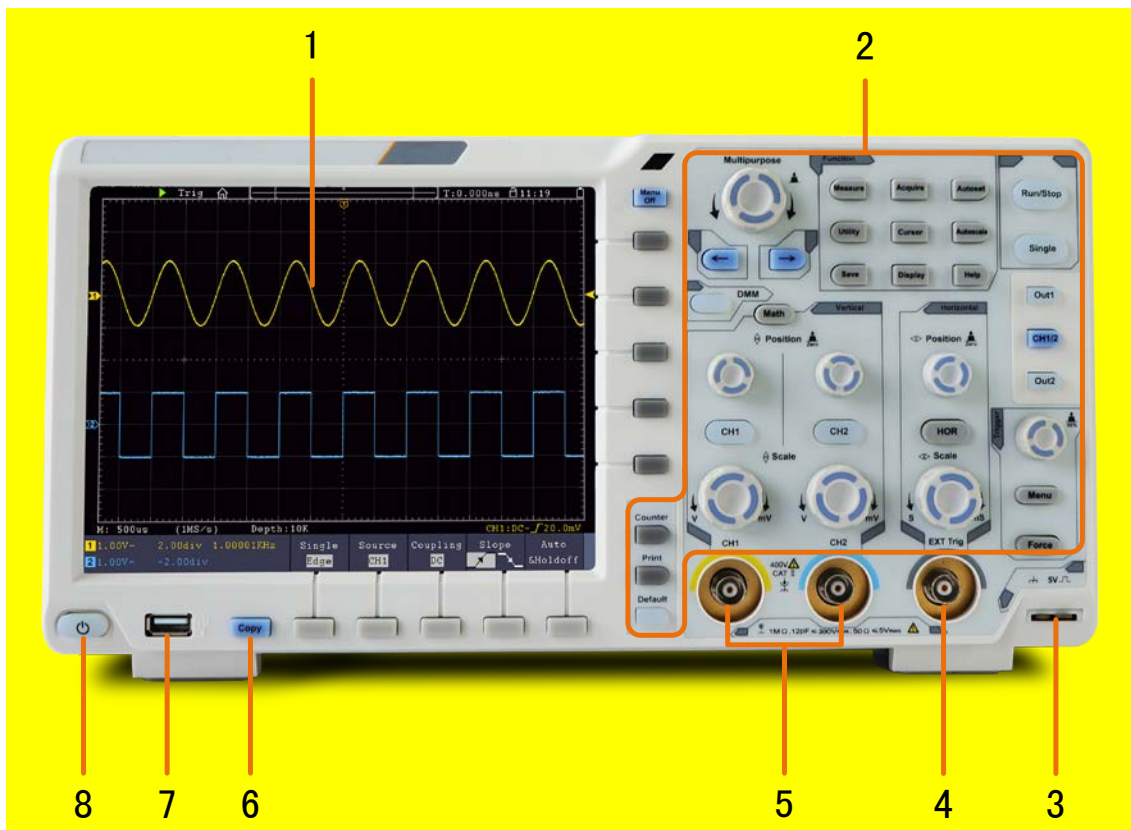# Quick Guide

Front Panel

1. Display area
2. Control (button and knob) area
3. Probe Compensation: Measurement signal (5V/1kHz) output.
4. EXT Trigger Input
5. Signal Input Channel
6. Copy button: You can save the waveform by just pressing this button in any user interface.
7. **USB Host port:** It is used to transfer data when external USB equipment connects to the oscilloscope regarded as "host device". For example: Saving the waveform to USB flash disk needs to use this port.
8. Power on/off
   Backlight of this button:
   Red light: The oscilloscope is turned off (connects with AC Power);
   Green light: The oscilloscope is turned on.

Rear Panel

1. Handle
2. Air vents
3. Input terminals of optional multimeter
4. AC power input jack
5. Fuse
6. **Foot stool**: Adjust the tilt angle of the oscilloscope.
7. **LAN port**: the network port which can be used to connect with PC.
8. **USB Device port:** It is used to transfer data when external USB equipment connects to the oscilloscope regarded as "slave device". For example: to use this port when connect PC to the oscilloscope by USB.
9. **Lock Hole**: You can lock the oscilloscope to a fixed location using the security lock (please buy it yourself) to secure the oscilloscope.
10. **Trig Out(P/F)** port: Trigger signal output or Pass/Fail output, also can be used as the port of CH2 Output of optional dual-channel waveform generator. The output type can be set on the menu (Utility menu→Output→Output).
11. **Out 1** port: CH1 Output of optional dual-channel waveform generator.

