



Datasheet

MSO3000HD Series High-resolution Oscilloscope

V1.1

November 2024

Product Introduction

MSO3000HD series high-resolution oscilloscope has the maximum bandwidth of 500 MHz, the maximum sampling rate of 2.5 GSa/s, and is equipped with 4 analog channels and 16 digital channels, with the storage depth of up to 500 Mpts. MSO3000HD series adopts exclusive Ultra Phosphor 3.0 technology, achieving the waveform capture rate of up to 1,500,000 wfms/s, with 256 levels of gray temperature colors, and features an innovative digital trigger system with high trigger sensitivity and low jitter.

This oscilloscope supports multiple advanced triggers, serial bus triggering and decoding, and offers advanced sampling and analysis modes such as spectrum analysis, power analysis, histogram, waveform recording, enhanced resolution (ERES), hardware-accelerated template testing, and search and navigation. Additionally, this oscilloscope provides multiple measurement and mathematical operations.

MSO3000HD series features a 10.1-inch capacitive touch screen that supports multiple gestures for common waveform operations. Combined with multiple one-touch keys on the front panel, this greatly optimizes the efficiency of oscilloscope operation and improves the user experience.



Mainstream touchscreen design providing an intelligent interactive experience

Featuring a 10.1-inch HD capacitive multi-touch screen, it supports a variety of gesture operations such as touch, drag, zoom and rectangle drawing. This makes operation more convenient and smoother, and helping the user learn the instrument more easily. It retains the traditional key and knob operation while also supporting mouse and keyboard, making instrument operation more versatile and greatly improving the interactive experience.



Brand new appearance design

MSO3000HD series features an innovative appearance with a double-sided thinning design. The display is aligned horizontally with the panel to enhance touch operation and visibility range. The black frame margin, combined with the metal grey and black body, enhances the overall sense of the instrument.



Features and Advantages

- Analog channel bandwidth: 500 MHz/350 MHz/200 MHz
- Real-time sampling rate of the analog channel is up to 2.5 GSa/s. The maximum sampling rate of the digital channel is 1.25 GSa/s.
- 12-bit vertical resolution, with up to 4096 points, ensures that the waveform details are clearly visible.
- 4 analog channels, 16 digital channels, and the storage depth of up to 500 Mpts
- The maximum waveform capture rate is up to 500,000 wfms/s (sequence mode: 1,500,000 wfms/s)
- 9 instrument functions: digital oscilloscope, logic analyzer, function/arbitrary waveform generator, spectrum analyzer, digital voltmeter, frequency meter, protocol analyzer, bode plot analyzer and power analyzer.
- Built-in 50 MHz equivalent performance dual-channel function/arbitrary waveform generator, supporting load the oscilloscope's on-screen data to Gen arbitrary waveform output in real time, and offering compatibility with multiple built-in arbitrary waveforms.
- Bode plot loop test analysis function designed to analyze the system stability.
- Parameter measurement adds histogram and line graph display
- Uninterrupted hardware real-time waveform recording and analysis of up to 125,000 frames and supports USB memory export function.
- Enhanced FFT of up to 4M points, supporting the spectrum analyzer functions such as frequency setting, waterfall curve, detection setting, and marker.
- Supports ERES (enhanced resolution) of up to 4-bit
- 54 kinds of parameter measurements
- Multi-Windows display
- Multi-channel 7-digit hardware frequency meter, supporting frequency refresh time and adjustable effective digit settings.
- DVM multi-channel RMS measurement: DC, AC RMS and DC+ACRMS
- Multiple trigger types: edge, pulse width, video, ramp, runt pulse, over-amplitude pulse, delay, timeout, duration, setup & hold, Nth edge and code pattern
- Protocol triggering and decoding function: RS232/UART, I²C, SPI, CAN, CAN-FD, LIN, FlexRay, Audio, MIL-STD-1553B, Manchester, SENT, ARINC429
- Zone trigger for capturing sporadic signals and observing complicated signals.
- Ultra Phosphor3.0 provides a super fluorescent display effect with up to 256 levels of gray.

- 10.1-inch 1280x800 HD capacitive multi-touch screen, supporting gesture control such as click, slide, zoom, edit, and drag
- Multiple peripheral interfaces: USB Host, USB Device, LAN, EXT Trig, AUX Out (Trig Out, Pass/Fail, DVM), Gen Out, HDMI
- Supports SCPI (Standard Command for Programmable Instrument)
- Built-in WebServer for accessing and controlling the instrument through a browser, supporting access from PC and mobile devices for cross-platform compatibility.
- Supports on-line update

Design Features

High-resolution

12-bit high-resolution ADC sampling has a quantization level of up to 4096, which is 16 times that of a traditional 8-bit ADC, allowing for better restoration of waveform details.



The excellent background noise, which is only 70 μ Vrms at the full bandwidth of 500 MHz, allows the 12-bit ADC to perform optimally.

Application Scope



Cost-effective, Nine-in-one Integrated Oscilloscope

MSO3000HD series integrates nine instrument functions, including a digital oscilloscope, logic analyzer, function/arbitrary waveform generator, spectrum analyzer, digital voltmeter, high-precision frequency meter, protocol analyzer, Bode plot analyzer, and power analyzer. This is a cost-effective oscilloscope for users.



Digital Oscilloscope

- Bandwidth: 500 MHz/350 MHz/200 MHz
- Maximum real-time sampling rate: 2.5 GSa/s
- Maximum storage depth: 500 Mpts
- 4 analog channels, 1 external trigger channel

Wave window		

Logic Analyzer (Option)

- 16-channel logic analyzer (hardware standard) can be used with the purchase of a UT-M15 logic analyzer probe (optional).
- Maximum sampling rate: 1.25 GSa/s
- Maximum storage depth: 250 Mpts
- Minimum detectable pulse width: 800 ps
- Digital probe provides separate high 8-bit and low 8-bit connections, it simplifies the connection of DUT. When connecting to square pins, UT-M15 can be connected directly to 8x2 square pins (2.54 mm).



