OPERATING   MANUAL

MHS-5200P/P+
Dual-channel
DDS Signal Generator

Software's: http://www.mhinstek.com/down/html/?145.html

Product Introduction

MHS-5200P / P + Series instrument uses large scale integrated circuits and high-speed FPGA MCU microprocessor, internal circuit to take surface mount technology has greatly enhanced the instrument's immunity and longevity. Display interface using LC1602 LCD display is divided into two lines, the top line shows the current frequency, the following line display other parameters or function variable and flexible use of flip key set, greatly enhances the operability. The instrument signal generator, waveform scanning, measuring and using parameters have great advantages, is an electronics engineer, electronics laboratories, production lines and teaching, research ideal test, measurement equipment.

Instrument characteristics

1, Direct digital synthesis (DDS) technology, FPGA design, low power consumption;

2, Dual output, can work in sync phase adjustable;

3, With up to 999 seconds, linear and logarithmic sweep sweep function;

4, With a sine wave, the basic function waveform triangle wave, square wave, sawtooth liters, falling sawtooth and variable duty cycle pulse waves, while supporting user-defined arbitrary waveform;

5, With a total of 10 groups M0 ~ M9 parameter storage place, boot automatically called M0 data;

6, Non-power amplifier output signal amplitude 5mVp-p ~ 20Vp-p, the amplifier output signal amplitude 30mVp-p ~ 30Vp-p

7, Built-in precision -20dB attenuator, achieve a minimum amplitude resolution 1mV;

8, With a 120% + 120% DC bias function;

9, The duty cycle of the pulse wave accurately adjusted to 0.1%;

10, With 4 variable phase difference of TTL output;

11, Having a frequency measurement, period measurement, positive and negative pulse width measurement, duty cycle measurements and counting functions;

12, Optional four kinds of gate frequency measurement time, which strike a balance between speed and accuracy;

13, All parametric equalizer can be done by an internal calibration procedure;

14, Powerful communications features, completely open communication protocol, the secondary development of very simple;

15, When connected to a PC, the PC can be used to control the instrument, and can be edited on the PC to download arbitrary waveform output waveform to the instrument.

Model Description

MHS-5200P / P + power-type function signal generator is based on the MHS-5200A on the increase in two-channel power amplifier, the instrument has all the features of MHS-5200A; the way the output signal is divided into two, the front panel CH1 and CH2 non-port BNC signal amplifier, the output amplitude range is 5mVp-p ~ 20Vp-p; rear panel terminal CH1 and CH2 output is the result of a power amplifier amplified signal voltage amplitude range is 30mVp-p ~ 30Vp-p .

Our power signal generator biggest feature is the amplitude of the signal is digital amplifier continuously adjustable, very accurate, because we are completely independent dual-channel amplifier, the output voltage can be used in series up to 60V, the maximum current can also be used in parallel up to 2A, maximum power is 30W.

model	Amplifier signal bandwidth (Including sine, square, and other waveforms)	Non-amplifier signal bandwidth (Sine wave)	Non-amplifier signal bandwidth (Other than the sine wave)
MHS-5200P（6M）	DC(0kHz)~80kHz	0Hz~6MHz	0Hz~6MHz
MHS-5200P（12M）	DC(0kHz)~80kHz	0Hz~12MHz	0Hz~6MHz
MHS-5200P（20M）	DC(0kHz)~80kHz	0Hz~20MHz	0Hz~6MHz
MHS-5200P（25M）	DC(0kHz)~80kHz	0Hz~25MHz	0Hz~6MHz
MHS-5200P+（6M）	DC(0KHz)~5MHz	0Hz~6MHz	0Hz~6MHz
MHS-5200P+（12M）	DC(0KHz)~5MHz	0Hz~12MHz	0Hz~6MHz
MHS-5200P+（20M）	DC(0KHz)~5MHz	0Hz~20MHz	0Hz~6MHz
MHS-5200P+（25M）	DC(0KHz)~5MHz	0Hz~25MHz	0Hz~6MHz

Machine built-in power module has two options,

One is the bandwidth of the amplifier 0-80kHz common type of (MHS-5200P),

Another type is the bandwidth broadband amplifier 0-5MHz's (MHS-5200P +),

You can choose different models according to their needs, two types of power amplifier parameters are as follows:

Project	MHS-5200P	MHS-5200P+
Signal bandwidth	DC(0kHz)~80kHz	DC(0KHz)~5MHz
Output signal amplitude	30mVp-p~30Vp-p	30mVp-p~30Vp-p
Maximum output current	1A	300mA
Maximum power output	15W*2	4.5W*2
Output short circuit protection	There are (limiting)	There are (limiting)
Output Impedance	≦1Ω	≦1Ω
Output phase	In phase with the signal terminal	With the signal terminal of the inverter
Distortion	<1%	<1%
Output signal flatness	±1dB	±1dB

Non-signal amplifier front panel CH1 and CH2 output, MHS-5200P (common type) and MHS-5200P + (broadband type) technical indicators are the same, we use the following details to introduce this form:

Project			Parameters	
Key Features	**Frequency Range**	Sine wave		Normal mode：MHS-5200-06M：0Hz~6MHz; MHS-5200-12M：0Hz~12MHz; MHS-5200-20M：0Hz~20MHz; MHS-5200-25M：0Hz~25MHz。
		Square wave	0Hz~6MHz	
		Triangle wave	0Hz~6MHz	
		Sawtooth	0Hz~6MHz	
		Arbitrary Waveform	0Hz~6MHz	
		TTLDigital signal wave	0Hz~6MHz	
	Output modulation		Frequency sweep	
	Waveform types		Sine, square, triangle, sawtooth lift, TTL digital signal wave, Arb	
	Waveform Length		2048 Point	
	Sampling rate		200MSa/s	
	Waveform amplitude resolution		12 bits	
	The minimum frequency resolution		10mHz	
	Frequency error		$\pm5\times10^{-6}$	
	Frequency stability		$\pm1\times10^{-6}$	
	Amplitude range (peak to peak)		5mVp-p~20Vp-p(12MHz or less) 5mVp-p~15Vp-p(12MHz above)	
	Output Impedance		50Ω±10%	
	Amplitude resolution		1mVp-p（-20dBAttenuation） 10mVp-p（Does not decay）	
	Amplitude stability		±0.5%（Every five hours）	
	Amplitude error		±1%+10mV（Frequency1KHz，15 Vp-p）	
	Offset Range		－120%～+120%（The ratio of the bias voltage and signal amplitude）	
	Bias Resolution		1%	
	Phase range		0～359°	
	Phase resolution		1°	
Sine wave	**Harmonic arrived System**		40dBc(<1MHz) ,35dBc(1MHz~20MHz)	

	Distortion	<0.8%(20Hz~20KHz)
Square wave	**Lifting along time**	≤20ns
	Overshoot	≤10%
	Duty cycle adjustment range	0%~99.9%
TTL	**Lifting along time**	≤20ns
	LOW	<0.3V
	High	1V~10V
Arbitrary Waveform	**Quantity**	16 groups
	Memory depth / group	1KB / 16 group
Scan	**Scan Mode**	Linear sweep, log sweep
	Scan time	1S～999S
	Scan range	It is determined by the sweep parameter settings
External measurements	**Frequency range**	GATE-TIME=10S　　　　0.1HZ - 60MHZ GATE-TIME=1S　　　　　1HZ - 60MHZ GATE-TIME=0.1S　　　　10HZ - 60MHZ GATE-TIME=0.01S　　　100HZ - 60MHZ
	Input voltage range	0.5Vp-p~20Vp-p
	Counting range	0~4294967295
	Counting	Manually
	Positive and negative pulse width measurement	10ns resolution, the maximum measurable 10s
	Periodic measurements	20ns resolution, the maximum measurable 20s
	Duty Cycle Measurement	0.1% resolution, measuring range from 0.1% to 99.9%
	Source Selection	1.Ext.IN input (AC signal), 2.TTL_IN input (digital signal)
Memory	**Memory**	10
	Location	M0-M9
Interface	**Interface**	Using USB to serial interfaces
	Communication rate	57600bps
	Protocol	Using the command line, the agreement public
Power supply	**DC**	DC12V
Size	**Length × width × height**	180×190×71mm
Weight	**Single**	680g

