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MSO6000HDP Series High-Resolution Oscilloscopes

Quick Start Guide

This manual applies to model:

MSO6000HDP Series

V1.0

June 2026

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1. MSO6000HDP Series Oscilloscopes

MSO6000HDP series high-definition oscilloscopes includes 2 models.

Model	Analog channel number	Analog bandwidth	Digital	Gen
MSO6104HDP	4	1 GHz	●	○
MSO6204HDP	4	2 GHz	●	○

●: Standard ○: Option ×: Not support

2. Getting Started Guide

This chapter is to introduce on using the MSO6000HDP series oscilloscope for the first time, the front and rear panels, the user interface, as well as touch screen function.

2.1. General Inspection

It is recommended to inspect the instrument follow the steps below before using the MSO6000HDP series oscilloscopes for the first time.

(1) Check for Damages caused by Transport

If the packaging carton or the foam plastic cushions are severely damaged, please contact the UNI-T distributor of this product immediately.

(2) Check Accessories

Please check appendix for the list of accessories. If any of the accessories are missing or damaged, please contact UNI-T or local distributors of this product.

(3) Machine Inspection

If the instrument appears to be damaged, not working properly, or has failed the functionality test, please contact UNI-T or local distributors of this product.

If the equipment is damaged due to shipping, please keep the packaging and notify both the transportation department and UNI-T distributors, UNI-T will arrange maintenance or replacement.

2.2.Before Use

To perform a quick verification of the instrument's normal operations, please follow the steps below.

(1) Connecting to the Power Supply

Refer to Connecting Power Supply, use the assembled power line or other power line that meets the local country standards to connect the oscilloscope. When the power switch  on the rear panel is not opened, the power soft indicator in the left bottom on the rear panel is extinguished, which indicates this soft switch key is no-effect. When the power switch  on the rear panel is opened, the power soft indicator in the left bottom on the rear panel is illuminated with red, and then press the soft switch key to enable the oscilloscope.

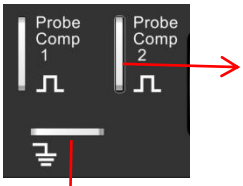
Voltage Range	Frequency
100 V-240 VAC (fluctuant: ±10%)	50 Hz/60 Hz
100 V-120 VAC (fluctuant: ±10%)	400 Hz

(2) Boot Check

Press the power soft switch key and the indicator should change from red to green. The oscilloscope will show a boot animation, and then enter the normal interface.

(3) Connecting Probe

This oscilloscope provides 2 pieces of compensating signal probe. Connect the BNC of the probe to the BNC of oscilloscope's CH1 and connect the probe to the "probe compensating signal connection clip", and then connect the ground alligator clip of the probe with the ground terminal of compensating signal connection clip. The output of compensating signal connection clip: amplitude is approximately 3 Vpp, with a default frequency of 1 kHz.



Probe compensating signal connection clip 1, 2

Ground terminal

Probe Compensating Signal Connection Clip and Ground Terminal

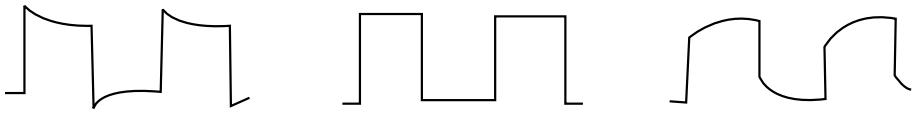
(4) Function Check

Press the AUTO key, a square wave (amplitude 3 Vpp, frequency 1 kHz) should appear on the screen. Repeat the step 3 to check all channels. If the displayed square waveform does not match the one shown above, please perform the 'Probe Compensation' procedure described in the next section.

(5) Probe Compensation

When the probe is connected to any input channel for the first time, this step might be adjusted to match the probe and the input channel. Probes that are not compensated may lead to measurement errors or mistake. Please follow the following steps to adjust the probe compensation.

- Set the attenuation coefficient in the probe menu to 10x and set the probe switch to 10x. Connect the oscilloscope probe to CH1. If using the probe's hook tip, ensure it makes stable contact. Connecting the probe to the "probe compensation signal connection clip" of the oscilloscope and connect the ground alligator clip to the ground terminal of probe compensating signal connection clip. Open CH1 and press the AUTO key.
- View the displayed waveform, as shown in the following figure 2.



Excessive Compensation Correct Compensation Insufficient Compensation

Probe Compensation Calibration

- If the displayed waveform resembles the above “Insufficient Compensation” or “Excessive Compensation”, use a non-metallic screwdriver to adjust the probe’s variable capacitance until the display matches the "Correct compensation" waveform.

Warning: To avoid electric shock when using the probe to measure high voltage, please ensure that the probe insulation is in good condition and avoid physical contact with any metallic part of the probe.

