JUNTEK MHS-5200A Function Arbitrary Waveform Signal Generator User Manual

Contents

JUNTEK MHS-5200A FunctionArbitrary Waveform Signal Generator

Hangzhou Junce Instruments Co., Ltd. MHS5200 Series Function/Arbitrary Waveform Signal Generator

The Hangzhou Junce Instruments Co., Ltd. MHS5200 Series Function/Arbitrary Waveform Signal Generator is a product that provides users with various waveforms, including sine, square, ramp, pulse, noise, and arbitrary waveform. It is designed to provide high-precision output signals for various applications such as electronic engineering, scientific research, and production testing.

Safety Requirements
Before operating the instrument, please read and follow the safety precautions listed below:

General Safety Summary

- Use Proper Power Cord: Only use the exclusive power cord designed for the instrument and authorized for use within the local country.
- Connect the Probe Correctly: Do not connect the ground lead to high voltage since it has isobaric potential as the ground. Observe All Terminal Ratings: To avoid fire or shock hazard, observe all ratings and markers on the instrument and check your manual for more information about ratings before connecting the instrument.
- Use Proper Over-voltage Protection: Ensure that no over-voltage (such as that caused by a bolt of lightning) can reach the product.
  Otherwise, the operator might be exposed to the danger of an electric shock.
- Do Not Operate Without Covers: Do not operate the instrument with covers or panels removed.
- Do Not Insert Anything Into the Air Outlet: Do not insert anything into the air outlet to avoid damage to the instrument.
- Avoid Circuit or Wire Exposure: Do not touch exposed junctions and components when the unit is powered on.
- Do Not Operate With Suspected Failures: If you suspect that any damage may occur to the instrument, have it inspected by JUNTEK authorized personnel before further operations. Any maintenance, adjustment or replacement especially to circuits or accessories must be performed by JUNTEK authorized personnel.

Provide Adequate Ventilation

Inadequate ventilation may cause an increase of temperature in the instrument, which would cause damage to the instrument. So please keep the instrument well ventilated and inspect the air outlet and the fan regularly.

Do Not Operate in Wet Conditions
To avoid short circuit inside the instrument or electric shock, never operate the instrument in a humid environment.

Do Not Operate in an Explosive Atmosphere
To avoid personal injuries or damage to the instrument, never operate the instrument in an explosive atmosphere.

Keep Instrument Surfaces Clean and Dry
To avoid dust or moisture from affecting the performance of the instrument, keep the surfaces of the instrument clean and dry.

Prevent Electrostatic Impact
Operate the instrument in an electrostatic discharge protective environment to avoid damage induced by static discharges. Always ground both the internal and external conductors of cables to release static before making connections.

Product Usage Instructions

To use the Hangzhou Junce Instruments Co., Ltd. MHS5200 Series Function/Arbitrary Waveform Signal Generator, follow the below instructions:

1. Connect the exclusive power cord designed for the instrument to a power outlet.
2. Connect the probe correctly and avoid connecting the ground lead to high voltage.
3. Observe all ratings and markers on the instrument and check the manual for more information about ratings before connecting the instrument.
4. Ensure that no over-voltage can reach the product, and do not operate the instrument without covers or panels removed.
5. Do not insert anything into the air outlet and avoid touching exposed junctions and components when the unit is powered on.
6. If you suspect any damage may occur to the instrument, have it inspected by JUNTEK authorized personnel before further operations.
7. Keep the instrument well-ventilated and inspect the air outlet and fan regularly.
8. Do not operate the instrument in a humid environment or an explosive atmosphere.
9. Keep the surfaces of the instrument clean and dry to avoid dust or moisture from affecting its performance.
10. Operate the instrument in an electrostatic discharge protective environment and always ground both the internal and external conductors of cables to release static before making connections.

Guaranty and Declaration

Notices
JUNTEK products are covered by P.R.C. patents, issued and pending.
This document replaces all previously published documentation.
Contact Us
If you have any problem or requirement when using our products or this manual, please contact JUNTEK.
E-mail: junce@junteks.com
Website: www.junteks.com

Safety Requirement

General Safety Summary

Please review the following safety precautions carefully before putting the instrument into operation so as to avoid any personal injury or damage to the instrument and any product connected to it. To prevent potential hazards, please follow the instructions specified in this manual to use the instrument properly.

