RIGOL

DNA6000-R Series

Vector Network Analyzer

Quick Guide

Apr.2026

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1 Document Overview

This document is intended to provide a quick overview of the front and rear panels, user interface and basic operation of the DNA6000-R series vector network analyzer.

TIP

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

Publication Number

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Software Version

00.00.11

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Format Conventions in this Manual

1. **Key**

   The front panel key is denoted by the menu key icon. For example, 

   indicates the "System" key.

2. **Menu**

   The menu item is denoted by the format of "Menu Name (Bold) + Character Shading" in the manual. For example, **Frequency** indicates clicking **Frequency** to enter the frequency setting menu.

3. **Operation Procedures**

   The next step of the operation is denoted by "**>**" in the manual. For example, **Frequency** > **Center** indicates first clicking **Frequency**, and then clicking **Center**.

Content Conventions in this Manual

DNA6000-R series vector network analyzer includes the following models. Unless otherwise specified, this manual takes DNA6264-R as an example to illustrate the functions and operation methods of the DNA6000-R series.

Model	Frequency	Number of Channels	Connector
DNA6082-R	5 kHz to 8.5 GHz	2	N-type Female
DNA6084-R	5 kHz to 8.5 GHz	4	N-type Female
DNA6142-R	5 kHz to 14 GHz	2	N-type Female

Model	Frequency	Number of Channels	Connector
DNA6144-R	5 kHz to 14 GHz	4	N-type Female
DNA6202-R	5 kHz to 20 GHz	2	3.5mm Threaded Male Connector
DNA6204-R	5 kHz to 20 GHz	4	3.5mm Threaded Male Connector
DNA6262-R	5 kHz to 26.5 GHz	2	3.5mm Threaded Male Connector
DNA6264-R	5 kHz to 26.5 GHz	4	3.5mm Threaded Male Connector

2 Safety Requirement

2.1 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.

1. Only the exclusive power cord designed for the instrument and authorized for use within the destination 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.

WARNING

Equipment meeting Class A requirements may not offer adequate protection to broadcast services within residential environment.

2.2 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 Notices 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**

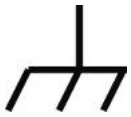
  It calls attention to an operation, if not correctly performed, could result in damage to the product or other devices connected to the product.

Safety Symbols on the Product:

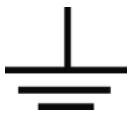
Hazardous Voltage

Safety Warning

Protective Earth Terminal



Chassis Ground



Test Ground

2.3 EMC Level

Class A (for non-residential products)

NOTE:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

2.4 Ventilation Requirement

This instrument uses a fan to force cooling. Please make sure that the air inlet and outlet areas are free from obstructions and have free air. When using the instrument in a bench-top or rack setting, provide at least 10 cm clearance beside, above and behind the instrument for adequate ventilation.

CAUTION

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.

2.5 Working Environment

Temperature

Operating: 0℃ to +40℃

Non-operating: -20℃ to +70℃

Humidity

- **Operating:**

  Below +30℃: ≤95% RH (without condensation)

  +30℃ to +40℃: ≤75% RH (without condensation)

- **Non-operating:**

  Below +40°C: 5% to 90%, without condensation

  +40°C to +60°C: 5% to 80%, without condensation

  +60°C to +70°C: 5% to 40%, without condensation

WARNING

To avoid short circuit inside the instrument or electric shock, never operate the instrument in a humid environment.

Altitude

Operating altitude below 2,000 m (6,561.68 feet)

Protection Level Against Electric Shock

ESD ±8kV

Installation (Overvoltage) Category

This product is powered by mains conforming to installation (overvoltage) category II.

WARNING

Ensure that no overvoltage (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.

Installation (Overvoltage) Category Definitions

Installation (overvoltage) category I refers to signal level which is applicable to equipment measurement terminals connected to the source circuit. Among these terminals, precautions are done to limit the transient voltage to a low level.

Installation (overvoltage) category II refers to the local power distribution level which is applicable to equipment connected to the AC line (AC power).

Pollution Degree

Pollution Degree 2

Pollution Degree Definition

- **Pollution Degree 1:** No pollution or only dry, nonconductive pollution occurs. The pollution has no effect. For example, a clean room or air-conditioned office environment.
- **Pollution Degree 2:** Normally only nonconductive pollution occurs. Temporary conductivity caused by condensation is to be expected. For example, indoor environment.
- **Pollution Degree 3:** Conductive pollution or dry nonconductive pollution that becomes conductive due to condensation occurs. For example, sheltered outdoor environment.
- **Pollution Degree 4:** The pollution generates persistent conductivity caused by conductive dust, rain, or snow. For example, outdoor areas.