2.3.Front Panel



Front Panel

Table 1 Front Panel Description

No.	Description	No.	Description
1	Display area	8	Digital Channel Input Terminal ②
2	Autoset & Run/Stop	9	Analog Channel Input Terminal ③
3	Trigger Control	10	Gen Output Terminal ④
4	Function Module	11	USB HOST
5	Horizontal Control	12	Microphone
6	Vertical Control	13	Soft Power Switch
7	Probe Compensation Signal Terminal & Ground Terminal ①		

①: Probe Compensation Signal Terminal & Ground Terminal: Connect the probe BNC connector to the C1 input BNC connector on the oscilloscope. Connect the probe tip to the probe compensation terminal and connect the probe ground alligator clip to the corresponding ground terminal to output the instrument signal.

②: Digital Channel Input Terminal: Use the provided UT - M15 logic probe to connect the oscilloscope to the DUT and enable the digital channel function.

③: Analog Channel Input Terminal: Connect the oscilloscope probe or BNC cable to these BNC connectors to input a signal into the oscilloscope.

④: Gen Output Terminal G1, G2: These BNC connections can output signals such as continuous wave, amplitude modulation, frequency modulation, amplitude-shift keying, frequency-shift keying, and sweep signals.

Note: The output terminal of the signal generator is equipped with an OVP function. When the input voltage exceeds ±9 V, OVP will be triggered.

2.4. Rear Panel



Rear Panel

Table 2 Rear Panel Description

No.	Description	No.	Description
1	EXT Trig	6	USB Device
2	AUX Out	7	LAN port
3	10MHz REF	8	AC power input socket
4	USB HOST port	9	Power switch
5	HDMI port	10	Safety lock

2.5.Operation Panel

(1) Vertical Control

- Math: Press this button open the mathematical operation menu to perform math operation (add,



subtract, multiply, divide), digital filter, and advanced operation.

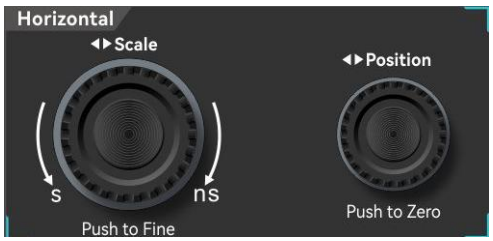
- Ref: Load a reference waveform from Local or USB for comparison with the measured waveform.
- Digital: Press this button to access Digital menu for configuring basic settings, group, threshold, bus, and label.
- Bus: Press this button to access Bus menu for configuring these protocols: RS232, I^2C, SPI, CAN, CAN-FD, CAN-XL, LIN, FlexRay, Audio, 1553B, Manchester, SENT, ARINC429, I3C, and 1-WIRE.
- 1, 2, 3, 4: Analog channel setting buttons correspond to C1, C2, C3, and C4. The four channel tabs are color-coded to match the waveform colors on the display and the channel input connectors. Press any buttons to enter the corresponding channel menu (activate or disable the channel).
- Scale: Vertical scale rotary knob adjusts the vertical scale of the selected channel. Turn the knob clockwise to decrease the scale and counterclockwise to increase the scale. As the vertical scale is adjusted, the waveform amplitude changes accordingly. The scale value



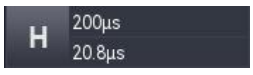
at the bottom left of the display updates in real time. The vertical scale is step with 1-2-5, press this rotary knob to switch between coarse and fine adjustment of the vertical scale.

- Position: Vertical position rotary knob adjusts the vertical position of the selected channel. Press this rotary knob to reset the channel position to the vertical center.

(2) **Horizontal Control**

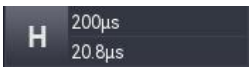


- Scale: Horizontal time base rotary knob adjusts the time base for all channels. As the time base is adjusted, the waveform is compressed or expanded in the horizontal direction. The time base value



of the display updates in real time. The time base is step with 1-2-5, press this rotary knob to switch between coarse and fine adjustment of the time base.

- Position: Horizontal position rotary knob adjusts the trigger point to the left or right. As the position is adjusted, the waveforms of all channels move left or right. The horizontal

position value 

of the display updates in real time. Press this rotary knob to reset the channel position to the horizontal center.

(3) Trigger Control



- Single: Press the Single button to activate the single trigger mode. The button lights up.
- Normal: Press the Normal button to activate the normal mode. The button lights up.
- Auto: Press the Auto button to activate the automatic mode. The button lights up.
- Slope: Press the Slope button to switch the trigger edge to rising, falling, or either edge. The corresponding button lights up.
- Position: Press the trigger Position rotary knob to adjust the trigger level. Turn clockwise to increase the level and counterclockwise to decrease it. As the trigger level is adjusted, the trigger level value in the top-right corner 

of the display updates in real-time.

  When in single mode, press the knob to quickly reset the trigger level to 50%.
- When the trigger mode is READY or TRIGED, the corresponding READY or Trig'd indicator lights up.

(4) Run/Stop, Auto Control



Run/Stop: Press the Run/Stop button to switch between Run or Stop modes.

Run: In Run mode, the button lights up green.

Stop: In Stop mode, the button lights up red.



