Fan

2.2 INSTALLATION

2.2.1 Connect the generator to the Ultrasonic transducer

The wires of ultrasonic transducer and generator must be > 4mm^2 and connected correctly and reliably.

The Figure 2 shows the junction box to output power on the Generator rear panel. **1** means high voltage output and conntects to the high-field electrode of ulerasonic tanscducer. **3** means low voltage output, connects to the low-field electrode of ultrasonic tansducer. **2** means ground and connects to rack for fixing the ulerasonic transducer.
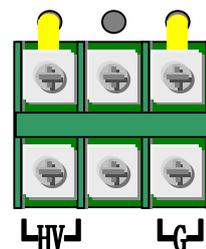

Figure 2. Junction box for output power

2.2.2 Connect the junction box for contorlling

The Figure 3 shows the junction box for controlling on the rear panel of generator.

- ●**13** and **14** are used for connecting temperature sensor. To use switch sensor (normally close), range: 60~70℃. If don't use temperature sensor, connect **13** and **14**.

● **12** and **11** are used for controlling. If Connect **12** and **11**，activate ultrasonic output; if not, stop output.

When connect **12** and **11**, turn on power switch, then generator generates ultrasonic waves, and if press ENTER (the red button), it won't work.

When open **12** and **11**, press ENTER, generator works, press again then stop activating ultrasonic waves.

If use temperature sensor, connect **11** and **12**.

● The function of **10** and **11** is as the red button ENTER. Connect **10** and **11**, generator works, connect them again then stop generating ultrasonic waves.

● **9**(+) and **8**(-) are output +24V/100mA when there are some problems happenning about ultrasonic transducer. It is used for alarm.

● There is a fan which used for cooling ultrasonic transducer connected to **7**(+) and **8**(-). The output voltage/current is +12V/200mA.

Figure 3. Junction box
for controlling
图 3 主机控制接线平台
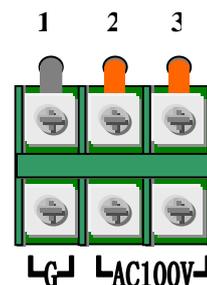
图 4 电源输入插头
Figure 4. Junction box to
input AC220V

2.2.3 Connect generator to AC Power

The Figure 4 shows the junction box to AC Power on the rear panel of Generator.

3 and **2** are input AC100V, **1** is Ground.

3. OPERATION

There is one mode to UWG Series digital Ultrasonic welding Generator :

● Normal and Setting Mode

Setup Parameters befor The First Use. Then test the performance of the Ultrasonic transducer, amplitude transformer and mould. Necessarily, continuous operation testing.

As the INSTALLATION above , when the device is installed correctly, Turn the power switch to ON, and generator sweeps frequency of ultrasonic transducer and

mould automatically then activate ultrasonic waves at once. SET the parameters befor the first use or change the process.

In this mode, there are five parameters:
- ⌖ Ultrasonic ON Time(ST) [unit: minute]
- ⌖ Ultrasonic OFF Time(MT) [unit: minute]
- ⌖ Ultrasonic ON/OFF Remaining Time(MT) [unit: hour]
- ⌖ Frequency(F)
- ⌖ Power(P)

There are six LEDs on the front panel, and one-to-one correspondence with these five parameters except LED(DT).

HOW TO OPERATE:

1) How to enter:
   - ➢ Turn generator Main Switch ON, activate ultrasonic output after sweeping frequency automatically.
   - ➢ If push ENTER button at this time, generator stops output. But if connect 12 and 11 (in Figure 3.Junction box for controlling) , ENTER button won't work.
   - ➢ Every time turn generator main switch ON, sweep frequency automaatically. If ultrasonic transducer has problems, beeper alarms.
   - ➢ The red LED(DT) and LED(ST) are on.