Safety Class

Class 1 – Grounded Product

2.6 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.

2.7 Environmental Considerations

The following symbol indicates that this product complies with the WEEE Directive 2012/19/EU.

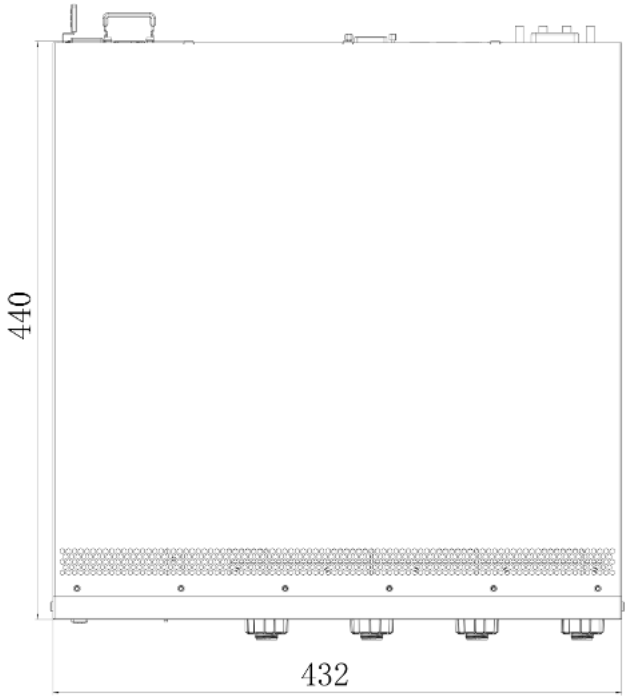
The equipment may contain substances that could be harmful to the environment or human health. To avoid the release of such substances into the environment and avoid harm to human health, we recommend you to recycle this product appropriately to ensure that most materials are reused or recycled properly. Please contact your local authorities for disposal or recycling information.

You can click on the following link *https://www.rigol.com/intl/services/environmental-protection-statement.html* to download the latest version of the RoHS&WEEE certification file.

3 Product Overview

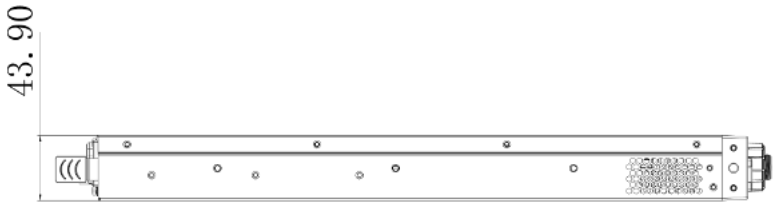
DNA6000-R series vector network analyzer offers multiple calibration methods including frequency response, single port, response isolation, enhanced response, full two port, and electrical calibration. It supports various data display formats including log magnitude, linear magnitude, SWR (Standing Wave Ratio), phase, group delay, Smith chart, polar plot, etc. Equipped with standard USB, LAN, and HDMI interfaces, the instrument accurately measures the magnitude-frequency, phase-frequency, and group delay characteristics of microwave networks. This product can be widely applied in fields such as electronics, communication and microwave. It is a commonly used testing equipment in the research and production processes of industries and universities.

3.1 Appearance and Dimensions



Unit: mm

Figure 3.1 Front View of DNA6000-R



Unit: mm

Figure 3.2 Side View of DNA6000-R

3.2 Front Panel

Figure 3.3 Front Panel of DNA6000-R Series

1. Power Key

Powers on or off the instrument. When it is powered on, the power key indicator is constant on, illuminated in green.

2. USB HOST Interface

The analyzer can serve as a "master" device to connect to the external USB device. The USB storage device, mouse, and keypad board can be connected to the instrument via the interface.

3. Type-C Interface

Used to connect the USB storage device.

4. Indicator

When the Acq indicator is constant on, it indicates that the system works normally. When LAN indicator blinks, it indicates that the network communication is normal.

5. Test Ports

Indicate the input and output connectors of the test signal. The LED indicator at the left-lower corner of each test port indicates the output status of the signal source. It is illuminated when a signal is output from this connector.