Autoset: Press the Autoset button, the oscilloscope automatically adjusts the vertical scale, time base, and trigger mode based on the input signal to display the optimal waveform.

(5) Function Module

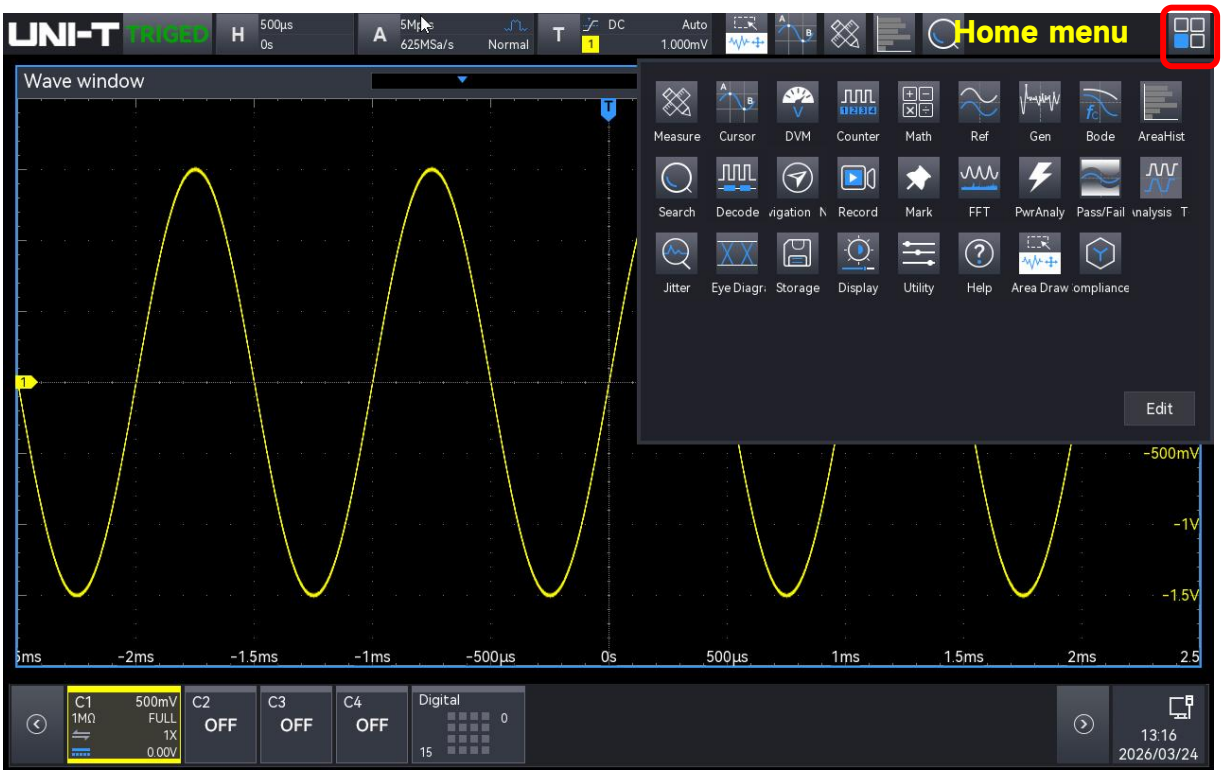


- Cursors: Press the Cursors button to access the cursor measurement menu for configuring time, voltage, or screen measurements for each source.
- Meas: Press the Meas button to access the measurement menu for configuring counter, voltmeter, parameter snapshot, measurement statistics, add measurement, clear measurement, and global settings.

- Quick Meas: Press the Quick Meas button to quickly open the parameter measurement. The parameter measurement information bar will be displayed.
- Analyze: Press the Analyze button to open the analysis menu and access functions such as voltmeter, counter, power analysis, waveform recording, pass/fail testing, timing analysis, jitter analysis, and eye diagram.
- : Press the Home button to open the home menu directly.
- : Press the User button to activate the user-defined function.
- : Press the Shortcut button to quickly save picture, waveform file, and setup file.
- : Press the Clear button to clear all recalled waveforms, eye diagrams, and measurement statistics.
-  Arrow keys (left/right): Use the arrow keys to select digits when adjusting values with multifunction knobs, allowing digit-by-digit navigation.
- DVM: Press the DVM button to open the digital multimeter menu directly.
- Gen: Press the Gen button to open the Gen menu and select G1.
- Touch/Lock: Press the Touch/Lock button to enable/disable the touch screen function. Press the Touch/Lock button once to disable the touch screen function, and the indicator lights up. Press the button again to enable the function, and the indicator lights off.
- Default: Press the Default button to reset all oscilloscope settings to their factory default values.
- Multipurpose: The multipurpose rotary knob becomes active when the Math menu is selected. The knob lights up, indicating that it can be used to adjust numeric values.