Instrument Description

1、Panel

MHS-5200P appearance Figure 2-1 shows the description of the parts as shown in Table 2-1.Figure 2-1 MHS5200P panel
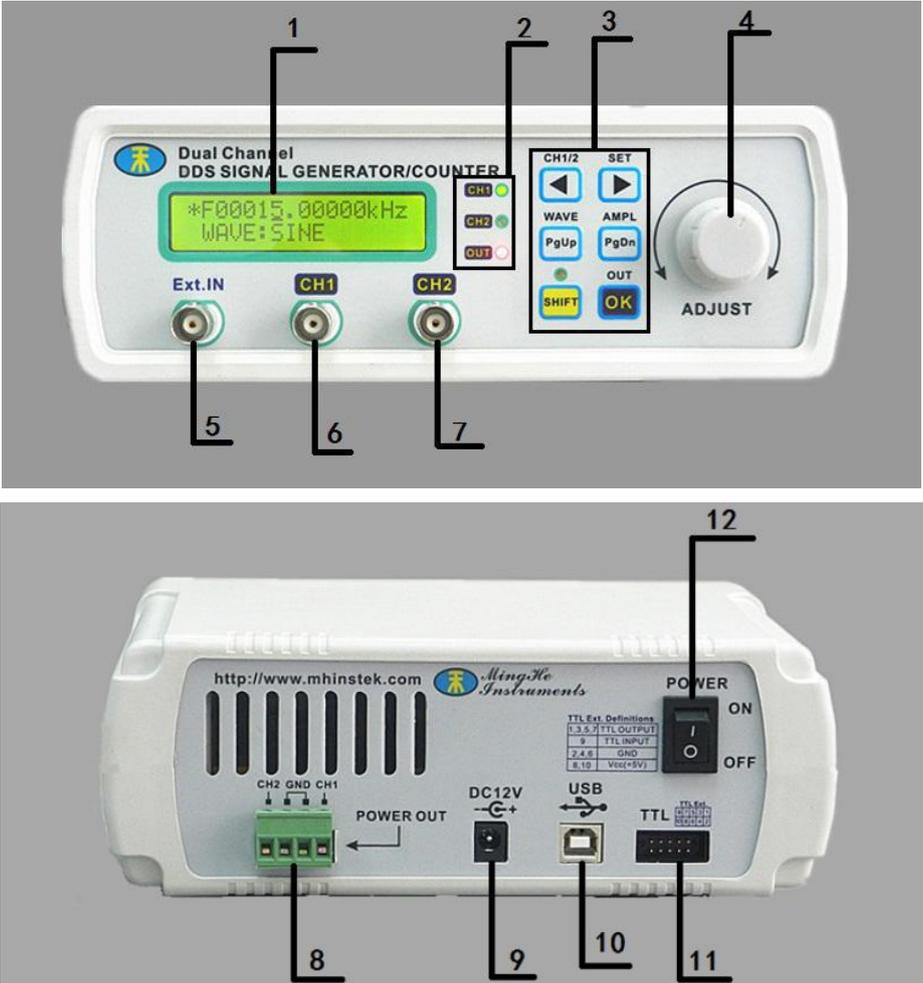
Table 2-1 MHS5200P Panel

Grade	Explanation	Grade	Explanation
1	LCD1602	7	CH2 output interface
2	Status Indicator	8	Power out
3	Operation buttons	10	USB communicationinterface
4	Knob	11	TTL input / output interfaceinterface
5	Ext.In input interface		
6	CH1 output interface	12	Switch

2、Ribbon Description

LCD instrument display is divided into two functional areas, as shown in Figure 2-2, description of the parts shown in Table 2-2.

Figure 2-2 MHS5200Pschematic display
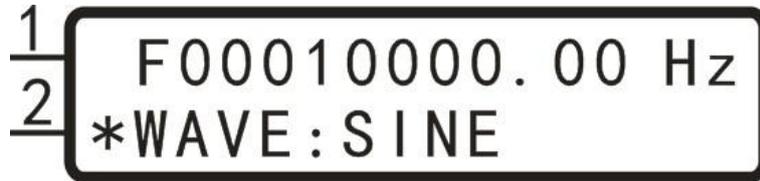
Table 2-2 MHS5200P Ribbon Description

Grade	Ribbon Description
1	Frequency Display
2	Operation Feature Tip

3、Key Functions

CH1/2 ◀	Cursor left adjustable parameters of the step value
SET ▶	Move the cursor right step to reduce the adjusted parameter value
WAVE PgUp	Page Up key function selection
AMPL PgDn	Function selection Page down
OUT OK	OK button
SHIFT + ◀ CH1/2	Channel switch (CH1 \ CH2)
SHIFT + ▶ SET	Switching position, when the "*" when the "*" second line adjustment options to adjust the frequency of the first line,
SHIFT + PgUp WAVE	Click this button to quickly enter a combination of waveform adjustment
SHIFT + PgDn AMPL	Click this button to quickly enter a combination of amplitude modulation
SHIFT + OK OUT	Click this button to turn on or off output combination

Menu Function Description

1	F00015.00000KHz	It indicates the current frequency of the output waveform
2	WAVE:SINE	WAVE mean waveform, SINE represents a sine wave
3	WAVE:SQUARE	SQUARE represents a square wave
4	WAVE:TRIANGLE	TRIANGLE triangular wave representation
5	WAVE:SAWTOOTH-R	SAWTOOTH-R represents liter sawtooth
6	WAVE:SAWTOOTH-F	SAWTOOTH-F represents drop sawtoot
7	WAVE:ARB0	ARB represents any wave, any wave 0 0 indicates the location of storage, a total of 0-15 Group on Arbitrary wave
8	AMPL: 05.00V	AMPL represents the output waveform of the peak to peak (voltage)
9	OFFS：000%	OFFS is an offset function, -120% to + 120% adjustment
10	DUTY：50.0%	DUTY is to adjust the duty cycle function
11	PHASE：000°	PHASE 2 represents the phase difference between channel 1 and channel
12	TRACE：OFF	Channel 1 and channel 2 track is open, OFF means closed, ON means open, the channel will change with the change of channel 1 and 2 open.
13	FREQ-UNIT:KHZ	Indicates the output frequency of the unit, then the unit is KHz, press the OK button to switch.

14	INVERT：OFF	A reverse function key, you can make the output waveform phase reverse.
15	BURST：OFF	It represents burst features on or off
16	MSR-SEL:Ext.IN	Represents the input port select frequency measurement signal, Ext.IN indicates an analog signal input port, TTL.IN represents digital signal input port
17	MSR-MODE:FREQ.	Represents a measurement mode, FREQ represented in this case the measurement frequency, COUNTR represents counting function, POS-PW positive pulse width measurement, NEG-PW negative pulse width measurement, PERIOD measurement period DUTY duty cycle measurements
18	GATE—TIME：1S	Set the gate time, you can press the OK button to switch
19	F=0Hz	It represents the frequency of the waveform being measured
20	SET SWEEP FRWQ1	Indicates the sweep start frequency, set on a single line
21	SET SWEEP FREQ2	Indicates the sweep stop frequency, set on a single line
22	SWEEP TIME:001S	It indicates the sweep time
23	SWEEP MODE:LINE	Sweep mode, LINE represents a linear sweep, LOG logarithmic sweep
24	SWEEP:OFF	Sweep switch, OFF means closed, ON means to open
25	SAVE:M0	Save parameters, select the encoder switching group 10 storage locations

Instructions

Power

1、Access 12V supply. You can use the box to configure oriented instrument powered DC5V power adapter.

2、Enter the main interface.

Instructions

This section will detail how to operate the instrument. It should be noted that, similar to the instrument channel CH1 CH2 channel with which the operating instructions section 1-6 also apply to CH2 channel.

1、Set the CH1 waveform

```
*F00024.00000kHz
 WAVE:SINE
```

Drawing 2-3

In the main interface shown in Figure 2-3, when the "*" in the first line ，

Click **OK** (OUT) Bond Adjust the output waveform type, the output waveform types are sine, square, triangle, rising sawtooth, descending sawtooth wave and a 16-Group on Arbitrary,Press **OK** (OUT) Key it is possible to return ahead of the original set of waveform，

If you want to quickly adjust the output waveform can click **SHIFT** + **PgUp** (WAVE)， Then a "*" to switch to the second row, rotating "ADJUST" knob, you can quickly switch the output waveform types.

2、Set the CH1 frequency

In the main interface, shown in Figure 2-4 when the "*" in the first line,By adjusting **◄** (CH1/2) or **►** (SET) Move the cursor to adjust the frequency step size，Then to adjust the frequency of the output waveform by rotating the "ADJUST" knob.

```
*F00020.00000kHz
 WAVE:SQUARE
```

2-4

3、Setting the amplitude of CH1

In the main interface，Press [SHIFT] + [PgDn] Button after，The magnitude of the interface will appear in a cursor set，Click [◄] or [►] Button, It is possible to move the cursor position, rotate "ADJUST" knob to adjust the amplitude of the output waveform, as shown below:

```
*F00020.00000kHz
 WAVE: 05.00V
```
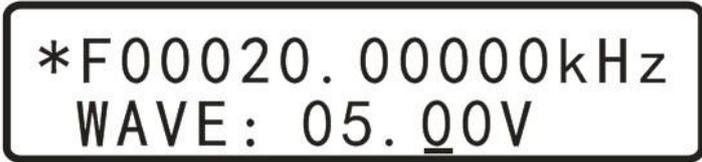
Drawing 2-5

Wherein, 05.00V refers peak to peak. In this range setting function mode, the maximum amplitude of 20V, minimum 0.20V, the minimum step value 0.01 (10mV); as shown in a state 2-6，Press [OK] -20dB Attenuation state of the incoming signal, the output signal of a maximum of 2.000V, the minimum value of 0.005V, the minimum step is 0.001V (1mV).

```
*F00020.00000kHz
 WAVE: 1.500V
```
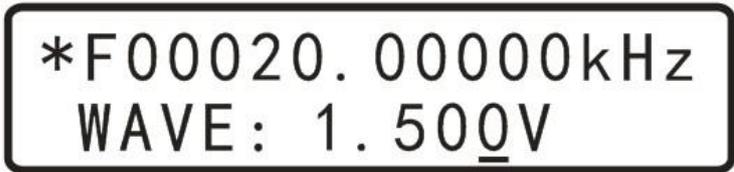
2-6

