

RIGOL
Innovation or nothing

DG900

DG900 Series
Function/Arbitrary Waveform Generator



Quick Guide

Guaranty and Declaration

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RIGOL guarantees that this product conforms to the national and industrial standards in China as well as the ISO9001:2015 standard and the ISO14001:2015 standard. Other international standard conformance certifications are in progress.

Contact Us

If you have any problem or requirement when using our products or this manual, please contact **RIGOL**.

E-mail: service@rigol.com

Website: www.rigol.com

General Safety Summary

1. Only the exclusive power cord designed for the instrument and authorized for use within the local country could be used.
2. Ensure that the instrument is safely grounded.
3. Observe all terminal ratings.
4. Use proper overvoltage protection.
5. Do not operate without covers.
6. Do not insert objects into the air outlet.
7. Use the proper fuse.
8. Avoid circuit or wire exposure.
9. Do not operate the instrument with suspected failures.
10. Provide adequate ventilation.
11. Do not operate in wet conditions.
12. Do not operate in an explosive atmosphere.
13. Keep instrument surfaces clean and dry.
14. Prevent electrostatic impact.
15. Handle with caution.
16. Please use the front-panel BNC output connector correctly. It is only allowed to output signal.

Safety Notices and Symbols

Safety Notices in this Manual:



WARNING

Indicates a potentially hazardous situation or practice which, if not avoided, will result in serious injury or death.

**CAUTION**

Indicates a potentially hazardous situation or practice which, if not avoided, could result in damage to the product or loss of important data.

Safety Terms on the Product:

DANGER It calls attention to an operation, if not correctly performed, could result in injury or hazard immediately.

WARNING It calls attention to an operation, if not correctly performed, could result in potential injury or hazard.

CAUTION It calls attention to an operation, if not correctly performed, could result in damage to the product or other devices connected to the product.

Safety Symbols on the Product:

Hazardous
Voltage



Safety
Warning



Protective Earth
Terminal



Chassis Ground



Test Ground

Care and Cleaning**Care**

Do not store or leave the instrument where it may be exposed to direct sunlight for long periods of time.

Cleaning

Clean the instrument regularly according to its operating conditions.

1. Disconnect the instrument from all power sources.
2. Clean the external surfaces of the instrument with a soft cloth dampened with mild detergent or water. Avoid having any water or other objects into the chassis via the heat dissipation hole. When cleaning the LCD, take care to avoid scarifying it.

**CAUTION**

To avoid damage to the instrument, do not expose it to caustic liquids.

**WARNING**

To avoid short-circuit resulting from moisture or personal injuries, ensure that the instrument is completely dry before connecting it to the power supply.

Document Overview

This manual introduces some basic information that you should know when you use the DG900 series function/arbitrary waveform generator for the first time. It contains the following contents: product overview, how to connect the instrument to the AC power, turn-on checkout, and remote control.

Tip

For the latest version of this manual, download it from the official website of **RIGOL** (www.rigol.com).

Format Conventions in this Manual

1. Keys:

The keys on the front panel are usually denoted by the format of "Key Name (Bold) + Text Box". For example, **Utility**.

2. Menu Labels:

The menu labels are usually denoted by the format of "Menu Word (Bold) + Character Shading". For example, **System Setting**.

3. Connectors:

The connectors on the front or rear panel are usually denoted by the format of "Connector Name (Bold) + Square Brackets (Bold)". For example, **[Counter]**.

4. Operation Procedures:

"→" represents the next step of operation. For example, **Utility**→**System Setting** indicates pressing **Utility** on the front panel and then pressing the menu label **System Setting**.

Content Conventions in this Manual

DG900 series function/arbitrary waveform generator includes the following models. Unless otherwise specified, this manual takes DG992 as an example to illustrate the operation methods of the DG900 series.

Model	No. of Channels	Max. Output Frequency
DG952	2	50 MHz
DG972	2	70 MHz
DG992	2	100 MHz

General Inspection

1. 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. **RIGOL** would not be responsible for free maintenance/rework or replacement of the instrument.

2. Inspect the instrument

In case of any mechanical damage, missing parts, or failure in passing the electrical and mechanical tests, contact your **RIGOL** sales representative.

3. Check the accessories

Please check the accessories according to the packing lists. If the accessories are damaged or incomplete, please contact your **RIGOL** sales representative.

Product Overview

As a multi-functional signal generator, DG900 series function/arbitrary waveform generator integrates many instruments into 1, such as function generator, arbitrary waveform generator, noise generator, pulse generator, harmonic generator, analog/digital modulator, and frequency counter. As a multi-functional and portable instrument, it offers you a new choice in education,

R&D, production, measurement, and other industries with its user-friendly touch screen and high performance at an unprecedented price point. For descriptions of the front panel, refer to Figure 1; for descriptions of the rear panel, refer to Figure 2; and for descriptions of the user interface (LCD), refer to Figure 3.

