



# MSO7000X Series Mixed Signal Oscilloscope

10GSa/s | 2GHz | 1Gpts | 2,000,000wfms/s



Datasheet REV.1.1

## Product Introduction

MSO7000X series is the brand new mixed signal oscilloscope launched by UNI-T. The bandwidth up to 2GHz and sample rate up to 10GSa/s, which has obvious advantages in high-speed signal analysis. MSO7000X has unique UltraAcq® technology, it raises the wave capture rate to 800,000wfms/s; 2,000,000wfms/s at Sequence mode, combined with an ultra-long storage depth of 1Gpts, dramatically improves the ability to capture anomalous signals, as well as the ability to measure and analyze waveform details.

MSO7000X supports multiple trigger decoding and has advanced measurement analysis, such as Sequence mode, Histogram, Power analysis, jitter analysis and eye diagram and Mask & limit testing. There are 48 kinds of parameters for automatic measurement, which greatly meets the measurement needs of engineers.

This oscilloscope is equipped with Win10 64-bit operating system, providing users with a stable and expandable system platform. Adopting 15.6-inch high-definition capacitive touch screen, supporting multi-window split-screen display and multiple gesture touch control, it can be widely used in Communication industry, Aerospace, Education and many other industries and fields.



## Details



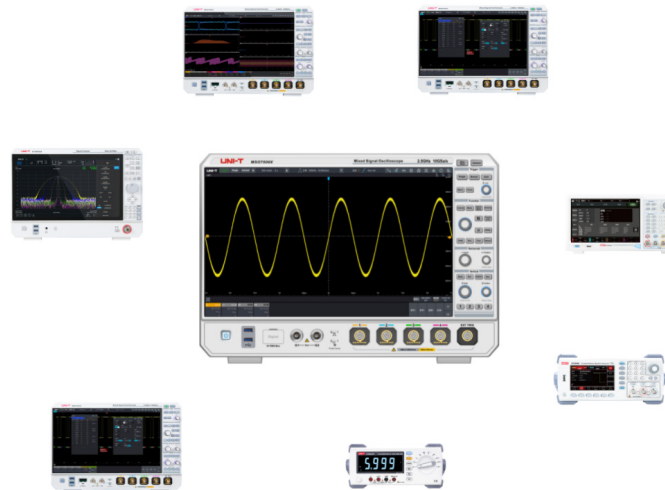
## Features and Advantages

- Analog channel bandwidth: up to 2GHz (1G/2GHz)
- Maximum sample rate: 10GSa/s
- Maximum storage depth: 1Gpts (standard)
- Wave capture rate:  $\geq 800,000$ wfms/s (UltraAcq®); 2,000,000wfms/s(Sequence mode)
- Multiple trigger types: edge, pulse, slope, video, pattern, timeout, runt, setup & hold, delay, duration and Nth edge trigger
- 11 kinds of serial protocol analysis: RS232/422/485/UART, I<sup>2</sup>C, SPI, CAN, CAN-FD, LIN, FlexRay, SENT, MIL-STD-1553, ARINC 429, AudioBus (I<sup>2</sup>S/LJ/RJ/TDM)
- Gathering 7 kinds of instrument functions, which is digital oscilloscope, logic analyzer, spectrum analyzer, function/arbitrary waveform generator, digital voltmeter, frequency counter and protocol analyzer
- 48 kinds of parameter measurement, it supports histogram, trace and tendency chart
- Multiple advanced measurement analysis function: Power analysis (optional), Jitter analysis and eye diagram (optional), Mask and limit testing and Histogram
- Equipped with Win10 64-bit operating system, providing 15.6 inch high-definition capacitive touch screen for various kinds of gesture operation of clicking, sliding, zoom out and dragging.
- Embedded WebServer can access the instrument and Control the measurement on browser, supporting two styles of layout and operation of PC/Smartphone, easy to realize cross-platform access
- SCPI (Standard Command for Programmable Instrument)
- Various interfaces: USB Host & Device, LAN, HDMI, AUX In/Out, 10MHz Ref In/Out
- Up to 8 number of math waveforms, built-in spectrum analysis and peak search function, supporting matlab embedded programming and data presentation, and support enhanced resolution up to 3 bits
- Built-in dual channel (with equivalent performance) function/arbitrary waveform generator with 60 MHz
- Built-in 16-channel logic analyzer: sample rate is 1.25GSa/s, storage depth is 125Mpts

# Design Features

## Seven-in-one integrated signal measurement platform

MSO7000X is not only one oscilloscope, but also a comprehensive signal analysis, integrating the independent functions of seven measurement instruments, which can easily cope with complex test environments.



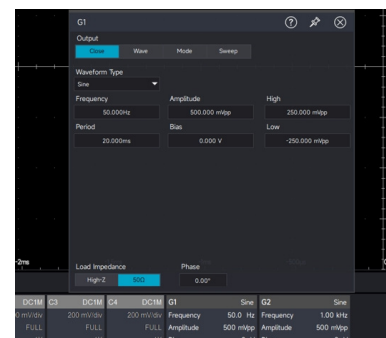
### Digital Oscilloscope

- Three bandwidth options: 1G/2GHz
- 4 analog channels + 1 external trigger channel
- Sample rate: 10GSa/s  
(all series standard configuration)
- With unique technology of UltraAcq® by UNI-T, the waveform capture rate up to 800,000wfms/s, 2,000,000wfms/s at Sequence mode
- Storage depth (all series standard configuration): 1Gpts (single channel), 250Mpts (all channels), making it easier to find details in the waveforms



### Function/Arbitrary Waveform Generator (option)

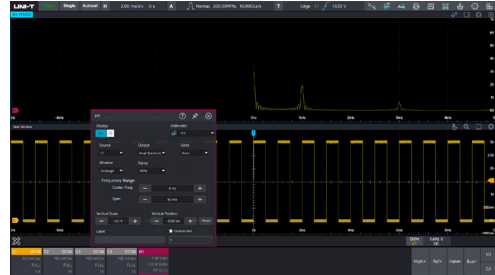
- Dual channel (with equivalent performance) function/arbitrary waveform generator
- The maximum frequency of dual channel is up to 60MHz, and sample rate of 625MSa/s
- Vertical resolution of 16bits



- Built-in various standard waveform: Sine, Square, Pulse, Ramp, Noise and DC
- Built-in more than 200 kinds of arbitrary waveforms
- Modulation and Sweep for a variety of signals

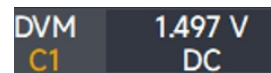
### Spectrum Analyzer

- Enhanced FFT (standard configuration), signal analysis up to 1Mpts
- Frequency analysis range: oscilloscope analog bandwidth
- Various spectrum view demonstration: amplitude spectrum, power spectrum, power spectral density, real part, imaginary part and phase spectrum
- 2 spectrum view analysis window can be added at same time, to meet the visual display under different window functions



### Digital Voltmeter

- 4 bits of DC/AC RMS/DC+AC RMS voltage measurement



### Logic analyzer (option)

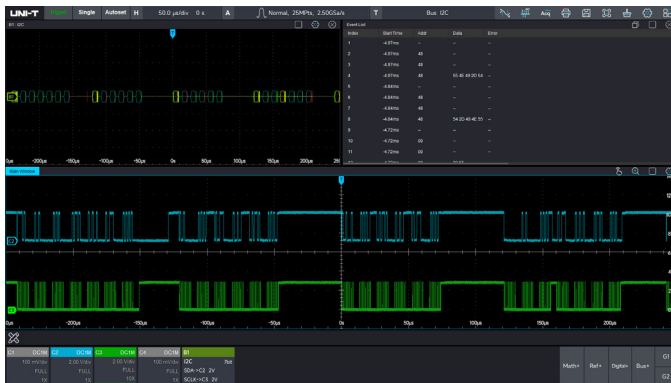
- Hardware is standard configured with a 16-channel logic analyzer, need to option the MSO7000X-LA Software only can use it
- Digital channel sample rate(standard configuration) :up to 1.25GSa/s
- Digital channel storage depth: up to 125Mpts, the minimum detectable pulse width is 3.2ns
- The digital probe provides separate signal input holders for the high and low octets and simplifies connection to the device under test. When connected to a square pin, the UT-M15 can be connected directly to an 8X2 square pin header with 2.54mm pins.
- UT-M15 provides outstanding electrical specification, input impedance is  $100\text{ k}\Omega \pm 2\%$ .



### Protocol Analyzer (option)

In the debugging process, engineers often need to observe signals on one or more serial buses to track and find events in system activities, which are more than just simple triggers. MSO7000X provides a variety of serial bus analysis, a variety of protocol trigger mode, which can trigger a

specific packet content, identify the polarity, chip selection, etc. The trigger event in the list display, the implementation of accurate measurements, with a wealth of scalability, basically covering the most commonly used protocol analysis of embedded design content.



