
OPERATING MANUAL

JDS2900 Series Digital Control Dual-channel DDS Signal Generator

Rev1.0

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1. Inspecting Package Contents

When you get a new JDS2900 series dual channel DDS signal generator, please inspect device as follows:

1.1 Inspect the shipping container for damage.

If there are damages in the container or foam, keep them until the whole machine and the accessories passing the electrical and mechanical tests. If your instrument has damaged during shipping, please contact your seller and us for compensation.

1.2 Check the Accessories

All contents are as follows, if there is missing, damage or wrong, please contact us or reseller.

| | |
|--------------------------------|-------------|
| Host: JDS2900 | 1pcs |
| Accessories: DC adapter | 1pcs |
| USB cable | 1pcs |
| Signal output cable | 2pcs |
| User manual (PDF) | 1pcs |
| CD | 1pcs |

1.3 Check the instrument

In case of any mechanical damage or defect, or if the instrument does not operate properly or pass the electrical and mechanical tests, you can contact us or reseller.

2. Summary

2.1 Brief Introduction

JDS2900 series DDS signal generator can produce sine wave, square wave, triangular wave, pulse wave, arbitrary wave, frequency up to 60MHz; it has a frequency scanning, measuring signal frequency and counter functions, can simultaneously display the output signal, amplitude and frequency The series has amplitude frequency characteristics, beautiful appearance; can be applied to factories, schools, research institutions and laboratories.

2.2、 Model Introduction

There are 5 models, JDS2900-60M, JDS2900-50M, MJDS2900-40M, JDS2900-30M and JDS2900-15M. The main difference is the max output frequency of sin wave, as follows:

| Model | The max output frequency of sin wave |
|-------------|--------------------------------------|
| JDS2900-60M | 60MHz |
| JDS2900-50M | 50MHz |
| JDS2900-40M | 40MHz |
| JDS2900-30M | 30MHz |
| JDS2900-15M | 15MHz |

2.4 Technical parameters

| Frequency Characteristics | | | | | |
|----------------------------------|--|--------------------------------------|-------------|-------------|-------------|
| | JDS2900-15M | JDS2900-30M | JDS2900-40M | JDS2900-50M | JDS2900-60M |
| Sine frequency range | 0~15MHz | 0~30MHz | 0~40MHz | 0~50MHz | 0~60MHz |
| Square frequency range | 0~15MHz | 0~15MHz | 0~15MHz | 0~15MHz | 0~15MHz |
| Triangle frequency range | | | | | |
| Pulse frequency range | 0~6MHz | 0~6MHz | 0~6MHz | 0~6MHz | 0~6MHz |
| CMOS/TTL digital frequency range | | | | | |
| Arbitrary wave frequency range | | | | | |
| Square rise time | ≤25nS | ≤20nS | ≤15nS | ≤15nS | ≤15nS |
| Pulse width adjustment range | 150nS-4000S | 60nS-4000S | 40nS-4000S | 30nS-4000S | 30nS-4000S |
| Minimum Frequency resolution | 0.01μHz (0.00000001Hz) | | | | |
| Frequency accuracy | ±20ppm | | | | |
| Frequency stability | ±1ppm/3h | | | | |
| Waveform Characteristics | | | | | |
| Waveform | Sine, Square, Triangle, Pulse (duty-cycle correction,Pulse width and cycle time adjustable),Partia Sine, CMOS, DC level, Half-wave, Full-Wave, Pos-Ladder, Neg-Ladder, Noise, Exponential Rise, Exponential Fall, Tone, Sinc Pulse, Lorentz Pulse, and 60 kinds user defined waveform. | | | | |
| Waveform length | 2048 points | | | | |
| Waveform sampling rate | 266MSa/s | | | | |
| Waveform vertical resolution | 14bits | | | | |
| Sine | Harmonic suppression | ≥45dBc(<1MHz); ≥40dBc(1MHz~20MHz) | | | |
| | Total harmonic distortion | <0.8%(20Hz~20kHz,0dBm) | | | |
| Square and Pulse | Overshoot (Square) | ≤5% | | | |
| | Duty-cycle range (Pulse) | 0.1%~99.9% | | | |