4、Setting bias of CH1

In the main interface，Press [PgUp] 或 [PgDn]，Adjusted to offset adjustment options shown in Figure 2-7，Then click [SHIFT] + [►]，The "*" are switched to the second row，Click [◄] or [►] To move the cursor，Then"ADJUST" knob to adjust the offset

parameter.
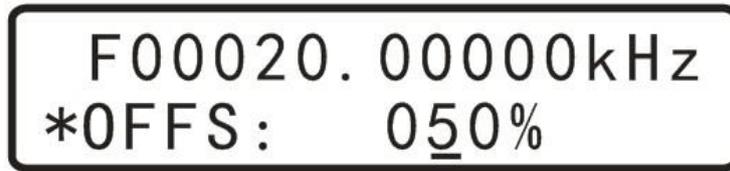
```
F00020.00000kHz
*OFFS:   050%
```

Drawing 2-7

5、Set the Amplitude CH1 power output

In the main interface，press the button SHIFT + PgDn(AMPL)，and then click PgDn(AMPL) to enter the power output settings interface, rotate "ADJUST" knob to adjust the amplitude of the output waveform, as shown below:
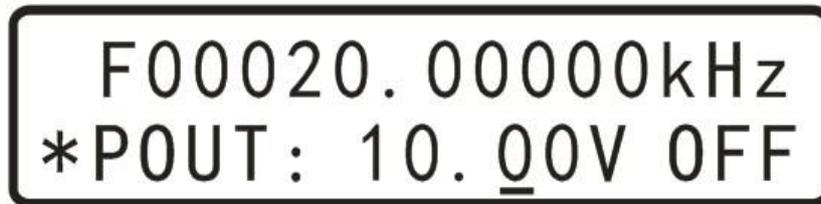
```
F00020.00000kHz
*POUT: 10.00V OFF
```

Press OK(OUT) to ON
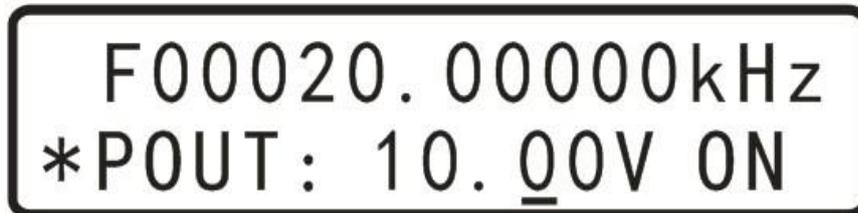
```
F00020.00000kHz
*POUT: 10.00V ON
```

6、Duty cycle setting CH1

In the main interface，Press PgUp(WAVE) or PgDn(AMPL)，Adjusted to duty cycle adjustment options shown in Figure 2-8，Then click SHIFT + ▶(SET) ，The "*" are switched to the second row, click ◀(CH1/2) or ▶(SET) To move the cursor，Then"ADJUST" knob to adjust the offset parameter.

```
F00020.00000kHz
*DUTY:  99.9%
```

Drawing2-8

7、Setting the phase difference between the two channels

In the main interface，Press[PgUp]WAVE or[PgDn]AMPL，Adjusting the phase adjustment options shown

in Figure 2-9, Then click[SHIFT]+[▶]SET ， The "*" are switched to the second row，

Click[◀]CH1/2 or[▶]SET To move the cursor， Then"ADJUST" knob to adjust the bias

parameter, you need special note is the phase difference only in the same frequency

CH1 and CH2 frequency when it makes sense.

```
F00020.00000kHz
*PHASE: 180°
```
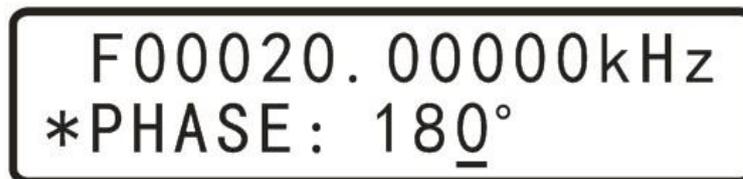
Drawing 2-9

8、Setting the display unit of frequency

In the main interface，Press[PgUp]WAVE or[PgDn]AMPL， Adjusted to the frequency display unit

adjustment options shown in Figure 2-9, Then click [SHIFT]+[▶]SET ， The "*" are

switched to the second row，Then click[OK]OUT Switching frequency units Hz、kHz、MHz。

```
F00000020.00Hz
*FREQ-UNIT:Hz
```

2-10

9、Tracking

Tracking function is used to synchronize the frequency of CH2 to CH1, and users can set the amplitude of the tracking and duty track, In the main interface，Press $\overset{\text{WAVE}}{\boxed{\text{PgUp}}}$ or $\overset{\text{AMPL}}{\boxed{\text{PgDn}}}$ ，Adjusted to tracking options shown in Figure 2-11，Then click $\boxed{\text{SHIFT}}+\overset{\text{SET}}{\boxed{\blacktriangleright}}$ ，The "*" are switched to the second row, and then click $\overset{\text{OUT}}{\boxed{\text{OK}}}$ Switched ON or OFF state. When the tracking function is turned frequency automatic tracking frequency channel CH2 CH1 channel. Also, before turning if tracing, CH1 and CH2 channel amplitude is the same tracking feature is turned on CH1 and CH2 frequency automatic tracking; if the duty is the same as CH1 and CH2 are turned on after tracing CH1 and CH2 account empty than automatic tracking.

```
F00000020.00Hz
*TRACE:ON
```

Drawing 2-11

10、External signal input port selection

Select the input signal Ext.IN for input AC signal, Select TTL.IN for selecting the input digital signal wave. In the main interface,Press$\overset{\text{WAVE}}{\boxed{\text{PgUp}}}or\overset{\text{AMPL}}{\boxed{\text{PgDn}}}$，Adjust to the input port selection page, Then click $\boxed{\text{SHIFT}}+\overset{\text{SET}}{\boxed{\blacktriangleright}}$ ，The "*" are switched to the second row,Then click$\overset{\text{OUT}}{\boxed{\text{OK}}}$Key switch input port selection Ext.IN or TTL.IN.

```
F00000020.00Hz
*MSR-SEL:Ext.IN
```

2-12

11、Measurement function

In selecting the input source later, the input signal can be measured a variety of parameters.

（1) In the main interface, Press $\boxed{\text{PgUp}}^{\text{WAVE}}or\boxed{\text{PgDn}}^{\text{AMPL}}$,Adjusted to the measurement function selection page shown in Figure 2-13，Then click$\boxed{\text{SHIFT}}+\boxed{\blacktriangleright}^{\text{SET}}$, The "*" are switched to the second row， Then click$\boxed{\text{OK}}^{\text{OUT}}$Bond Switch the output port selection measurement object. FREQ.（Frequency）、 COUNTR(Counting function)、POS-PW(+ Width)、 NEG-PW(Negative Pulse Width)、PERIOD(Cycle)、DUTY（Duty cycle）。

```
F00000020.00Hz
*MSR-MODE:POS-PW
```

Drawing2-13

（2）After determining the measurement object，Click$\boxed{\text{PgDn}}^{\text{AMPL}}$, Enter gate time selection page as shown below:

（3）Click$\boxed{\text{OK}}^{\text{OUT}}$Bond，Select a different gate time 10S, 1S, 0.1S, 0.01S, different gate time on the frequency measurement accuracy and measurement speed.

```
F00000020.00Hz
*GATE-TIME:1S
```

Drawing 2-14

（3）Gate time is determined，Click$\boxed{\text{PgDn}}^{\text{AMPL}}$, Enter the measurement results display. The page can display the input measurement results, such as frequency, duty cycle, pulse width, and so the cycle parameters.

12、sweep function

（1） Adjusted to start frequency sweep function settings page, and then adjust the start frequency 5kHz. As shown below:

```
*F00005.00000kHz
SET SWEEP  FREQ1
```

（2）Then click [PgDn]^AMPL Into the cut-off frequency sweep function settings page, and then adjust the cutoff frequency of 10kHz. As shown below:

```
*F00010.00000kHz
SET SWEEP  FREQ2
```

Drawing2-16

（3） Then click [PgDn]^AMPL Enter sweep time setting page，Then click [SHIFT]＋[▶]^SET The "*" are switched to the second row，Rotation "ADJUST" knob to adjust the sweep time, frequency arbitrarily set the time range between 1-600S, shown in the lower set sweep time 10S:

```
F00010.00000kHz
*SWEEP  TIME:010s
```

（4） Then click [PgDn]^AMPL Enter sweep mode selection screen shown in Figure 2-22, Click [OK]^OUT Bond Select the frequency scan mode。There are two ways to scan frequency, LINE (linear scanning) and LOG (logarithmic sweep).

（5） After determining the scan mode，Click [PgDn]^AMPL Enter sweep control page，Then click [OK]^OUT on or off sweep function.

