Rigol DS1052E

Rigol DS1052E Digital Oscilloscope Instruction Manual

Model: DS1052E

1. Introduction and Overview

The Rigol DS1052E is a high-performance 50MHz digital oscilloscope designed for precise electronic measurements. It features two channels and a maximum real-time sample rate of 1 GSa/s, with an equivalent-time sample rate of 25 GSa/s. The device is equipped with a vibrant 64k TFT color LCD for clear waveform display.

Key features include:

- 1 GSa/s maximum real-time sample rate, 25 GSa/s maximum equivalent-time sample rate
- 50 MHz Bandwidths
- 20 automatic measurements
- 64 k TFT color LCD, bright and vivid waveform display
- Ultra compact design: 303mm x 154mm x 133mm (WxHxD)

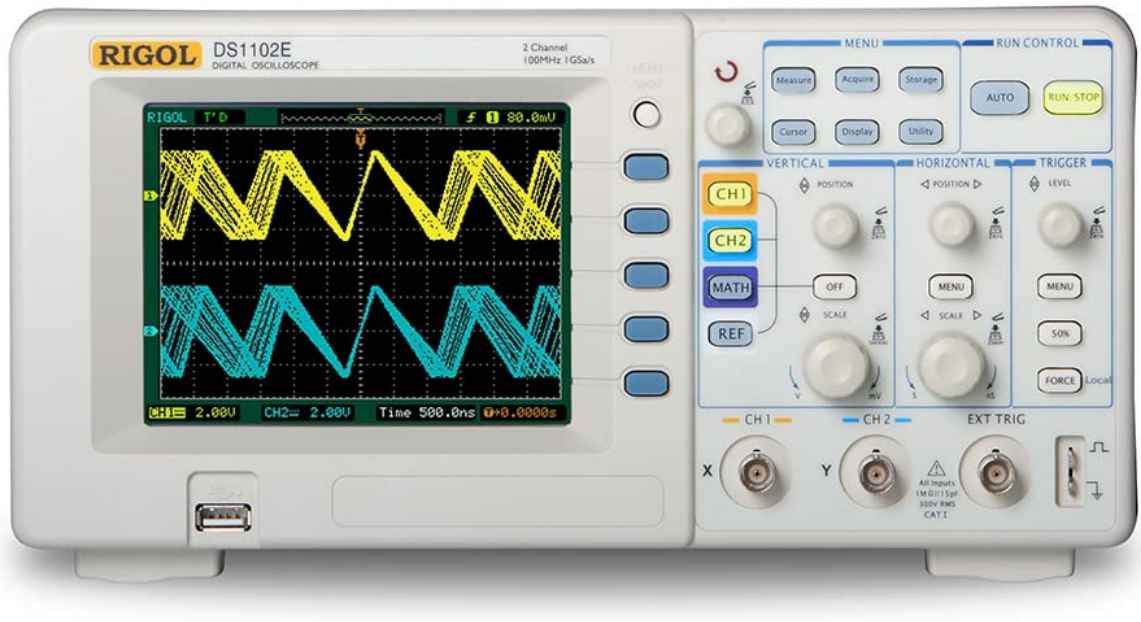


Figure 1.1: Front view of the Rigol DS1052E Digital Oscilloscope, showing the display, controls, and input ports.

2. Setup

Before operating the oscilloscope, ensure it is properly set up. Connect the power cable to the rear of the unit and plug it into a suitable power outlet. The device supports 45-440Hz AC, 100-240V 50VA MAX. Always maintain ground to avoid electric shock.

Figure 2.1: Side view of the Rigol DS1052E, highlighting the power input connector.

For initial use or to reset settings, connect the probes to the input channels (CH1, CH2) and the probe compensation output. Use the 'Auto' function to automatically adjust vertical and horizontal scales for optimal waveform display. To return to factory default settings, navigate to the 'Storage' menu, select 'Factory', and load the settings.

Figure 2.2: Rear view of the Rigol DS1052E, showing various ports including USB and RS-232.

3. Operating the Oscilloscope

The DS1052E offers various operational modes and features to capture and analyze waveforms effectively.

3.1 Auto-Run Function

The 'Auto' button automatically senses signals on the inputs and makes the best guess for time scale and vertical scaling for each signal. This is useful for quickly setting up the display for unknown signals.

3.2 Saving and Loading Waveforms

The oscilloscope supports various storage capabilities:

- **Waveform:** Saves the waveform data, reusable between oscilloscopes or arbitrary waveform generators.
- **Setups:** Saves parameters for vertical and horizontal positions, as well as triggering information.

- **Bitmap:** Creates a screenshot of the display, including all displayed information and menus. Can be inverted for better visibility.
- **CSV:** Exports data in a comma-delimited format, suitable for analysis in spreadsheet software like Excel.
- **Factory:** Resets the oscilloscope to its factory default settings.

To save or load data externally, insert a USB stick into the front USB port. The 'External' option will become available in the 'Storage' menu, allowing you to browse and manage files on the USB drive.