Software Suit	Description	Optional Model	Standard /Option
Computer serial bus trigger and analysis	RS-232/422/485/UART	/	Standard
Embedded serial bus trigger and analysis	I <sup>2</sup> C, SPI	/	Standard
Automotive serial bus trigger and analysis	CAN, LIN	/	Standard
Automotive serial bus trigger and analysis	CAN-FD	MSO7000X-CANFD	Option
Automotive serial bus trigger and analysis	FlexRay	MSO7000X-FLEX	Option
Automotive sensor bus trigger and analysis	SENT	MSO7000X-SENT	Option
Audio serial bus trigger and analysis	I <sup>2</sup> S, LJ, RJ, TDM	MSO7000X-AUDIO	Option
Aerospace serial bus trigger and analysis	MIL-STD-1553, ARINC 429	MSO7000X-AREO	Option

- Supporting data trigger and packet type trigger
- Supporting event list and search function

### Digital Frequency Counter

- 8-bit high accuracy hardware frequency counter (Standard)

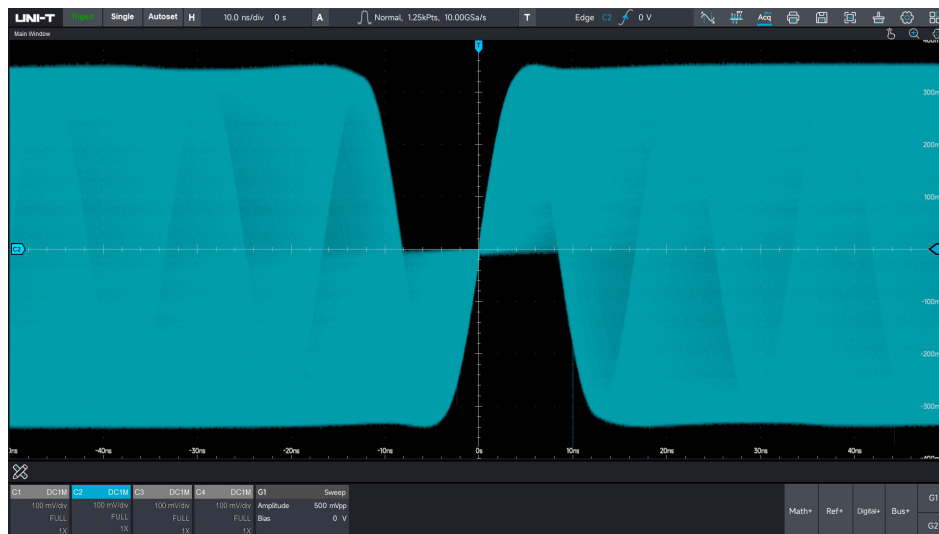


## Unique technology UltraAcq® by UNI-T

When you try to find and debug the occasional or intermittent anomalies in the signal, the waveform capture rate is very important, as we all know, all oscilloscopes have a "dead time", which means the time interval between acquisitions, and it is one of the most important indicators of the ability of oscilloscopes to capture anomalous signals, so to improve the capture rate of waveforms is often the first choice of the oscilloscope manufacturer.

MSO7000X adopts original UltraAcq® technology by UNI-T, utilizing multi-body cross-mapping technology and a segmented collaborative matrix processing architecture to improve waveform capture rate up to 800,000wfms/s, 2,000,000wfms/s at Sequence mode. Compared to traditional oscilloscope of 200,000wfms/s, the MSO7000X has a dead time of less than 1µs, and can capture more than 1 million 200ps fast-edge signals per second.

With the information entropy-based intelligent detection technology of abnormal signals, it can easily cope with the probability of occasional or intermittent events encountered by engineers in the testing process, realizing the "seamless acquisition" of abnormal signals, and with the new Ultra Phosphor 2.0 super fluorescent display technology, it can make escaped signals to visibly appear.



## Brand new quick Autoset strategy

Fuzzy control is an intelligent control method based on fuzzy set theory, fuzzy linguistic variables and fuzzy logic reasoning. The advantages of the algorithm are fewer iterations, faster speed, and better anti-interference ability.

In the past, oscilloscopes performed Autoset to find the appropriate signal amplitude and frequency for display, but the response speed of oscilloscopes is very different due to different solutions adopted by each oscilloscope manufacturer, even affecting the experience of using oscilloscopes.

UNI-T redefines the execution of Autoset by adopting fast fuzzy algorithm based on analog signals and multi-channel parallel processing technology, combined with hardware 8 bits high-precision frequency counter, which allows the oscilloscope to quickly find and process the amplitude and frequency of the unknown signals displayed when executing the Autoset strategy. It takes less than 1.5s to open the full channel, and less than 1.4s to open a single channel, which greatly improves the working efficiency and reduces the risk of misuse for users who need to change test objects frequently and need to test quickly.

## 15.6-inch FHD capacitive touch screen, excellent interface layout brings extraordinary interactive experience

Provides a touch experience consistent with smartphones and tablets, allowing for seamless touch interaction; At the same time, it retains the instrument-specific knobs and shortcut buttons, taking into account the instrument's proprietary attributes; Match the mouse and keyboard to handle testing tasks more efficiently.

- Move and zoom out the waveform
- Drag the window to change the layout
- Fix the pop-up window for reducing frequently switching multi-windows
- Screen extension for improve multitasking efficiency

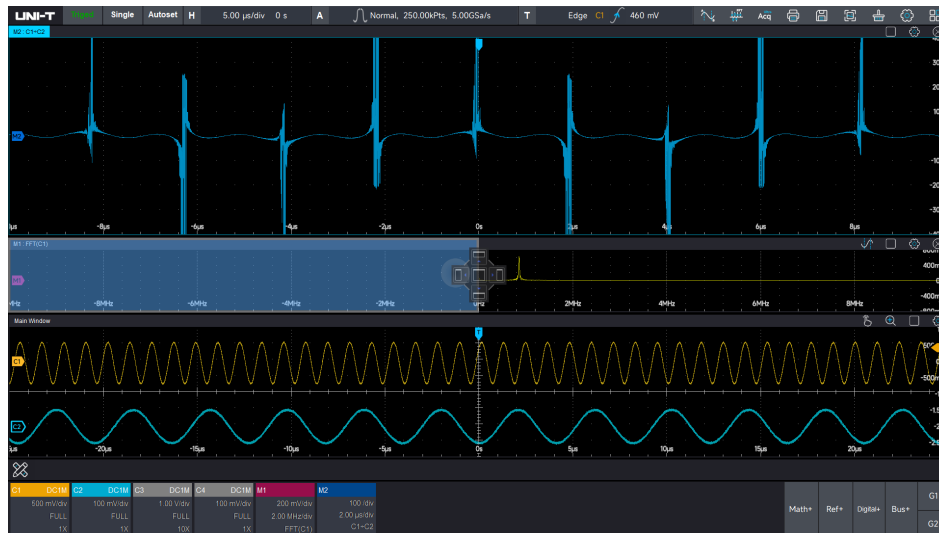


### User-defined Layout

MSO7000X provides an open oscilloscope user interface, you can select the created channel menu, drag and drop it to any position you want to place it, providing automatic layout adjustment in the four directions of " East, West, South, North", you don't have to worry about your operation will

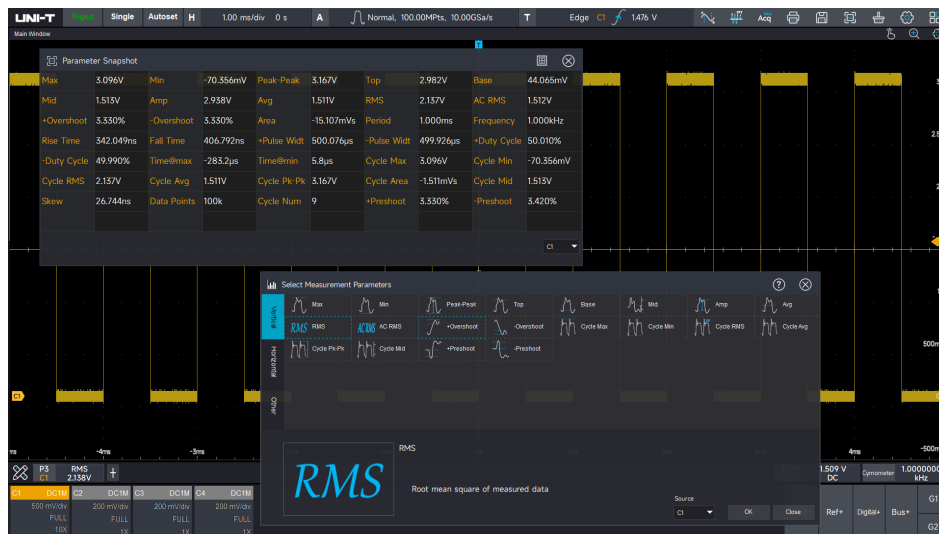


make the oscilloscope desktop cluttered, the oscilloscope will automatically adjust the size and width according to the number of channel's menu. 15.6-inch ultra-wide screen not only provides enough display area for signal channels, but also for Reference waveforms, Bus decode, Math, FFT and Digital channels.