- **Use Proper Power Cord**
  Only the exclusive power cord designed for the instrument and authorized for use within the local country could be used.
- **Connect the Probe Correctly**
  If a probe is used, do not connect the ground lead to high voltage since it has isobaric potential as the ground.
- **Observe All Terminal Ratings**
  To avoid fire or shock hazard, observe all ratings and markers on the instrument and check your manual for more information about ratings before connecting the instrument.
- **Use Proper Over-voltage Protection**
  Ensure that no over-voltage (such as that caused by a bolt of lightning) can reach the product. Otherwise, the operator might be exposed to the danger of an electric shock.
- **Do Not Operate Without Covers**
  Do not operate the instrument with covers or panels removed.
- **Do Not Insert Anything Into the Air Outlet**
  Do not insert anything into the air outlet to avoid damage to the instrument.
- **Avoid Circuit or Wire Exposure**
  Do not touch exposed junctions and components when the unit is powered on.
- **Do Not Operate With Suspected Failures**
  If you suspect that any damage may occur to the instrument, have it inspected by JUNTEK authorized personnel before further operations. Any maintenance, adjustment or replacement especially to circuits or accessories must be performed by JUNTEK authorized personnel.
- **Provide Adequate Ventilation**
  Inadequate ventilation may cause an increase of temperature in the instrument, which would cause damage to the instrument. So please keep the instrument well ventilated and inspect the air outlet and the fan regularly.
- **Do Not Operate in Wet Conditions**
  To avoid short circuit inside the instrument or electric shock, never operate the instrument in a humid environment.
- **Do Not Operate in an Explosive Atmosphere**
  To avoid personal injuries or damage to the instrument, never operate the instrument in an explosive atmosphere.
- **Keep Instrument Surfaces Clean and Dry**
  To avoid dust or moisture from affecting the performance of the instrument, keep the surfaces of the instrument clean and dry.
- **Prevent Electrostatic Impact**
  Operate the instrument in an electrostatic discharge protective environment to avoid damage induced by static discharges. Always ground both the internal and external conductors of cables to release static before making connections.
- **Handle with Caution**

Please handle with care during transportation to avoid damage to keys, knobs, interfaces, and other parts on the panels.

Notices

1. Make sure that the input power is correct.
2. The shell of the instrument is fragile and easy to corrode. Please don't hit or close to chemicals to avoid corrosion.
3. Working temperature: 10~ 50℃, storage temperature : 20 ~70℃, and keep the instrument in a dry environment.
4. Do not attempt to disassemble the instrument it will void the warranty. There are no user-serviceable parts inside the instrument. Repairs can only be made through designated repair outlets or sent back to the factory.
5. Please avoid placing unsafe items such as lighted candles, cups with water, and corrosive chemicals on the surface of the instrument to avoid damage to the instrument.
6. The display screen is a fragile device, please do not touch or bump it . Please avoid children playing with the instrument. When there is dirt on the LCD surface, wipe it carefully with a soft cloth.
7. Please do not move the instrument violently to avoid causing irreparable damage to the internal circuit. If the instrument does not work properly, please contact the supplier!

Inspection

When you get a new MHS5200A series dual-channel signal generator, it is recommended that you inspect the instrument according to the following steps.

Inspect the Packaging
If the packaging has been damaged, do not dispose the damaged packaging or cushioning materials until the shipment has been checked for completeness and has passed both electrical and mechanical tests. The consigner or carrier shall be liable for the damage to the instrument resulting from shipment. We would not be responsible for free maintenance/rework or replacement of the instrument.

Check the Contents
Please check the contents according to the packing lists. If the instruments are damaged or incomplete, please contact your JUNTEK sales representative.

Host	**MHS-5200A Series Dual Channel Signal Generator**	**1pc**
Accessory	**Power Adapter**	**1pc**
	USB Cable	**1pc**
	Signal Connection Cable	**2pcs**
	Quick Guide	**1pc**
	Certificate of Conformity	**1pc**

Inspect the Instrument
In case of any mechanical damage, missing parts, or failure in passing the electrical and mechanical tests,

contact your JUNTEK sales representative.

MHS5200A Signal Generator Overview

The Instrument Introduction

The MHS-5200A series of instruments use large-scale FPGA integrated circuits and high-speed MCU microprocessors. The internal circuit adopts surface mount technology, which greatly improves the anti-interference and service life of the instrument. The display interface adopts LC1602 liquid crystal display, which is divided into two lines of upper and lower displays. The upper line displays the current frequency, and the lower line displays other variable parameters or functions. It is flexibly set by the page key, which greatly enhances the operability. This instrument has great advantages in signal generation, waveform sweeping, parameter measurement and use. It is an ideal test and measurement equipment for electronic engineers, electronic laboratories, production lines, teaching, and scientific research.