3.3 Long Memory Mode and Zoom

For detailed analysis of longer signals, the DS1052E features a long memory mode. In 'Normal' acquisition mode, the oscilloscope acquires about 16,000 points per waveform. Switching to 'Long Memory' mode (via the 'Acquire' menu) allows the acquisition of up to a million points, providing significantly higher resolution for detailed waveform examination.

To zoom into a specific area of a waveform, press the 'Horizontal' key. A zoom window will appear, allowing you to adjust the time scale and position to inspect fine details of the signal. This is particularly useful for troubleshooting complex signals where specific events need closer inspection.

3.4 Alternate Triggering

The oscilloscope can operate independently on two channels using alternate triggering. This allows you to set different trigger levels and time scales for each channel, enabling simultaneous observation and analysis of two independent signals with distinct characteristics. This is accessed through the 'Trigger' menu, by changing the mode from 'Edge' to 'Alternate'.

Video 3.1: RIGOL DS1000E Series Overview and Feature Demonstration. This video provides a visual guide to the oscilloscope's features, including auto-run, storage capabilities, long memory mode, and alternate triggering.

4. Maintenance

To ensure the longevity and optimal performance of your Rigol DS1052E oscilloscope, follow these general maintenance guidelines:

- Keep the device clean and free from dust. Use a soft, dry cloth for cleaning the exterior. Avoid abrasive cleaners or solvents.
- Ensure proper ventilation. Do not block the ventilation openings on the device.
- Store the oscilloscope in a cool, dry environment when not in use, away from direct sunlight and extreme temperatures.
- Handle probes and cables with care to prevent damage.

5. Troubleshooting

If you encounter issues with your Rigol DS1052E, consider the following common troubleshooting steps:

- **Display or Signal Issues:** If the display is erratic or signals are not appearing correctly, try using the 'Auto' function to re-adjust settings. If issues persist, reset the device to factory defaults via the 'Storage' menu.
- **Software Compatibility:** Some users have reported issues with included software requiring specific runtime

environments (e.g., NIVISAruntime.msi) not provided on the installation CD. Check the official Rigol website for updated software and drivers.

- **Language Settings:** If the manual or on-screen messages are in an unexpected language, consult the device's settings menu to change the display language to English.
- **Power Issues:** Ensure the power cord is securely fitted. A loose connection can cause intermittent power.
- **Fan Noise:** Some units may exhibit noticeable fan noise. This is often a characteristic of the design and not indicative of a fault.

6. Specifications

Specification	Value
Bandwidth	50 MHz
Channels	2
Real-time Sample Rate	1 GSa/s
Equivalent-time Sample Rate	25 GSa/s
Display	64k TFT color LCD
Automatic Measurements	20
Dimensions (WxHxD)	303mm x 154mm x 133mm
Package Dimensions	17 x 11 x 10 inches
Weight	0.01 ounces (shipping weight may vary)
Manufacturer	Rigol
First Available Date	January 7, 2009

7. Warranty and Support

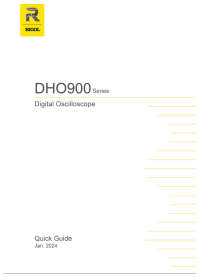
For warranty information, technical support, or service inquiries regarding your Rigol DS1052E oscilloscope, please contact Rigol USA directly.

Rigol USA Contact:

- Phone: 877-4-RIGOL-1
- Website: www.rigolna.com

You can also visit the official Rigol Store on Amazon for additional product information and resources.

Related Documents - DS1052E

	RIGOL DS1000E/DS1000D Series Digital Oscilloscopes User's Guide This user's guide provides comprehensive operational and technical information for the RIGOL DS1000E and DS1000D series digital oscilloscopes. These instruments are designed for efficient and accurate signal analysis in various applications.
	Руководство пользователя RIGOL DS1000Z Цифровой осциллограф Подробное руководство пользователя для цифровых осциллографов RIGOL серии DS1000Z, включая модели DS1054Z, DS1104Z, DS1074Z и другие. Охватывает характеристики, безопасность, эксплуатацию и технические детали.
	RIGOL DHO900 Series Digital Oscilloscope Quick Guide This quick guide provides essential information for the RIGOL DHO900 Series Digital Oscilloscope, covering safety requirements, general inspection, product overview, preparation for use, touch screen gestures, and parameter setting methods.
	RIGOL DHO900 Series Digital Oscilloscope Quick Guide Quick guide for the RIGOL DHO900 Series Digital Oscilloscope, covering safety requirements, product overview, preparation for use, and basic operations.
	RIGOL DM858 Series Digital Multimeter Quick Guide A quick guide to the RIGOL DM858 Series Digital Multimeter, covering safety requirements, product overview, general inspection, preparation for use, touch screen gestures, measurement connections, security lock, fuse replacement, help system, and remote control.
	RIGOL DHO800 Series Digital Oscilloscope Quick Guide A quick guide to the RIGOL DHO800 Series Digital Oscilloscope, covering safety requirements, product overview, preparation for use, touch screen gestures, and parameter setting.