13、Save / Load function

In the main interface, press [PgUp]^WAVE or [PgDn]^AMPL Enter the parameter to save the page, and

then click ⌊SHIFT⌋ + ⌊▶SET⌋ Press the key combination of "*" consumption is adjusted to the second row in Figure 2-11, then rotate "ADJUST" knob to adjust the save location, this machine a total of 10 sets of parameters stored addresses M0-M9. Machine is turned on by default to read M0 address parameters.

```
F00010.00000kHz
*SAVE:   M0
```
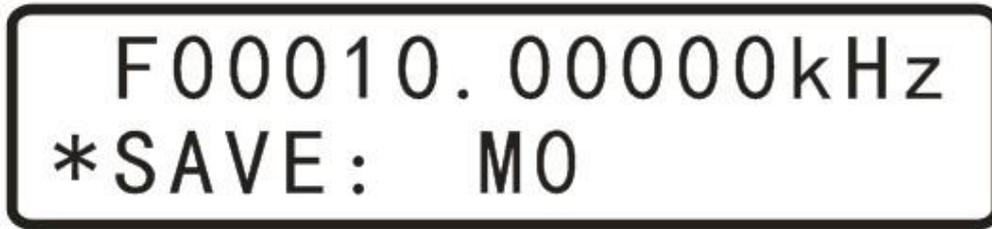
图 2-16

In the main interface, press ⌊PgUp WAVE⌋ or ⌊PgDn AMPL⌋ Enter the parameter to call up the page, then click ⌊SHIFT⌋ + ⌊▶SET⌋ Press the key combination of "*" consumption is adjusted to the second row in Figure 2-12, then rotate "ADJUST" knob to adjust the save location, this machine a total of 10 sets of parameters stored addresses M0-M9. Machine is turned on by default to read M0 address parameters.

```
F00010.00000kHz
*LOAD:   M0
```
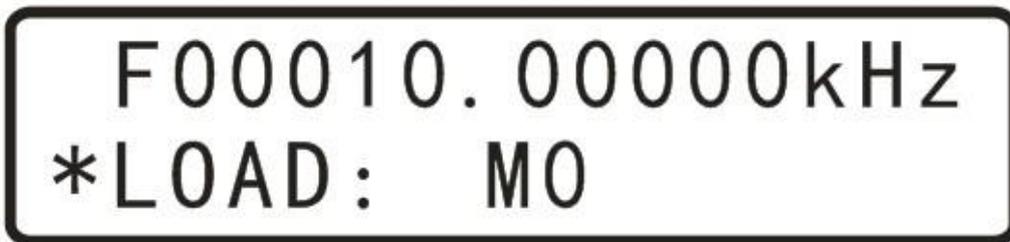
2-17

14、Calibration function

Calibration function is we do a job at the factory, you can consult the factory calibration is required.

Chapter Four PC Instructions

1、install software

Step 1: Install the runtime software visa540_runtime.exe
Step 2: Install CH341SER the SETUP.exe serial to USB drivers
Step 3: Install signal generator .exe program

2, online

Step 1: right-click on the computer - property - device manager -

computer distribution by serial port
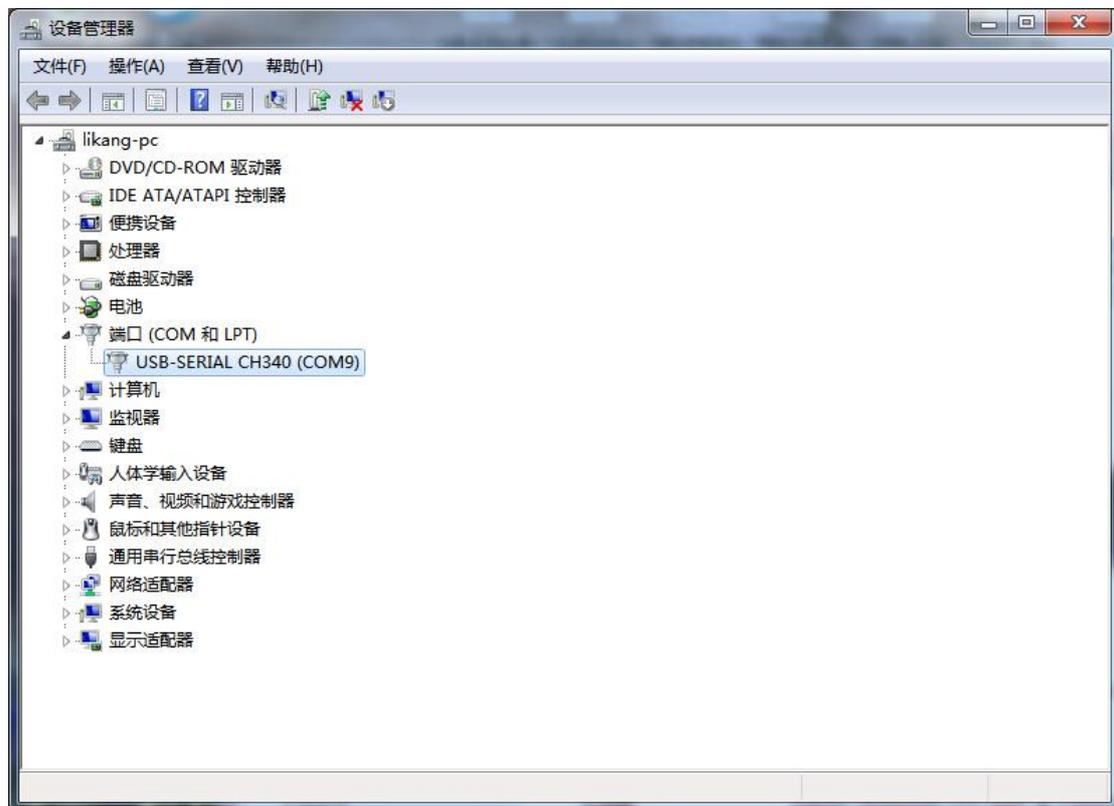
Step 2: choose the corresponding point on line after a serial port
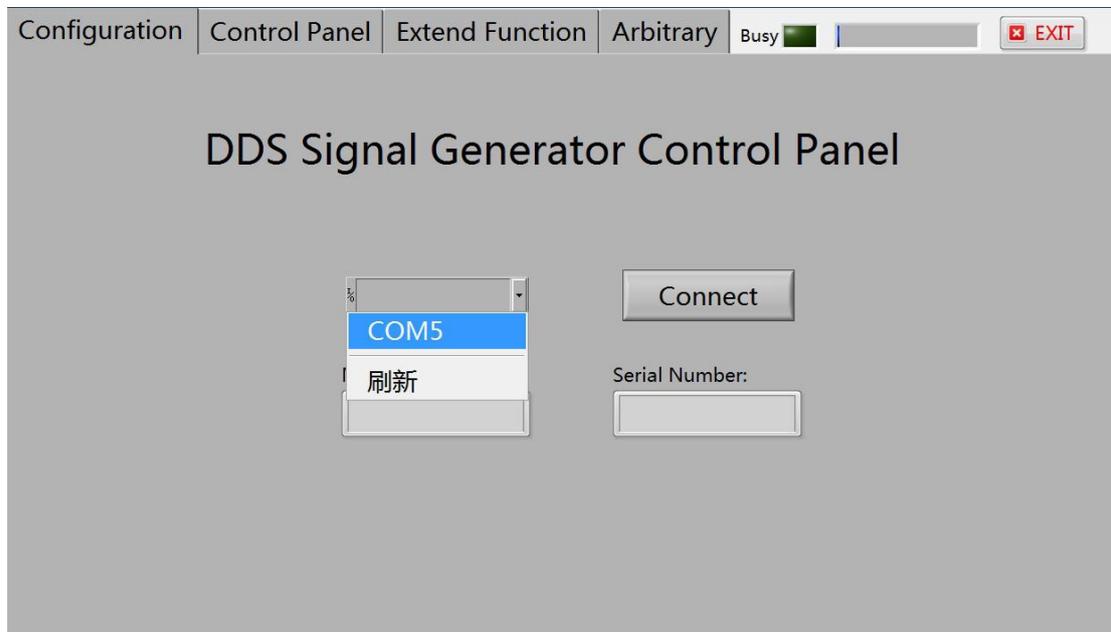

Step 3: online success
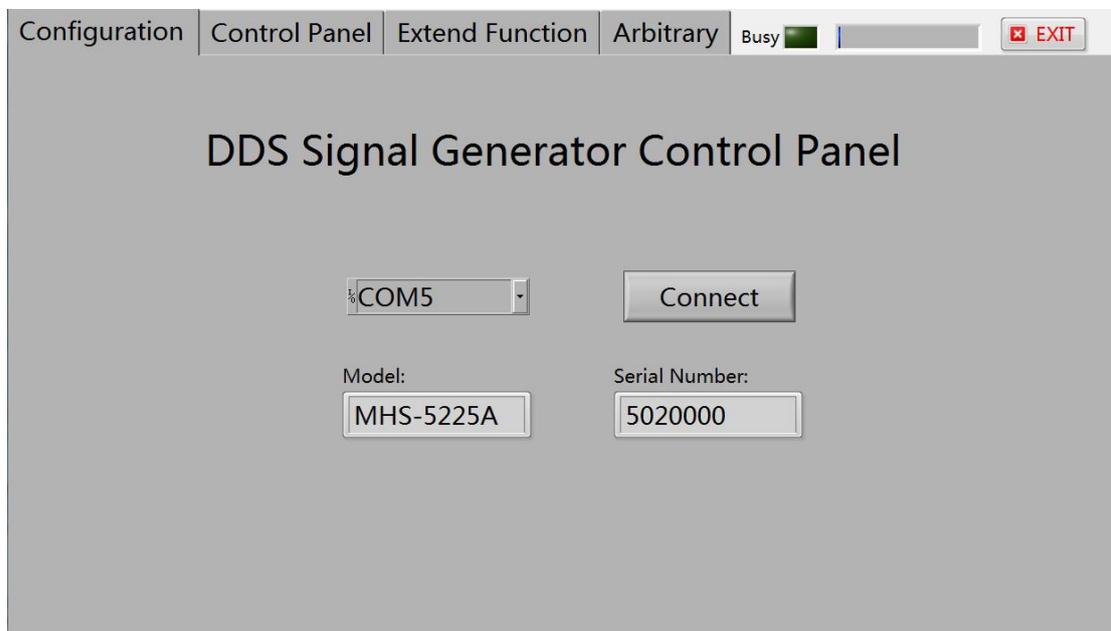
1: standard output waveform