3.3 Rear Panel

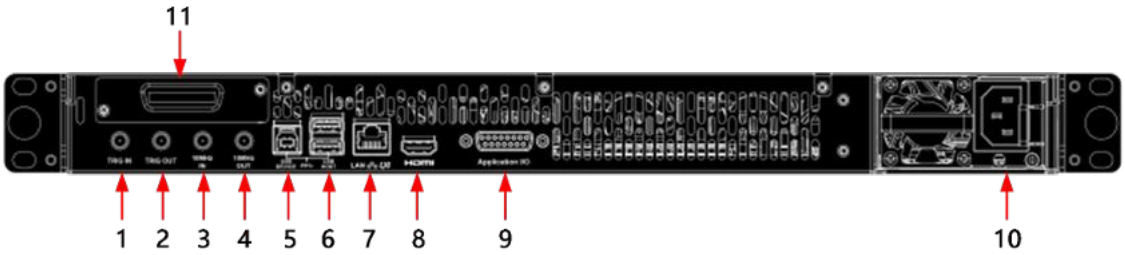


Figure 3.4 Rear Panel of DNA6000-R Series

1. TRIG IN

SMA connector, used to input external trigger signal to the instrument.

2. TRIG OUT

SMA connector, used to output external trigger signal.

3. 10MHz IN

SMA connector, used to input external reference clock signal.

4. 10MHz OUT

An SMA connector that can output the 10 MHz clock signal generated by the internal crystal oscillator inside the instrument.

5. USB DEVICE

Connects the instrument to the PC via this interface.

6. USB HOST Interface

Two USB HOST interfaces, used for powering external devices and data communication.

7. LAN

Connects the instrument to network via this interface. The instrument is in compliance with the standards specified in *LXI Device Specification 2011*. It can be used to set up a test system with other standard devices. Then you can control the instrument through using Web Control to send the SCPI commands when the instrument is connected to the network.

8. HDMI

Connects the instrument to an external display that has the HDMI interface (e.g. monitor or projector) via this interface to better observe the waveform display clearly.

9. Application I/O

Used to connect the external slave device for control.

10. Power Socket

Used to connect to the 800 W power supply module.

11. GPIB

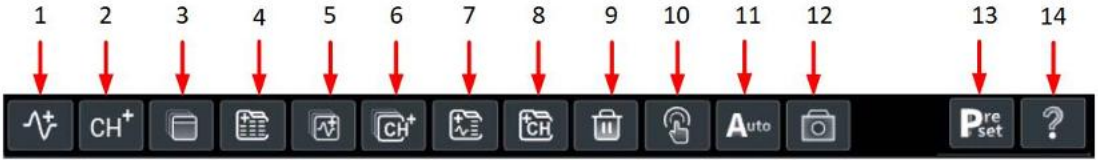
GPIB connector, used for instrument control and data communication.

3.4 User Interface

No.	Description
1	Quick Operation Toolbar
2	Window Display Area
3	Function Menu Area
4	Notification Area
5	System Status Bar