Control Area
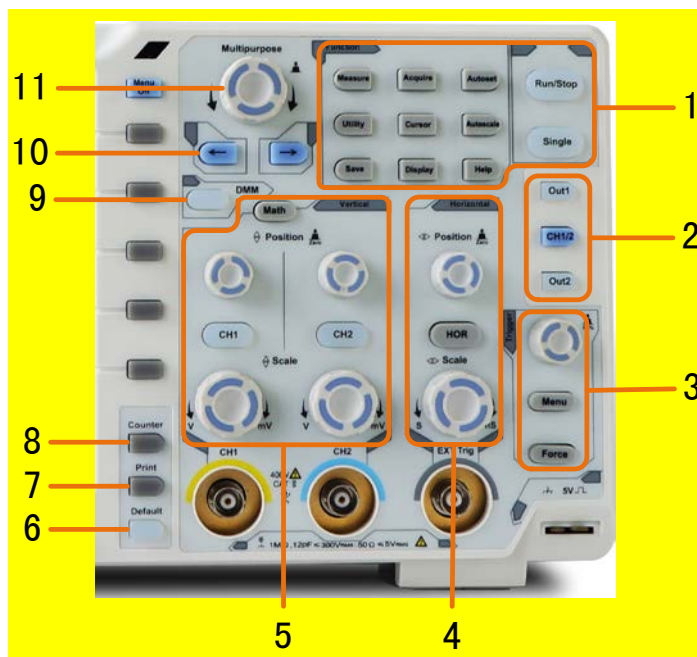
1. **Function button area**: Total 11 buttons

2. **Waveform generator controls (optional)**
   or
   DAQ: Multimeter (optional) recorder
   P/F: Pass/Fail
   W.REC: Waveform Record

3. **Trigger control area** with 2 buttons and 1 knob.

   The Trigger Level knob is to adjust trigger voltage. Other 2 buttons refer to trigger system setting.

4. **Horizontal control area** with 1 button and 2 knobs.

   "HOR" button refer to horizontal system setting menu, "Horizontal Position" knob control trigger position, "Horizontal Scale" control time base.

5. **Vertical control area** with 3 buttons and 4 knobs.

   "CH1" and "CH2 " correspond to setting menu in CH1 and CH2. "Math" button provides access to math waveform functions (+, -, ×, /, FFT, user function, digital filter). Two "Vertical Position" knob control the vertical position of CH1/CH2, and two "Scale" knob control voltage scale of CH1, CH2.

6. **Default**: Call out the factory settings.

7. **Print**: Print an image of what appears on the instrument screen.

8. **Decode**: Turn on/off **Decode** function.

9. **DMM** (optional Digital Multimeter) or **Snapshot** (Shortcut button for measurement snapshot)

10. **Direction key:** Move the cursor of the focused parameter.

11. **M** knob (Multipurpose knob): when a M symbol appears on the menu, it indicates

you can turn the **M** knob to select the menu or set the value. You can push it to close the menu on the left and right.