## Parameter Measurement

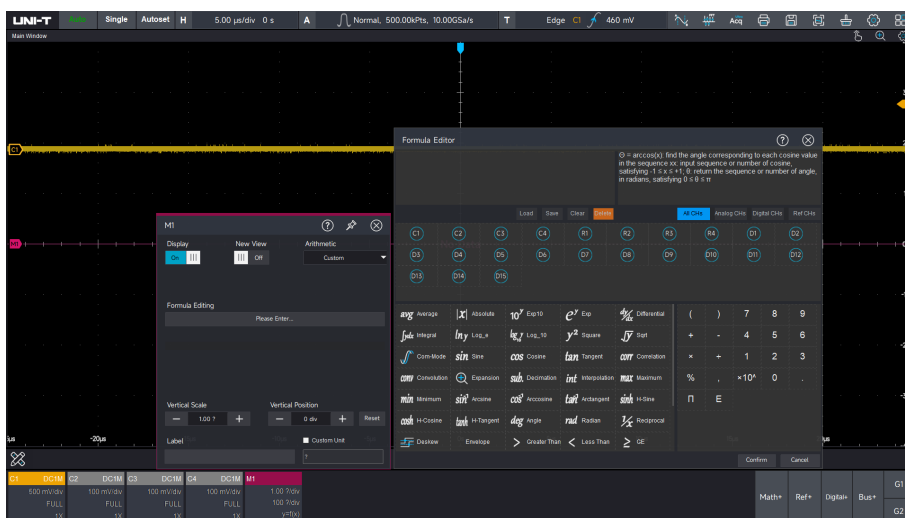
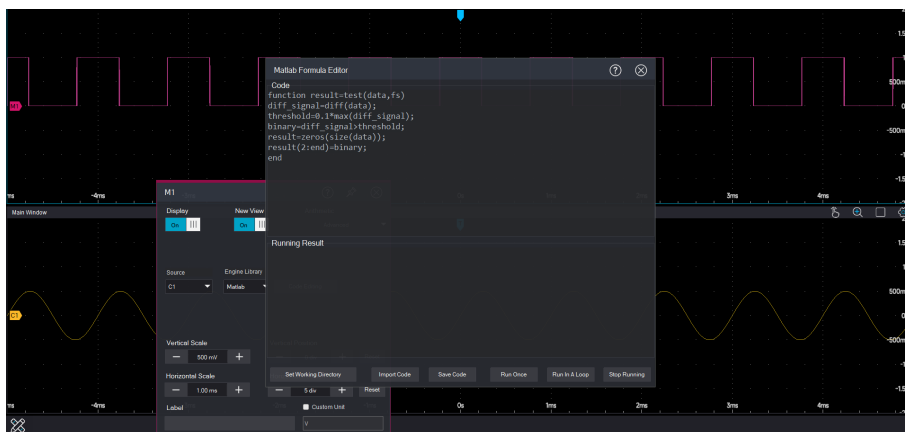
MSO7000X provides 48 kinds of measurement parameters and supports histogram, trace, and Trend chart statistics of the measurement parameters. The Quick Meas can display 35 kinds of measurement items of the current measurement channel, the measurement results are constantly updated, the measurement channel can be switched, and the parameter snapshots can also be used as separate channel menus for easily observing the appropriate measurement data.



## Waveform Math

MSO7000X provides a system of algorithms for complex waveform operations, which you can use to further process your waveforms and render the results directly to the oscilloscope.

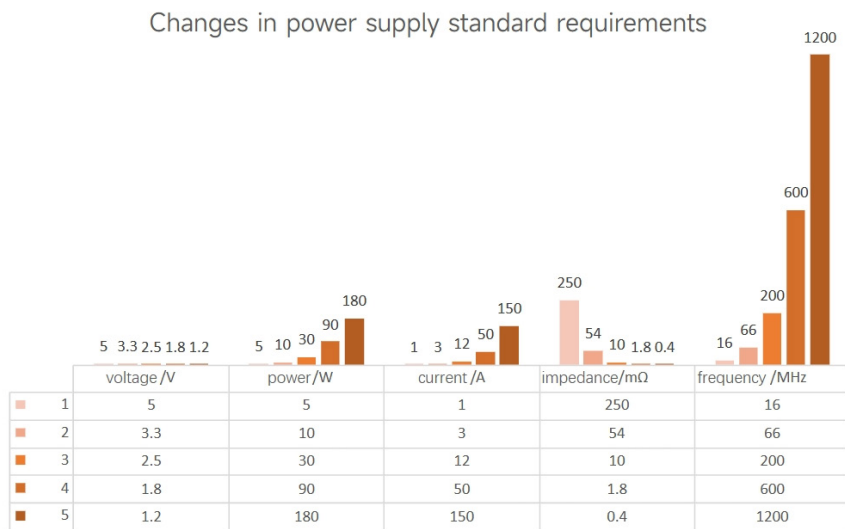
- Enhanced FFT: the spectrum view including time domain, frequency domain and modulated domain
- Filter (High-pass filter, low-pass filter, band-pass filter and band-stop filter)
- Enhanced resolution mode adopts the filter that provide higher resolution and each channel can be set independently, maximum enhances the resolution to 3 bits. If the resolution and bandwidth is weighed, then filtering is the best approach
- User-defined function operation: including digital channel, analog channel, reference channel and all channels.
- Embedded programming technology matlab for directly rendering operating code to oscilloscope



## Multi-aspect dissecting power integrity - Power analysis (option)

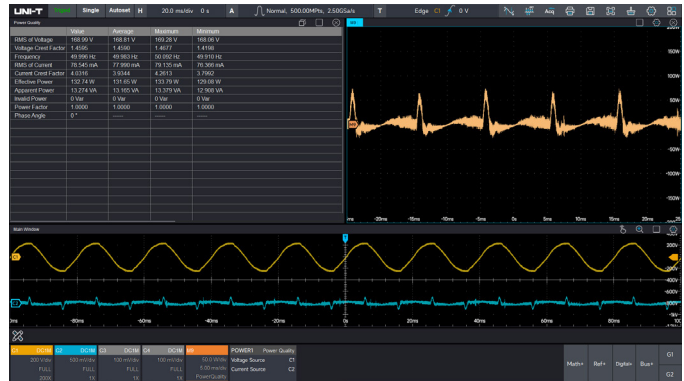
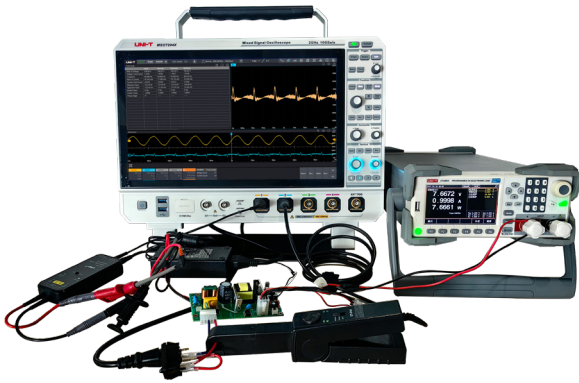
With the development of chip technology, the power supply system requirements are also increased. When the power supply network of small voltage and high current has been the trend, especially for the chip or the power supply network composed of precision components, the requirements of the various parts of the circuit reliable power supply and noise suppression, but also to ensure that the integrity of the signal transfer between the chip, the power supply test has ushered in a greater challenge. The designer is more concerned about the energy-saving power supply and the response speed to ensure that the power supply is stable and clean.

Based on the currently tendency, the power integrity testing is particularly important, it directly affects the signal integrity, and in turn the signal quality also reflects the power quality, and even power quality will cause a series of electromagnetic interference problems, which makes the designer more headaches. So having an oscilloscope that can analyze the power supply is undoubtedly your most correct choice.



MSO7000X provides a full range of power analysis tools and evaluation results, you only need to select the appropriate analysis type, connecting the voltage probe and the current probe to the test point of power system or specified test fixtures as shown in the diagram, connecting to the channel that you want to observe, and then finally make appropriate fine-tuning to get the results you want.