SELEC **ENTER**
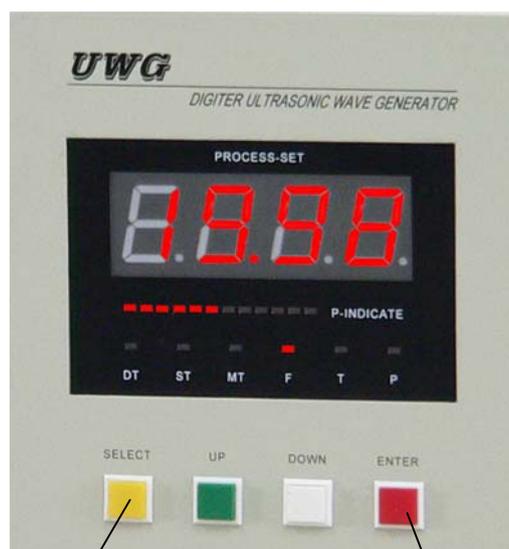
2) How to set Ultrasonic ON Time(ST):
   - ➢ Push the **SELECT** button until the red LED(ST) **flash**, then set Ultrasonic ON Time(ST).
   - ➢ Push the '▲' button or '▼' button, choose the right time (maximum:99 hours).

3) How to set Ultrasonic OFF Time(MT):
   - ➢ Push the **SELECT** button until the red LED(MT) **flash**, then set

Ultrasonic OFF Time(MT).

➢ Push the '▲' button or '▼' button, choose the right time (between 0.1 ~ 999 s).

➢ Usually set Ultrasonic OFF Time(MT) zero, generator activate ultrasonic output continuately.

4) How to Know Frequency(F):

➢ Push the **SELECT** button until the red LED(F) flash, the Frequency is shown.

➢ Donnot need to adjust Frequency.

5) How to set Power(P):

➢ Push the **SELECT** button until the red LED(P) flash, then set the Power(P).

➢ Push the **ENTER** button, generator generates ultrasound waves to ultrasonic amplitude transformer as Ultrasonic ON Time(ST) set.

➢ If Welding Power(P) is not suitable, push the '▲' button and '▼' button. There are twelve red LEDs (marking number '7' on the Generator front panel, Figure 1.) representing the current, every LED means about 1A.

NOTICE:

The Power(P) value displayed is only a reference value. The value of the actual power has a correlation with the pressure, if the power value displayed and the pressure of welding are greater, the output power value is the greater. The actual output power value of Ultrasonic transducer display by twelve LEDs.

The parameters are automatically stored in the UWG generator in every change.

After Setting complete, push **ENTER** (if not connect 12 and 11 in **Figure 3**), generator works in the specified setting as above.

For example 1, set Ultrasonic ON Time(ST) is 4 hours, Ultrasonic OFF Time(MT) is 2 hour, the screen display in order from ST to P as follow:

When generator activate ultrasonic output:

⌃ Ultrasonic ON Time(ST) [unit: minute] ⟹ 60.00 minutes

⌃ Ultrasonic OFF Time(MT) [unit: minute] ⟹ 60.00 minutes

⏃ Ultrasonic ON/OFF Remaining Time(MT) [unit: hour] ⟹ 3 hours

⏃ Frequency(F) ⟹19.96 KHz

⏃ Power(P) ⟹ 2000

When generator stop output:

⏃ Ultrasonic ON Time(ST) [unit: minute] ⟹ 00.00 minutes

⏃ Ultrasonic OFF Time(MT) [unit: minute]⟹ 60.00 minutes

⏃ Ultrasonic ON/OFF Remaining Time(MT) [unit: hour] ⟹ 1 hours

⏃ Frequency(F) ⟹19.96 KHz

⏃ Power(P) ⟹ 2000

For example 2, set Ultrasonic ON Time(ST) is 4 hours, Ultrasonic OFF Time(MT) is 0 hour, the screen display in order from ST to P as follow:

When generator activate ultrasonic output:

⏃ Ultrasonic ON Time(ST) [unit: minute] ⟹ 60.00 minutes

⏃ Ultrasonic OFF Time(MT) [unit: minute]⟹ 00.00 minutes

⏃ Ultrasonic ON/OFF Remaining Time(MT) [unit: hour] ⟹ 3 hours

⏃ Frequency(F) ⟹19.96 KHz

⏃ Power(P) ⟹ 2000

Generator won't stop generating ultrasonic waves.