| | | | |
|--------------------------------------|--|---|-----------------------------------|
| Ramp wave | Linearity | $\geq 98\%$ (0.01Hz~10kHz) | |
| Output Characteristics | | | |
| Amplitude range | Frequency ≤ 10 MHz | 10MHz \leq Frequency ≤ 30 MHz | 30MHz \leq Frequency |
| | 2mVpp~20Vpp | 2mVpp~10Vpp | 2mVpp~5Vpp |
| Amplitude resolution | 1mV | | |
| Amplitude stability | $\pm 0.5\%/5$ h | | |
| Amplitude flatness | $\pm 5\%$ (<10MHz); $\pm 10\%$ (>10MHz) | | |
| Waveform Output | | | |
| Output impedance | 50 Ω $\pm 10\%$ (typical) | | |
| Protection | All the signal output terminal can be shorted within 60s | | |
| DC Offset | | | |
| Offset adjusting range | Output Amplitude >2V | 0.2V < Output Amplitude ≤ 2 V | 0 < Output Amplitude ≤ 0.2 V |
| | -9.99V~9.99V | -2.5V~2.5V | -0.25V~0.25V |
| Offset resolution | 0.01 V | | |
| Phase characteristics | | | |
| Phase adjusting range | 0~359.9° | | |
| Phase resolution | 0.1° | | |
| TTL/COMS Output | | | |
| Low level | <0.3V | | |
| High level | 1V~10V | | |
| Level rise/fall time | ≤ 20 ns | | |
| External Measurement Function | | | |
| Frequency meter function | Frequency measurement range | 1Hz~100MHz | |
| | Measurement accuracy | Gate time continuously adjusted between 0.01s~10s | |
| Counter function | Counting region | 0-4294967295 | |
| | Coupled mode | 2kinds Coupling modes, DC and AC | |
| | Control mode | Manual operation | |
| Input signal voltage range | 2Vpp~20Vpp | | |
| Pulse width measurement | 0.01us (resolution), 20s (MAX measuring time) | | |
| Period measurement | 0.01us (resolution), 20s (MAX measuring time) | | |
| Sweep Function | | | |

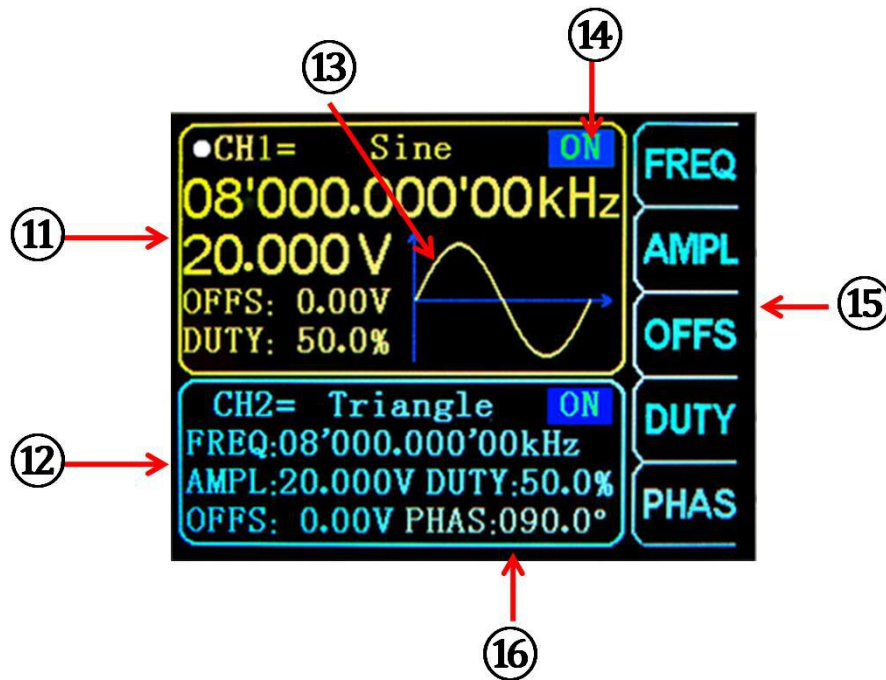
| | | |
|-------------------------------------|--|--|
| Sweep channel | CH1 or CH2 | |
| Sweep type | linear sweep、log sweep | |
| Sweep time | 0.1s~999.9s | |
| Setting range | User settings | |
| Sweep direction | Forward, Backward and Roundtrip | |
| Burst function | | |
| Number of pulses | 1-1048575 | |
| Burst mode | Manual Trig、CH2 Trig、Ext.Tring(AC) 、Ext.Tring(DC) | |
| General technical parameters | | |
| Display | Display type | 2.4 inch TFT color LCD |
| Storage and loading | Quantity | 100 groups |
| | Location | 00 to 99 (Power on will load the position 00) |
| Arbitrary wave | quantity | 1 to 60, totally 60 groups (default set 15 groups) |
| Interface | Interface mode | USB to serial interface |
| | Extension interface - | There is serial interface of TTL level mode to be convenient for user development. |
| | Communication speed | 115200bps |
| | communication protocol | Command-line mode, Open protocol |
| Power supply | Voltage range | DC5V±0.5V |
| Manufacturing process | Surface-mount technology, FPGA design, high reliability, long service life | |
| Buzzer | User can set ON or OFF by procedure | |
| Operating characteristics | Full button operation, knob continuous adjustment | |
| Environmental conditions | Temperature: 0~40 °CHumidity:<80% | |