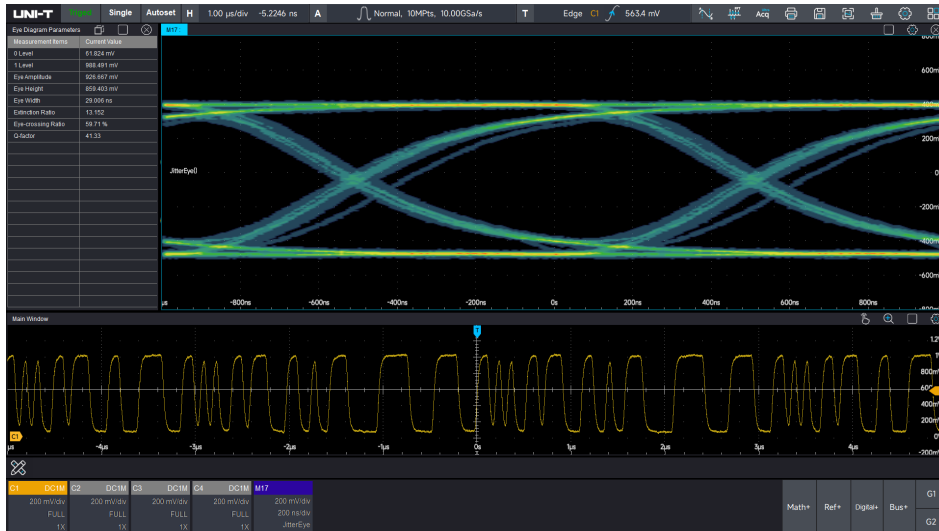
- Power quality
- Harmonic analysis
- Switching loss
- ripple analysis
- Loop analysis
- Safe operation area



## Visualization analysis of signal integrity - jitter analysis and eye diagram(option)

With the improving of signal rate, the interference factors increase in the process of data transmission, it cause more sensitive to the loss of the link. The designer should be more accurately grasp the reasons for the signal differentiation, most of the signal jitter problem boils down to basically clock jitter brought about by the system failure in the transmission link, such as the power supply to generate the clock jitter, the discontinuity of the PLL, the crystal generated by the thermal and mechanical noise, Intersymbol interference, and a series of fault problems. How to locate these faults? MSO7000X series oscilloscopes provide provides such a solution for you.

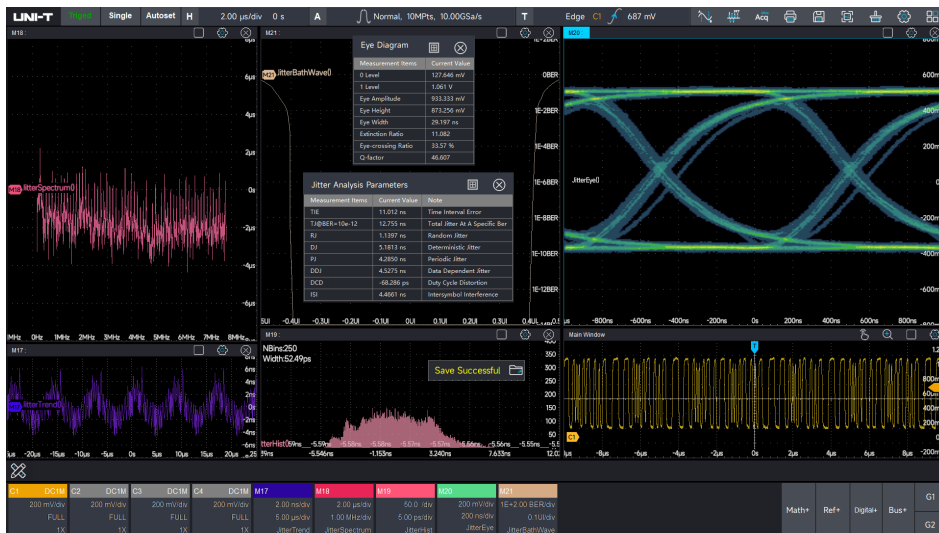
MSO7000X provides eye diagram and measurement functions with clock recovery, including fixed frequency, first-order phase-locked loop, second-order phase-locked loop, external clock, and other clock recovery methods. No extra settings are required, it can quickly generate an eye diagram of a serial signal, use standard eye diagram templates or customized templates to identify anomalies, and the test results are displayed directly in the parameter list.



TIE jitter is the most common jitter indicator, MSO7000X provides a set of jitter analysis software that can be measured visually, which includes TIE trend chart/TIE spectrogram, histogram and bathtub curve, and it can locate the distribution of jitter from different domains such as time, frequency, and statistical domains, e.g., RJ is Unbounded and DJ is bounded.

Measurement parameter of eye diagram: Eye amplitude, Eye Height, Eye Width, Level 1, Level 0, Q factor

Measurement parameter of jitter: TIE, TJ BER, RJ, DJ, PJ, DDJ, DCD



## WebServer

- SCPI remote control
- Remotely checking and controlling
- Export waveform file
- Checking user's manual on line
- Supporting cellphone access



## Various External Ports

MSO7000X series oscilloscopes provide a wealth of external interfaces, including USB Host, USB Device, LAN (LXI), HDMI, AUX In/Out and 10M Ref In/Out.

### AUX In

1. Trigger Sync input
2. AWG external trigger input

### AUX Out

1. Trigger Sync output
2. Pass the test result
3. AWG trigger output

### 10M Ref In/Out

In: A reference clock that provides sampling for the oscilloscope. Out: It can output its own 10MHz reference clock and provide it to other external instruments for inter-instrument clock synchronization.

### Digital

Digital signal input for connecting a digital signal source or other digital device.

### G1 Out

Channel 1 of AWG output for outputting the channel 1 signal of the AWG to other devices.

### G2 Out

Channel 2 of AWG output for outputting the channel 2 signal of the AWG to other devices.

### Probe Comp

Probe compensation for calibrating the probe of the oscilloscope.





### EXT TRIG

External trigger for connecting an external trigger signal source so that the oscilloscope can be triggered according to that signal.



## Probe and Accessory

### Passive Probe

Model	Type	Description
 <p><b>UT-P07</b></p>	High impedance probe	1X: DC ~ 8MHz 10X: DC ~ 500MHz Oscilloscope compatibility: all series of <b>UNI-T</b>
 <p><b>UT-P20</b></p>	High impedance probe	DC ~ 100MHz Probe coefficient: 100:1 Maximum operating voltage: 1500Vrms Oscilloscope compatibility: all series of <b>UNI-T</b>
 <p><b>UT-V23</b></p>	High voltage probe	DC ~ 100MHz Probe coefficient: 100:1 Input resistance: 100MΩ ± 2% Maximum operating voltage: 2000Vpp Oscilloscope compatibility: all series of <b>UNI-T</b>
 <p><b>UT-P21</b></p>	High voltage probe	DC ~ 50MHz Probe coefficient: 1000:1 Maximum operating voltage: DC 15kVrms, AC 10kV (sine wave) Oscilloscope compatibility: all series of <b>UNI-T</b>

## Current Probe

Model	Type	Description
<b>UT-P40</b> 	Current probe	DC ~ 100kHz Range: 50mV/A, 5mV/A Current Range: 0.4A ~ 60A Maximum operating voltage: 600Vrms Oscilloscope compatibility: all series of <b>UNI-T</b>
<b>UT-P41</b> 	Current probe	DC ~ 100kHz Range: 100mV/A, 10mV/A Current Range: 0.4A ~ 100A Maximum operating voltage: 600Vrms Oscilloscope compatibility: all series of <b>UNI-T</b>
<b>UT-P42</b> 	Current probe	DC ~ 150kHz Range: 100mV/A, 10mV/A Current Range: 0.4A ~ 200A Maximum operating voltage: 600Vrms Oscilloscope compatibility: all series of <b>UNI-T</b>
<b>UT-P43</b> 	Current probe	DC ~ 25MHz Range: 100mV/A Maximum measuring current: 20A Rise time: 14ns Oscilloscope compatibility: all series of <b>UNI-T</b>
<b>UT-P44</b> 	Current probe	DC ~ 50MHz Range: 50mV/A Maximum measuring current: 40A Rise time: 7ns Oscilloscope compatibility: all series of <b>UNI-T</b>



**UT-P4030D**



Current probe

Bandwidth: DC ~ 100MHz  
 Range: 1X:5A, 10X:30A  
 Rise time:  $\leq 3.5\text{ns}$   
 Maximum continuous current: 30Arms  
 Resolution: 5A:1mA, 30 A:10mA  
 Oscilloscope compatibility: all series of **UNI-T**

**UT-P4150**



Current probe

Bandwidth: DC ~ 12MHz  
 Range: 10X:30A, 100X: 150A  
 Rise time:  $\leq 29\text{ns}$   
 Maximum continuous current:150Arms  
 Resolution: 30A:10mA, 150A:100mA  
 Oscilloscope compatibility: all series of **UNI-T**

**UT-P4500**



Current probe

Bandwidth: DC ~ 5MHz  
 Range: 10X:75A, 100X:500A  
 Rising time:  $\leq 70\text{ns}$   
 Maximum continuous current:500Arms  
 Resolution:75A: 10mA, 500A:100mA  
 Oscilloscope compatibility: all series of **UNI-T**