(1) the control signal output normal function, display boxes can real-time display current output waveform;
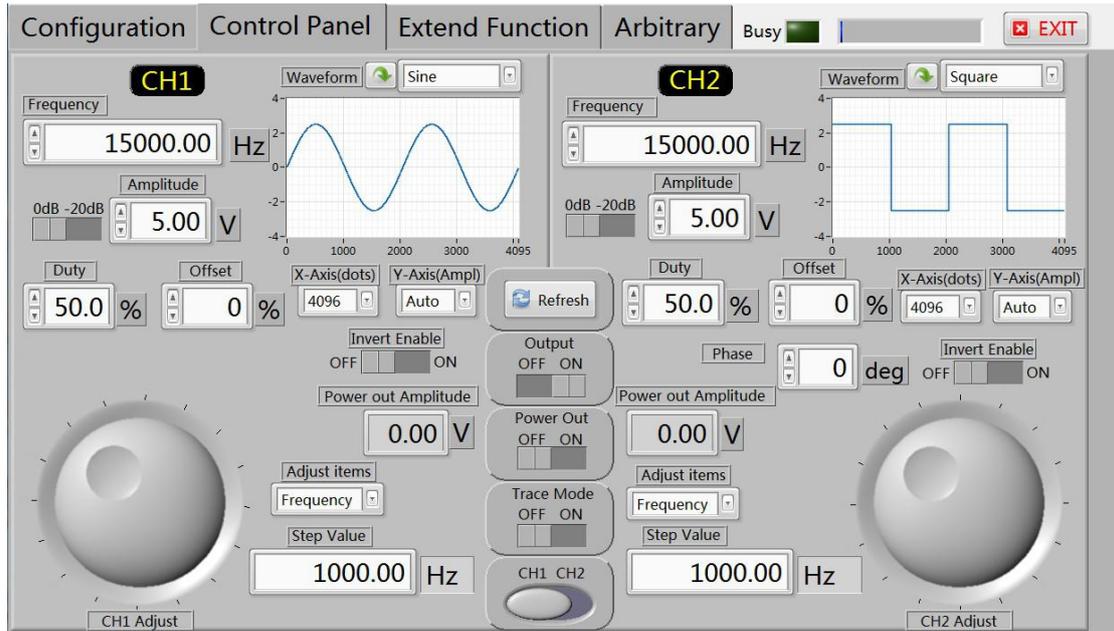
（2）measure the external signal function, can also be precise control of pulse width and cycle;
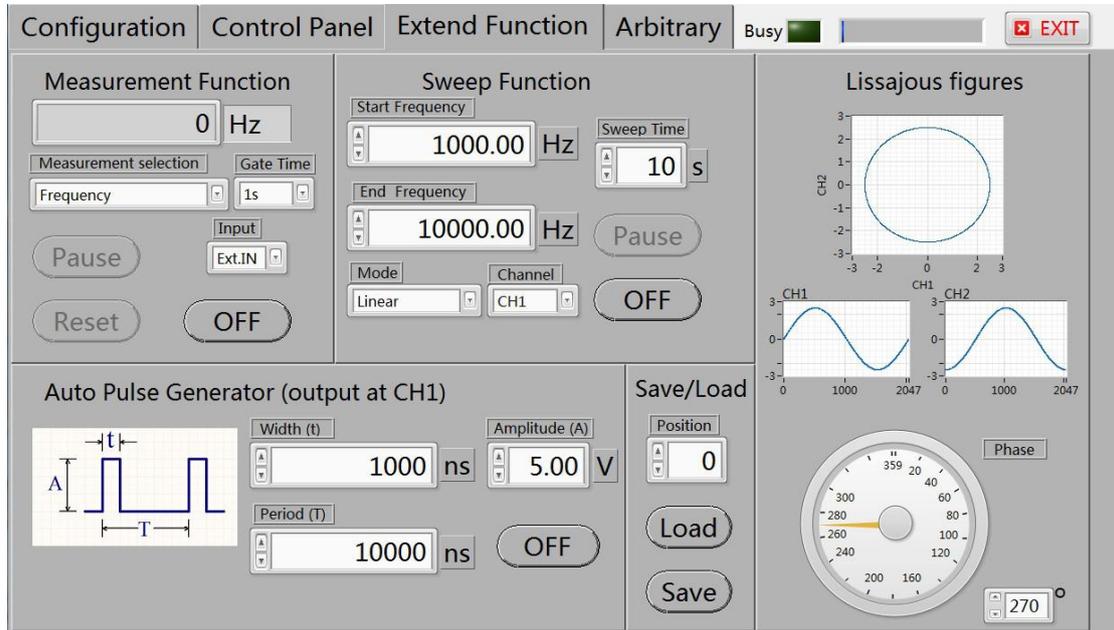

(3) connect the upper machine, switch to expand page, can control the output arbitrary waveform,

We have some regular arbitrary wave, default of the currently selected is

the medical pulse wave;
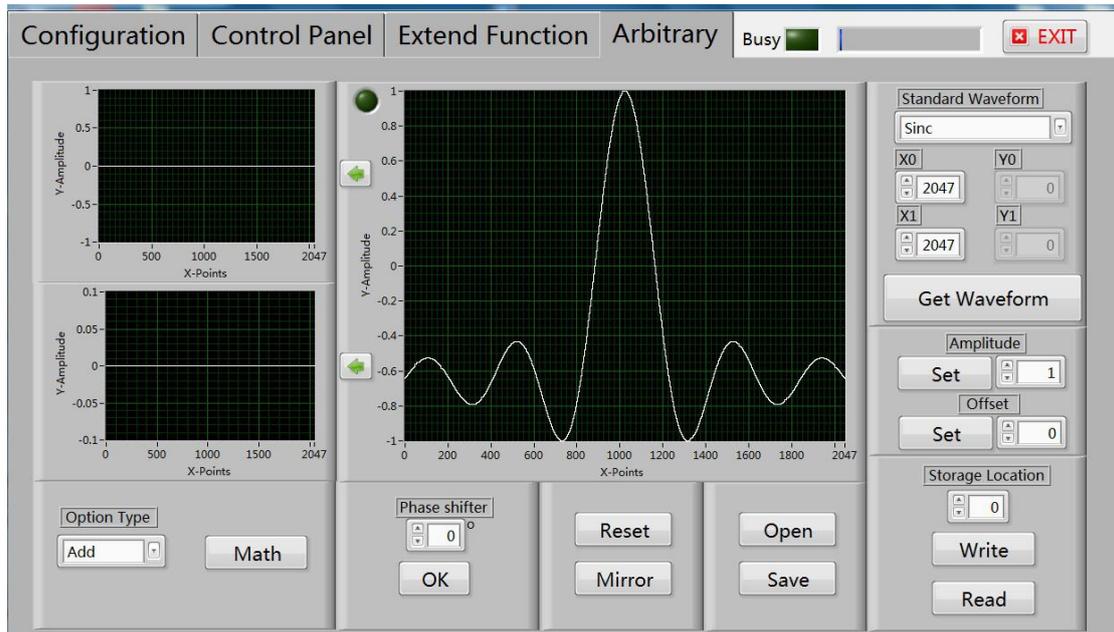
(4) keep the location choice, this series of machine with 0-15 waveform save location, select position 1 here, and then click on "write"; Blue bar said written progress;
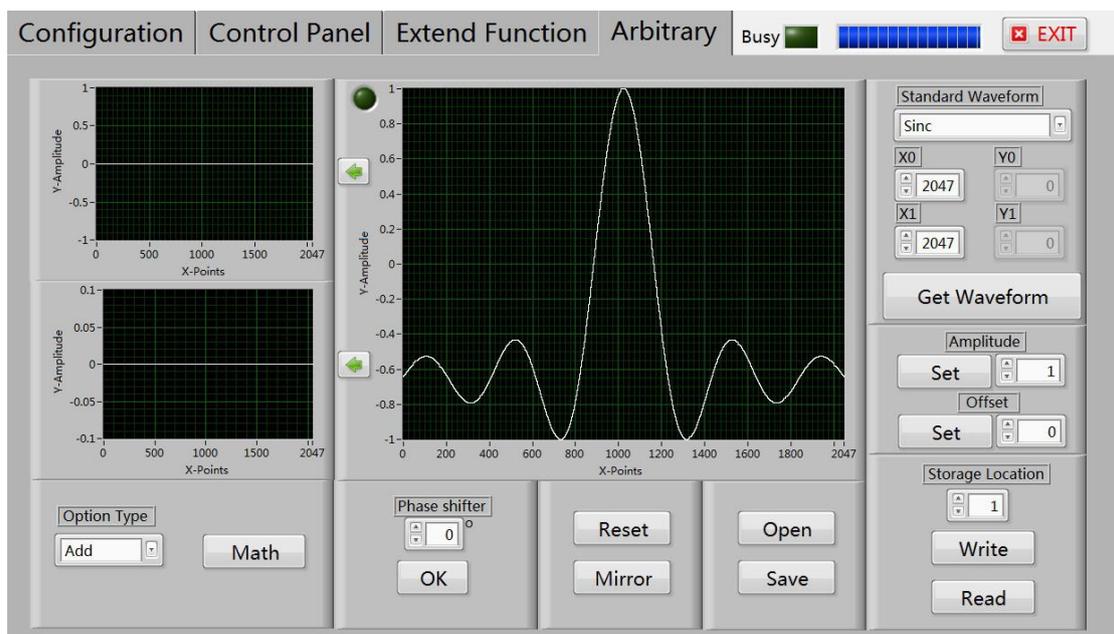
(5) after the completion of the write CH1 channel Arb1 v, the signal control page below:
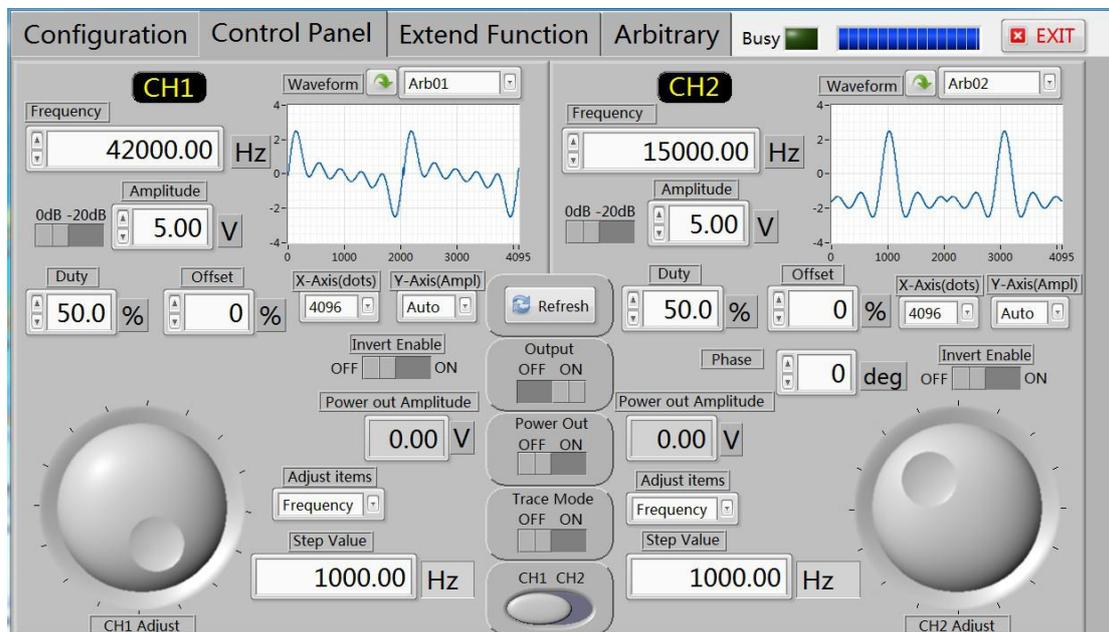