Model Description

This series of instruments are divided into four models, the main difference is the maximum frequency of sine wave output, as described below:

Model	Sine wave output maximum frequency
MHS-5206A	6MHz
MHS-5212A	12MHz
MHS-5220A	20MHz
MHS-5225A	25MHz

Instrument characteristics

- The instrument adopts direct digital synthesis (DDS) technology and FPGA design, which can reduce power consumption
- The instrument can output two channels, the two channels work synchronously, and the phase difference is adjustable
- With linear frequency sweep and logarithmic frequency sweep function up to 999 seconds
- It has basic function waveforms such as sine wave, triangle wave, square wave,rising sawtooth, falling sawtooth, pulse wave with adjustable duty cycle, and 16 groups of arbitrary waveforms customized by the user;
- There are 10 sets of parameter storage locations M0~M9, and the data of M0 will be automatically loaded after power on;
- Below 12MHz, the maximum amplitude can reach 20Vpp, and above 12MHz, the maximum amplitude can reach 15Vpp;
- Built-in precision -20dB attenuator, the minimum amplitude resolution is 1mV
- With -120%~+120% DC bias function;
- Pulse wave duty cycle adjustment is accurate to 0.1%;
- With 4 TTL outputs with variable phase difference;
- It has the functions of frequency measurement, period measurement, positive and negative pulse width measurement, duty cycle measurement and counter;
- It can select four frequency measurement gate times to achieve a balance between speed and accuracy
- All parameters can be calibrated by internal procedures

- The powerful communication function and fully open communication protocol make the secondary development very simple
- After connecting with the PC, the PC can be used to control the instrument, and the arbitrary waveform can be edited on the PC and then downloaded to the instrument to output the waveform
- This type of machine can be equipped with an optional power module, so that the signal output amplitude can reach 40Vpp, and the maximum output current can reach 1A;

Specifications

Model selection				
	MHS-5206A	MHS-5212A	MHS-5220A	MHS-5225A
Sine wave frequency range	0~6MHz	0~12MHz	0~20MHz	0~25MHz
Square wave frequency range	0~6MHz			
Pulse wave frequency range	0~6MHz			
TTL / COMS digital signal frequency range	0~6MHz			
Arbitrary / other waveform frequency range	0~6MHz			
Frequency characteristics				
Frequency minimum resolution	10mHz			
Frequency error	±5×10-6			

Frequency stability	±1X10-6/5 hours
Arbitrary / other waveform	50Ω±10%
Amplitude characteristic	
Amplitude range (peak-to-peak value)	5mVp-p~20Vp-p
Amplitude resolution	1mVp-p (-20db attenuation) 10mVp-p(No attenuation)
Amplitude stability	±0.5%(Each 5 hours)
Amplitude error	±1%+10mV(Frequency1KHz,15Vp-p)
Offset range	-120%~+120%
Offset resolution	1%
Relative range	0~359°
Phase resolution	1°
Waveform characteristics	

Waveform type	Sine Square pulse (adjustable duty cycle, precise adjustment of pulse width and period), triangular wave, partial sine wave, CMOS wave, DC level (set DC amplitude by adjusting offset), half wave, full Wave, positive staircase wave, anti-ladder wave , noise wave, exponential rise, exponential drop, Symplectic p ulse and Lorenz pulse and 60 arbitrary wave forms	
Wave length	2048 points	
Waveform sampling rate	200MSa/s	
Waveform vertical resolution	12 bits	
Sine wave	Harmonic Suppression	≥40dBc(<1MHz); ≥35dBc(1MHz~25MHz)
	Total harmonic distortion	<0.8%(20Hz~20kHz)
Square wave	Rise and fall time	≤20ns
	Overshoot	≤10%
	Duty cycle adjustment range	0.1%-99.9%
TTL signal	Output level	≥3Vpp
	Fan-out coefficient	≥20TTL
	Rise and fall time	≤20ns

COMS signal	Low level	0.3V
	High level	1V~10V
	Rise and fall time	≤20ns
Saw tooth wave	Duty cycle 50%	Saw tooth wave
	Duty cycle 50%	Saw tooth wave
Arbitrary wave	Quantity	16 groups
	Storage depth / group	1KB / 16 groups
Waveform output		
Frequency measurement 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	0.5V-pp~20Vp-p