User Interface Introduction
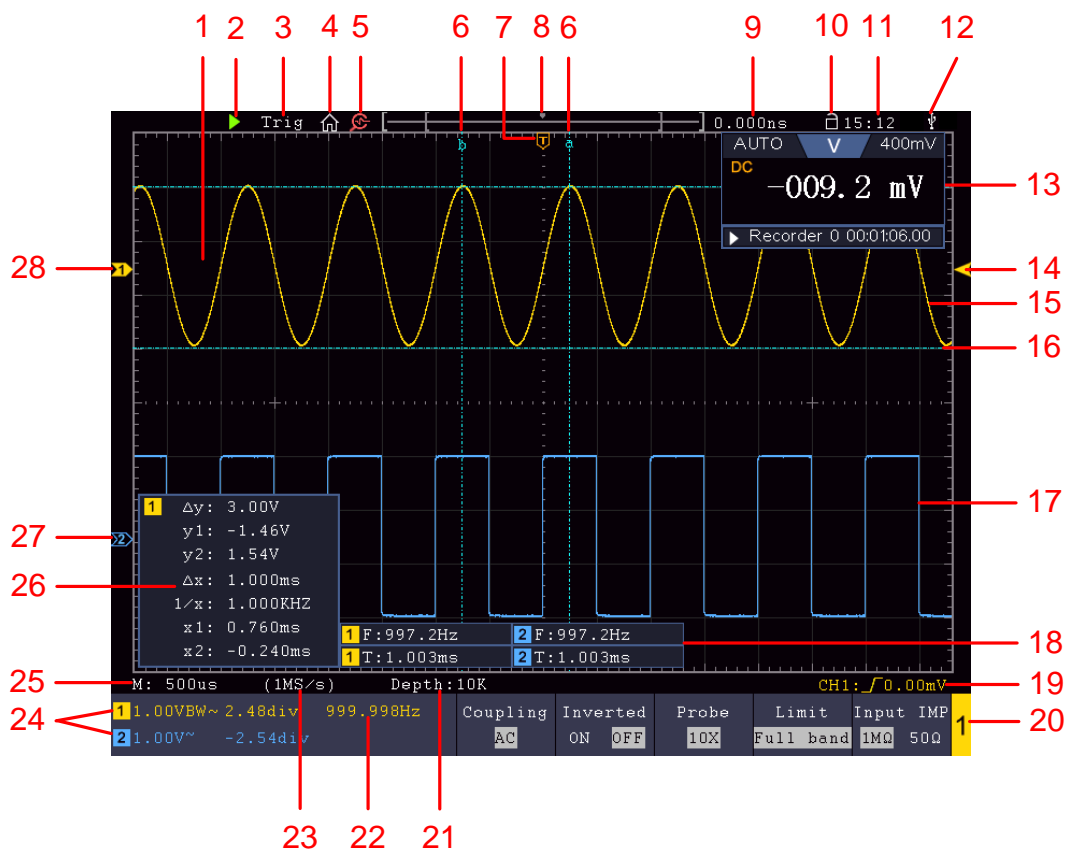
1. Waveform Display Area.
2. Run/Stop (touchable)
3. The state of trigger, including:

   Auto: Automatic mode and acquire waveform without triggering.

   Trig: Trigger detected and acquire waveform.

   Ready: Pre-triggered data captured and ready for a trigger.

   Scan: Capture and display the waveform continuously.

   Stop: Data acquisition stopped.

4. Click to show/hide the touchable menu pane.
5. Turn on/off the magnifier function.
6. The two blue dotted lines indicates the vertical position of cursor measurement.
7. The T pointer indicates the horizontal position for the trigger.
8. The pointer indicates the trigger position in the record length.
9. It shows present triggering value and displays the site of present window in internal memory.
10. Touchable icon is to enable (🔓) or disable (🔒) the touchscreen controls.

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11. It shows setting time.

12. It indicates that there is a USB disk connecting with the oscilloscope.

13. Multimeter window.

14. The pointer shows the trigger level position.

15. The waveform of CH1.

16. The two blue dotted lines indicate the horizontal position of cursor measurement.

17. The waveform of CH2.

18. It indicates the measured type and value of the corresponding channel. "**T**" means period, "**F**" means frequency, "**V**" means the average value, "**Vp**" the peak-peak value, "**Vr**" the root-mean-square value, "**Ma**" the maximum amplitude value, "**Mi**" the minimum amplitude value, "**Vt**" the Voltage value of the waveform's flat top value, "**Vb**" the Voltage value of the waveform's flat base, "**Va**" the amplitude value, "**Os**" the overshoot value, "**Ps**" the Preshoot value, "**RT**" the rise time value, "**FT**" the fall time value, "**PW**" the +width value, "**NW**" the -Width value, "**+D**" the +Duty value, "**-D**" the -Duty value, "**PD**" the Delay A−>B ⊥ value, "**ND**" the Delay A->B ⊥ value, "**TR**" the Cycle RMS, "**CR**" the Cursor RMS, "**WP**" the Screen Duty, "**RP**" the Phase, "**+PC**" the +Pulse count, "**-PC**" the - Pulse count, "**+E**" the Rise edge count, "**-E**" the Fall edge count, "**AR**" the Area, "**CA**" the Cycle area.

19. The icon shows the selected trigger type, e.g. ⌐ represents triggering on the rising edge for an Edge trigger. The reading shows the trigger level value of the corresponding channel.

20. Channel identifier of current bottom menu.

21. The readings show the record length.

22. The frequency of the trigger signal.

23. The readings show current sample rate.

24. The readings indicate the corresponding Voltage Division and the Zero Point positions of the channels. "BW" indicates bandwidth limit.