(6) Home Menu

Press the Home icon in the top-right of the screen to open the Home quick menu, including: measurement, cursors, voltmeter, counter, math, reference, signal generator, Bode plot, regional histogram, search, decoding, navigation, recording, marker, FFT, power analysis, pass/fail test, timing analysis, jitter analysis, eye diagram, storage, display, utility, help, area draw, and compliance analysis. The quick menu provides direct access to the corresponding function menus。



2.6. User Interface

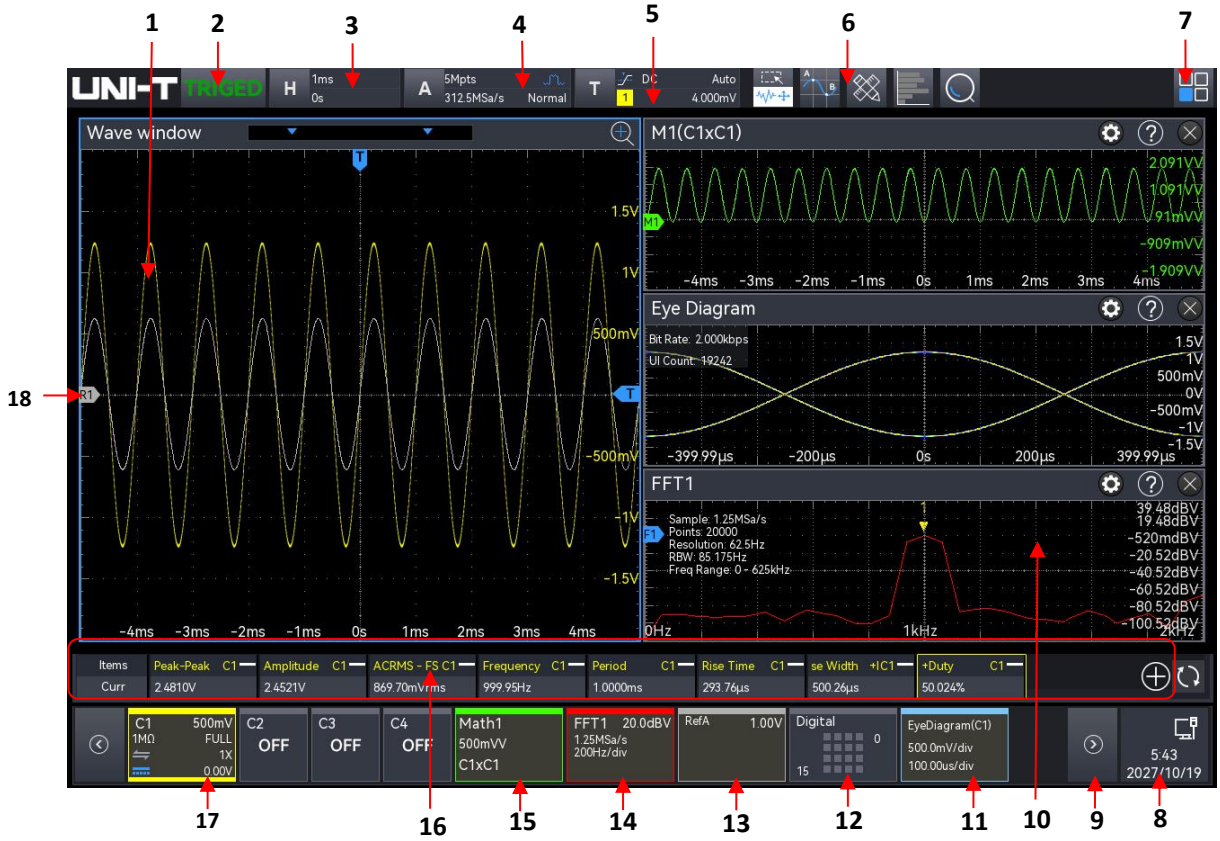


Table 3 User Interface Description

No.	Description	No.	Description
1	Waveform display window	10	Multi-window display area
2	Trigger state	11	Eye diagram/Jitter analysis label
3	Horizontal base label	12	Digital label
4	Sampling rate and memory depth label	13	Ref label
5	Trigger info label	14	FFT label
6	Function toolbar	15	Math label
7	Home menu	16	Measured result display window
8	Notification	17	Channel label
9	Volts/div signal bar	18	Analog channel icon