4. INITIAL MOOD FOR SETTING FREQUENCY AND PROTECTION PARAMETERS

NOTICE: The frequency and protection parameters in this mood set by technicists in the manufacture factroy, do not be provided to finally user.

4.1.How to into initial mood

As finish the INSTALLATION correctly, push the ENTER button and ▲ button, Turn the power switch to ON, push ▲ until the number '****' display. Push the SELECT button until the red LED(DT) and LED(ST) flash at the same time, it means into the mood.

4.2. How to set the starting frequency for sweeping

MUST Set the starting frequency in The first use.

Push the SELECT button until the red LED(DT) and LED(MT) flash at the same time, push the '▲' button or '▼' button，select a right one. For example, if use the ultrasonic transducer of 20KHz, usually set the starting frequency is 20.50KHz.

NOTICE: The maximum frequecy is 22.00KHz, but when set the starting frequency for sweeping, do not set it as 22.00KHz, or default starting frequency.

4.3. How to set the finishing frequency for sweeping

Must Set the finishing frequency in The first use.

Push the SELECT button until the red LED(DT) and LED(F) flash at the same time, push the '▲' button or '▼' button，select a right one. For example, if use the ultrasonic transducer of 20KHz, usually set the finishing frequency is 18.80KHz.

NOTICE:

- **The minimum frequecy is 18.00KHz, but when set the finishing frequency for sweeping, do not set it as 18.00KHz, or default finishing frequency.**

- **The range of sweeping frequency from starting to finishing for ultrasonic transducer is the actual resonant frequency±0.50KHz. For example, if the actual resonant frequency is 19.90KHz, the range of sweeping frequency is 20.40~19.40KHz. If the range is too wide, the sweeping frequency time will be longer and ultrasonic transdncer may work in harmonic wave point.**

4.4. How to detecte resonant frequency for ultrasonic transducer, amplitude transformer and mould

Push the SELECT button until the red LED(DT) and LED(ST) flash at the same time, then push the ENTER button, generator detectes automatically the frequency of ultrasonic transducer, amplitude transformer and mould. When finish, the frequency displayed on the front panel is no-pressure resnonant frequency.

4.5. How to set protection

Push the SELECT button until the red LED(DT) and LED(T) flash at the same time, start to set. The maximum value is 100. "100" means : when all the twelve red LEDs (marked 7 on the Generator front panel, Figure 1.) are light and then generator is protected. If set the number is 50, there are 6~7 red LEDs light, and generator is protected.

4.6.Set whether generating ultrasonic waves when turn switch on

Push the SELECT button until the red LED(DT) and LED(P) flash at the same time, start to set. If choose **1**, generate ultrasonic waves once turn switch ON. If

choose **0**, turn switch ON , it won't generate ultrasonic waves, then push the ENTER button, generate ultrasonic waves.

In a general way, choose **1.**

When all the parameters set finish, Turn the power switch to OFF.

5. SPECIFICATIONS

    6.1   Model：UWG—1500 ;

    6.2   Power：AC100V（single-phase）;

    6.3   Frequency：18~22KHz;

    6.4   Generator Dimension：180(W)×270(H)×460(D)mm^3 ;

    6.5   Generator Weight：8kg ;

    6.6   Output Power：1000W;

6. MAINTENANCE

    5.1   UWG series equipment is high-voltage power, please DO NOT self-maintain or repair.

    5.2   The operating voltage on the high voltage side of Ultrasonic transducer is about 800V. Prohibite touch the high voltage When generating ultrasonic waves, otherwise there is danger of electric shocks and burns!

    5.3   The wires output of power from generator and ultrasonic transducer can not be error, otherwise the rack will take high-voltage!

    5.4   If occurring di-di alarm discontinuously in the generator and frequency gose to the highest settings, please check whether the transducer, amplitude transformer and mold have problems.

    5.5   In the process, if the working frequency is getting lower and lower, please check whether mold is broken.