    The icon shows the coupling mode of the channel.

    "—" indicates direct current coupling

    "∼" indicates AC coupling
    " ⏚ " indicates GND coupling

25. The reading shows the setting of main time base.

26. It is cursor measure window, showing the absolute values and the readings of the cursors.

27. The blue pointer indicates the grounding datum point (zero point position) of the waveform of the CH2 channel. If the pointer is not displayed, it means that this channel is not opened.

28. The yellow pointer indicates the grounding datum point (zero point position) of the waveform of the CH1 channel. If the pointer is not displayed, it means that the channel is not opened.

Technical Specifications

Oscilloscope

Vertical Resolution (A/D)	Bandwidth	Rise Time
8 bits mode	200 MHz	≤ 1.75 ns
12 bits mode	150 MHz	≤ 2.33 ns
14 bits mode	20 MHz	≤ 17.5 ns

Performance Characteristics	Instruction		
Horizontal Scale	1ns/div-1000s/div, step by 1 – 2 - 5		
Sample rate (real time)	Dual CH	8 bits mode	1 GS/s
		12 bits mode	500 MS/s
		14 bits mode	100 MS/s
	Single CH	8 bits mode	1 GS/s
		12 bits mode	500 MS/s
		14 bits mode	100 MS/s
Waveform Refresh Rate	75,000 wfms/s		
Display	8" color LCD, TFT display , 800×600 pixels		
Channel	2 + 1 (External)		
Max Record length	40M		
Input coupling	DC, AC , Ground		
Input impedance	1MΩ±2%，in parallel with 15pF±5pF; 50Ω±2%		
Max. input voltage	1MΩ：≤300 Vrms; 50Ω：≤5 Vrms		
DC gain accuracy	1 mV	3%	
	2 mV	2%	
	≥ 5 mV	1.5%	
Vertical sensitivity	1 mV/div-10 V/div		
Trigger type	Edge, Video, Pulse, Slope, Runt, Windows, Timeout, Nth Edge, Logic, I2C, SPI, RS232, CAN		
Decoding Type	RS232, I2C, SPI, CAN		
Trigger mode	Auto, Normal, Single		
Line/field frequency (Video)	Support standard NTSC, PAL and SECAM broadcast systems		
Automatic measurement	Period, Frequency, Mean, PK-PK, RMS, Max, Min, Top, Base, Amplitude, Overshoot, Preshoot, Rise Time, Fall Time, +Pulse Width, -Pulse Width, +Duty Cycle, -Duty Cycle, Delay A→B ⌐, Delay A→B ⌐, Cycle RMS, Cursor RMS, Screen Duty, Phase, +Pulse Count, -Pulse Count, Rise Edge Count, Fall Edge Count, Area, and Cycle Area.		
Waveform Math	＋, －, ×, ÷, FFT, FFTrms, Intg, Diff, Sqrt, User Defined Function, digital filter (low pass, high pass, band pass, band reject)		
Waveform storage	100 waveforms		
Communication interface	USB, USB flash disk storage, Trig Out(P/F), LAN,		
Power supply	100V - 240 VACRMS, 50/60 Hz, CAT Ⅱ		
Power Consumption	＜33 W		

Waveform Generator (Optional)

Max Frequency Output	25 MHz (Sample 125 MS/s) or 50 MHz (Sample 250 MS/s) (optional)
Channel	2
Vertical Resolution	14 bits
Amplitude Range	2 mVpp - 6 Vpp
Waveform length	8K
Standard Waveforms	Sine, Square, Ramp, and Pulse

Multimeter (Optional)

Full scale reading	3¾ digits (Max 4000 – count)
Diode	0 V - 1.5 V
Input impedance	10 MΩ
On/Off measurement	<50(±30)Ω beeping
Capacitance	51.2nF - 100uF: ±(3%±3 digit)
Voltage	DCV: 400mV, 4V, 400V: ±(1%±1digit) Max. input: DC 1000V ACV: 4V,40V,400V:±(1%±3digit) Frequency: 40Hz-400Hz, Max. input: AC 750V (virtual value)
Current	DCA: 40mA,400mA: ±(1.5%±1 digit) 10A: ±(3%±3digit) ACA: 40mA: ±(1.5%±3 digit) 400mA: ±(2%±1 digit) 10A: ±(3%±3digit)
Resistance	400Ω: ±(1%±3 digit), 4KΩ~40MΩ: ±(1%±1 digit)