Function/Arbitrary Waveform Generator (Option)

- 50 MHz equivalent performance dual-channel output
- Sampling rate: 250 MSa/s
- Vertical resolution: 16-bit
- Multiple built-in standard waves: Sine, square, pulse, ramp, arbitrary, noise, and DC
- AM, FM, ASK, FSK, and sweep frequency output

Wave window	-				
	Gen		? ×		
					600mV
	Switch	Type Continues a			
		Continuous +			400mV
		Continuous			200-10
		Base Wave	Sine 🔻		200111
D	<u> </u>		1.000 000 000 kHz		-11
			100 mVpp		
	Impedance		0 mVpp		-200mv
	1ΜΩ				-400mV
	G1->G2 G1<-G2				
	Invert				-600mV
-4µs -3µs	off -tip			3µs	4µs
C1 200mV C2 C3	C4 LA	G1			_ C
	F OFF	1kHz 100mV			3 18.1 2024/0

Spectrum Analyzer

- Standard enhanced FFT with up to 4 Mpts for 4-channel signal analysis
- Frequency range: 0 to 2.5 GHz
- Waterfall curve
- 4 traces and 4 detections
- Mark type: Auto, manual and threshold
- Marker point list

Digital Voltmeter

- 4-digit voltmeter
- Measurement: DC/AC RMS/AC+DCRMS
- Limit alarm

High-precision Frequency Meter

- 7-digit hardware frequency meter
- Frequency meter: Refresh time and adjustable
 - effective digit settings
- Summary counter

Bode Plot Analyzer (Option)

- Built-in function/arbitrary waveform generator
- Frequency response analysis
- Loop stability analysis
- Filter analysis
- Amplifier analysis









Protocol Analyzer

- 12 kinds of triggering and decoding protocols, including those for computers, embedded serial buses, automobile, aerospace, and audio applications.
- Decoding can be operated in the pause and record modes.
- Supports event list and search function

	A 5Mpts T 1 Auto	ই 🏧 🗶 📃 🔘	8
Wave window	*		
	83 (8x04) (8x05) (8x55) (8x55) (8x46)	0x49 0x20 0x54 0x55 0x46 0x55 0x56 0x56 0x56 0x56 0x56 0x56 0x5	3.56V 2.56V
			1 560mV
-2001.00 -4001.00	-100ur -200ur 0pc -20	20un A00un 800un	-1.44V -2.44V
RS232 Event List (B1) 1:		• ?	X
ld 💌			Q
	Time	Data	1~
2	-829 fiys	0001	
*	-690 dys	0#02	
	-551 бµs	CNC0	
5	-412 <i>6</i> gs	0104] ~
C1 100V 1100 FLLL 0FF OF 000V	F 0FF 14	③ 10 2024	L17 104/23

Option Name	Description	Option Model	Standard/Option
Computer serial bus			
triggering and	RS-232/422/485/UART	-	Standard
analysis			
Embedded serial bus			
triggering and	I2C, SPI	-	Standard
analysis		•	
Automobile serial bus			
triggering and	CAN	MSO3000HD-CAN	Standard
analysis			
Automobile serial bus	\sim		
triggering and	LIN	MSO3000HD-LIN	Option
analysis			
Automobile serial bus			
triggering and	CAN-FD	MSO3000HD-CANFD	Option
analysis			
Automobile sensor			
bus triggering and	FlexRay	MSO3000HD-FLEX	Option
analysis			
Computer serial bus			
triggering and	SENT	MSO3000HD-SENT	Option
analysis			
Audio serial bus			
triggering and	Audio	MSO3000HD-AUDIO	Option
analysis			
Aerospace serial			
bus triggering			Option
and analysis			
Wireless	Manchester	MSO3000HD-MANCH	Option

communication trigger and analysis

Power Analyzer (Option)

With the development of chip technology, the requirements for power supply systems are also increased. Nowadays, low-voltage, high-current power supply networks have become a trend. Especially for chips or networks composed of precision components, it is essential to ensure reliable power supply and noise suppression across various parts of the circuit, as well as to maintain the integrity of signal transmission between chips. This presents greater challenges for power supply testing. Designers are now more focused on energy-efficient power supplies and response speed to ensure the power supply remains stable and clean. Based on this, power integrity testing becomes particularly important. Power integrity directly affects signal integrity, and conversely, signal quality also reflects power quality. Furthermore, power quality can cause a series of electromagnetic interference issues, which can be a significant concern for designers. Therefore, having an oscilloscope capable of power analysis is undoubtedly your best choice.

MSO3000HD series provides a comprehensive set of power analysis tools and evaluation results. To use them, simply select the appropriate analysis type and connect the voltage probe and current probe to the power system test point or specified test fixtures, as shown in the diagram. Then, connect to the desired channel for observation and make any necessary fine-tuning adjustments to achieve your desired results.

- Power quality
- Harmonic analysis
- Switching loss *

- Ripple wave analysis
- Loop analysis
- Safety operation area *



"*" indicates features being added. Power analysis support is subject to the latest firmware available on the official website.

Ultra Phosphor 3.0

When attempting to identify and debug occasional or intermittent anomalies in signals, the waveform capture rate is a crucial indicator. This rate represents the oscilloscope's ability to capture waveforms per unit of time, reflecting its speed in processing and analyzing signals. MSO3000HD series uses advanced software and hardware architecture to achieve 5 to 10 times higher data processing performance than previous generation products. Equipped with Ultra Phosphor 3.0, it supports 8-channel parallel graph mapping, with a processing rate of up to 20 Gbps and the waveform capture rate of up to 500,000 wfms/s, and up to 1.5 million 750 ps fast edge signals in sequence mode, facilitating easy and accurate capture of occasional signals.



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. However, the response speed varied significantly among oscilloscope manufacturers due to different solutions adopted. This inconsistency affected the user experience. UNI-T has redefined Autoset execution by adopting a fast fuzzy algorithm based on analog signals and multi-channel parallel processing technology. This is complemented by a 7-bit high-precision hardware frequency counter, allowing the oscilloscope to quickly find and process the amplitude and frequency of unknown signals during Autoset execution. The entire channel can be opened in less than 1.5s, and a single channel in less than 1s, greatly enhancing working efficiency and reducing the risk of misuse for users who frequently change test objects and require rapid testing.

Multiple Parameter Measurements

Parameter measurement is a crucial function for engineers when using an oscilloscope. MSO3000HD series provides 54 measurement parameters, with the capability to display up to 27 measurement parameters simultaneously. Each page of measurement statistics displays 9 parameters, which can be presented in histograms and trend charts. The histogram visually represents the probability distribution of the parameters, while the trend chart reflects parameter changes over time. The parameter snapshot displays 39 test items for single-channel measurement. These include voltage and time measurement parameters, with measured results constantly refreshed during the process. MSO3000HD series introduces a new amplitude calculation strategy, incorporating top and bottom strategies, making it convenient for engineers to utilize the parameter measurement function. Additionally, MSO3000HD series now includes a burst function that displays burst parameters, enabling accurate and immediate analysis of channel measurement data.



