Front Panel Overview

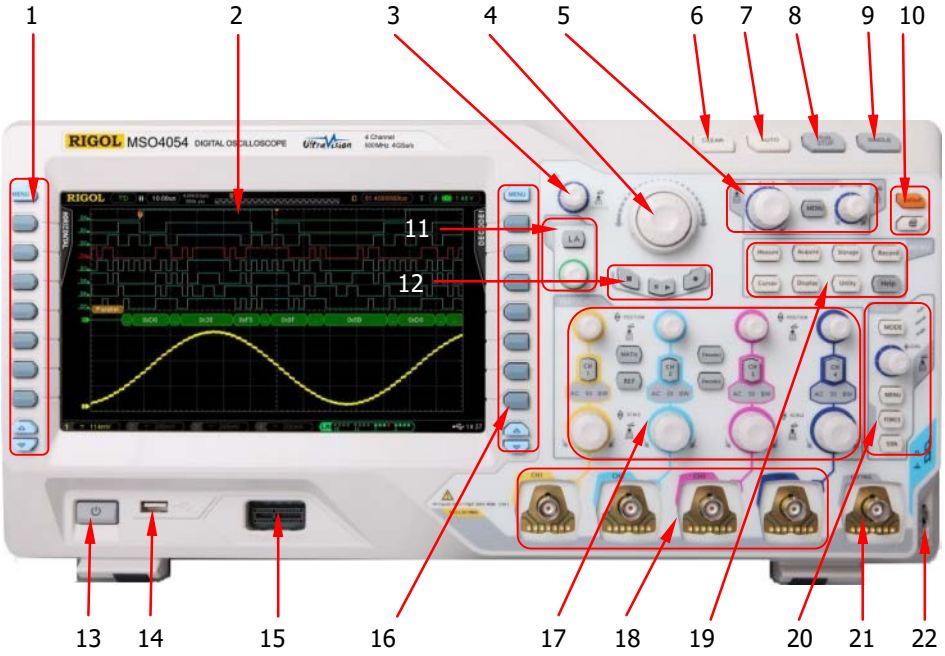


Figure 1-12 Front Panel Overview

Table 1-1 Front Panel Description

No.	Description	No.	Description
1	29 Parameters Measurement Menu Softkeys	12	Record
2	LCD	13	Power Key
3	Multi-function Knob	14	USB HOST
4	Navigation Knob	15	Digital Channel Input Terminal[1]
5	HORIZONTAL	16	Function Setting Menu Softkeys
6	CLEAR	17	VERTICAL
7	AUTO	18	Analog Channel Input Terminals
8	RUN/STOP	19	Function Keys
9	SINGLE	20	TRIGGER
10	Default and Print	21	EXT TRIG Input Terminal
11	LOGIC ANALYZER[1]	22	Probe Compensation Signal Output Terminal and Ground Terminal

Note[1]: Only applicable to MSO4000 mixed signal oscilloscope.

Rear Panel Overview

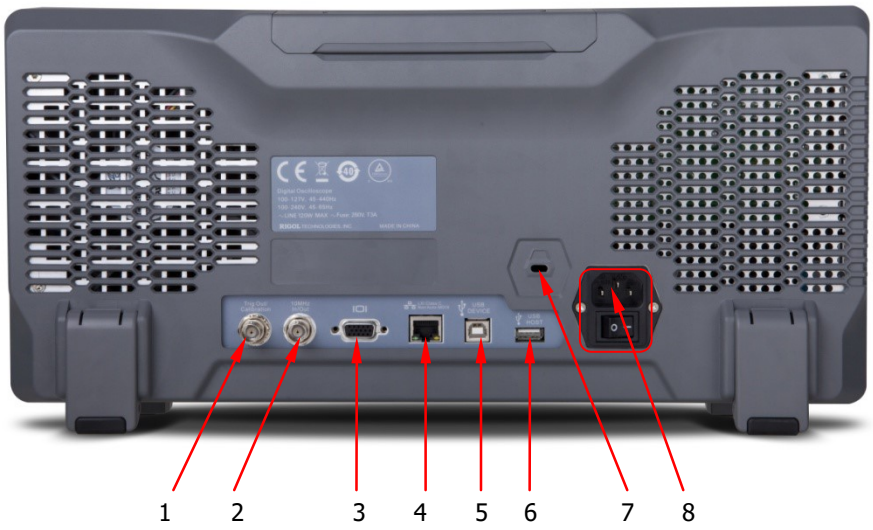


Figure 1-13 Rear Panel Overview

1. **Trig Out/Calibration**

   Various kinds of signals can be output from this connector (press **Utility** → **AuxOutput** to select the desired output type).

   1) **TrigOut:** the oscilloscope outputs a signal that can reflect the current capture rate of the instrument each time a trigger is generated. Connect the signal to a waveform display device and measure the frequency of the signal; the measurement result is the same as the current capture rate.
   2) **Fast:** the oscilloscope outputs a fast edge signal with 500 ps rise time from this connector and the signal can be used in the self-calibration of the oscilloscope.
   3) **GND:** the oscilloscope outputs a ground level from this connector.
   4) **PassFail:** the oscilloscope outputs a TTL high level when a failed waveform is detected until the current frame of waveform is finished and then outputs a low level at the beginning of the next frame of waveform. This signal can be transmitted to other control system for easy view of the test result.