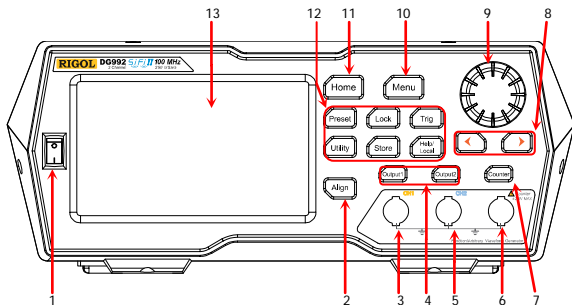


Figure 1 Front Panel

Table 1 Front Panel Description

No.	Description	No.	Description
1	Power Key	8	Arrow Keys
2	Align Phase Key	9	Knob
3	CH1 Output Connector	10	Menu Key
4	Channel Control Area	11	Home Key
5	CH2 Output Connector	12	Function Keys
6	Counter Measurement Signal Input Connector	13	LCD Touch Screen
7	Frequency Counter	—	—

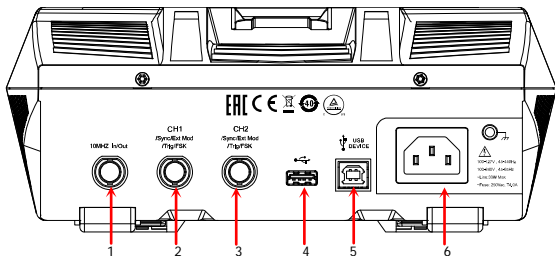


Figure 2 Rear Panel

Table 2 Rear Panel Description

No.	Description	No.	Description
1	10MHz In/Out Connector	4	USB HOST
2	CH1 Sync/Ext Mod/Trig/FSK Connector	5	USB DEVICE
3	CH2 Sync/Ext Mod/Trig/FSK Connector	6	AC Power Cord Connector

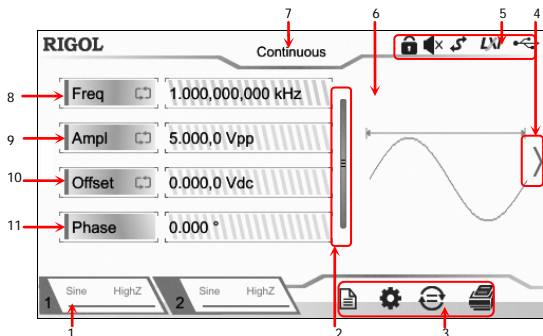


Figure 3 User Interface

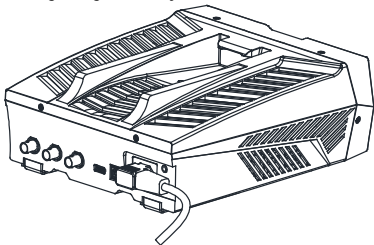
Table 3 User Interface Icons

No.	Name	Description
1	Channel Output Configuration Status Bar	Displays the current output configuration of the channel.
2	Up and Down Scroll Bar	Prompts you to move up and down with your fingers on the screen to view and set parameters.
3	Information Setting	<ul style="list-style-type: none"> 🔒: opens the Store interface. ⚙️: opens the Utility interface. 🔄: performs the channel copy function. 🖨️: performs the screen print operation.
4	Right Arrow	Prompts you to slide right on the screen to switch to the waveform selection interface.
5	Status Bar	<ul style="list-style-type: none"> 🔒: indicates that the front-panel keys and the screen are locked. 🔇: indicates that the beeper is disabled. 🔧: indicates that the instrument is in programming-controlled mode. 🌐: indicates that the instrument has been successfully connected to the local area network by using the network cable. 📁: indicates that a USB storage device is found.
6	Waveform	Displays the currently selected waveform of each channel.
7	Interface Label	Displays the label of the current interface.
8	Frequency	Displays the frequency of the current waveform of each channel.
9	Amplitude	Displays the amplitude of the current waveform of each channel.
10	Offset	Displays the DC offset of the current waveform of each channel.
11	Phase	Displays the phase of the current waveform of each channel.

To Prepare for Use

To Connect to AC Power


Please use the power cord provided in the accessories to connect the signal generator to the AC power source, as shown in the figure below. The rated AC power source supported by the signal generator is (100-127 V, 45-440Hz) or (100-240 V, 45-65Hz), and its maximum input power shall not exceed 30 W. When the signal generator is connected to the AC power source via the power cord, the instrument automatically adjusts itself to within the proper voltage range, and you do not need to select the voltage range manually.