Mathematical Operation

MSO3000HD series provides a system of algorithms for complex waveform operations, allowing you to further process waveforms and display the results directly on the oscilloscope.

- Basic operation: +, -, *, ·
- Digital filter (high-pass, low-pass, band-pass and band-limit)
- Custom function operation: analog channel, reference waveform



Navigate and Search

The storage depth of MSO3000HD series is upgraded to 500 Mpts, allowing it to capture tens of thousands of waveforms in one capture. Searching for waveforms manually can be time-consuming for engineers.

MSO3000HD series provides customizable search conditions, which are very useful for locating sampled signals and finding waveforms of interest. With the analysis function, events can be analyzed in detail, eliminating the time-consuming and inconvenient process of manual searches.



Hardware-accelerated Template Test

Using hardware-accelerated template testing, the waveform test can be completed in a few seconds to meet special standards.



Zone Trigger

The zone trigger function serves two purposes: firstly, to isolate occasional abnormal signals, and secondly, to stabilize the waveform display. Only a stable trigger can provide a stable waveform display. With this function, engineers can handle complex and variable signals during debugging. The zone trigger function is easy to use, so engineers don't have to spend time learning how to use it.

A rectangle drawing gesture can quickly isolate a signal to be observed. The waveform does not have to be completely stable to trigger; the zone trigger function can capture a waveform that meets the specified conditions and stabilize it for triggering.



Various Connection

MSO3000HD series offers a wide range of connections with flexibility and convenience.



Wi-Fi connection eliminates the need for cable connections, making instrument connectivity freer and simpler, with wider coverage and a simpler operating setup.









Multiple Control Methods

Control or secondary development through the instruction set conforming to the SCPI standard.



Use UNI-T free instrument manager for control.

It can be controlled by installing instrument management software on the PC side through LAN, WIFI or USB Device.



WebServer

SCPI for remote checking and control

Export waveform files

Browsing the user manual online

PC/Mobile phone access



Performance Characteristics

All specifications are guaranteed, except those marked "typical".

Unless otherwise stated, all the performance characteristics are suitable for the probe that the attenuation switch set to 10x and MSO3000HD series mixed signal oscilloscope.

To meet these specifications, the oscilloscope should first meet the following conditions.

- The instrument must be operated continuously for at least thirty minutes at the specified operating temperature.
- The self-calibration must be performed when the operating temperature reaches or exceeds 5 °C.

Model	MSO3054HD	MSO3034HD	MSO3024HD
Analog bandwidth	500MHz	350MHz	200MHz
Calculated rise time (10 to 90%) (typical)	≤0.80ns	≤1.00ns	≤1.80ns
la a ch (a chach	4 analog channels		
chappel number	16 digital channels	$\langle \rangle$	
	2-channel signal output		
Sampling mode	Real-time sampling		
Acquisition mode	Normal, peak detect, hig	h resolution, averaging, Er	hanced resolution
ERES	Enhanced bit: 1 , 1.5 , 2 ,	2.5 , 3 , 4 (12 to 16-bit)	
Maximum sample rate	Analog channel: 2.5 GSa mode) Digital channel: 1.25 GSa	a/s (interweave mode), 1.2 /s	5 GSa/s (non-interweave
Average	After all channels have reached N samples simultaneously, the number of N times can be selected from 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048, 4096, 8192.		
Memory depth	Auto (limit to 5 Mpts), 25 Max	kpts, 250 kpts, 500 kpts, 5	5 Mpts, 50 Mpts, 100 Mpts,
Maximum	500,000 wfms/s		
capture rate	1,500,000 wfms/s(sequ	ence mode)	
Sequential sampling	Maximum 125,000 frame	s, minimum two trigger in	terval < 700 ns
Hardware real-time	125,000 frames		

waveform	
recording	
and playing	
Screen	10.1 - inch 1280x800 HD capacitive touch screen
Vertical System	(Analog channel)
Input coupling	DC, AC, GND
Input impedance	(1 MΩ±2%) (18 pF±3 pF) 50 Ω± 1.5%
Probe	Voltage probe ratio: 0.001X、0.01X、0.1X、1X、10X、100X、1000X, Custom
attenuation	Current probe ratio: 5 mV/A, 10 mV/A, 50 mV/A, 100 mV/A, 200 mV/A,
factor	500 mV/A, 1V/A, Custom
Maximum input	1 MΩ: 400 V (DC+ACVpk) 135 V _{RMS}
voltage	50 Ω: 5 V _{RMS} Max
Vertical	12-bit (EPES is anabled with a maximum of 16-bit)
resolution	
Vertical scale	500 μV/div to 10 V/div (1 MΩ) 500 μV/div to 1 V/div (50 Ω)
Offset range	 500 μV/div to 50 mV/div: ±2 V (50 Ω and 1 MΩ) 100 mV/div to 1 V/div: ±5 V (50 Ω) 100 mV/div to 1 V/div: ±25 V (1 MΩ) 2 V/div to 10 V/div: ±250 V (1 MΩ) Vertical offset reading: V
Band limit	50 Ω: 20 MHz, Full, Custom
(typical)	1 MΩ: 20 MHz, Full, Custom
Low-frequency response	(AC coupling, -3 dB); ≤5 Hz (on BNC)
DC gain accuracy	<5 mV: ±2% full scale, ≥5 mV: ±1.5% full scale
DC offset accuracy	± (2%+0.1 div+2 mV)
Unit	W, A, V and U, default: V
Channel-to-chan	
nel	DC to maximum bandwidth: >40 dB
isolation(typical)	
Digital channel	
Threshold	8-channel in one group
	TTL (1.4 V)
Inreshold	5.0 V CMOS (+2.5 V), 3.3 V CMOS (+1.65 V)
selection	2.5 V CMOS (+1.25 V), 1.8 V CMOS (+0.9 V)