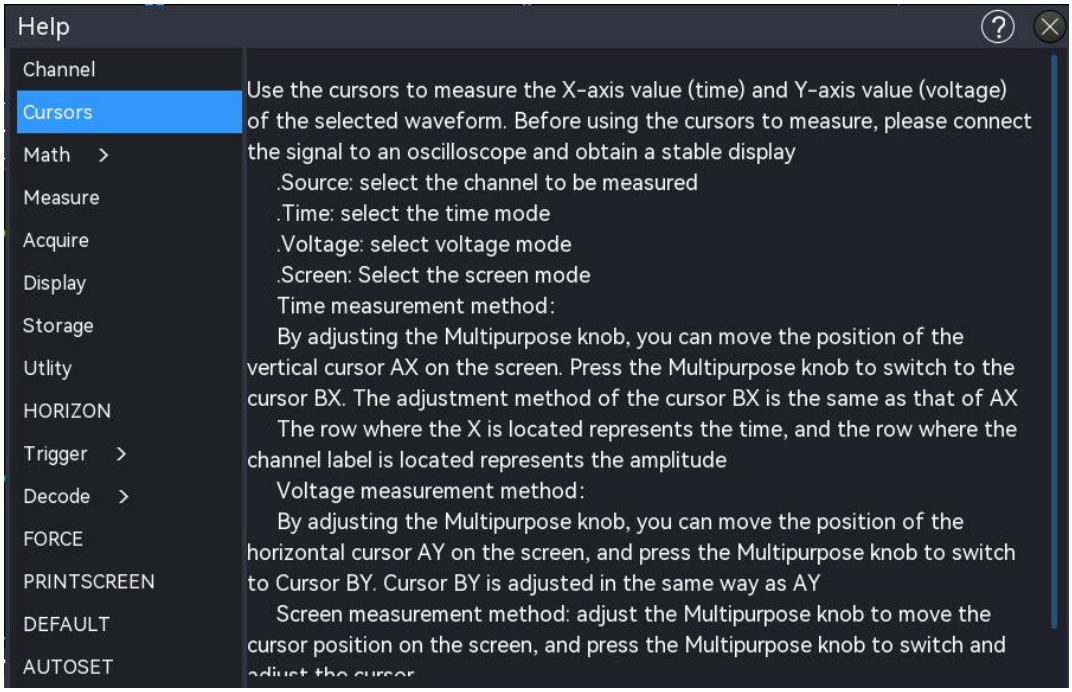
2.7.Help System

The help system provides information about the function keys (including menu keys) on the front panel.

The user can access the help system by following these steps.

- In Home menu, click on the help icon "" to open the help menu.
- In each function menu popup, click on the help icon "" on the top right to open the relevant help menu.

The help screen is divided into two parts, the left side is "Help Options", and the right side is "Help Display Area". By selecting a help option, the user can view all related help content on the right.



3. Parameter Setting

MSO6000HDP series supports the Multipurpose rotary knob and touch screen to set the parameter, the setting steps as follows.

(1) Multipurpose rotary knob

For the parameter of time and voltage, once the parameter is selected, rotate the Multipurpose rotary knob on the front panel to enter the parameter value.

(2) Touch screen

Once the parameter or text field has been selected, double-click to pop up the virtual keyboard to enter the parameter value, label name, or file name.

a. Enter character string

When naming a file or folder, use the character keyboard to enter a string.

b. Text field

Enter text: input letters, numbers, and special characters, with a maximum length of 16 characters.

c. Clear key

Press the "Clear" key to delete all contents in the text field.

d. Caps key

Press the "Caps" key to switch between upper and lower case.

e. Tab key

Press the "Tab" key to enter 2 spaces at a time.

f. Shift key

Press the "Shift" key to switch among number, special character, upper and lower case.

g. Arrow keys (left, right)

If part of the content needs to be changed, press the "←, →" key to move the cursor to left or right and then to edit the content.

h. Space key

Press the "Space" key to enter one space in the text field.