3. Instrument Introduction

3.1 Front Panel Introduction



3.2 Display Interface Introduction



11-CH1 Parameters

13-Wave Display

15-Function list of Softkey

12- CH2 Parameters

14-Current Channel Output State

16-Phase angle between CH1 and CH2

3.3 Button function Introduction

| name | Introduction |
|------------------|---|
| Function softkey | Function softkey can activate the corresponding function on the screen |
| | Enter main interface, or set waveform of current channel |
| | Fast switch between measurement mode interface and main interface |
| | Fast switch between modulation mode interface and main interface |
| | Fast switch between system setting interface and main interface |
| | In main interface, press it to control output of CH1 and CH2 in the same time; in modulation mode interface, press it to control ON/OFF |
| | When setting parameter, press it to move cursor to set step value. |
| | Press it to enter CH1 channel, and press it again to control output of CH1, You can keep pressing for more than 1s to set CH1 into the primary channel. |
| | Press it to enter CH2 channel, and press it again to control output of CH2, you can keep pressing for more than 1s to set CH2 into the primary channel. |

4. Operation Introduction

Press the power button, the instrument starts and enters welcome interface, and then enters language selection interface. Press corresponding softkey to choose language, and then enter the main interface lastly. When you start the instrument in the future, there is no language selection interface, entering the main interface directly.



Welcome Interface



Language Selection Interface

4.1 Introduction of Main Interface

4.1.1 Press **OK** to open or close the output of both channels in the same time.

4.1.2 Select channel: Press **CH1** or **CH2** to select current channel. Press again to control the channel ON/OFF.

Keep pressing **CH1** or **CH2** key for more than 1 second to set the current channel as the primary channel.

4.1.3 Set waveform: Press **WAVE** key to set waveform of current channel; rotate knob to set waveform quickly. Press **◀ ▶** to switch between arbitrary waveforms and preset waveforms.

4.1.4 Set frequency: press [FREQ] softkey to enter frequency setting, and press **◀ ▶** to move cursor to set the step value. And then rotate the knob to adjust value; keep pressing [FREQ] softkey for more than 1 second to change frequency unit.

4.1.5 Other parameters setting are same as 4.1.14 (Keep pressing [OFFS], [DUTY] and [PHAS] to Initialize to default values)

4.2 Introduction of measurement mode interface

4.2.1 On measurement mode, press [FUNC] softkey to enter the state of switching between measure and counter.

4.2.2 Coupling set: press [COUP] softkey can set the coupling mode to AC and DC.

4.2.3 Set gate time: press [GATE] to set gate time. and press **◀ ▶** can set step value. And then rotate knob to adjust value. [MODE] setting is as above. name

4.2.4 The operation at counter function are almost same to the operation of measure function.

4.3 Introduction of modulation mode interface

4.3.1 On modulation mode interface, press [FUNC] softkey to enter the state of switching between sweep frequency (CH1 and CH2) and burst function.



4.3.2 On sweep frequency function (CH1), press **▲ ▼** move cursor to choose edited item, after the item selected, you can press **◀ ▶** (or press CHG softkey) and rotate knob to adjust value.

4.3.3 After set all items, press ON softkey to start sweep frequency function, and press OFF to stop.

4.3.4 Other function operation are almost same as above.

4.4 Introduction of system setting interface

4.4.1 Recall and store: it can recall and store current waveform parameter to the specific place, rotate knob to the specific place. When you want to recall, store and delete, press corresponding softkey.

4.4.2 Sync: When sync, CH1 is the object of operation. CH2 parameter will be changed with the changes of CH1 parameter. When the sync item is selected, you can press   or knob to select the sync item needed, press ON softkey to select and press OFF softkey to cancel.

4.4.3 Other function on system setting interface and other interface operation are similar as above.