Datasheet

MSO3000HD Series

	ECL (-1.3 V)	
	PECL (+3.7 V)	
	LVDS (+1.2 V)	
	0 V	
	Custom	
Threshold range	±20.0 V, 20 mV stepping	
Threshold	$\pm (100 \text{ m})/(1 \text{ threshold setting of } 7\%)$	
accuracy		
Dynamic range	±10 V + threshold	
Input impedance	(101 kΩ±1%) (9 pF ± 1 pF)	
Minimum voltage	500 mVpp	
Minimum		
detectable pulse	800 ps	
width(typical)	000 ps	
Vertical		
resolution	1 bit	
Channel-to-chan		
nel deskew	±100 ns	
range		
Horizontal System (Analog channel)		
	200 MHz (2 ns/div to 1 ks/div)	
Time have were	350 MHz (1 ns/div to 1 ks/div)	
Time base range	500 MHz (500 ps/div to 1 ks/div)	
	(simultaneously display the current sampling rate and memory depth)	
Time base	±1 ppm (original accuracy); ±1ppm (the aging rate of first year); ±3.5ppm	
accuracy	(the aging rate of ten years)	
Time base delay	Pre-trigger (negative delay): ≥ 1 screen width	
time range	Post-trigger (positive delay): 1 s to 5 ks	
	Y-T (default)	
	X-Y (CH1-CH2, CH1-CH3, CH1-CH4, CH2-CH3, CH2-CH4, CH3-CH4)	
Time base mode	Roll, time base \ge 50 ms/div, using the horizontal rotary knob to enter or exit	
	Roll mode	
	Scan, time base ≥ 50 ms/div, user can select Roll or Scan mode	
Trigger		
Trigger	CH1 to CH4:	
Sonsitivity	≤ 10 mV/div, The larger value of 1div or 5 mVpp	
Sensitivity	> 10 mV/div, 0.5 div	

	400 mVpp, DC to 10 MHz
	800 mVpp,, 10 MHz to External trigger bandwidth frequency(250 MHz)
	Enable the noise rejection, with trigger sensitivity reducing half
Trigger level	Internal: \pm 5 div from the center of the screen
range	EXT: ± 9 V
Trigger modes	Auto, Normal, Single
Trigger holdoff range	0.0 ps to 10 s
	DC: all signal can pass
Trigger coupling	AC: block DC component of input signal
(typical)	HF reject: suppress high-frequency components of signals above 40 kHz
	LF reject: suppress low-frequency components of signals below 40 kHz
Noise reject	Suppress the high-frequency noise of signal, to reduce the error-touched possibility
Zone Triggering	
Zone	2 Zones; source: CH1 to CH4; Feature: Must Intersect, Must Not Intersect
Edge	
Slope	Rising, Falling, Either
Source	CH1 to CH4, AC Line, EXT, D0 to D15
Runt	
When	>, <, ≤ ≥, None
Polarity	Positive, Negative
Pulse width	3.2 ns to 10 s
Source	CH1 to CH4, D0 to D15
Window	
Polarity	Rising, Falling, Either
When	Enter, Exit, Time
Set	3.2 ns to 10 s
Source	CH1 to CH4
Nth edge	
Slope	Rising, Falling
Idle time	3.2 ns to 10 s
Edge number	1 to 65535
Source	CH1 to CH4, D0 to D15
Delay	
Edge type	Rising, Falling
When	>, <, < >, > <

Datasheet	MSO3000HD Series
Delay time	3.2 ns to 10 s
Source	CH1 to CH4, D0 to D15
Timeout	
Slope	Rising, Falling, Either
Timeout	3.2 ns to 10 s
Source	CH1 to CH4, D0 to D15
Duration	
Code pattern	H, L, X
When	>, <, ≤ ≥
Duration	3.2 ns to 10 s
Source	CH1 to CH4, D0 to D15
Setup and Hold	
Clock edge	Rising, Falling
Data type	H, L
Setup	3.2 ns to 10 s
Hold	3.2 ns to 10 s
Source	CH1 to CH4, D0 to D15
Pulse width	
Polarity	Positive, Negative
When	>, <, ≤ ≥
Pulse Width	0.8 ns to 4 s
Source	CH1 to CH4, AC Line, EXT, D0 to D15
Slope	
Slope	Positive, Negative
When	>, <, ≤ ≥
Time	3.2 ns to 1 s
Source	CH1 to CH4
Video	
Standard	PAL, NTSC, SECAM, 525p/60, 625p/50, 720p/24, 720p/25, 720p/30, 720p/50, 720p/60, 1080i/25, 1080i/30, 1080p/24, 1080p/25, 1080p/30, 1080pfs/24
Source	CH1 to CH4
Pattern	
Code pattern	H, L, X, Rising, Falling
Source	CH1 to CH4, D0 to D15
RS232/UART	
When	Start, FrameErr, CheckErrr, Data

Baud rate	2400 bps, 4800 bps, 9600 bps, 19200 bps, 38400 bps, 57600 bps, 115200
	bps, custom
Data bit	5 bits, 6 bits, 7 bits, 8 bits
Source	CH1 to CH4, D0 to D15
12C	
When	Start, Restart, Stop, Loss, Address, Data, Address & Data
Addr mode	7 bits, 10 bits
Addr range	0 to 7F, 0 to 3 FF
Byte length	1 to 5
Source	CH1 to CH4, D0 to D15
SPI	
Mode	Timeout, CS
When	Start, Data
Timeout	100 ns to 1 s
Data bit	4 bits to 32 bits
Source	CH1 to CH4, D0 to D15
CAN	
Signal type	CAN_H, CAN_L
When	Start, Data Frame, Remote Frame, Error Frame, Over-Load, Identifier, Data,
	Identifier&Data, End of Frame, Missing Ack, Biterror, CRC, Error, ALL Errors
	10 kbps, 19.2 kbps, 20 kbps, 33.3 kbps, 38.4 kbps, 50 kbps, 57.6 kbps, 62.5
Data rate	kbps, 83.3 kbps, 100 kbps, 115.2 kbps, 125 kbps, 230.4 kbps, 250 kbps, 490.8
	kbps, 500 kbps, 800 kbps, 921.6 kbps, 1 Mbps, 2 Mbps, 3 Mbps, 4 Mbps, 5
	Mbps, custom
Source	CH1 to CH4, D0 to D15
CAN-FD	
Signal type	CAN_H, CAN_L
When	Start, Data Frame, Remote Frame, Error Frame, Over-Load, Identifier, Data,
	Identifier&Data, End of Frame, Missing Ack, Bit Error, CRC Error, ALL Errors
	10 kbps, 19.2 kbps, 20 kbps, 33.3 kbps, 38.4 kbps, 50 kbps, 57.6 kbps, 62.5
Data rate	kbps, 83.3 kbps, 100 kbps, 115.2 kbps, 125 kbps, 230.4 kbps, 250 kbps, 490.8
	kbps, 500 kbps, 800 kbps, 921.6 kbps, 1 Mbps, 2 Mbps, 3 Mbps, 4 Mbps, 5
	Mbps, custom
FD data rate	250 kbps, 500 kbps, 800 kbps, 1 Mbps, 1.5 Mbps, 2 Mbps, 4 Mbps, 6 Mbps, 8
	Mbps, custom
Source	CH1 to CH4, D0 to D15
LIN	