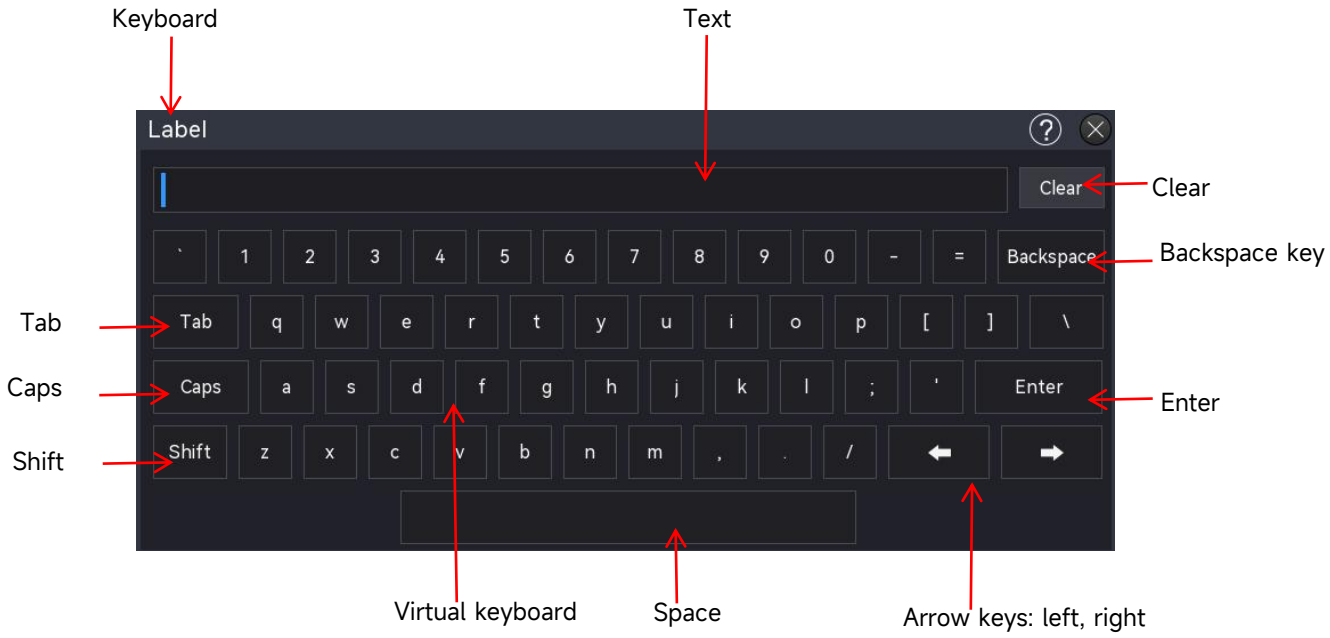
i. Backspace key

Press the "Backspace" key to delete a single character. This key is used to delete a character when the input field contains a large amount of content.

j. Enter key

Once the content has been entered, press the "Enter" key to confirm the setting and close

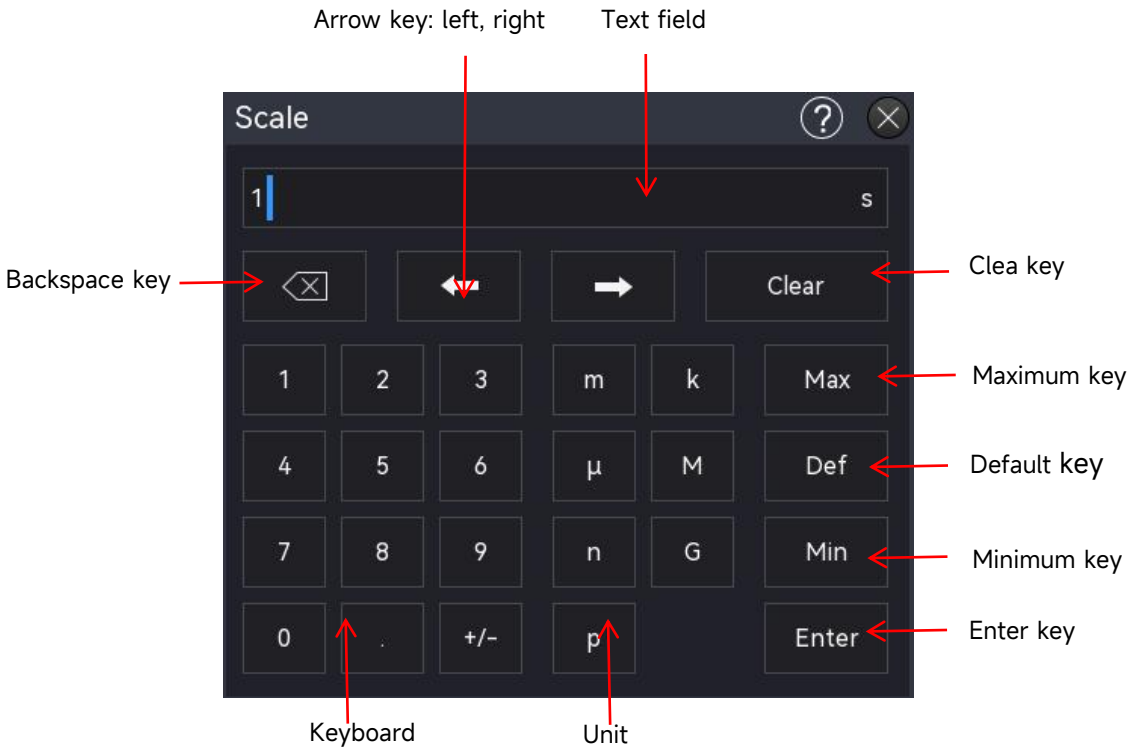
the virtual keyboard.



(3) Enter numeric value

When setting or editing a parameter, use the numeric keyboard to enter the numeric value.

1. Click the number or unit to enter



After entering all the values and selecting the desired units, the numeric keypad will automatically close, completing the parameter setting. Additionally, the user can manually close the numeric keypad by clicking the confirm key, in which case the unit will default to the preset unit. On the numeric keypad, the user can also perform the following operations:

a. Delete the entered parameter value.

b. Set the parameter to the maximum or minimum value (sometimes specifically the maximum or minimum value for the current state).

c. Set the parameter to the default value.