Counting range	0~4294967295
Counting method	Manual
Positive and negative pulse width measurement	10ns resolution, maximum measurement 10s
Period measurement	20ns resolution, maximum measurement 20s
Duty cycle measurement	0.1% resolution, measuring range 0.1% ~ 99.9%
Source selection	1. EXT.IN input (AC signal) 2. TTL_IN input (digital signal)
Communication characteristics	
Interface method	Use USB to serial interface
Communication rate	57600bps
Protocol	Using the command line, the agreement is open
Other	
Power supply	DC 5V±0.5V
Dimension	180*190*72mm

Net weight	550g(Host) 480g(Annex)
Gross weight	1090g
Working environment	Temperature:-10℃~50℃ Humidity 80

Instrument Introduction

Front Panel Overview

Panel introduction video:https://youtu.be/flecFKTi9v8

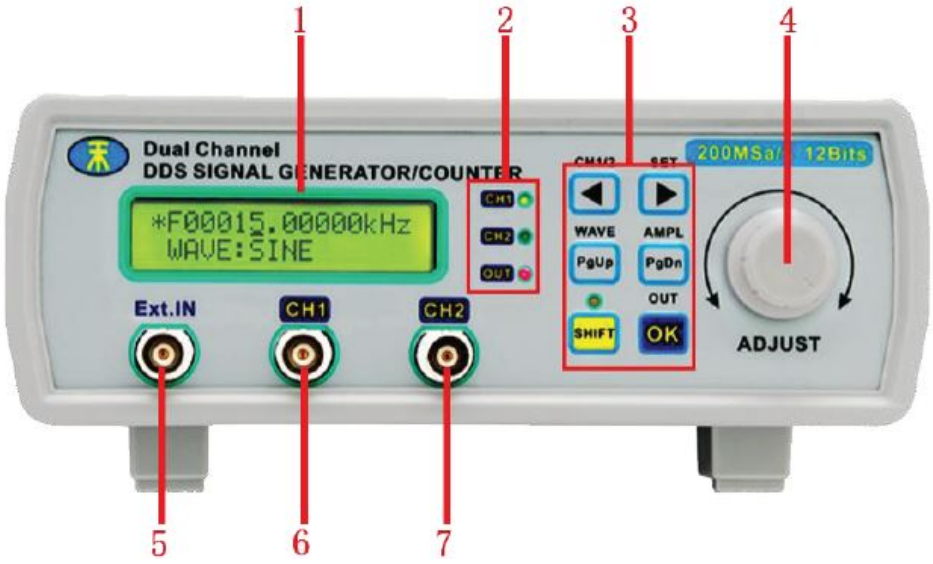


Table 2-1-1 MHS5200A front panel diagram illustration

Label	Illustration	Label	Illustration
1	LCD	5	Ext.In input port
2	Status Indicator	6	CH1 output port
3	Operation keys	7	CH2 output port
4	Shuttle knob		