2: hand-painted arbitrary wave

(1) the upper machine and machine good connection, ensure the normal order of the communication between machine and computer.

(2) the software switch to expand the function pages, and then move the mouse to waveform display area, and then press the left mouse button to start drawing, release the left mouse button to stop drawing.
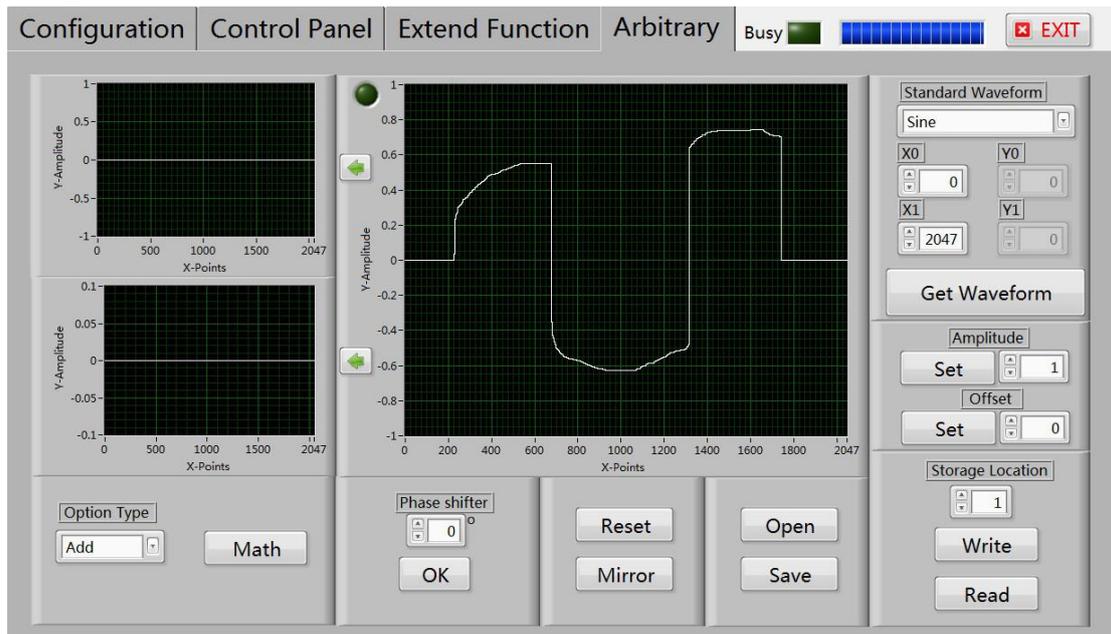
(3) to save the location of the waveform in the corresponding position, and then signal control page will bring up the map the location of the waveform in the preservation of the.
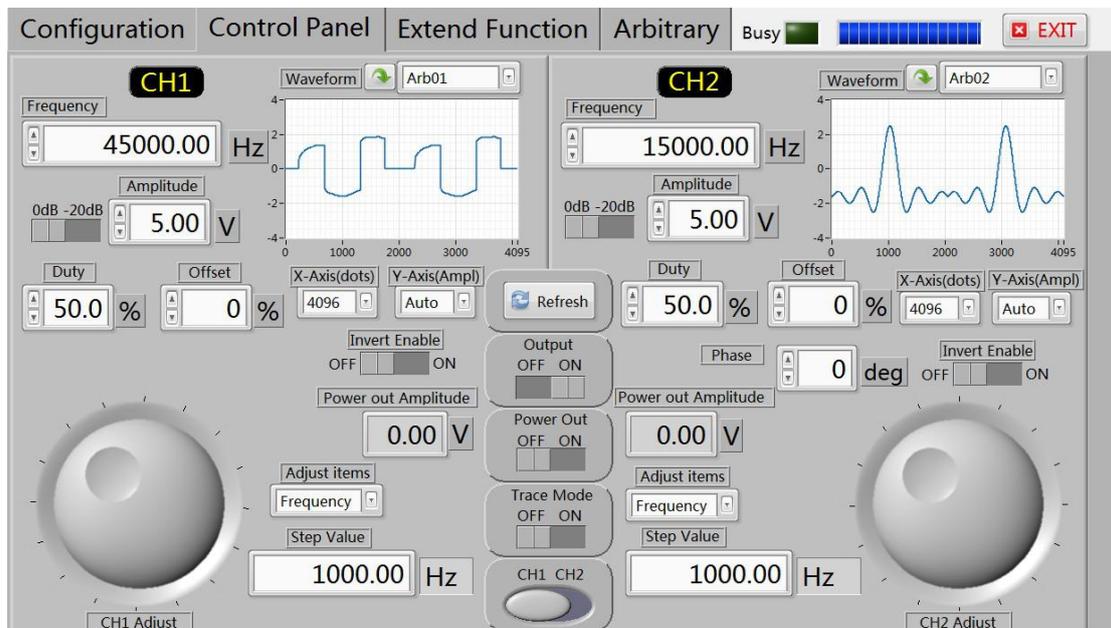
3：Hand draw a trapezoidal wave

（1）The upper machine and machine good connection, ensure the normal order of the communication between machine and computer.