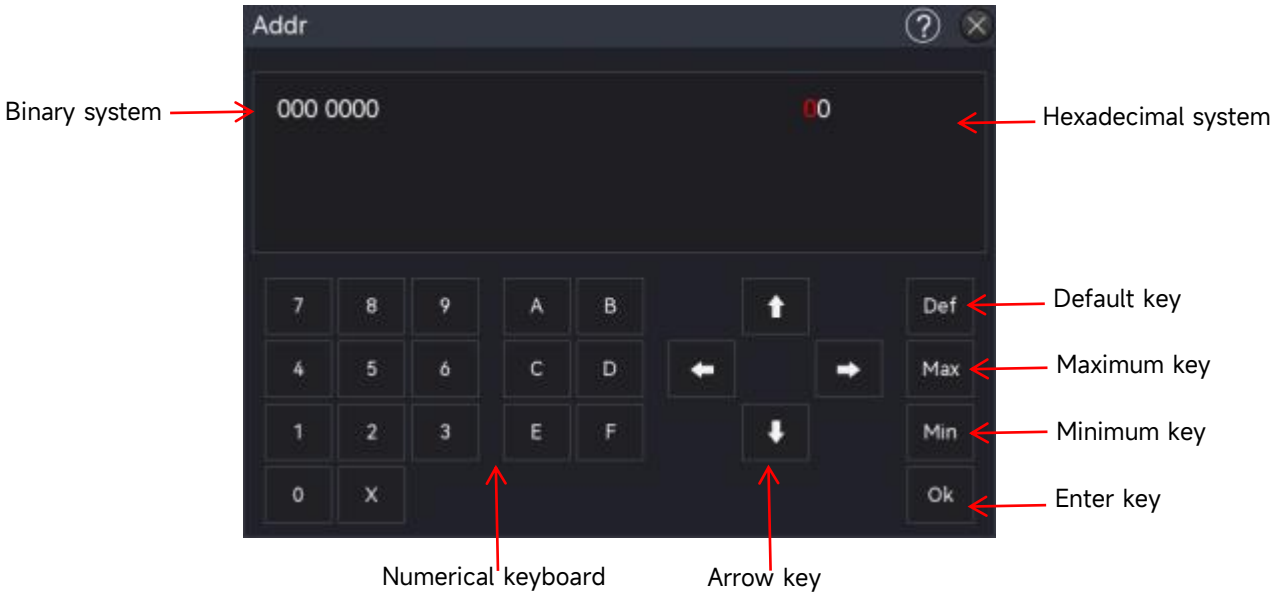
d. Clear the parameter input field.

e. Move the cursor to modify the parameter value.

2. Enter binary, hexadecimal system value

During the decoding trigger, use the numeric keypad to enter binary or hexadecimal values for data and address settings.

Enter Method: Tap to select the number or text field to be edited, and then use the numeric keypad to enter the desired numeric or letter values.



(4) After entering all the values and pressing the "Ok" button, the numeric keypad will automatically close, completing the parameter setting. Additionally, on the numeric keypad, the user can perform the following operations:

- Move the cursor to modify the parameter value.
- Set the parameter to the maximum or minimum value (sometimes specifically for the current state).
- Set the parameter to the default value.
- Clear the parameter input field.
- Delete the entered parameter value.

4. Touch Screen

MSO6000HDP series provides 12.1-inch super capacitive touch screen, multiple point touch control and gesture control. MSO6000HDP has easily operating system with flexible and high-sensitive touch screen features for great waveform display and excellent user experience.

Touch control function includes tap, squeeze, drag, and rectangle drawing.

Note: The menu displayed on the screen of the oscilloscope can all use the touch control function.

(1) Tap

Use one finger to slightly tap on an icon or a word on the screen as shown in the following figure.

Tap gesture can use for:

- Tap the menu display on the screen and then to setup
- Tap the function icon on the top right corner to open the corresponding function
- Tap the pop-up numeric keyboard to set the parameter
- Tap the virtual keyboard to set the label name and file name
- Tap a message to pop up a ⊗ button on the top right corner to close the pop-up window.
- Tap other window displayed on the screen and then to setup
- Tap a message to reveal a help key in the top right corner. Clicking this key will open the corresponding function's help menu, providing detailed guidance on the selected feature



Tap Gesture

(2) Pinch

Squeeze two fingers together or separate. Pinch gesture can zoom out or zoom in the waveform. To zoom out the waveform, pinch two fingers together and then slide them apart; to zoom in, spread two fingers apart and then pinch them together, as shown in the following figure.

- Adjust the horizontal time base of waveform by squeezing on the horizontal direction.
- Adjust the vertical time base of waveform by squeezing on the vertical direction.



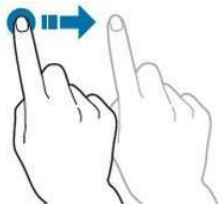
Pinch Gesture

(3) Drag

Use one finger to press and drag the selected item to the aimed position as shown in the following figure.

Drag gesture can use for:

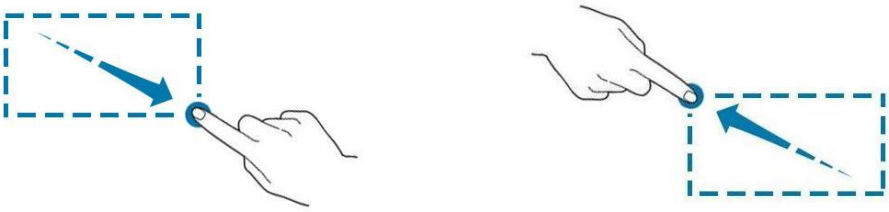
- Drag the waveform to change the waveform position.
- Drag the window to change the window position.
- Drag the cursor to change the cursor position.