Rear Panel Overview

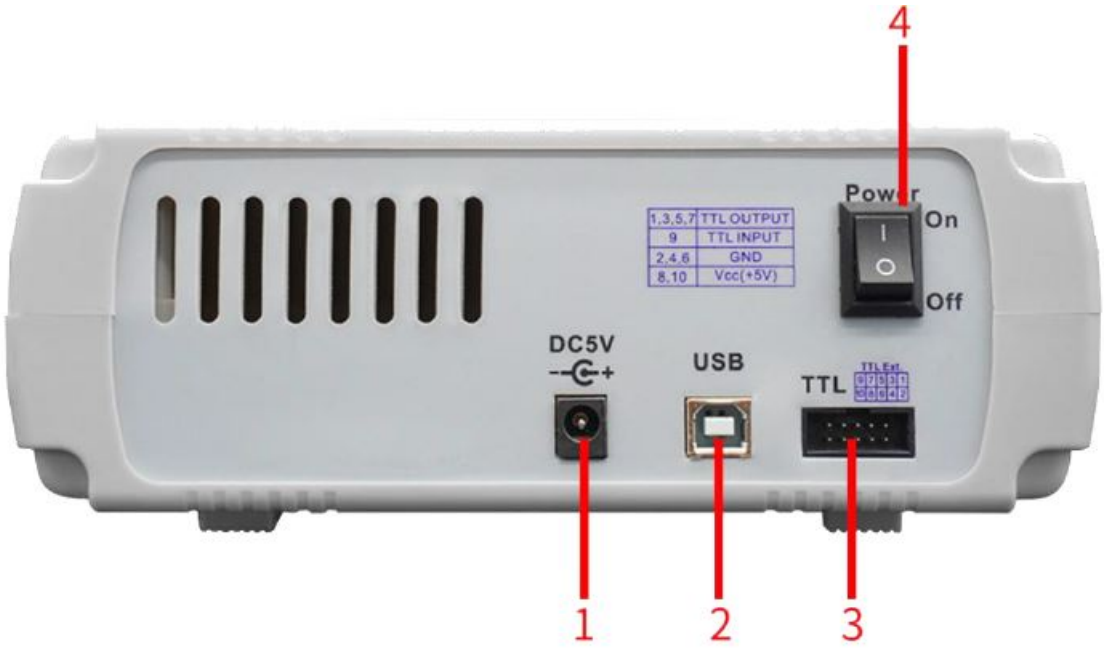


Figure 2-2-1 MHS5200A rear panel diagram

Table 2-2-1 MHS5200A rear panel diagram illustration

Label	Illustration	Label	Illustration
1	DC5V power input interface	3	TTL input/output interface
2	USB communication interface	4	Power switch

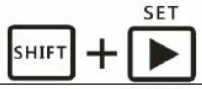
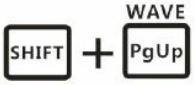
Function area description
The liquid crystal display of the instrument is divided into 2 functional areas, as shown in Figure 2-2, and the description of each part is shown in Table 2-2.

Figure 2-2-1 MHS5200A display diagram

Table 2-2-1 MHS5200A functional area description

Label	**Function area description**
1	Frequency display
2	Operation function prompt

Keys description

Item	Illustration
	Move the cursor to the left to increase the adjustment parameter step value
	Move the cursor to the right to decrease the adjustment parameter step value
	Function selection page up key
	Function selection page down key
	Confirm key
	Channel switching (CH1/CH2)
	Switch the function position, adjust the frequency when ”*” sign is in the first line, and adjust the function option when "*" sign is in the second line
	Press this combination keys to quickly enter the waveform adjustment interface
	Press this combination keys to quickly enter the amplitude adjustment interface
	Press this combination keys to turn off or turn on the output

Menu function description

1	F00015.00000KHz	It indicates the frequency of the current output waveform
2	WAVE:SINE	WAVE means waveform, SINE means sine wave
3	WAVE:SQUARE	SQUARE means square wave
4	WAVE:TRIANGLE	TRIANGLE means triangular wave
5	WAVE:SAWTOOTH-R	SAWTOOTH-R means rising sawtooth wave
6	WAVE:SAWTOOTH-F	SAWTOOTH-F means falling sawtooth wave
7	WAVE:ARB0	ARB means arbitrary waveform, 0 means the arbitray wave which saved at the location 0, there are 0-15 arbitrary waveforms in total
8	AMPL: 05.00V	AMPL means the peak-to-peak value (voltage) of the output waveform
9	OFFS 000%	OFFS means offset function, which can be adjusted from -120% to +120%
10	DUTY 50.0%	DUTY means the function of adjusting the duty cycle
11	PHASE 000°	PHASE means the phase difference between channel 1 and channel 2
12	TRACE OFF	OFF means channel 2 track channel 1 is turned off, and ON means that it i s turned on. After turning on, the value of channel 2 will change with the change of channel 1.
13	FREQ-UNIT:KHZ	It means the unit of output frequency. In this case, the unit is KHz, which can be switched by pressing the OK button.
14	INVERT OFF	The one-key reverse function can reverse the output waveform phase.

15	BURST OFF	It means that the burst function is on or off
16	MSR-SEL:Ext.IN	Ext.IN means analog signal input port, TTL.IN means digital signal input port
17	MSR-MODE:FREQ.	Measurement mode,FREQ means measure the frequency;COUNTR means counter function; POS-PW means measure the positive pulse width; NEG-PW means measure negative pulse width, PERIOD means measure period; DUTY means measure duty cycle
18	GATE—TIME 1S	Set the gate time,press OK to switch
19	F=0Hz	It means the frequency of the measured waveform
20	SET SWEEP FRWQ1	Means to set the start frequency of the sweep, set in the previous line
21	SET SWEEP FREQ2	It means to set the sweep stop frequency, set in the previous line
22	SWEEP TIME:001S	It means to set the sweep time
23	SWEEP MODE:LINE	Sweep mode, LINE means linear sweep, LOG logarithmic sweep
24	SWEEP:OFF	Sweep frequency switch, OFF means off, ON means on
25	SAVE:M0	Save the parameters, select the encoder to switch 10 groups of storage locations
26	LOAD:M0	Load the parameters, select the encoder to switch 10 groups of storage locations