**UT-P4100A**



Current probe

Bandwidth: DC ~ 600kHz  
 Current range:  
 low-scale 50mA-10A, high-scale 1A-100A  
 Range sensitivity:  
 low-scale 0.1V/A, high-scale 0.01V/A  
 Oscilloscope compatibility: all series of **UNI-T**






**UT-P4100B**



Current probe

Bandwidth: DC ~ 2MHz  
 Current range:  
 low-scale 50mA-10A, high-scale 1A-100A  
 Range sensitivity:  
 low-scale 0.1V/A, high-scale 0.01V/A  
 Oscilloscope compatibility: all series of **UNI-T**

## Active Probe

Model	Type	Description
<b>UT-PA2000</b> 	Active single-ended probe	10X:DC~2GHz Input capacitance: $\leq 1\text{pF}$ Dynamic range: $\pm 7\text{V}$ (DC or peak AC ) Oscilloscope compatibility: <b>MSO7000X</b> series
<b>UT-P30</b> 	High voltage differential probe	DC ~ 100MHz Attenuation ratio: 100:1, 10:1 Differential input voltage: $\pm 800\text{Vpp}$ Oscilloscope compatibility: all series of <b>UNI-T</b>
<b>UT-P31</b> 	High voltage differential probe	DC ~ 100MHz Attenuation ratio: 1000:1, 100:1 Differential input voltage: $\pm 1.5\text{kVpp}$ Oscilloscope compatibility: all series of <b>UNI-T</b>
<b>UT-P32</b> 	High voltage differential probe	DC ~ 50MHz Attenuation ratio: 1000:1, 100:1 Differential input voltage: $\pm 3\text{kVpp}$ Oscilloscope compatibility: all series of <b>UNI-T</b>
<b>UT-P33</b> 	High voltage differential probe	DC ~ 120MHz Attenuation ratio: 100:1, 10:1 Differential input voltage: $\pm 14\text{kVpp}$ Oscilloscope compatibility: all series of <b>UNI-T</b>

**UT-P35**

High voltage  
differential probe

DC ~ 50MHz  
Attenuation ratio 500:1, 50:1  
Rise time: 7ns  
Accuracy: 2%  
Differential input voltage:  
1/50: 130 (DC + peak AC);  
1/500: 1300 (DC + peak AC);  
Common input voltage:  
100Vrms, CATI; 600Vrms, CATII  
Oscilloscope compatibility:  
all series of **UNI-T**

**UT-P36**

High voltage  
differential probe

DC ~ 50MHz  
Attenuation ratio 2000:1, 200:1  
Rising time 3.5ns  
Accuracy: 2%  
Differential input voltage:  
1/200:560 (DC + peak AC);  
1/2000:5600 (DC + peak AC);  
Common input voltage:  
2800Vrms, CATI; 1400Vrms, CATII;  
Oscilloscope compatibility:  
all series of **UNI-T**

## Technical Parameter

All specifications are guaranteed, except those marked "typical". The instrument must be operated continuously for at least thirty minutes at the specified operating temperature.

Main parameters	MSO7204X	MSO7104X
Bandwidth (-3dB) @50Ω*1	2GHz	1GHz
Bandwidth (-3dB) @1MΩ	500MHz	
Rise time @50Ω (typical)	175ps	350ps
Analog channels	4+EXT	
Digital channels (option)	16 (option of MSO7000X-LA is required to purchase)	
Sample rate of analog channel*2	10GSa/s (Single channel);5GSa/s (Dual channel);2.5GSa/s (Full channel)	
Vertical resolution	8-bit (HD12-bit)	
Maximum memory depth	1Gpts (Single channel); 500Mpts (Dual channel); 250Mpts (Full channel)	
Waveform capture rate*3	≥800,000wfms/s(UltraAcq®); 2,000,000wfms/s(Sequence mode)	
Function/Arbitrary waveform generator (option)	The Maximum frequency output of waveform: 60MHz, Sample rate: 625MSa/s Supports arbitrary waveform and provides arbitrary waveform editor Supports modulation and sweep	
Digital voltmeter	4-bit, DC, AC RMS, DC+AC RMS	
Frequency counter	8-bit	
Serial protocol analysis	Standard: RS-232/422/485/UART, SPI, I <sup>2</sup> C, CAN, LIN Option: CAN-FD, SENT, FlexRay, AudioBus(I <sup>2</sup> S/LJ/RJ/TDM), MIL-STD-1553, ARINC429	
Measurement	Supports 48 kinds of automatic parameter measurement, quick meas; and statistical analysis, histogram, trend chart and trace analysis	

Mathematical operation	Up to 8 number of math waveforms at same time, Enhanced FFT, Basic mathematical operation, Filter, Advanced function editor, Embedded matlab programming operation and render, Enhanced resolution
Analysis tool	Histogram, Area histogram, Trend chart, Trace
Advanced analysis function	Power analysis (option), Jitter analysis and eye diagram (option), Mask and limit test, Sequence mode
Interface	USB Device, USB Host*4, LAN (10/100/1000Mb/s), HDMI, AuxIn (trigger sync input, AWG external trigger input), AuxOut (trigger sync output, pass the test result, AWG trigger output), 10MHz REF In/Out
Display screen	15.6-inch FHD capacitive touch screen (1920*1080) + Gesture touch

Analog channel	MSO7204X	MSO7104X
Channels	4+EXT	
Bandwidth limit @50Ω (typical)	1GHz, 500MHz, 20MHz	500MHz, 20MHz
Bandwidth limit @1MΩ (typical)	20MHz	
Vertical input sensitivity range*4	1MΩ: 1mV/div ~ 10V/div 50Ω: 1mV/div ~ 1V/div	
Input coupling	AC, DC, GND	
Input impedance	1MΩ ± 1% (15 ± 3pF), 50Ω ± 2%	
DC Gain Accuracy *4	<b>50Ω:</b> ± 1.5% (± 2.0% at ≤5mV/div) ± full scale division of 1% (≤5mV/div: ± full scale division of 1.5%) <b>1MΩ:</b> ± 1.2% (± 1.5% at ≤5mV/div) ± full scale division of 1% (≤5mV/div: ± full scale division of 1.2%)	
Offset range	<b>50Ω:</b> 1mV/div-100mV/div: ±2V; 200mV/div-1V/div: ± 5V <b>1MΩ:</b> 1mV/div-50mV/div: ± 2V; 100mV/div-500mV/div: ± 20V; 1V/div: ± 40V; 2V/div-10V/div: ± 100V	
DC offset accuracy	≤ 200mV/div (± 0.1div ± 2mV ± offset of 1.5%) > 200mV/div (± 0.1div ± 2mV ± offset of 1.0%)	
Probe attenuation coefficient	1X, 10X, 100X, User: 0.001X~1000X	

Maximum input voltage	1M $\Omega$ : $\leq 300V_{rms}$ , CAT I; 50 $\Omega$ : $\leq 5V_{rms}$
Channel isolation	$\geq 500:1$ (DC ~ 1GHz), $\geq 200:1$ (>1GHz)
★ 1. Bandwidth of 2G is only suitable for single channel mode.	
★ 2. Dual channel mode: it can only open C1 and C2; or C3 and C4.	
★ 3. Maximum waveform capture rate is used to open UltraAcq <sup>®</sup> and single channel mode.	
★ 4. 1mV/div is a digital amplification of 2mV/div. For vertical accuracy calculations, the 1mV/div vertical sensitivity should be calculated as 2mV/div full scale using 16mV.	

### Digital channel (option)

Channels	16
Sample rate	1.25GSa/s
Memory depth	125Mpts
Maximum input toggle rate	500MHz
Minimum detectable pulse width	3.2ns
Thresholds	A total of 4 groups are adjustable, each group has 4 channels
Threshold selection	TTL (1.4V) / 5.0V CMOS (+2.5V), 3.3V CMOS (+1.65V) / 2.5V CMOS (+1.25V), 1.8V CMOS (+0.9V) ECL (-1.3V) / PECL (+3.7V) / LVDS (+1.2V) / 0V / User-defined (4 channel in one group, and the threshold can be adjusted)
Threshold range*	$\pm 20.0V$ , 20mV stepping
Threshold resolution*	20mV
Threshold accuracy*	$\pm(100mV + 3\%$ of threshold setting after calibration)
Maximum input voltage*	$\pm 40V_{peak}$
Maximum input dynamic range*	$\pm 10V +$ threshold
Minimum voltage swing *	500mVpp

Input impedance*	100k $\Omega$ $\pm$ 2%
Vertical resolution	1 bit
Inter-channel delay*	1.6ns (typical value)

Notes: \* indicates the indicator after the oscilloscope is connected to the digital probe

### Horizontal System

Time base range	100ps/div - 1000s/div
Time base accuracy	$\pm$ (1.6+0.5* the number of years after calibration) ppm
Time base delay range	Pre-trigger: $\geq$ 0.5 screen width; Post-trigger: $\leq$ 5000s
Adjustable range of inter-channel delay	$\pm$ 100ns, minimum stepping of 40ps
Delay between analog channels	$\leq$ 100ps
Horizontal mode	Y-T/X-Y/ROLL