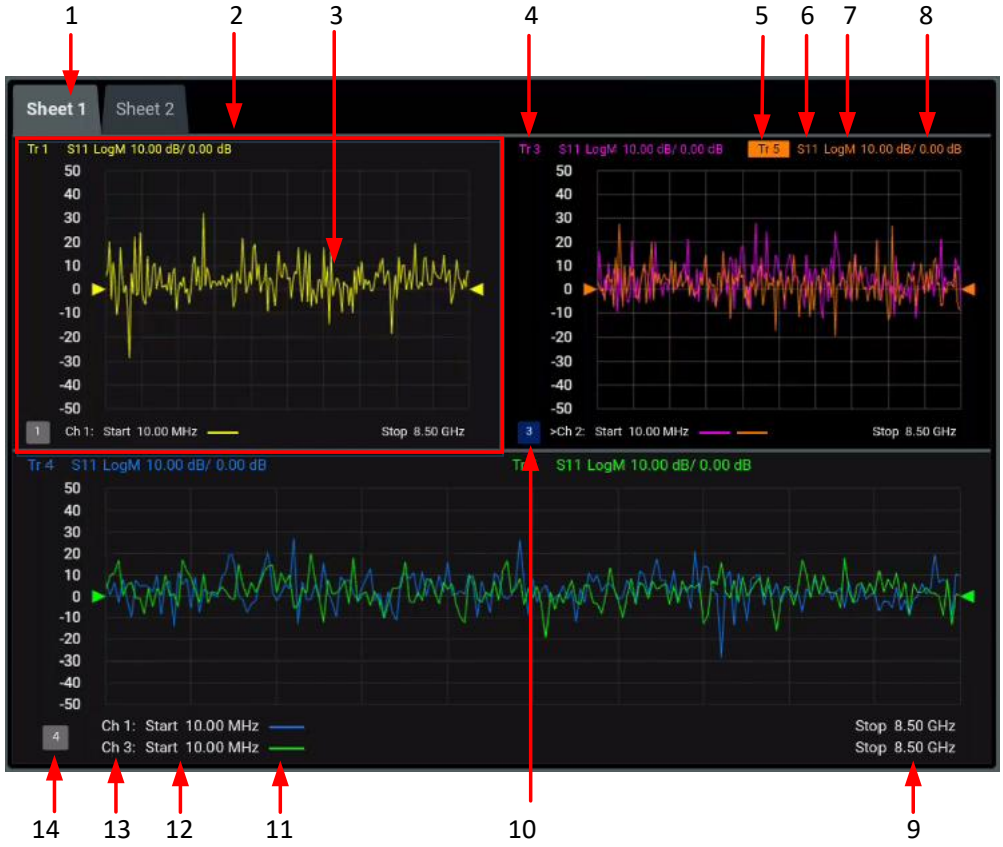
3.4.1 Quick Operation Toolbar

The following figure shows the quick operation toolbar, and the table below it lists the functions of the quick operation keys on the toolbar.



No.	Description
1	Adds a new trace.
2	Adds a new channel.
3	Adds a new window.
4	Adds a new sheet.
5	Adds a new trace to a new window.
6	Adds a new trace and channel to a new window.
7	Adds a new trace and channel to a new window in a new sheet.
8	Adds a new trace and a new channel to a new window in a sheet.
9	Shortcut key for "Delete". By default, it deletes the Active Trace. If there is no Active Trace (i.e., an empty window), it deletes the Active Window. If the Sheet is empty, it deletes the Active Sheet, the last sheet cannot be deleted.
10	Manual trigger key.
11	Shortcut key for Auto Scale. Adjusts the parameters to the optimal state of the signal.
12	Saves the screenshot of the current screen.
13	Restores the system to preset settings.
14	Displays the help document.

3.4.2 Window Display Area

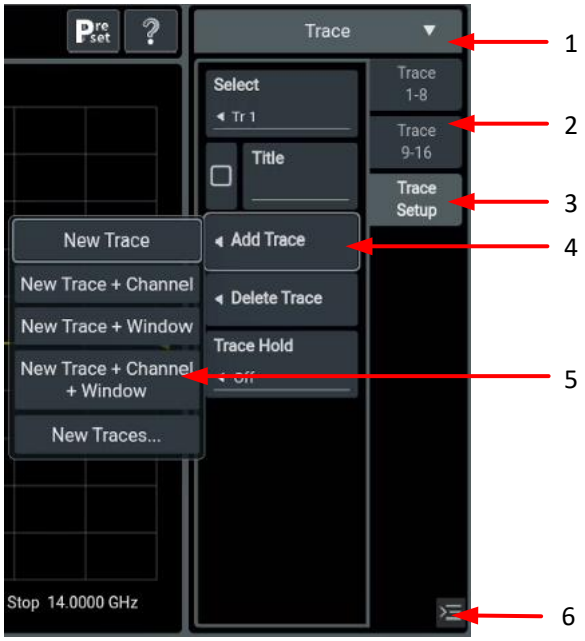


No.	Description
1	Indicates sheet name. When there is only sheet, no sheet label is displayed. Click on the sheet tab to switch the sheet. You can also rename the sheet. Each sheet can contain multiple windows.
2	Indicates window. Traces can be displayed in the window. The definitions for the horizontal coordinate and vertical coordinate are related to the measurement parameter and data format. One sheet can display up to 9 windows. For the newly added windows, you can click **Pg Up** or **Pg Dn** to view the desired window. • Single-clicking one window can make it become the active window. • Double-clicking the window area can maximize the currently selected window; double-clicking it again to restore to the multi-pane windowing. • Dragging the scale on the Y-axis can modify the reference level.
3	Indicates trace. It is a set of measurement data points. Clicking on the specified trace can select it as the active trace.
4	Indicates the trace number. Currently, it is not selected.
5	Indicates the trace number. Currently, it is selected.