（2）Hand-painted trapezoidal in standard waveforms when choosing a straight line;

（3）Set the starting point for 0, termination point 800; The starting range 0, terminate the magnitude 8

（4）Click on the generated waveform generated waveform as follows:
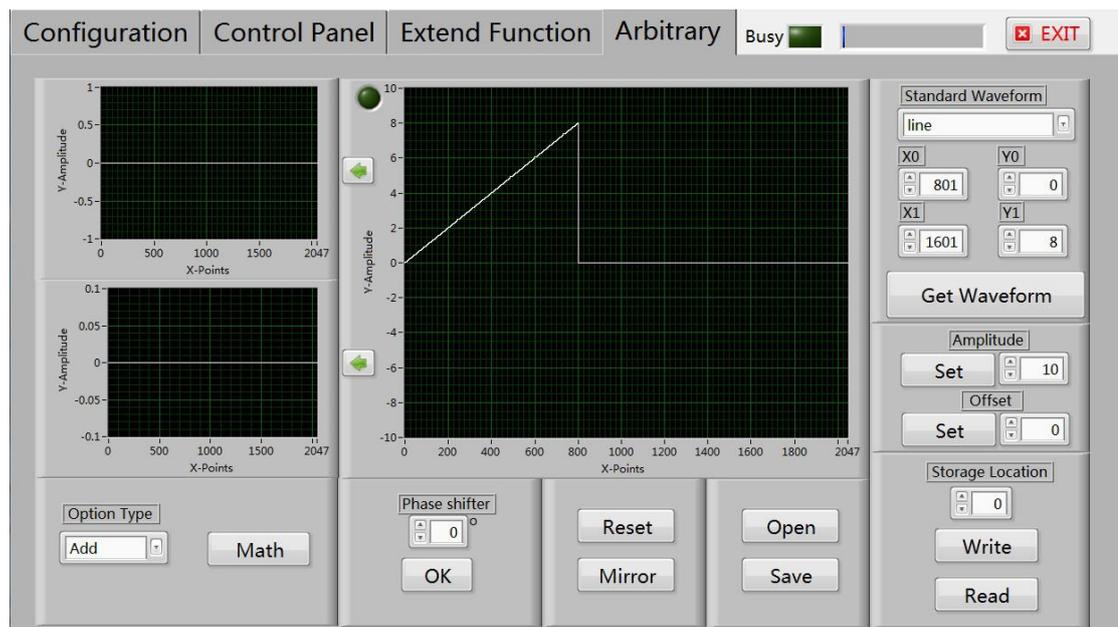
（5） In setting up starting point, end points, 800, 1601; Starting magnitude 8, termination of magnitude 8, then click the generated waveform, generated waveform is as follows:
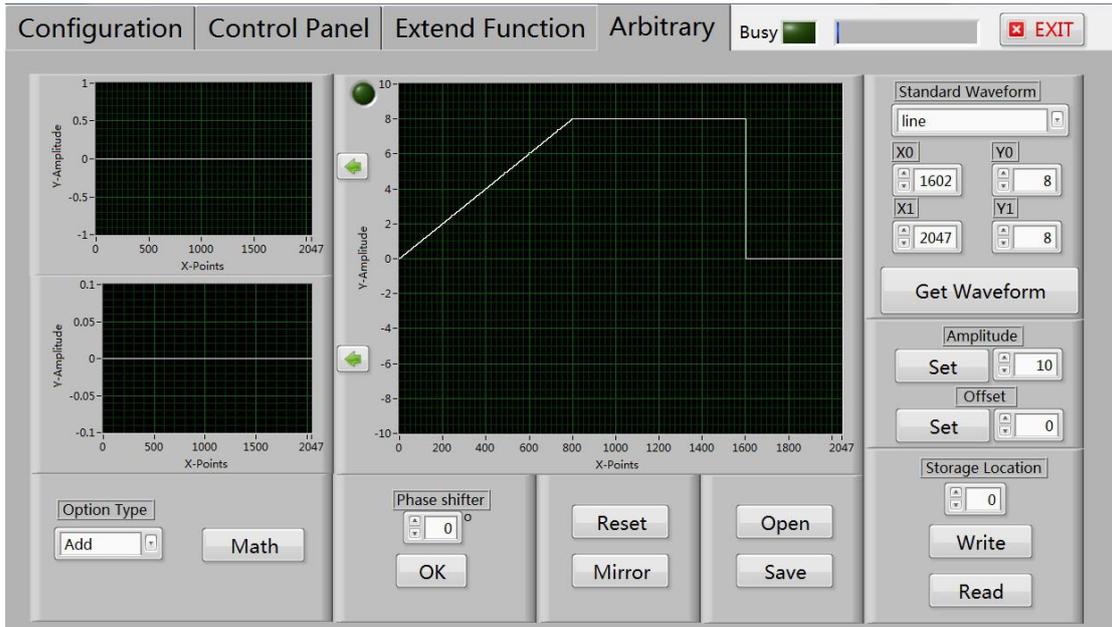
（6） In setting up starting point, end points, 1602, 2047; Starting magnitude 8, termination by 0, and then click the generated waveform, forming waveform as shown:
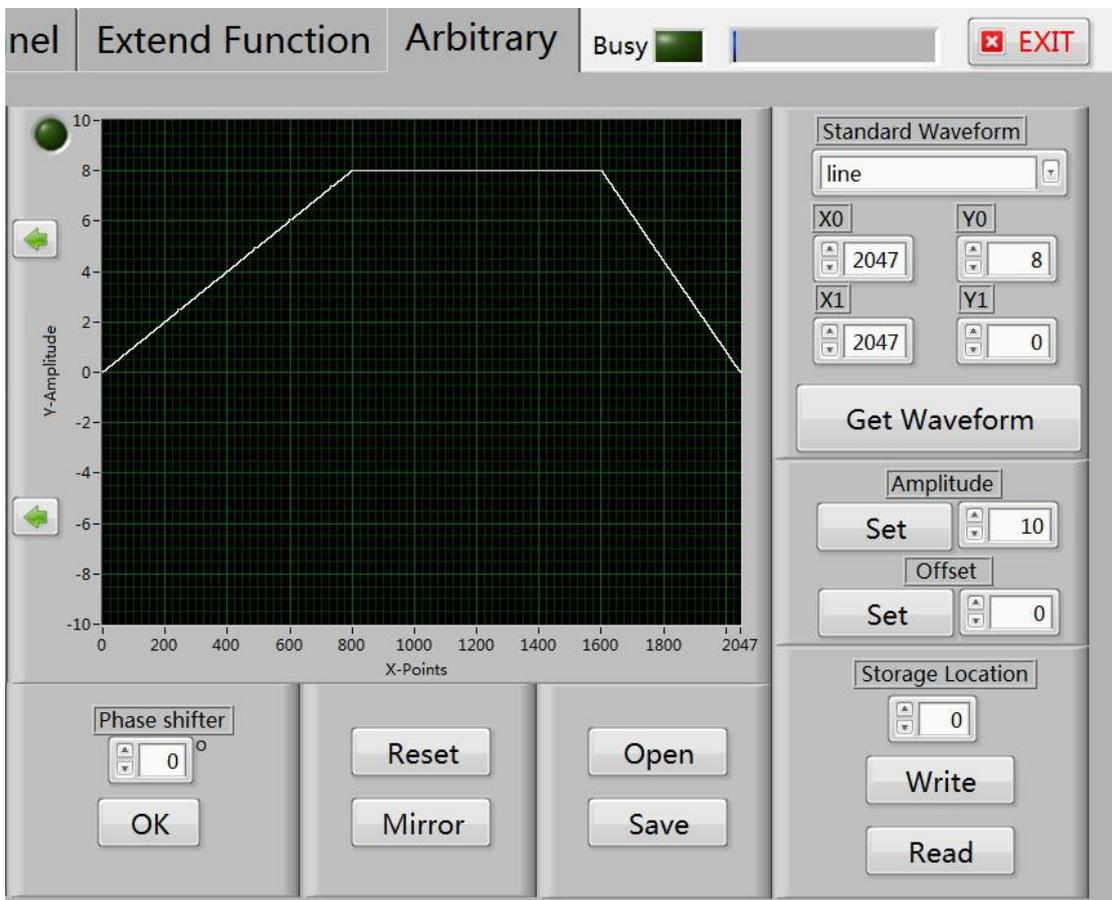
（7） Then put the waveform is saved in the corresponding position, and then signal control page will bring up the map the location of the waveform in the preservation of the.

This is the way how to draw a trapezoidal wave, one instance, in this way can draw other types of waveforms.

4. Draw a amplitude modulation waveform

（1） The upper machine and machine good connection, ensure the normal order of the communication between machine and computer.