### Acquisition System

Peak Detect	Captures glitches as narrow as 400ps
High resolution	High resolution mode 8 ~ 12 bits
Averaging	2 ~ 65536
UltraAcq <sup>®</sup>	In quick acquisition mode, the waveform capture rate can reach to 800,000wfms/s

### Trigger System

Trigger modes	Automatic, Normal and Single	
Trigger coupling	HF rejection	Reject the high frequency signal that above 1MHz

	LF rejection	Reject the low frequency signal that below 1MHz
	Noise rejection	Turn on/off trigger delay
	DC	DC coupling trigger
	AC	AC coupling trigger
Trigger holdoff range	6.4ns ~ 10s	
Trigger sensitivity	Internal trigger: C1 ~ C4	≤5mV: 1div; > 5mV: 0.5div
	External trigger	EXT: 100mVpp DC ~ 100MHz, 150mVpp 100MHz ~ 200MHz EXT/5:500mVpp DC ~ 100MHz, 750mVpp 100MHz~200MHz
Trigger level range	Internal	± 4divs from the center of the screen
	External trigger	EXT: ±1V; EXT/5: ±5V
	AC Line	Fixed at about 50% of line voltage
<b>Trigger Type</b>		
Edge trigger	Source	C1 ~ C4/EXT/(EXT/5)/D0 ~ D15/AC
	Slope	Rising edge, Falling edge, Any edge
Pulse width trigger	Source	C1 ~ C4/D0~D15
	Polarity	Positive pulse width, Negative pulse width
	Limit condition	Less than, greater than, within range
	Pulse width	3.2ns ~ 10s
Slope trigger	Source	C1 ~ C4
	Slope	Rise, Fall
	Limit condition	Less than, greater than, within range
	Time setting	3.2ns ~ 10s
Video trigger	Source	C1 ~ C4, Ext
	Standard	NTSC, PAL



	Trigger condition	All lines, specified line, odd field or even field
Pattern trigger	Source	C1 ~ C4
	Pattern setting	H, L, X, rising edge, falling edge
Timeout trigger	Source	C1 ~ C4/D0~D15
	Edge type	Rising edge, Falling edge, Any edge
	Time setting	3.2ns ~ 10s
Runt trigger	Source	C1 ~ C4
	Polarity	Positive pulse width, negative pulse width
	Limit condition	Less than, greater than, within range, outside the range
	Time setting	3.2ns ~ 10s
Setup/Hold trigger	Clock source	C1 ~ C4
	Clock edge	Rising edge, falling edge
	Data source	C1 ~ C4
	Condition	Setup, hold, setup & hold
	Time setting	3.2ns ~ 10s
Delay trigger	Source	C1 ~ C4
	Edge type	Rising edge, falling edge
	Delay type	Less than, Greater than, Within range, Outside the range
	Delay time	3.2ns to 10s
Duration trigger	Source	C1 ~ C4
	pattern setting	H, L, X
	Trigger condition	Greater than, Less than, Within range
	Duration	3.2ns to 10s
Nth edge trigger	Source	C1 ~ C4/D0~D15

	Edge type	Rising edge, Falling edge
	Free time	3.2ns to 10s
	Edge number	1 to 65535
RS-232/422/485/UART trigger	Trigger mode	Start, Parity error, Data, Stop
I <sup>2</sup> C trigger	Trigger mode	Start, Restart, Stop, Response failure, Address, Data, Address and Data
SPI trigger	Trigger mode	Chip selection active, Data
CAN trigger	Trigger mode	Frame start, Frame type, ID, Data, ID & Data, End of Frame, Error
LIN trigger	Trigger mode	Frame start, ID, Data, ID check error, Checksum error
CAN-FD trigger (option)	Trigger mode	Frame start, Frame type, ID, Data, ID & Data, End of Frame, Error
SENT trigger (option)	Trigger mode	Synchronization, Frame start, Data, CRC check error
AudioBus trigger (option)	Trigger mode	Data, Synchronization
FlexRay trigger (option)	Trigger mode	Frame head, indicator, ID, Cycle count, data, ID & data, End of Frame, error
MIL-STD-1553 trigger (option)	Trigger mode	Command frame, Data frame, State frame, CRC check error
ARINC 429 trigger (option)	Trigger mode	Frame start, Label, Source or Objective identifier, Data, Mark and State, Check error

## Waveform Measurement

### Cursor Measurement

Source	C1 ~ C4, Math, Ref, Histogram
Type	Vertical cursor measuring time and voltage (X,Y), reciprocal of $\Delta X$ (Hz) ( $1/\Delta X$ ), $\Delta Y/\Delta X$ (V/s); Horizontal cursor measuring voltage (Y) and $\Delta Y$ ; Supports automatic trace cursor;

## Automatic Measurement

Voltage measurements	Maximum, Minimum, Peak-to-Peak, Top, Base, Middle, Amplitude, Average, AC RMS, Standard deviation, Positive overshoot, Negative overshoot, Maximum cycle, Minimum cycle, Cycle RMS, Cycle average, Cycle Peak-to-Peak, Cycle middle, Positive pre-shoot, Negative pre-shoot, Upper, Bottom, Crossover voltage
Timing measurements	Period, Frequency, Rise time, Fall time, Positive pulse width, Negative pulse width, Positive duty cycle, Negative duty cycle, Time @Max, Time @Min, Rise time @Lv, Fall time @Lv, period @Lv, Frequency @Lv, pulse width @Lv, duty cycle @Lv, Phase difference @Lv, RRD @Lv, FFD @Lv, RFD @Lv, FRD @Lv, Delay, Data count, Burst width, Setup time, Hold time, Cycle count
Other measurements	Area, periodic area
Histogram parameter	$\mu \pm 1\sigma$ , $\mu \pm 2\sigma$ , $\mu \pm 3\sigma$ , mode, mean, standard deviation, maximum, minimum, median, peak-to-peak, peak count, total sample size
Measurement source	C1 ~ C4
Number of measurements	48 kinds of automatic measurement, it can display 10 parameters at the same time
Measurement range	Screen or Cursor
Quick Meas	Display 35 measurement items of the current measurement source, the source can be switched
Measurement statistics	Current value, Average value, Maximum value, Minimum value, Standard deviation, Measure the count, Histogram, Trend chart, Trace

## Waveform math

Number of math waveforms	Supports 8 math waveforms and it can display at the same time
Source	C1 ~ C4, P1 ~ P10, R1 ~ R4
Advanced operation	supporting matlab embedded programming and data presentation

Basic operation	Add, Subtract, Multiply, Divide, AND, OR, NOT, XOR, Average, Absolute, Exp10, Exp, Differential, Integral, Ln, Lg, Square, Square root, common, Sine, cos, tan, Correlation, Convolution, extended-value, Extraction, Interpolation, maximum, minimum, user-defined function expression (editable and performs composite formula operations)	
Enhanced FFT	Function	amplitude spectrum, power spectrum, Psd, real part, imaginary part, phase spectrum
	Window functions	Rectangular/Hanning/Blackman/Hamming/Flatop
	Display	Full screen (spectrum view), multi-window
	Vertical units	Vrms/dBrms
Digital filter	Low pass, High pass, Band pass, Band stop	
Enhanced resolution	Enhanced bit: 0.5, 1, 1.5, 2, 2.5, 3bits	

### Measurement Analysis

Digital voltmeter	Source	C1 ~ C4
	Mode	DC, AC RMS, DC+AC RMS
	Voltage resolution	4 digits
Frequency counter	Frequency resolution	8 digits
Mask and limit testing	Source	C1 ~ C4
	Test mask	User-defined test mask or load standard test mask
	Test failure	Stop, Save, Alarm, Test report
Histogram	Source	P1 ~ P10
	Type	Horizontal, vertical and measurement
	Measurement item	$\mu\pm 1\sigma$ , $\mu\pm 2\sigma$ , $\mu\pm 3\sigma$ , mode, mean, standard deviation, maximum, minimum, median, peak-to-peak, peak count, total sample size
	Source	C1 ~ C4

Jitter analysis (option)	Clock recovery	Fixed frequency: automatic/user-defined PLL: First-order phase-locked loop; Second-order phase-locked loop; Display clock: external clock;
	View	TIE histogram, TIE trend chart, TIE spectrum, Bath-Tub Curve
	Measurement parameter	TIE, TJ BER, RJ, DJ, PJ, DDJ, DCD
Eye diagram analysis (option)	Source	C1 ~ C4
	Clock recovery	Fixed frequency: automatic/user-defined PLL: first-order phase-locked loop; second-order phase-locked loop;
	Measurement parameter	Eye amplitude, Eye Height, Eye Width, Level 1, Level 0, Q factor
Power analysis (option)	Analysis item	Power quality, Harmonic analysis, Switching loss, ripple analysis, Loop analysis, Safe operation area
Loop analysis (optional power analysis)	Start frequency	50Hz~50MHz
	Stop frequency	60Hz~50MHz
	Points	1~1000
	Output amplitude	High Z: 20mVpp to 6Vpp 50Ω: 10mVpp to 3Vpp