Basic Operations Of the Instrument

Power On

1. Connect to a 5V power supply. You can use the DC5V power adapter to power the instrument.
    1. The liquid crystal display shows the company name, instrument version number and serial number.
    2. Enter the main interface.
2. Basic operation

    Dual channel output video:**https://youtu.be/QN36ijcGNh0**

This section will introduce how to operate the instrument in detail. It should be noted that the CH2 channel of this instrument is similar to the CH1 channel.
When the green light corresponding to the CH1 is on, it means that the current operation is the parameter of the CH1 channel. Similarly, when the green light corresponding to the CH2 is on, it means that the current operation is the parameter of the CH2 channel. You can switch between channel 1 or channel 2 through SHIFT+CH1/2/◀ .

Set the waveform of CH1

Setting the waveform video: **https://youtu.be/6GrDOgn5twg**
In the main interface, when the sign "*" is on the first line, you can press the key OUT/OK to adjust the output waveform type.The output waveform types include sine wave, square wave, triangle wave, rising saw-tooth wave,falling saw-tooth wave and 16 groups of arbitrary waves. Press and hold the key OUT/OK can return to the original waveform. If you want to quickly switch the output waveform, you can press the keys SHIFT+WAVE/PgUp to switch the sign "*" to the second line, and then rotate the "ADJUST" knob to switch the output waveform type. As shown in Figure 2-1-1

Figure 2-1-1

Set the frequency of CH1
Frequency setting video: **https://youtu.be/cnt1fRaQi-A**
In the main interface , when the sign "*" is on the first line, the cursor can be moved by pressing the key CH1/2/◄ or SET/► to adjust the frequency step value, and then rotate the "ADJUST" knob to adjust the frequency of the output waveform. As shown in Figure 2-2-1

Figure 2-2-1

Set the amplitude of CH1
Setting Amplitude Video: **https://youtu.be/UfRjFdFM0ic**
In the main interface, a cursor will appear in the amplitude setting interface after pressing the keys SHIFT+AMPL/PgDn .Then press the key CH1/2/◄ or SET/► can move the cursor position, and rotate the "ADJUST" knob to adjust the amplitude of output waveform.As shown in Figure 2-3-1.

Figure 2-3-1

05.00V in the picture refers to the peak-to-peak value.In this mode of amplitude setting function, the maximum amplitude is 20V, the minimum value is 0.20V, and the minimum step value is 0.01 (10mV). As shown in Figure 2-3-2, press the key OUT/OK to enter the signal -20dB attenuation state. At this time, the maximum value of the output signal is 2.000V, the minimum value is 0.005V, and the minimum step value is 0.001V (1mV).

Figure 2-3-2

Set the offset of CH1

Setting Bias Video: **https://youtu.be/rRq_9ICl9U8**

In the main interface, press the key WAVE/PgUp or AMPL/PgDn to enter the option interface of offset adjustment , and then press the keys SHIFT+SET/► to switch sign "*" to the second line.Next press the key CH1/2/◄ or SET/► to move the cursor, and rotate the "ADJUST" knob to adjust the offset parameters. As shown in Figure 2-4-1.

Figure 2-4-1

Set the duty cycle of CH1

Setting Duty Cycle Video: **https://youtu.be/5YSrsXele2U**

In the main interface, press the key WAVE/PgUp or AMPL/PgDn to enter the option interface of duty cycle adjustment, and then press the keys SHIFT+SET/► can switch the sign "*" to the second line. Press the key CH1/2/◄ or SET/► can move the cursor, and rotate the "ADJUST" knob to adjust the duty cycle parameters. As shown in Figure 2-5-1.

Figure 2-5-1

Set the phase difference of the two channels

Setting the phase difference video: **https://youtu.be/LzTNe5HYbYg**

In the main interface, press the key WAVE/PgUp or AMPL/PgDn to enter the option interface of phase adjustment, and then press the keys SHIFT+SET/► to switch the sign "*" to the second line, press the key CH1/2/◄ or SET/► can move the cursor, and then rotate the "Adjust" knob to adjust the phase parameters as shown in Figure 2-6-1. It should be noted that the phase difference is only meaningful when the CH1 frequency and the CH2 frequency are the same after tracking function is turned on.

Figure 2-6-1

Set the display frequency unit

Unit video at set display frequency: **https://youtu.be/rgC_ir3pwmg**

In the main interface, press the key WAVE/PgUp or AMPL/PgDn to enter the option interface of the unit of the display frequency,and then press the keys SHIFT+SET/► , switch "*" to the second line, finally press the key OUT/OK to switch the unit of the frequency: Hz kHz MHz. As shown in Figure 2-7-1.