Trigger condition	Sync, Identifier, Data, Identifier & Data, Wake Frame, Sleep Frame, Error
Version	v1.x, v2.x, Either
Baud rate	1.2 kbps, 2.4 kbps, 4.8 kbps, 9.6 kbps, 10.417 kbps, 19.2 kbps, 20 kbps, custom
Data length	1 to 8
Source	CH1 to CH4, D0 to D15
FlexRay	
When	Start, Indicators, Identifier, Cycle, Heade, Data, Identifier & data, End frame, Error
Polarity	BM, BDiff/BP
Baud rate	2.5 Mbps, 5 Mbps, 10 Mbps, custom
Source	CH1 to CH4, D0 to D15
Audio	
When	Word, Left, Right, Any
Format	Standard, Left Aligned, Right Aligned, TDM
Source	CH1 to CH4, D0 to D15
MIL-STD-1553B	
When	Sync, Command, Status, Data, Error
Polarity	Positive, Negative
Source	CH1 to CH4
SENT	
When	Fast : Sync, Status, Data, CRC, STAT+Data, S&D +CRC, F_ CRC Error, CONT Pul Err
when	Slow: Sync, Short ID, Short Data, Short CRC, Short ID & data, Enh ID, Enh Data, Enh CRC, Enh ID & data, SLO CH CRC error
Source	CH1 to CH4, D0 to D15
Manchester	
When	Start, Header SEG, Data SEG, Tail SEG, Error
Baud rate	500 bps to 10 Mbps
Source	CH1 to CH4, D0 to D15
ARINC 429	
When	Start bits, End bits, Label, Source/Destination Identifier, Data, Signal/Status
	Matrix, Label & bits, Parity error, Bit Error, Gap Error, All Error
Source	CH1 to CH4
Decoding	
Number of	4
decodes	
Decoding type	Standard: RS232/UART, I2C, SPI

	Option: CAN, CAN-FD, LIN, FlexRay, Audio, MIL-5TD-1553B, SENT,
	Manchester, ARINC 429
Darallal	Up to 18 bits parallel bus decoding, supports the combination of analog
Falallel	channel and digital channel and supports custom time setting
Source	CH1 to CH4, D0 to D15
Measurement	
	Voltage difference between cursors ($ riangle Y$)
	Time difference between cursors ($ riangle X$)
Cursor	Reciprocal of $\triangle X$ (Hz) (1/ $\triangle X$)
	Voltage and time of waveform point
	Display the cursor in the automatic measurement
	Analog channel: 54 kinds of parameter
	Maximum, Minimum, Top, Base, Amplitude, Middle, Peak-Peak, Average,
	Average-Cycles, RMS, RMS-Cycles, AC RMS, AC RMS-Cycles, Area,
	Area-Cycles, +Area, -Area, +Area-Cycles, -Area-Cycles, +Overshoot,
	-Overshoot, +Preshoot, -Preshoot, Period, Frequency, Rise time, Fall time,
Automatic	+Width, -Width, +Duty, -Duty, +Pulse count, -Pulse count, Rising edge count,
measurements	Falling edge count, Burst width, Burst Interval, Burst Period, Burst Per count,
	Ratio, Period Ratio, Setup time, Hold time, Setup & Hold Ratio, FRFR, FRFF,
	FFFR, FFFF, FRLF, FRLR, FFLF, Phase(r-r), Phase(f-f)
	Digital channel:
	Frequency, Period, +Width, -Width, +Duty, -Duty, Rising delay A \rightarrow B, Falling
	delay $A \rightarrow B$, Phase $A \rightarrow B$, Phase $B \rightarrow A$
Measurement	Common measurement and accuracy measurement (Full memory hardware
mode	measurements)
Measurement	Simultaneously display 27 kinds of parameter measurement
type	
Measurement	Main time base. Zoom time base. Cursor area
range	
Measurement	Mean Maximum Minimum Std Dev Count Tendency chart Histogram
statistics	
XY measurement	Time, Cartesian, Polar, Product, Ratio
Analysis	Frequency Counter, DVM, Pass/Fail, Waveform recording, Bode plot, Power
/ mary 515	Analysis
Math	
Waveform math	A+B, A-B, A×B, A÷B, Advanced, Filter
Filter	Low pass, High pass, Band pass, Band stop
Operation	0,1,2,3,4,5,6,7,8,9 (+, -, *, /, , >, <, &&, , ==, !=)

Function	sin, cos, sinc, tan, sqrt, exp, lg, ln, floor, abs, acos, asin, atan, sinh, tanh, ceil, cosh, fabs, intg, diff			
FFT				
Channel number	4			
Window types	Hanning, Hamming, Rectangle, Blackman			
FFT count	Up to 4 Mpts			
FFT vertical scale	Vrms, dB			
	Waterfall: ON, OFF			
	Spectrum range: Start frequency, Stop frequency, Center frequency, Span			
FFT	Four traces: Normal, Average, Max Hold, Min Hold			
	Marker: Marker type, Marker Points, Marker list			
Storage				
Setting	Set Status (.set)			
Waveform	Waveform data (*.dat) (*.csv) (*.bsv)			
lmage	Image storage (*.bmp) (*.png) (*.jpg)			
Report	Decoding Event List (*.csv) (*.pdf) (*.html)			
Gen (Option)				
Channel	2			
Sample rate	250 MSa/s			
Vertical				
resolution				
Maximum	50 MHz			
frequency				
Standard	Sine, Square, Ramp, Noise, DC and Arbitrary wave			
Built-in arbitrary	200 types including Sinc, ExpRise, ExpFall, Cardiac, Gauss, Lorentz, and HaverSine			
	Frequency range: 1 µHz to 50 MHz			
	Flatness: ±0.5 dB (relative 1 kHz)			
Sine wave	Harmonic distortion: -40 dBc			
Sine wave	Non-harmonic spurious (typ): -40 dBc			
	Total harmonic distortion: 1% (DC to 20 kHz, 1Vpp)			
	SNR: 40 dB			
	Frequency range			
2	Square wave: 1 μHz to 15 MHz; Pulse wave: 1 μHz to 15 MHz			
Square wave/Pulse wave	Rising/falling time: <13 ns (typical 1kHz, 1Vpp. 50 Ω)			
	Overshoot: typical 2% (1 kHz, 1 Vpp, 50 Ω)			
	Duty ratio			