### Serial Bus Decode

Channels of decode	2-channel	
RS-232/422/485/UART decode	Source	C1 ~ C4
	Data width	5-bit, 6-bit, 7-bit, 8-bit
	Parity check	Odd, Even or None
	Stop bit	1-bit, 2-bit

	Polarity	Positive, Negative
	Bit sequence	LSB, MSB
	Baud rate	2400bps, 4800bps, 9600bps, 19200bps, 38400bps, 57600bps, 115200bps, User-defined
I <sup>2</sup> C decode	Source	C1 ~ C4
	Signal	SCL, SDA
	Data width	7-bit, 10-bit
SPI decode	Source	C1 ~ C4
	Signal	MISO, MOSI, MOMI
	Clock edge	Rise edge, fall edge
	Chip selection edge	High level, low level
	Bit sequence	LSB, MSB
CAN decode	Source	C1 ~ C4
	Signal	CAN_H, CAN_L, send/receive, differential
LIN decode	LIN protocol version	1.0, 2.0
	Source	C1 ~ C4
	Baud rate	2400bps, 4800bps, 9600bps, 19200bps, user-defined
	Polarity	Positive, Negative
	Byte	1 ~ 8
CAN-FD decode (option)	Source	C1 ~ C4
	SD signal rate	10kbps, 20kbps, 33.3kbps, 50kbps, 62.5kbps, 83.3kbps, 100kbps, 125kbps, 1Mbps, User-defined
	FD signal rate	1Mbps, 2Mbps, 3Mbps, 4Mbps, 5Mbps, 6Mbps, 7Mbps, 8Mbps, User-defined
SENT decode (option)	Source	C1 ~ C4

	Baud rate	10kbps, 20kbps, 33.3kbps, 50kbps, 62.5kbps, 83.3kbps, 100kbps, 125kbps, 1Mbps, User-defined
	Data length	1Nibbles, 2Nibbles, 3Nibbles, 4Nibbles, 5Nibbles, 6Nibbles
	CRC	V2008, V2010
AudioBus decode (option)	Source	C1 ~ C4
	Protocol type	I <sup>2</sup> S, LJ, RJ, TDM
	Audio track type	Left channel, Right channel
FlexRay decode (option)	Source	C1 ~ C4
	Signal	BP, BM, RX/TX, Differential
	Baud rate	1Mbps, 5Mbps, 10Mbps, User-defined
MIL-STD-1553 decode (option)	Source	C1 ~ C4
	Baud rate	1Mbps, 10Mbps, User-defined
ARINC 429 decode (option)	Source	C1 ~ C4
	Signal type	Single-end, Differential
	Signal rate	12.5kbps, 100kbps, User-defined
	Decoding mode	19-bit, 23-bit

### Function/Arbitrary Waveform Generator (option)

Channels	2
Sample rate	625MSa/s
Vertical resolution	16-bit
Maximum frequency	60MHz
Standard waveform	Sine, Square, Pulse, Ramp, Noise and DC
Modes of operation	Continuous, Modulation, Sweep

### Built-in Wave

Sine waveform	Frequency range: 1 $\mu$ Hz to 60MHz	
	Amplitude flatness: typical value (sine waveform, 0dBm) $\leq$ 30MHz: $\pm$ 0.5dB $\leq$ 60MHz: $\pm$ 0.8dB	
	Harmonic distortion: -40dBc	
	Spurious(non-harmonic):-40dBc	
	Total harmonic distortion: 1% (DC ~ 20kHz, 1Vpp)	
SNR (Signal to Noise Ratio):40dB		
Square/pulse waveform	Frequency range: square waveform: 1 $\mu$ Hz to 25MHz; pulse waveform : 1 $\mu$ Hz to 25MHz;	
	Rise/fall time: <7ns	
	Overshoot: <2% (1kHz, 1Vpp, 50 $\Omega$ )	
	Duty cycle range: 0.01% to 99.99%, it can be adjusted	
	Minimum pulse width: 20ns	
Jitter: 2ns		
Ramp waveform	Frequency range: 1 $\mu$ Hz to 1MHz	
	Symmetry: 0.01% ~ 99.99%	
	Linearity: < 1% of peak output (typical value, 1kHz, 1Vpp, symmetry 100%)	
Noise	Bandwidth: 60MHz (typical value)	
Arbitrary waveform	Frequency range: 100mHz to 5MHz	
	Waveform length: 8 to 512k points (play mode)	
	Type: supports over 200 kinds of arbitrary waveforms, such as Sinc/ Exponential Rise/Fall/Cardiac/Gaussian/Lorentz/Haversine and etc.	
<b>Modulation</b>		
AM modulation	Carrier waveform	Sine/square/ramp/arbitrary waveform
	Source	Internal
	Modulation waveform	Sine/square/ramp/noise/ arbitrary waveform
	Modulation frequency	2mHz ~ 200kHz



	Modulation depth	0% ~ 120%
FM modulation	Carrier waveform	Sine/square/ramp/arbitrary waveform
	Source	Internal
	Modulation waveform	Sine/square/ramp/noise/ arbitrary waveform
	Modulation frequency	2mHz ~ 200kHz
	Frequency deviation	DC ~ 30MHz
PM modulation	Carrier waveform	Sine/square/ramp/arbitrary waveform
	Source	Internal
	Modulation waveform	Sine/square/ramp/noise/ arbitrary waveform
	Modulation frequency	2mHz ~ 200kHz
	Phase deviation	0° ~ 360°
<b>Sweep</b>		
Sweep	Carrier wave	Sine/square/ramp/arbitrary waveform
	Type	Lin, log
	Sweep time	1ms ~ 500s
	Trigger source	Internal, external, manual
<b>Frequency Characteristics</b>		
Signal frequency	Accuracy: $\pm 0.5\text{ppm}$ , 25 °C Annual aging rate $\pm 1\text{ppm}$ temperature coefficient $< \pm 0.5 \text{ ppm}/^\circ\text{C}$ Resolution: 1 $\mu\text{Hz}$	
<b>Output Characteristics</b>		
Signal amplitude	Amplitude (50 $\Omega$ )	$\leq 30\text{MHz}$ : 10mVpp ~ 3Vpp $\leq 60\text{MHz}$ : 10mVpp ~ 1.5Vpp
	Amplitude (High Z)	$\leq 30\text{MHz}$ : 20mVpp ~ 6Vpp $\leq 60\text{MHz}$ : 20mVpp ~ 3Vpp

	Resolution: 1mV	
	Accuracy: typical value (sine waveform of 1kHz, 0V offset, > 20mVpp) ± (2% of setting value + 2mVpp)	
DC offset	Range (Peak AC + DC)	±1.5V (50 Ω) ±3V (High Z)
	Resolution: 1mV	
	Offset accuracy: ±2% of offset setting value ± 2%±2mV of amplitude setting value	
Waveform output	Impedance: 50Ω (typical value) Protection: over voltage protection (the waveform output is closed when overvoltage occurs, and reminder will prompt in the screen)	

## Display

Display	15.6-inch FHD capacitive touch screen
Display resolution	1920*1080 (H*V)
Zoom	Horizontal and vertical zooming is supported in all waveform,supports gesture control and zooming
Grid	10 horizontal scale division × 8 vertical scale division
Grayscale	256
Display mode	Point, vector
Waveform color	Waveform color can set by user-defined
Persistence	Off, automatic, infinite

## Computer

CPU	Inter® core™ i5-6500 (3.2GHz, 64-bit)
Operating system	Windows 10 IoT Ent LTSC (64bit)
Memory	8GB
Hard disk(SSD)	128GB

<b>Interface and Protocol</b>	
High-definition audio/video output	One HDMI interface on the rear panel
USB host	Four interfaces, two interface on the front panel and two on the rear panel
USB device	One USB device interface on the rear panel
LAN port	One Ethernet interface (10/100/1000Mb/s) on the rear panel
Probe compensator output	Square waveform of 1kHz, 3Vpp
10 MHz reference clock Input/output	In/Out can be opened individually and simultaneously In: BNC connector on the rear panel, A reference clock that provides sampling for the oscilloscope. Out: BNC connector on the rear panel, It can output its own 10MHz reference clock and provide it to other external instruments for inter-instrument clock synchronization.
Aux output	BNC connector on the rear panel 1. Trigger sync output; 2. Pass the test result; 3. AWG trigger output
Aux input	1. Trigger sync output 2. AWG external trigger output
EXT Trig	BNC connector on the front panel
Lock of Kensington	Standard lock key of Kensington
Remote control	Built-in WebServer: Support to input the oscilloscope IP to enter the web interface through the web browser, it can view the instrument state, view and update the network state, view help manual and programming manual, download drive program, save the oscilloscope setting, export waveform, screenshot and remote control the instrument by keyboard and mouse
USBTMC	Supports standard USBTMC interface protocol
SCPI	Supports standard SCPI