No.	Description
6	Indicates the trace title. By default, it displays the test parameters.
7	Indicates the data format of the trace. In this figure, LogM indicates the log magnitude format.
8	Indicates Scale/Reference Level (related to the measurement data display format)
9	Indicates the stop frequency of the sweep.
10	Indicates the window number. Currently, the window is selected.
11	Indicates the trace for the channel. Its color is the same as the color of the trace for the specified channel.
12	Indicates the start frequency of the sweep.
13	Indicates the channel number.
14	Indicates the window number. Currently, the window is not selected.

3.4.3 Function Menu Area

Enter the Function Menu to make the settings.



No.	Description
1	Function menu name. You can click the drop-down button to switch to select other function menus.
2	Secondary sub-menu (unselected)

No.	Description
3	Secondary sub-menu (selected)
4	Third-level sub-menu. You can click the drop-down button (<) to select the sub-menu under it.
5	Forth-level sub-menu
6	Shows/Hides the function menu

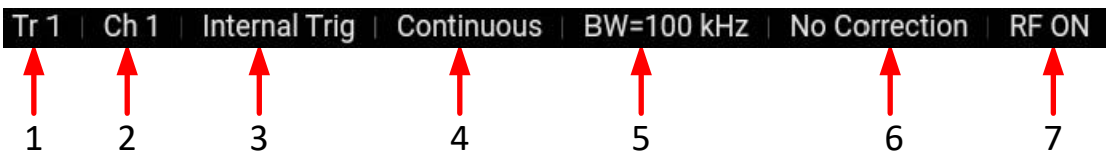
3.4.4 Notification Area

Displays LAN icon, sound icon, and remote control icon as well as date and time. You can click this area to open the "System" menu.

No.	Description
1	Remote control icon. When you use Web Control to control the instrument remotely, Rmt will be displayed.
	LAN icon. When the LAN interface is successfully connected, LXI is displayed.
	Sound icon. Click on this icon to turn on or off the sound. When enabled, will be displayed ; when disabled, will be displayed.
	USB storage device icon: When a USB storage device is detected, will be displayed.
	External Clock Icon: When you use the external 10 MHz clock signal Ext will be displayed.
2	Date: displays the system date. You can set it in the **Setting** sub-menu under **System**.
3	Time: displays the system time. You can set it in the **Setting** sub-menu under **System**.

3.4.5 System Status Bar

Displays the main parameters of the current system status.



No.	Description
1	Active trace
2	Active channel
3	Trigger source. Currently it is set to internal trigger. It can be configured in the **Trigger** menu.
4	Trigger mode, currently set to continuous trigger. It can be configured in the **Trigger** menu.
5	IF bandwidth, which can be set in the **Avg BW** menu.
6	Calibration type. After calibration, it displays the calibration type. If correction is disabled, it displays No Correction.
7	Internal stimulus source. It displays the RF power status for all channels and can be configured in the **Power** menu.

4 To Prepare for Use

4.1 To Connect to Power

Please use the power cord provided in the accessories to connect the spectrum analyzer to the AC power source. The AC power source supported by the instrument is 100-240 V, 50-60 Hz. The power consumption of the instrument cannot exceed 100W(400VA). When the spectrum analyzer 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.

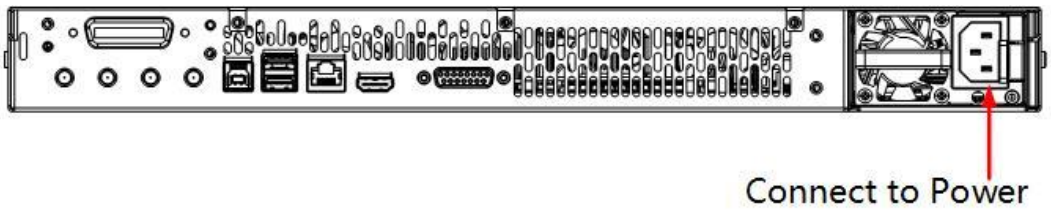


Figure 4.1 Connect to Power

CAUTION

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

4.2 Turn-on Checkout

- **Power on**
  - After connecting the instrument to the power source properly, press the power key on the lower-left corner of the front panel to power on the instrument. During the start-up process, the instrument performs a series of self-tests. After the self-test, the splash screen is displayed.
  - Click the Notification Area and select **Setting** > **Power Switch** in the displayed **System** menu. By default, the **Power Switch** menu is enabled. The instrument will be powered on automatically after the instrument is connected to power.
- **Shutdown**

- Press the power key and a prompt message "Are you sure to shutdown?" is displayed. Click **OK** to shut down the instrument.
- Press twice to directly shut down the instrument.
- Press for three seconds to directly shut down the instrument.