	Square wave: 1% to 99%, adjustable; Pulse wave: 1% to 99%, adjustable			
	Resolution of duty ratio: 1% or 10 ns (take the greater value of both)			
	Minimum pulse width: 20 ns			
	Resolution of pulse width: 10 ns			
	Jitter: 2 ns			
	Frequency range: 1 µHz to 400 kHz			
Ramp wave	Linearity: 1%			
	Symmetry: 0.1% to 99.9%			
Noise	Bandwidth: 50 MHz (typical)			
	Frequency range: 1 µHz to 5 MHz			
Arbitrary wave	Waveform length: 8 k			
	Internal save position: 200			
	Accuracy: ± 1 ppm (original accuracy); ± 1 ppm (the aging rate of first year); \pm			
Frequency	3.5ppm (the aging rate of ten years)			
	Resolution: 1 µHz			
	Output range: 20 mVpp to 6 Vpp (high resistance); 10 mVpp to 3 Vpp (50 Ω)			
Amplitude	Resolution: 1 mV			
	Accuracy (Typical value: 1 kHz, sine wave, 0V, deviation): ± (5%+2 mVpp)			
	Range: ±3 V (high resistance); ±1.5 V (50 Ω)			
DC offset	Resolution: 1 mV			
	Accuracy: ± (offset set value 5%+2 mV)			
AM				
Carrier wave	Sine, Square, Ramp, Arbitrary wave			
Source	Internal			
Modulated wave	Sine, Square, Rising ramp, Falling ramp, Noise, Arbitrary wave			
Modulation	2 mHz to 50 kHz			
frequency				
Modulation	0% to 120%			
depth				
FM				
Carrier wave	Sine, Square, Ramp, Arbitrary wave			
Source	Internal			
Modulated wave	Sine, Square, Rising ramp, Falling ramp, Noise, Arbitrary wave			
Modulation frequency	2 mHz to 50 kHz			
Deviation	12.5 MHz (maximum)			

ASK			
Carrier wave	Sine, Square, Ramp, Arbitrary wave		
Modulated wave	Square wave (Duty ratio 50%)		
Modulation	2 mHz to 50 kHz		
frequency			
FSK			
Carrier wave	Sine, Square, Ramp, Arbitrary wave		
Modulated wave	Square wave (Duty ratio 50%)		
Modulation	2 mHz to 50 kHz		
frequency			
Hopping	Any frequency within the range of the Carrier wave signal		
frequency			
Sweep			
Mode	Linear, Logarithmic		
Sweep time	1 ms to 500 s		
Start and stop	Any frequency within the range of the waveform		
frequency			
Display			
Screen	10.1 - inch multi-touch capacitive screen		
Resolution	1280×RGB×800 vertical pixel		
Color	24-bit true colors		
Persistence	Auto, 50 ms, 100 ms, 200 ms, 500 ms, 1 s, 5 s, 10 s, 20 s, infinite, close		
Display type	Point, Vector		
Real-Time clock	Time and data (user-defined)		
Waveform	1% to 100% (default 50%)		
Intensity			
Grid Intensity	0% to 100% (default 50%)		
Backlight	1% to 100% (default 50%)		
Intensity			
Transparent	0% to 100% (default 50%)		
Bode plot (option)			
Start frequency	50 Hz to 50 MHz		
Stop frequency	60 Hz to 50 MHz		
Count	1 to 1000		
Amplitude	High resistance: 20 mVpp to 6 Vpp		
50Ω: 10 mVpp to 3 Vpp			
DVM (typical)			

Datasheet	MSO3000HD Series	
Source	Analog channel	
Mode	DC, AC+DC RMS, AC RMS	
Resolution	4-bit	
Buzzer	Beeps when the specified limit values are reached or exceeded	
Frequency Cour	iter	
Source	any analog channel and digital channel	
Measurement	Frequency, Period, Totalizer	
Counter	The maximum effective digits are 7, and the refresh time and effective digits are adjustable.	
Maximum		
measurement	Maximum bandwidth of analog channel	
frequency		
Time reference	Internal reference: ±1 ppm (original accuracy); ±1ppm (the aging rate of first year); ±3.5ppm (the aging rate of ten years)	
Interface		
USB-Host 3.0	1 on the front panel, 2 on the rear panel 🔶	
USB-Device 3.0	1 on the rear panel	
LAN	LAN (VXI11), 10/100/1000 Base, RJ-45	
AUX Out	Trig Out, Pass/Fail, DVM	
Gen Out	2 on the front panel	
10MHz reference	50 Ω , amplitude 400 mVpp to 4.5 Vpp (-3.979 dBm, 17.044 dBm), frequency	
input	10 MHz ± 10 ppm	
10MHz reference output	50 Ω , 1.65 Vpp square wave	
HDMI ¹	1 port for external display or projector	
WIFI	802.11b/g/n, WPA-PSK	
General technic	al specification	
Probe compensation	ator output	
Output voltage	3 Vp-p	
Frequency	10 Hz ,100 Hz, 1 kHz (default), 10 kHz	
Power Source		
Power source	100 V to 240 VAC (fluctuate: ±10%), 50 Hz/60 Hz	
voltage	100 V to 120 VAC (fluctuate: ±10%), 400 Hz	
Power consumption	120 W Max	
Fuse	3 A, F-class, 250 V	
Environmental		