<b>Power Supply</b>	
Power voltage	100V ~ 240VAC (fluctuate $\pm 10\%$ ) 50Hz/60Hz
Power	Maximum 200W
Fuse	3A, T class, 250V

<b>Environment</b>	
Temperature range	Operating: 0°C ~ + 40°C; non-operating: -20°C ~ + 70°C
Cooling method	Forced fan cooling
Humidity range	Operating: below +35°C, relative humidity $\leq 90\%$ ; non-operating: +35°C ~ +40°C, relative humidity $\leq 60\%$
Altitude	Operating: below 2000 meters; non-operating: below 15000 meters

<b>Mechanical Specifications</b>	
Dimension (W×H×D)	Size that not count foot pad and outer protective cover: 445mm×302mm×200mm Size that count foot pad and outer protective cover: 452mm×309mm×216mm Size that adding rack accessories: 485mm×356mm×209mm
Weight	< 10.5kg
Installation	7U (Optional MSO7000X-RM setup suit of rack mounting)

<b>Standard</b>	
Electromagnetic compatibility	Compliance with EMC directive (2014/30/EU), compliance with or better than IEC 61326-1:2021/ EN61326-1:2021, IEC 61326-2-1:2021/ EN61326-2-1:2021
	CISPR11/EN 55011                      Conducted disturbance CLASS B group1, 150kHz-30MHz

	Radiation disturbance CLASS B group 1, 30MHz-1GHz
IEC 61000-4-2/EN 61000-4-2	Electrostatic discharge (ESD) 4.0kV (contact), 8.0kV (air)
IEC 61000-4-3/EN 61000-4-3	Radio-frequency electromagnetic field immunity 0V/m (80MHz to 1GHz) 3V/m (1.4GHz to 2GHz) 1V/m (2.0GHz to 2.7GHz)
IEC 61000-4-4/EN 61000-4-4	Electrical fast transient (EFT) 2kV (Input AC Power ports)
IEC 61000-4-5/EN 61000-4-5	Surges 1kV (live line to zero line); 2kV (live/zero to ground)
IEC 61000-4-6/EN 61000-4-6	Radio-frequency continuous conducted Immunity 3V, 0.15-80MHz
IEC 61000-4-11/EN 61000-4-11	Voltage dips: 0% UT during 1 cycle; 40% UT during 10/12 cycles; 70% UT during 25/30 cycles Short interruption: 0% UT during 250/300 cycles
Safety specification	EN 61010-1:2010+A1:2019 EN IEC61010-2-030:2021+A11:2021 BS EN61010-1:2010+A1:2019 BS EN IEC61010-2-030:2021+A11:2021 UL 61010-1:2012 Ed.3+ R:19 Jul2019 UL 61010-2-030:2018 Ed.2 CSA C22.2#61010-1:2012 Ed.3+U1;U2;A1 CSA C22.2#61010-2-030:2018 Ed.2

### Warranty and Calibration Service

Calibration interval 1 year

Warranty 1 year

<b>Order Information</b>	
<b>Product Model</b>	
MSO7204X	Bandwidth of 2GHz, the maximum sample rate is 10GSa/s (single channel 10GSa/s, dual channel 5GSa/s, 4-channel 2.5GSa/s ), 4-channel oscilloscope
MSO7104X	Bandwidth of 1GHz, the maximum sample rate is 10GSa/s (single channel 10GSa/s, dual channel 5GSa/s, 4-channel 2.5GSa/s), 4-channel oscilloscope
<b>Standard Accessories</b>	
UT-D30	USB3.0 data cable x 1
UT-P07A	Passive high impedance probe x 4 set
UT-L45	BNC-BNC straight-through cable x 2
--	Protective cover of front panel x 1
--	National standard cable x 1
--	Calibration certificate
<b>Optional Accessories</b>	
MSO7000X-RM	Setup suit of rack mounting
<b>Option</b>	
MSO7000X-AWG	Dual channel 60 MHz function/arbitrary waveform generator
MSO7000X-LA	16-channel logic analyzer
MSO7000X-JITTER	Advanced jitter analysis and eye diagram
MSO7000X-PWR	Advanced power analysis
MSO7000X-CANFD	Automotive serial bus trigger and analysis (CAN-FD)
MSO7000X-FLEX	Serial bus trigger and analysis (FlexRay)
MSO7000X-SENT	Automotive sensor (SENT)
MSO7000X-AUDIO	Audio serial bus trigger and analysis (I <sup>2</sup> S, LJ, RJ, TDM)
MSO7000X-AREO	Aerospace serial bus trigger and analysis (MIL-STD-1553, ARINC 429)

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MSO7000X-BND	Upgrade suit (JITTER, PWR, CANFD, FLEX, SENT, AUDIO, AERO)
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**Probe**

UT-PA2000	Active single-end probe (2GHz;10 X)
UT-P07A	Passive high impedance probe (1X: 8MHz; 10X: 500MHz)
UT-P20	Passive high voltage probe (100MHz; probe coefficient 100:1, 1.5kVrms)
UT-V23	Passive high voltage probe (100MHz; 2kVpp)
UT-P21	Passive high voltage probe (50MHz; maximum of operating voltage DC 15kVrms)
UT-P40	Current probe (100kHz; 0.4A ~ 60A)
UT-P41	Current probe (100kHz; 0.4A ~ 100A)
UT-P42	Current probe (150kHz; 0.4A ~ 200A)
UT-P43	Current probe (25MHz; maximum of measurement current 20A)
UT-P44	Current probe (50MHz; maximum of measurement current 40A)
UT-P4030D	Current probe (100MHz; maximum of measurement current 30A)
UT-P4150	Current probe (12MHz; maximum of measurement current 150A)
UT-P4500	Current probe (5MHz; maximum of measurement current 500A)
UT-4100A	Current probe (600kHz; maximum of measurement current 100A)
UT-4100B	Current probe (2MHz; maximum of measurement current 100A)
UT-P30	High voltage differential probe (100MHz; $\pm 800$ Vpp)
UT-P31	High voltage differential probe (100MHz; $\pm 1.5$ kVpp)
UT-P32	High voltage differential probe (50MHz; $\pm 3$ kVpp)
UT-P33	High voltage differential probe (120MHz; $\pm 14$ kVpp)
UT-P35	High voltage differential probe (50MHz; 1.3kV)
UT-P36	High voltage differential probe (50MHz; 5.6kV)
UT-M15	16-channel logic analyzer probe

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Notes: Please order all hosts, accessories and options from your local UNI-T distributor.

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## About US

UNI-T was founded in 1988 and officially registered as UNI-Trend (China) Technology Co., Ltd. In 2003. We design and manufacture test and measurement solutions. Over the years, we have striven to be the technology pioneer and professional solution provider for the community with a sustainable shared future. UNI-T have been committed to the innovation of electronic testing and measurement industry, and as a well-established brand in the test and measuring industry, we serve a wide-range of customers in Education and Scientific Research, Industrial Automation, Automobile, Transportation, Energy, Semi-conductors, Network and Communications, Medical, Environmental protection and more. The company went public in SSE STAR (Sic-Tech Innovation Board) stock market in Feb. 2021 (code: 688628)

### R&D focused

With 3 R&D centers in Dongguan, Chengdu and Changzhou, and over 200 experienced R&D engineers ensuring the competitive edge of UNI-Trend Group to provide reliable, innovative and cost-effective products to the market. The proprietary factory floor space is 100,000 square meters with annual manufacturing capacity over 10 million units. We are the testing specialists providing solutions to help our partners and customers around the world.

### Wide-Range Production Line

As a growing company with solutions that span multiple sectors, there's a lot to talk about UNI-Trend Group. We got four major product lines: Test & Measurement Instruments, Field Measurement Instruments, Thermal Imagers and Environmental Testers. With extensive applications in industries and fields, you can count on UNI-T on the tasks from R&D to facility/equipment maintenance. Our Test & Measurement Instruments portfolios includes Signal Analyze, RF & Microwave, Power Electronic, Passive components and Safety Testers.

### Customer-Centric Sales

UNI-T's worldwide partners in over 80 countries provide our customers timely services whereas needed. We collaborate with our partner closely on not only product and technical aspects but also channel and business topics to ensure the customer satisfaction. In collaboration with partners, UNI-T strive to maintain the best quality products and service for scientists, engineers and technicians around the world for future success. the science and technology and humanities-based, and is committed to become the world's first-class instrumentation national brand.

Learn more at: [www.uni-trend.com](http://www.uni-trend.com)

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