CAUTION

To avoid electric shock, ensure that the instrument is correctly grounded.

Turn-on Checkout

After connecting the instrument to the power source properly, press  on the front panel to start the signal generator. During the start-up, the instrument will undergo the initialization and self-check process. Then, it will enter a default interface.


To Set the System Language

DG900 arbitrary waveform generator supports multiple languages. You can press  → **System Setting**, and then select a desired language from the **Language** drop-down list.


To Use the Built-in Help System

DG900 series provides the help information for each front-panel function menu and the current display interface. You can view the help information if you have any questions during the operation process.

1. Obtain the help information of the front panel keys

To get the help information about the front-panel keys, press the  key first, and then press the desired key for the help information. Then, the corresponding help information is displayed.

2. Obtain the common help topics

Press  on the front panel, and then the following interface is displayed below. Tap "Help" to enter the help interface. At this time, you can tap on the touch screen to move up and down the help items or rotate the knob to scroll up and down the list to select the

desired help item. Then, the help information for the item is displayed in the interface.



3. Obtain the descriptions of the data in the interface

Press **Help/Local** on the front panel to enter the interface, as shown above. Tap **"Center"** to view the descriptions for the data in the center of the current interface. Tap **"Top"** to view the descriptions for the data in the top part of the current interface. Tap **"Bottom"** to view the descriptions for the data in the bottom part of the current interface. Tap **"Guide"** to enter the guide interface.

4. Page up/down operation


When the help information is displayed in multiple pages, you can tap to move up and down the touch screen to view the help information.



5. Close the current help information

When the help information is displayed in the interface, press **Help/Local** on the front panel to close the help information currently displayed on the screen.

Example: To Output Sine


This section mainly introduces how to output Sine waveforms (frequency 20 kHz, amplitude 2.5 Vpp, offset 500 mVdc, start phase 90°) from the **[CH1]** connector.

- 1. Select the output channel:** Press **Output1** on the front panel or tap the channel output configuration status bar  to select CH1. At this time, the channel is indicated in red in the status bar.
- 2. Select Sine waveforms:** Press **Menu** on the front panel, and then the waveform selection interface is displayed. Tap **Continuous** and then select the **"Sine"** icon to go to the sine waveform parameter setting interface automatically.
- 3. Set frequency:** Tap the **Freq** parameter input field to input 20 with the pop-up numeric keypad, and then select "kHz" as the unit. Tap **"Ok"**.
- 4. Set amplitude:** Tap the **Ampl** parameter input field to input 2.5 with the pop-up numeric keypad, and then select "Vpp" as the unit. Tap **"Ok"**.
- 5. Set offset voltage:** Tap the **Offset** parameter input field to input 500 with the pop-up numeric keypad, and then select "mVdc" as the unit. Tap **"Ok"**.
- 6. Set start phase:** Tap the **Phase** parameter input field to input 90 with the pop-up numeric keypad, and then select "" as the unit. Tap **"Ok"**.

- 7. Enable channel output:** Press **Output1** or tap the channel output configuration status bar  to enable the channel output. Then, the backlight of **Output1** key is illuminated and the channel status is highlighted () , and the Sine signal is output from the **[CH1]** connector based on the current configurations.
- 8. Observe the output waveforms:** Connect the **[CH1]** connector of the DG900 series to the oscilloscope by using the BNC cable, and then you can view the output waveforms from the oscilloscope.

Remote Control

DG900 series function/arbitrary waveform generator can be connected to the PC via the USB or GPIB (working with **RIGOL** USB-GPIB interface converter) to realize remote control. The remote control can be realized by using SCPI (Standard Commands for Programmable Instruments) commands. DG900 series signal generator supports two ways of remote control: user-defined programming and PC software (e.g. **RIGOL** Ultra Sigma).

When the instrument is in remote control, the front panel keys (except the Power key  and **Help/Local** key) and the touch screen are locked. At this time, you can press **Help/Local** to exit the remote mode.

More Product Information

1. Obtain the device information

Press **Utility**→**System Info** to obtain the information of the instrument, including the device model, device serial number, as well as software version number.

2. Check the option installation

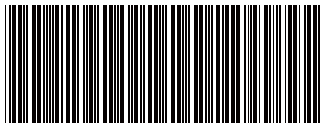
Press **Utility**→**Option** to view the installation status of all the options.

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

DG900 User's Guide: introduces the functions of the instrument and the operation methods, remote control methods, possible failures and solutions in using the instrument, and order information;

DG900 Programming Guide: provides detailed descriptions of SCPI commands and programming instances of the instrument.

DG900 Datasheet: provides the main features and technical specifications of the instrument.



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