Tomporaturo	Operating: 0°C to +40°C					
remperature	Non-operating: -20°C to +70°C					
Cooling	Forced cooling by fan					
Humidity	Operating: below +35 °C, relative humidity ≤90%; non-operating: +35 °C to +40 °C, relative humidity ≤60%					
Altitude	Operating: below 3,000 meters; non-operating: below 15,000 meters					
Pollution degree	2					
Operating						
environment	In-door					
Mechanical Spec	cifications					
Dimension (W×H ×D)	364 mm×209 mm×106 mm					
Weight	3.83 kg					
Calibration inter	rval					
Calibration interva	l 1 year					
Safety Regulation	ons		•			
	IEC 61326-1:202 IEC 61326-2-1:20 Conducted	CISPR 11/EN 55011	CLASS B group 1, 150 kHz-30 MHz			
	Radiation disturbance	CISPR 11/EN 55011	CLASS B group 1, 30 MHz-1 GHz			
	(ESD)	IEC 61000-4-2/EN 61000-4-2	4.0 kV (contact), 8.0 kV (air)			
Electromagnetic	Radio	Radio IEC 61000-4-3/EN	0V/m (80 MHz to 1 GHz)			
compatibility	consitivity		3V/m (1.4 GHz to 2 GHz)			
compationity			1V/m (2.0 GHz to 2.7GHz)			
	Electrical fast transient (EFT)	IEC 61000-4-4/EN 61000-4-4	2kV (AC input)			
	Surge	IEC 61000-4-5/EN 61000-4-5	1kV (live to zero) 2kV (live/zero to ground)			
	Radio continuous sensitivity	IEC 61000-4-6/EN 61000-4-6	3V, 0.15-80 MHz			
	Voltage dip and short-term	IEC 61000-4-11/EN 61000-4-11	Voltage dip: 0% UT during 1 cycle			

	interruption	40% UT during 10/12 cycles
		70% UT during 25/30 cycles
		Short-term interruption: 0% UT
		during 250/300 cycles
	EN 61010-1:2010+A1:2019	
	EN IEC61010-2-030:2021+A11:2021	
	BS EN61010-1:2010+A1:2019	
Safety	BS EN IEC61010-2-030:2021+A11:2021	
specification	UL61010-1:2012 Ed.3+ R:19 Jul2019	
	UL61010-2-030:2018 Ed.2	
	CSA C22.2#61010-1:2012 Ed.3+U1;U2;/	A1
	CSA C22.2#61010-2-030:2018 Ed.2	

Remarks

1: only support standard HDMI, not support other adapters.

Order information

	Description	Order No.	
	MSO3054HD (500 MHz, 2,5 GSa/s, 4 analog	MSO3054HD	
Model	MSO3034HD(350 MHz,2.5 GSa/s, 4 analog	MS03034HD	
Houer	channels)	11303034110	
	MSO3024HD (200 MHz, 2.5 GSa/s, 4 analog		
	channels)	MSU3024HD	
	National standard cable x 1		
0	USB3.0 cable x 1	UT-D30	
Standard	BNC-BNC direct-through line x 1	UT-L45	
accessories	BNC-red and black alligator connecting wire x 1	UT-L02A	
	Passive probe (500 MHz/350 MHz/200 MHz) x 4	UT-P07A/UT-P08A/UT-P05	
Optional	200MHz Upgrade to 500MHz Bandwidth	MSO3000HD-BW2MT5M	
	200MHz Upgrade to 350MHz Bandwidth	MSO3000HD-BW2MT3M5	
	350MHz Upgrade to 500MHz Bandwidth	MSO3000HD-BW3M5T5M	
accessories	All serial bus triggering and decoding options	MSO3000HD-BND	
	Automobile serial bus triggering and decoding	MSO3000HD-AUTO	
	option(CAN, CAN-FD, LIN, FlexRay, SENT)		

Automotive serial bus triggering and decoding option CAN	MSO3000HD-CAN
Automotive serial bus triggering and decoding option CAN-FD	MSO3000HD-CAN-FD
Automotive serial bus triggering and decoding option LIN	MSO3000HD-LIN
Automotive Serial Bus Trigger and decoding Option FlexRay	MSO3000HD-FLEX
Automotive sensor serial bus triggering and decoding option SENT	MSO3000HD-SENT
Audio serial bus triggering and decoding option Audio	MSO3000HD-AUDIO
Aerospace serial bus triggering and decoding Option MIL-STD-1553	MSO3000HD-MIL1553
Aerospace serial bus triggering and decoding Option ARINC429	MSO3000HD-ARINC429
Wireless communication serial bus triggering and decoding option MANCHESTER	MSO3000HD-MANCH
Dual channel function/arbitrary waveform generator (Includes Bode Plot)	MSO3000HD-AWG
Power analysis	MSO3000HD-PWR
Isolation transformer	UT-ISOT
High voltage probe	UT-V23/UT-P21/UT-P20
	UT-P30/UT-P31/UT-P32/
High voltage differential probe	UT-P33/UT-P35/UT-P36
Active probe (single end)	UT-PA2000
	UT-P40/UT-P41/UT-P42/
Current probe	UT-P43/UT-P44/UT-P4030
	D/UT-P4150/UT-P4500/P4
	100A/P4100B

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

Oscilloscope probes and accessories

Passive probe

Model	Туре	
UT-P01	- High resistance probe	1X: DC to 8 MHz 10X: DC to 25 MHz Oscilloscope compatibility: all series of UNI-T
UT-P03	High resistance probe	1X: DC to 8 MHz 10X: DC to 60 MHz Oscilloscope compatibility: all series of UNI-T
UT-P04	High resistance probe	1X: DC to 8 MHz 10X: DC to 100 MHz Oscilloscope compatibility: all series of UNI-T
UT-P05	High resistance probe	1X: DC to 8 MHz 10X: DC to 200 MHz Oscilloscope compatibility: all series of UNI-T
UT-P06	High resistance probe	1X: DC to 8 MHz 10X: DC to 300 MHz Oscilloscope compatibility: all series of UNI-T
UT-P07A	High resistance probe	10X: DC to 500 MHz Input resistance:10 MΩ Maximum of operating voltage: <600V pk Oscilloscope compatibility: all series of UNI-T

UT-P08A		10X: DC to 350 MHz		
	High	Input resistance: 10 M Ω		
$= \cap$	resistance	Maximum of operating voltage: <600V pk		
	probe	Oscilloscope compatibility:		
		all series of UNI-T		
UT-P20	_	DC to 100 MHz		
	High	Probe coefficient 100:1		
	resistance	Maximum of operating voltage: 1500 Vrms		
\equiv ()	probe	Oscilloscope compatibility:		
00 ===		all series of UNI-T		
UT-V23		DC to 100 MHz		
	-	Probe coefficient 100:1		
-	High voltage	Input resistance: 100 MΩ±2%		
	probe	Maximum of operating voltage: 2000 Vpp		
		Oscilloscope compatibility:		
		all series of UNI-T		
UT-P21		DC to 50 MHz		
	-	Probe coefficient 1000:1		
	High voltage	Maximum of operating voltage: DC 15		
	probe kVrms, AC 10 kV (sine wave)			
in		 Oscilloscope compatibility: 		
		all series of UNI-T		
Current probe				
Model	Type			
	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
	-	DC to 100 kHz		
	Current	Range: 50 mV/A, 5 mV/A		
	probo	Current range: 0.4 A to 60 A		
	probe	Maximum of operating voltage: 600 Vrms		
O		Oscilloscope compatibility: all series of UNI-T		
UT-P41				
	-	DC to 100 kHz		
	Current	Range: 100 mV/A, 10 mV/A		
	probe	Current range: 0.4 A to 100 A		
		Maximum of operating voltage: 600 Vrms		
A Com		Oscilloscope compatibility: all series of UNI-T		