Figure 2-7-1

Tracking function

Setting up the tracking function video: **https://youtu.be/82t4BJYuPeo**

The tracking function is used to synchronize the frequency of CH2 with CH1, and the user can also set amplitude tracking and duty cycle tracking. In the main interface, press the key WAVE/PgUp or AMPL/PgDn to enter the option interface of tracking as shown in Figure 2-8-1, and then press the keys SHIFT+SET/► to switch the "*" to the second line.Next, press the key OUT/OK to switch the status to the on or off. When the tracking function is turned on, the frequency of the CH2 channel automatically tracks the frequency of the CH1 channel. In addition, if the amplitude of the CH1 and CH2 channels are the same before the tracking function is turned on, it will also automatically track after the tracking function is turned on; if the duty cycle of the CH1 and CH2 channels are the same before the tracking function is turned on, it will also automatically track after the tracking function is turned on.

Figure 2-8-1

External signal input port selection

Set external signal input port to select video: **https://youtu.be/n36FlpU6k1k**

Select Ext.IN port for inputting AC signals, and TTL.IN port for inputting digital signals. In the main interface, press the key WAVE/PgUp or AMPL/PgDn to enter the input port selection interface as shown in figure 2-9-1, then press the keys SHIFT+SET/► to switch the "*" to the second line,and then press the key OUT/OK to switch the input port to select Ext .IN or TTL.IN.

Figure 2-9-1

Measurement function

Setting the measurement function video: **https://youtu.be/ZqgAgsAsM4g**

After the input signal source is selected, input signal can be measured.

In the main interface, press the key WAVE/PgUp or AMPL/PgDn to enter the measurement function selection interface as shown in figure 2-10-1,and then press the key SHIFT+SET/► to switch the "*" to the second line,

then press the key OUT/OK to select the measurement object: FREQ. (frequency), COUNTR (count function), POS-PW (positive pulse width), NEG-PW (negative pulse width), PERIOD (period), DUTY (duty cycle).

Figure 2-10-1

After confirming the measurement object, press the key AMPL/PgDn to enter the gate time selection interface as shown in figure 2-10-2.Press the key OUT/OK to select different gate time 10S, 1S, 0.1S, 0.01S. Different gate time affects the accuracy and speed of frequency measurement.

Figure 2-10-2

After determining the gate time, press the key AMPL/PgDn to enter the measurement result display interface as shown in Figure 2-10-3. This interface can display the input measurement results, such as frequency (F), counter (C), positive pulse width (H), negative pulse width (L), period (T) ,duty cycle (DUTY) and other parameters.

Figure 2-10-2

Frequency sweep function
Setting the sweep function video: **https://youtu.be/fDPzLjO4H-0**

- In the main interface, press the key WAVE/PgUp or AMPL/PgDn to enter the initial frequency setting interface of the sweep function, and then adjust the initial frequency to 5kHz as an example as shown in Figure 2-11-1 below

Figure 2-11-1

- Press the key AMPL/PgDn to enter the cut-off frequency setting interface of the sweep function, and then adjust the cut-off frequency to 10kHz as an example as shown in Figure 2-11-2.

Figure 2-11-2

- Press the key AMPL/PgDn to enter the sweep time setting interface.Firstly press the keys SHIFT+SET/► to switch the sign “*” to the second line, then rotate the “ADJUST” knob to adjust the sweep time, the sweep time range sets arbitrarily between 1-500S, as shown in Figure 2 -11-3 set the sweep time to 10S.

Figure 2-11-3

- Press the key AMPL/PgDn to enter the sweep mode selection interface as shown in Figure 2-11-4. Press key OUT/OK to select the frequency sweep mode. There are two frequency sweep modes: LINE (linear sweep) and LOG (logarithmic sweep).

Figure 2-11-4

- After confirming the sweep mode, press the key AMPL/PgDn to enter the sweep control interface as shown in Figure 2-11-5, and then press the key OUT/OK to turn on (ON) or turn off (OFF) the sweep function.

Figure 2-11-5

Save/Load function

Set the store/modulation function video: **https://youtu.be/pGs_o0EaBJo**

Save function: In the main interface press the key WAVE/PgUp or AMPL/PgDn to enter the parameter saving interface, and then press the keys SHIFT+SET/► to switch the sign ”*” to the second line as shown in the Figure 2-12-1. And then rotate the “ADJUST” knob to select the save location, finally press the key OUT/OK to save the data at the setting location. This machine has 10 groups of parameter storage addresses M0-M9. When the machine is turned on, the M0 address parameter is read by default.