2. Reference Clock

A more precise sample clock signal can be provided for the oscilloscope with the reference clock. It can also be used to synchronize the clocks of two or more oscilloscopes.

3. Video Output

Through this interface, the oscilloscope can be connected to an external monitor for clearer waveform display. At this point, the display of the oscilloscope is still operational.

4. LAN

Through this interface, the oscilloscope can be connected to the local area network for remote control. This oscilloscope conforms to LXI-C standard and can quickly build test system with other devices.

5. USB DEVICE

Through this interface, the oscilloscope can be connected to PictBridge printer to perform the print operation or PC to control the oscilloscope remotely.

6. USB HOST

You can connect a USB storage device via this interface to perform external storage and recall. You can also extend a GPIB interface via this interface using the USB-GPIB interface converter (optional) provided by **RIGOL** to realize GPIB communication.

Note: There is also a USB HOST interface at the front panel.

7. Lock Hole

Use a security lock (available separately) to lock the oscilloscope to a fixed location via this lock hole.

8. AC Power Socket/Power Switch

AC power input terminal. This oscilloscope accepts two kinds of AC power supplies: 100-127 V, 45-440 Hz and 100-240 V, 45-65 Hz. For the power connection method, refer to "**To Connect to Power Supply**".

Front Panel Function Overview

VERTICAL

MSO4000/DS4000 provides an independent vertical control system for each analog input channel.

- **CH1**, **CH2**, **CH3**, **CH4**: analog input channel switches.
  The four channels are marked by different colors which are also used to mark the corresponding waveforms on the screen and the channel input connectors. Press any key to turn on the corresponding channel and open the corresponding channel menu; press again to turn off the channel.

- **VERTICAL POSITION**: channel vertical position knobs.
  Turn the knob to modify the vertical position of the corresponding channel waveform. During the modification, the waveform of the corresponding channel moves up and down; the vertical position information (as shown in the figure below) pops up at the lower-left side of the screen in real-time. Pressing down the knob can quickly reset the vertical position (zero).
  

- **VERTICAL SCALE**: channel vertical scale knobs.
  Turn the knob to modify the vertical scale of the corresponding channel waveform. During the modification, the waveform of the corresponding channel is expanded or compressed vertically (the actual amplitude keeps unchaged); the vertical scale information (as shown in the figure below) at the bottom of the

screen changes accordingly. Pressing down the knob can quickly switch the vertical scale adjustment mode between "Coarse" and "Fine".

- **MATH**: press this key to open the math operation function menu. You can perform addition, subtraction, multiplication, division, FFT, digital filter, logic operations and advanced operations.

- **REF**: press this key to enable the reference waveform function. You can compare the waveform actually measured with the reference waveform.

- **Decode1**, **Decode2**: press any key to open the corresponding decoding function menu.
  MSO4000/DS4000 supports parallel decoding and various protocol decodings (for more details, refer to "**Protocol Decoding**").

HORIZONTAL

- **MENU**: press this key to open the horizontal control menu. You can turn on or off the delayed sweep, switch between different horizontal time base modes, switch between "Coarse" and "Fine" adjustments of the horizontal time base as well as modify the horizontal reference setting.

- **HORIZONTAL SCALE**: horizontal scale knob.
  Turn the knob to modify the horizontal time base. During the modification, the waveforms displayed are expanded or compressed horizontally; the horizontal time base message (as shown in the figure below) at the upper-left side of the screen changes accordingly. Pressing down the knob can quickly turn on or off the delayed sweep.

  When delayed sweep is turned on, turning the knob can modify the delayed

sweep time base. During the modification, the delayed sweep waveform is expanded or compressed horizontally; the delayed sweep time base message (as shown in the figure below) at the middle of the screen changes accordingly.

- **HORIZONTAL POSITION**: horizontal position knob.
  Turn the knob to modify the horizontal position (namely the trigger position). During the modification, the trigger point and the waveforms displayed move left or right; the horizontal position message (as shown in the figure below) at the upper-right side of the screen changes accordingly. Pressing down the knob can quickly reset the horizontal position (zero).

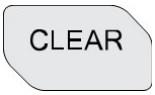
  When delayed sweep is turned on, turning the knob can modify the delayed sweep horizontal position. During the modification, the delayed sweep trigger point and waveform move left or right; the delayed sweep horizontal position message (as shown in the figure above) at the upper-right side of the screen changes accordingly.

TRIGGER

- **MODE**: press this key to switch the trigger mode to "Auto", "Normal" or "Single" and the corresponding status backlight of the current trigger mode would be illuminated.
- **TRIGGER LEVEL**: trigger level knob.
  Turn the knob to modify the trigger level. During the modification, the trigger level line moves up and down; the trigger level message (as shown in the figure below) pops up at the lower-left side of the screen in real-time. Pressing down the knob can quickly reset the trigger level to 0.
  

- **MENU**: press this key to open the trigger operation menu. This oscilloscope provides various trigger types.
- **FORCE**: in **Normal** and **Single** trigger modes, press this key to generate a trigger signal forcibly.
- **50%**: press this key to set the trigger level to the vertical midpoint of the trigger signal amplitude.

CLEAR



Press this key to clear all the waveforms on the screen. If the oscilloscope is in "RUN" state, new waveforms will be displayed.