（2） In the standard waveform selection box choose sine wave, the starting point for writing 0; End point written

80, and then click the generated waveform button in a row, and then click the green arrow to the right form waveform as shown:
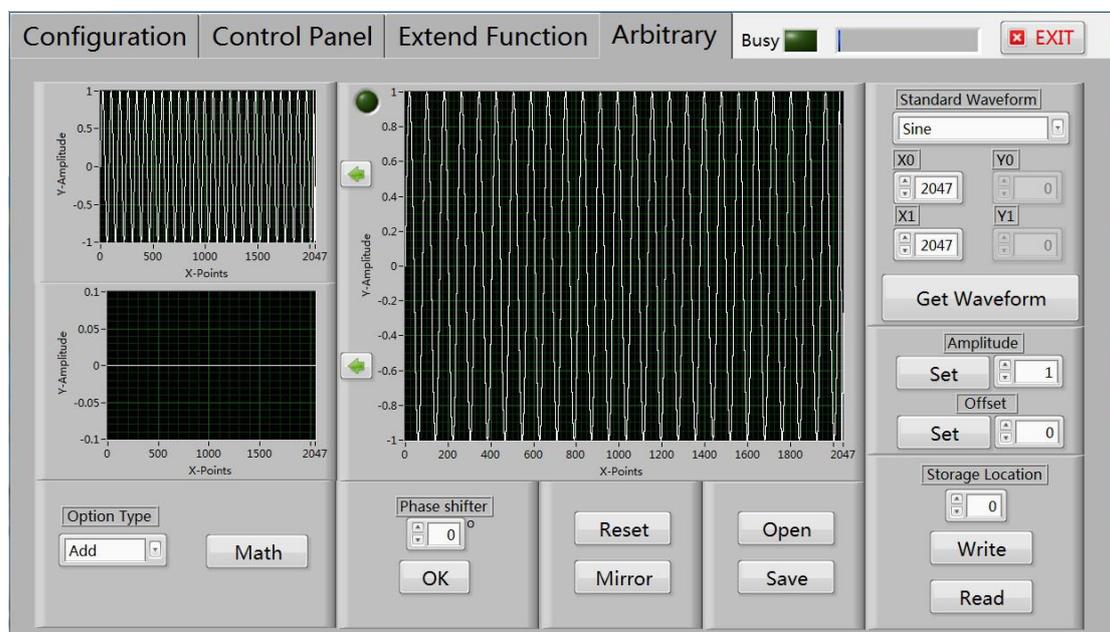
（3）Set the starting point 0; End point 2048, and then click "generate the waveform" button. Click the green arrow to the right generated waveform as shown:
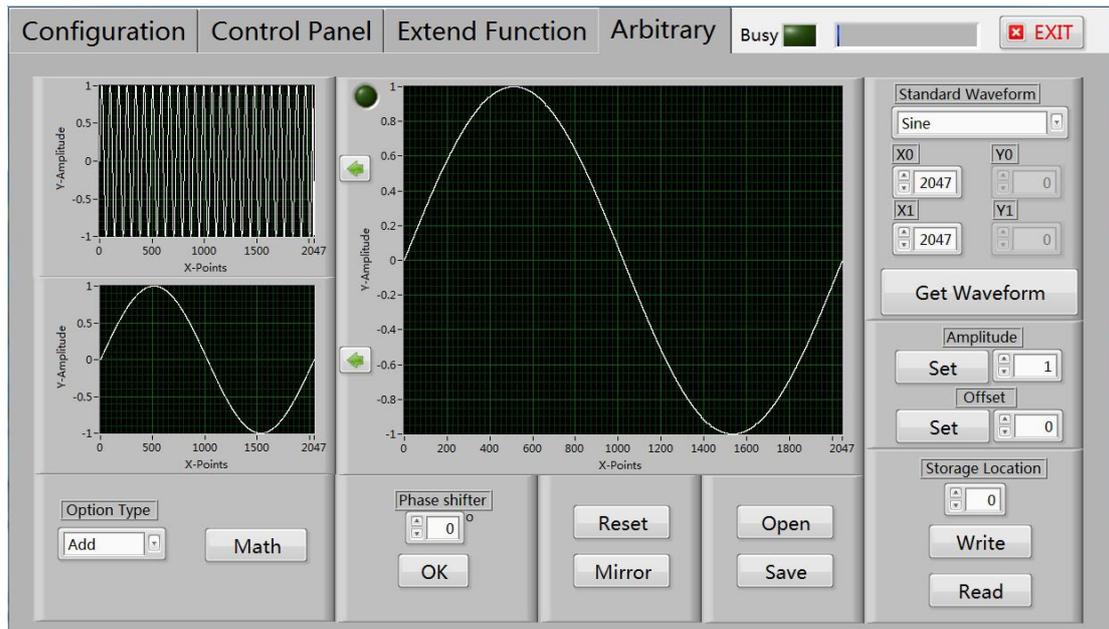
（4）Select operation type product, and then click operation button,generates the amplitude modulationwaveform.
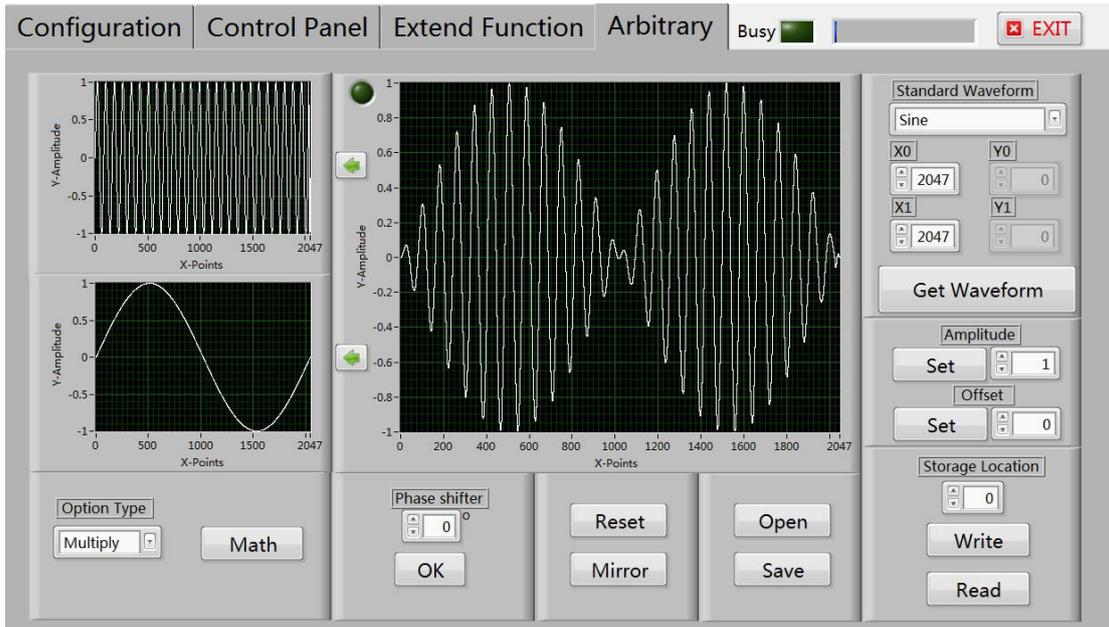
（5）Then to save the location of the waveform on 01 location, and then will draw waveform signal control page in the preservation of 01 out of position.
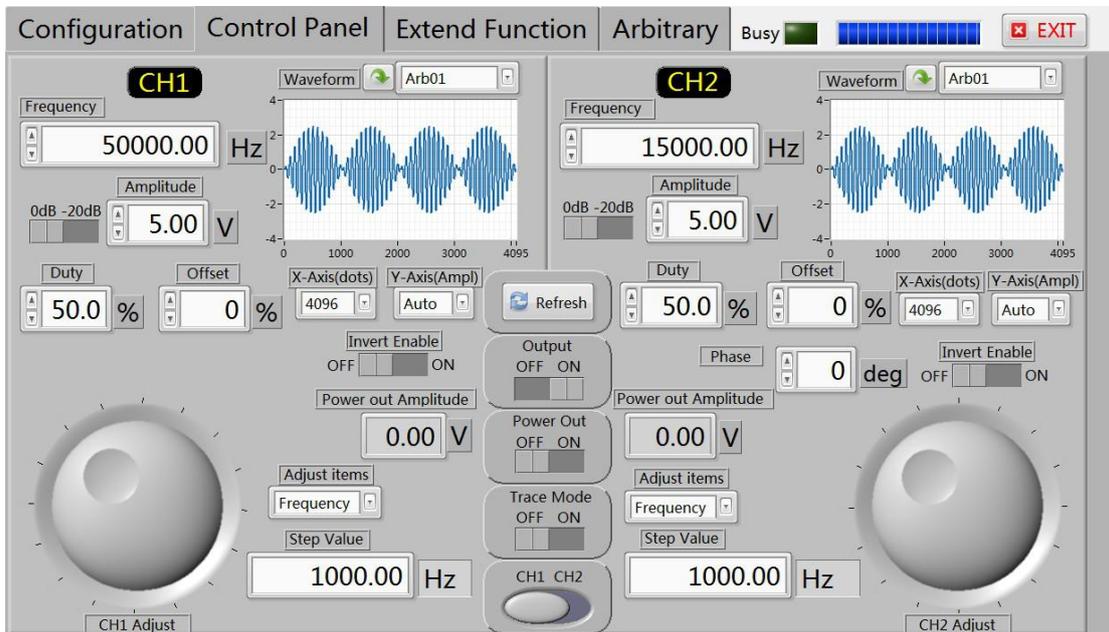
Care and maintenance

1. Make sure the input power adapter correctly, the machine uses DC5V power adapter;

2, the instrument display on the LCD module is fragile, perishable items, please do not slam and near chemicals to prevent corrosion. When you feel the liquid surface dust and dirt, wipe with a soft cloth carefully.

3, the working temperature of -10 ~ 50 ℃, Storage temperature -20 ~ 70 ℃, and the instrument in a dry environment.

4. Do not attempt to disassemble the equipment, destroy the package will void the warranty. The instrument is there are no user-serviceable parts, repairs may only repair outlets or by specifying the return factory.

5, avoid lighted candles, a water cup, corrosive chemicals and other unsafe items placed on the surface of the instrument, so as not to cause damage to the instrument.

6, the display screen are easy to pollution, fragile device, do not touch the hand as well as external and collision, avoid children play this instrument.

7. Do not move the instrument to avoid severe irreparable damage to the internal circuit when the instrument is working properly.

Exclude the above problem re-power the instrument still does not work, please contact your supplier!