UT-P42		DC to 150 kHz
	_	Range: 100 mV/A, 10 mV/A
	Current	Current range: 0.4 A to 200 A
	probe	Maximum of operating voltage: 600 Vrms
		Oscilloscope compatibility:
		all series of UNI-T
UT-P43		DC to 25 MHz
	-	Range: 100 mV/A
	Current	Maximum test current: 20 A
	probe	Rising time: 14 ns
		Oscilloscope compatibility:
		all series of UNI-T
UT-P44		DC to 50 MHz
	-	Range: 50 mV/A
	Current	Maximum test current: 40 A
	probe	Rising time: 7 ns
		Oscilloscope compatibility:
		all series of UNI-T
UT-P4030D		Bandwidth: DC to 100 MHz
		Rising time: ≤3.5 ns
	High-freque	Range selection: 30 A/5 A
0	ncy current	Maximum test current: 30 A
0	probe	Voltage of insulated line: 300 V CAT I
		Oscilloscope compatibility:
		all series of UNI-T
UT-P4150		Bandwidth: DC to 12 MHz
	-	Rising time: ≤29 ns
	High-freque	Range selection: 150 A/30 A
600		Maximum test current: 150 A
	ncy current	Voltage of insulated line: 600 V CATII 300 V
2 2	probe	CATIII
		Oscilloscope compatibility:
		all series of UNI-T
UT-P4500		Bandwidth: DC to 5 MHz
	— High-freque ncy current probe	Rising time: ≤70 ns
		Range selection: 500 A/75 A
		Maximum test current: 500 A
		Voltage of insulated line: 600V CATII 300 V
		CATIII

		Oscilloscope compatibility:
		all series of UNI-T
UT-P4100A		Bandwidth: DC to 600 kHz
		Rising time: ≤583 ns
		Maximum test current: 100 A
	Low-frequen	Range selection: 100 A/10 A
	cy current	Range sensitivity: 0.1 V/A, 0.01 V/A
	probe	Common-mode voltage RMS: CATI 600 V
		CATII 600 V CATIII 300 V
		Oscilloscope compatibility:
		all series of UNI-T
UT-P4100B		Bandwidth: DC to 2 MHz
		Rising time: ≤175 ns
		Maximum test current: 100 A
	Low-frequen	Range selection: 100 A/10 A
۳)	cy current	Range sensitivity: 0.1 V/A, 0.01 V/A
$\langle \mathbf{n} \rangle$	probe	Common-mode voltage RMS: CATI 600 V
		CATIL600 V CATIII 300 V
		Oscilloscope compatibility:
		all series of UNI-T
	0	
Active probe		
Model	Type	
	1,100	10X: DC to 2 GHz
	Active	Input capacitance: ≤1 pF
	single-ended	Dynamic range: ±7 V (DC or peak AC)
	probe	Oscilloscope compatibility:
	P. 000	MSO7000X/MSO3000X/MSO3000HD series
UT-P30		
		DC to 100 MHz
		Attenuation ratio 100:1,10:1
	anterential	Input differential-mode voltage: ±800 Vpp
	probe	Oscilloscope compatibility: all series of UNI-T

UT-P31	_	
	High voltage differential probe	DC to 100MHz Attenuation ratio 1000:1,100:1 Input differential-mode voltage: ±1.5 kVpp Oscilloscope compatibility: all series of UNI-T
UT-P32		
	High voltage differential probe	DC to 50 MHz Attenuation ratio 1000:1,100:1 Input differential-mode voltage: ±3 kVpp Oscilloscope compatibility: all series of UNI-T
UT-P33		
	High voltage differential probe	DC to 120 MHz Attenuation ratio 100:1,10:1 Input differential-mode voltage: ±14 kVpp Oscilloscope compatibility: all series of UNI-T
UT-P35		DC to 50 MHz
	-	Attenuation ratio 500:1,50:1
	K	Rising time: 7 ns
		Accuracy: 2%
	High voltage	Input differential-mode voltage:
	differential	1/50:130 (DC+peakAC)
	probe	1/500:1300 (DC+peakAC)
		Input common-mode voltage:
		100 Vrms, CATI
		600 Vrms, CATII
		Oscilloscope compatibility: all series of UNI-T
UT-P36		DC to 50 MHz
		Attenuation ratio 2000:1,200:1
	High voltage	Rising time: 3.5 ns
		Accuracy: 2%
		Input differential-mode voltage:
	differential	1/200:560 (DC+peakAC)
	probe	1/2000:5600 (DC+peakAC)
		Input common-mode voltage:
		2800 Vrms, CATI
		1400 Vrms, CATII
		Oscilloscope compatibility: all series of UNI-T

Options ordering and installation

- 1. **Purchase options:** Based on your requirements, please purchase the specified function options from UNI-T Sales Personnel and provide the serial number of the instrument that needs the option installed.
- 2. **Receive certificate:** You will receive the license certificate based on the address provided in the order.
- 3. **Register and obtain license:** Visit the UNI-T official website license activation session for registration. Use the license key and instrument serial number provided in the certificate to obtain the option license code and license file.
- 4. Install the option: Download the option license file to the root directory of a USB storage device device, and connect the USB storage device to the instrument. Once the USB storage device is recognized, the Option Install menu will be activated. Press this menu key to begin installing the option.

Limited Warranty and Liability

Uni-T guarantees that the Instrument product is free from any defect in material and workmanship within three years from the purchase date. This warranty does not apply to damages caused by accident, negligence, misuse, modification, contamination, or improper handling. If you need a warranty service within the warranty period, please contact your seller directly. Uni-T will not be responsible for any special, indirect, incidental, or subsequent damage or loss caused by using this device. For the probes and accessories, the warranty period is one year. Visit instrument.uni-trend.com for full warranty information.



Learn more at: <u>www.uni-trend.com</u>



Register your product to confirm your ownership. You will also get product notifications, update alerts, exclusive offers and all the latest information you need to know.

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