Figure 2-12-1

Load function: In the main interface, press the key WAVE/PgUp or AMPL/PgDn to enter the parameter loading interface, and then press the keys SHIFT+SET/► to adjust the sign "*" to the second line as shown in Figure 2-12-2, then rotate the "ADJUST" knob to select saving location, and finally press the key OUT/OK to load the data from the setting location. This machine has 10 groups of parameter storage addresses M0-M9. When the machine is turned on, the M0 address parameter is read by default.

Figure 2-12-2

Reverse function

Video on setting reverse function: **https://youtu.be/gMTf6585Yfk**
Reverse function can quickly realize the 180-degree change of the output waveform phase of corresponding channel. In the main interface, press the key WAVE/PgUp or AMPL/PgDn to adjust to the measurement function selection interface as shown in Figure 2-13-1, and then press the key OUT/OK to turn on the reverse function as shown in figure 2-13-2.

Figure 2-13-2

Burst function
Setting the burst function video: **https://youtu.be/qns4jBj5jnU**
This function can realize the CH2 channel burst the CH1 channel output.
The premise of the realization of the burst function is that the setting waveform frequency of the CH1 channel is greater than the CH2 channel. After the trigger function is turned on, the starting position of each cycle of the CH2 channel waveform will trigger CH1 channel to output a pulse wave.
In the main interface, press the key WAVE/PgUp or AMPL/PgDn to adjust to the burst function control interface as shown in Figure 2-14-1.Then press the key OUT/OK to start the burst function, as shown in Figure 2-14-2

Figure 2-14-1

Figure 2-14-2

4 TTL output function
This machine can output 4 channels of TTL at the same time. When CH1 and CH2 are not synchronized, the TTL1, TTL3, TTL4 and CH1 channels are synchronized, the duty cycle is determined by CH1; TTL2 and CH2 are synchronized, and the duty cycle is determined by CH2. If CH1 and CH2 are synchronized, the TTL1, TTL2, TTL3, and TTL4 are synchronized simultaneously, and the phase is determined by the phase difference between CH1 and CH2.

Calibration function
We have already calibrated the machine before leaving the factory, if you need to calibrate yourself, you can consult the manufacturer.

PC Software Control Output
Communication protocol and software link: **http://68.168.132.244/MHS5200A_CN_Setup.rar**

- Install the software (the upper computer software has Chinese and English operation interfaces)
  - **Step 1:** Install visa540_runtime.exe software runtime
  - **Step 2:** Install the SETUP.exe serial port to USB driver file in CH341SER
  - **Step 3:** install the signal generator.exe program
- **Connect**
  - **Step1:**Right click on the computer-Properties-Device Manager-Observe the serial port assigned by the computer
  - **Step 2:** Select the corresponding serial interface and click Connect
  - **Step 3:**Display the model and serial number, indicating that the connection is finished.

For detailed operation, please refer to the detailed introduction of the host computer in the software installation package

For More Product Information

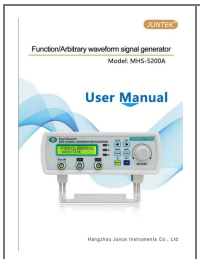
For more information about this instrument, refer to the relevant manuals by logging in to the official website of JUNTEK (www.junteks.com) to download them.

- “MHS5200A Operation Demo Video” provides operation video of this product.
- “MHS5200A PC Software and Communication Protocol” provides corresponding PC software and

communication protocol for this product.

- “MHS5200A User Manual” includes the technical specifications, the functions of the instrument and operation methods, possible failures and solutions in using the instrument and other information.
- “MHS5200A Communication Protocol” provides MHS5200A product communication protocol.
- “MHS5200A Connection Program Installation Instructions” provides detailed instructions for installing drivers on the host computer of MHS5200A products.

Documents / Resources

	JUNTEK MHS-5200A Function Arbitrary Waveform Signal Generator [pdf] User Manual MHS-5200A, MHS-5200A Function Arbitrary Waveform Signal Generator, Function Arbitrary Waveform Signal Generator, Arbitrary Waveform Signal Generator, Waveform Signal Generator, Signal Generator, Generator

References

- 68.168.132.244/MHS5200A_CN_Setup.rar
- EXT Services
- ttl.in - This website is for sale! - ttl Resources and Information.
- æå·žå‡æµ‹ä»ªå™¨ä»ªè¡¨æœ‰é™å…¬å¸-é¡–é¡µ