Drag Gesture

(4) Rectangle Drawing

Open the HOME menu and click the icon "Rectangle Drawing" to enable the function, drag your finger to draw a rectangle on the screen as shown in Figure (a), (b), move the finger, a menu will appear on the screen, at this point, "Region A", "Region B", "Intersection", "Non-intersect" can be selected. Drag your finger from bottom right to the top left on the screen to draw the trigger area.



(a) (b)

Rectangle Drawing Gesture

Select "Zone A":

- Draw the trigger zone A
- Open the trigger zone A
- Open "Zone Trigger" menu

Select "Zone B":

- Draw the trigger zone B
- Open the trigger zone B
- Open "Zone Trigger" menu

Note: Click on "rectangle drawing" to step through rectangle drawing and operating waveform mode. Click on "rectangle drawing", if the icon shows , it indicates that "rectangle drawing" mode is enabled; if the icon shows , it indicates that "operating waveform" mode is enabled.

5. Remote Control

MSO6000HDP series high-definition oscilloscopes can communicate with a PC via USB and LAN port for remote control. Remote control is implemented using SCPI (Standard Commands for Programmable Instruments).

MSO6000HDP series has three methods for remote control.

(1) Custom Programming

The user can perform the programming control on the oscilloscope through SCPI (Standard Commands for Programmable Instruments). For detailed descriptions on command and programming, please refer to *MSO6000HDP Series High-Definition Oscilloscopes-Programming Manual*.

(2) PC Software Control (Instrument manager)

The user can use a PC software to remotely control the oscilloscope. The instrument manager can display the oscilloscope screen in real time and control the operation with the mouse. It is recommended to use the PC software provided by UNI-T. It can be downloaded from UNI-T official website (https://www.uni-trend.com).

Operating steps:

- Setup the communication between the instrument and a PC
- Open the instrument manager software and search the instrument source
- Right-click to open the oscilloscope, operate the instrument manager to remotely control the oscilloscope (refer to *Instrument Manager-User's Manual* for more details) .This device supports remote control through communication with a computer via USB and LAN interfaces. Remote control is implemented using the SCPI command set, allowing users to operate and configure the device remotely.

(3) Web Control

Once the network is connected, users can access a web page via the IP address. After logging in with the username and password, they can control the device. The Web Control feature displays the instrument's screen interface in real-time. It supports web access from PCs, smartphones, and iPads, and allows for both internal and external remote control of the device.

6. Troubleshooting

(1) If the oscilloscope remains black screen without any display when press the power soft key.

a. Check if the power plug is properly connected and the power supply is normal.

b. Check if the power switch is turned on. If the power switch is turned on, the power soft key on the front panel should be green. When the power soft key is enabled, the power soft key should be blue, and the oscilloscope will make active sound. There should be a normal relay rattle when the soft switch key is pressed.

c. If the relay has sound, it indicates that the oscilloscope is normal boot-up. Press the Default key and press the "Yes" key, if the oscilloscope returns to normal, indicating that the backlight brightness is set too low.

d. Restart the oscilloscope after completing the above steps.

e. If the product still does not work properly, contact the UNI-T Service Center for assistance.

(2) After signal acquisition, the waveform of the signal does not appear on the screen.

a. Check whether probe and DUT are connected properly.

b. Check whether the signal output channel is open.

c. Check whether the signal connecting line is connect to analog channel.

d. Check whether the signal source has DC offset.

e. Plug out the connected signal, to check whether the base line is within the screen range (If not, please perform self-calibration).

f. If the product still does not work properly, contact the UNI-T Service Center for assistance.

(3) The measured voltage amplitude value is 10 times larger or 10 times smaller than the actual value.

Check whether the channel probe attenuation coefficient settings are consistent with the used probe attenuation rate.

(4) There is a waveform display but not stable.

a. Check the trigger settings in trigger menu whether is consistent with the actual signal input channel.

b. Check the trigger type: the general signals should use "Edge" trigger. The waveform can only be displayed stably if the trigger mode is set correctly.

c. Try to change trigger coupling to HF rejection or LF rejection, to filter out the high-frequency or low-frequency noise that interfere the trigger.

(5) No waveform is displayed after pressing the Run/Stop key.

a. Check whether the trigger mode is set to "Normal" or "Single" and verify if the trigger level

exceeds the waveform range.

b. If the trigger mode is in normal or single and the trigger level is in the center, set the trigger mode to Auto.

c. Press the Autoset key to automatically complete the above settings.

(6) Waveform refresh is very slow.

a. Check whether the acquisition method is set to "Average" and if the average times are large.

b. Check whether the storage depth is maximum

c. Check whether the trigger holdoff is large.

d. Check whether it is normal trigger and is slow time base.

e. All the above will lead to slow waveform refresh, it is recommended to restore the factory settings, then the waveform can be refreshed normally.

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