4.3 To Set the System Language

This series supports multiple system languages. To select the desired language, click the notification area at the lower-right corner of the screen to select **Setting** > **Language**.

5 Basic Operation

This chapter introduces the basic operation of the instrument.

5.1 To Connect to the Display and the Control Device

DNA6000-R series does not have an LCD display or monitor. To set the parameters and view the measurement results, you need to connect it to an external control and display device. You can use the externally connected monitor, mouse, or keyboard to control the DNA6000-R series.

Mouse Operation Rule

Connect the mouse to the instrument via the USB HOST interface to perform the following operations. Note that you can only use the left mouse button to perform the left-click operation. Right-click and mouse rolling operation are not allowed.

1. Click the mouse to select the menu and window.
2. Long press the left mouse button to drag the displayed data or window.
3. In the Marker menu, click the mouse to move the marker, but you are unable to use the mouse to add a marker.

Keypad Board Operation Rule

After the keypad board is properly connected to the instrument via the USB HOST interface, and then you can use the shortcut keys on the keypad to perform the same function as what you do with the Function key.

Externally Connected Device Operation Rule

You can configure the parameters for the function menu, measurement results, and other information on the user interface through the display device (e.g. LCD, TV, projector, etc.) externally connected via the rear-panel HDMI interface.

5.2 To Use the Built-in Help System

The built-in help document of the vector network analyzer provides information about the functions and menu introductions of the instrument.

Click on the help icon on the quick operation toolbar at the top of the main interface, then the Help documentation is displayed. You can get its help information by clicking on the link for the introduction of the specified function.

5.3 To View the Option and the Option Installation

This series vector network analyzer provides many options to meet various measurement requirements. If you need any of these options, order them according to the Order No. available in Data Sheet, and then install the options according to this section. Besides, you can also view the options currently installed on the vector network analyzer and activate the newly purchased option.

1. View the Installed Option

If your instrument has currently installed the option, perform the following operations to view the name of the installed option and other detailed information about the option from the option list.

Click the notification area in the lower-right corner of the screen to pop up the system menu. Click **Options** to view the options currently installed.

2. Install the Option

The option license is a string with a fixed number of characters. Each instrument has one unique license. The license file should be in specific format, with the filename extension "*.lic". After you purchase an option, you will obtain a key (used for obtaining the license). Then, you can install the option according to the following steps.

a. Obtain an option license

Log in to the **RIGOL** official website (*http://www.rigol.com*), click **SERVICE CENTER** > **LICENSE ACTIVATION** to enter the license activation interface.

Input the correct key, serial number (click **About** to acquire the serial number of the instrument), and verification code. Click **Generate** to acquire the download link for the option license file.

b. Install the option

Install the option by sending SCPI commands. For details, refer to *Programming Guide* of the product. After installation, a prompt message "Option activated successfully" is displayed. After the option has been installed, you are recommended to restart the instrument.

TIP

- During the installation process, you are not allowed to power off the instrument.
- Installing options by sending SCPI commands is supported. Installing options by inputting the license code manually is not supported.

5.4 Remote Control

This instrument supports Web Control remote operation. Web Control is Web-based remote control operation. With Web control, you can access and operate the LAN-

connected instrument via the web page on any smart terminals such as PC, mobile, and iPad, without needing to install any software. The operation procedures are as follows:

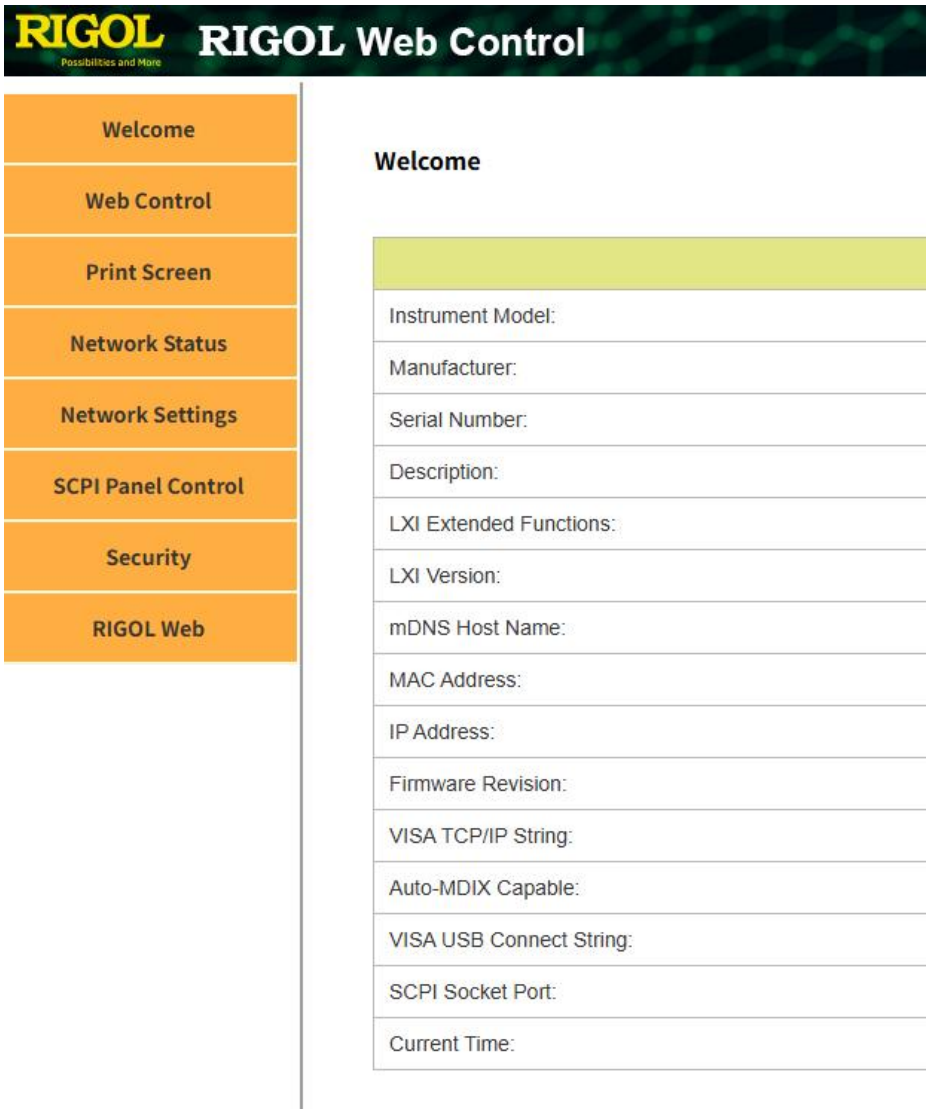
1. Connect the instrument to the network

   Ensure that the rear-panel LAN interface is connected to the network. Note that the instrument must be connected to the network where the control terminal is located. Then you can operate the instrument in remote way by accessing the network.

2. Obtain the IP address

   In the **System** menu, click **IO** to view the IP address of the instrument.

3. Input the IP address of the instrument into the browser address bar, then press Enter to access the web page, as shown in the following figure.



4. Click **Web Control** on the left side of the screen to enter the instrument remote control interface. You can use the mouse to remotely control the instrument in real time, with the same effect as operating the instrument directly.
5. Click **Print Screen**, and you can select "Take Screenshot" or "Record Screen" to capture the current screen shot.
6. Click **Network Settings** to configure the network. Note that login is required when changing the network configuration. When you first log in to the Web Control, use the user name "admin" and the password "rigol"..
7. The SCPI Panel Control function allows the user to send SCPI commands through the web interface for remote programming control of the instrument. Click **SCPI Panel Control** to enter the commands into the SCPI Command input field. After inputting the commands, click the **Send&Read** button to send the command and read the returned value.

   You can program and control the instrument by using the SCPI (Standard Commands for Programmable Instruments) commands.For details about the SCPI commands and programming, refer to *Programming Guide* of this series of product.
8. Close the browser to exit the instrument remote control interface.

Only one user can access the instrument IP address for remote control operation at a time. First come, first served. Concurrent logins are not allowed. If the connection is interrupted, you can refresh the browser to load the page.

CAUTION

Before setting up communication, please turn off the instrument to avoid causing damage to the communication interfaces.

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Communication

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- Memory and MCU Chip
- Third-Generation Semiconductor
- Solar Photovoltaic Cells

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- Power Test
- Automotive Electronics

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