UNI-T

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# UPO1000HD Series

# High-Resolution Oscilloscopes

## Data Sheet

V1.1

August. 2025

# Product Introduction

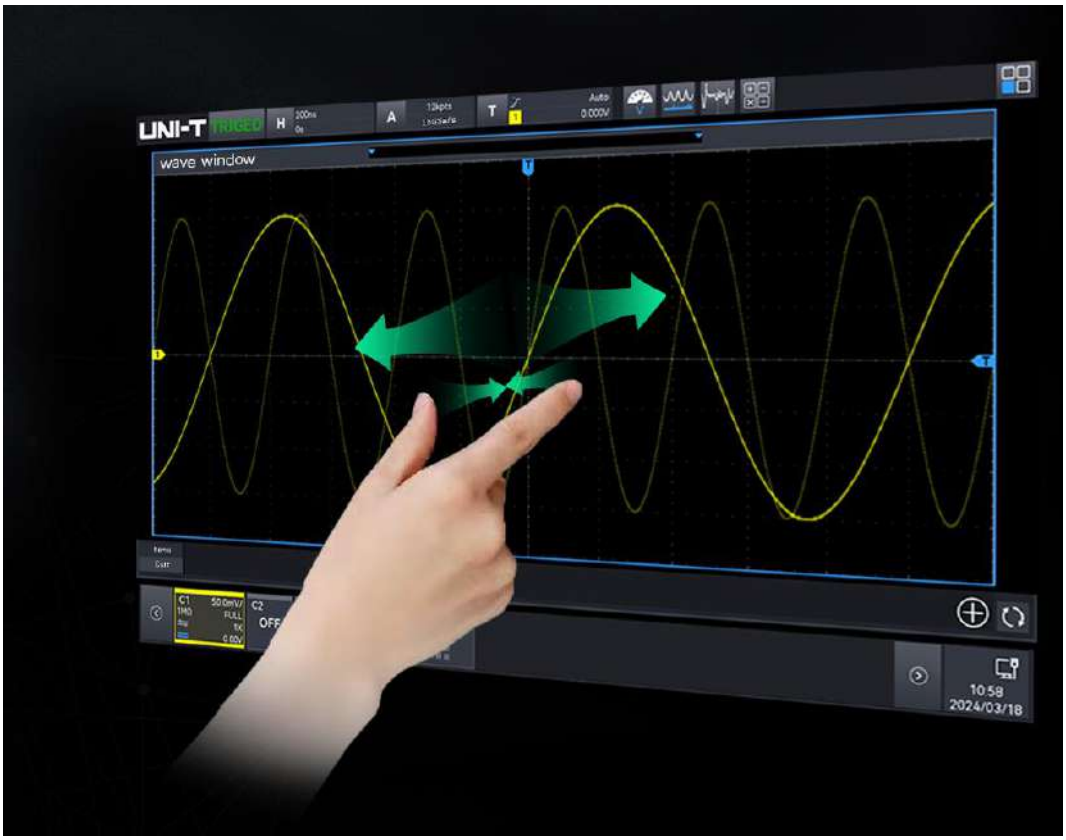
High-Resolution 1000HD series high-resolution oscilloscope has the maximum bandwidth of 150 MHz, the maximum sampling rate of 1.25 GSa/s, and is equipped with 4/2 analog channels , with the memory depth of up to 100 Mpts. High-Resolution 1000HD series adopts exclusive Ultra Phosphor 3.0 technology, achieving the waveform capture rate of up to 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, hardware-accelerated template testing, and search and navigation. Additionally, this oscilloscope provides multiple measurements and mathematical operations.

High-Resolution 1000HD series features a 7-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.

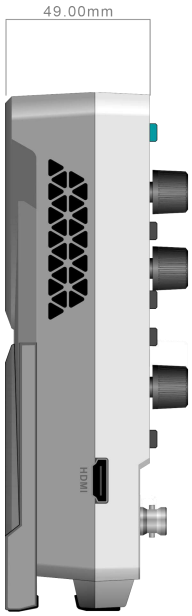
# Mainstream Touchscreen Design Providing Intelligent Interactive Experience

Featuring a 7-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 helps 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

High-Resolution 1000HD 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, enhances the overall sense of the instrument.


# Features and Advantages

- Analog channel bandwidth: 150 MHz/80 MHz
- Real-time sampling rate of the analog channel is up to 1.25 GSa/s.
- 12-bit vertical resolution, with up to 4096 points, ensures that the waveform details are clearly visible.
- 4/2 analog channels and the memory depth of up to 100 Mpts
- The maximum waveform capture rate is up to 100,000 wfms/s (sequence mode: 500,000 wfms/s)
- 6 instrument functions: Digital oscilloscope, spectrum analyzer, digital voltmeter, frequency meter, protocol analyzer,and power analyzer.
- Parameter measurement adds Bar Chart and line graph display
- Uninterrupted hardware real-time waveform recording and analysis of up to 100,000 frames and supports USB memory export function.
- Enhanced FFT of up to 1M points, supporting the spectrum analyzer functions such as frequency setting, waterfall curve, detection setting, and marker.
- 56 kinds of parameter measurements
- Multi-Windows display
- Multi-channel 6-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, $I^2C$, SPI, CAN, LIN
- 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.
- 7-inch 1024x600 HD capacitive multi-touch screen, supporting gesture control such as click, slide, zoom, edit, and drag
- Multiple peripheral interfaces: USB Host, USB Device, LAN, AUX Out (Trig Out, Pass/Fail, DVM), 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

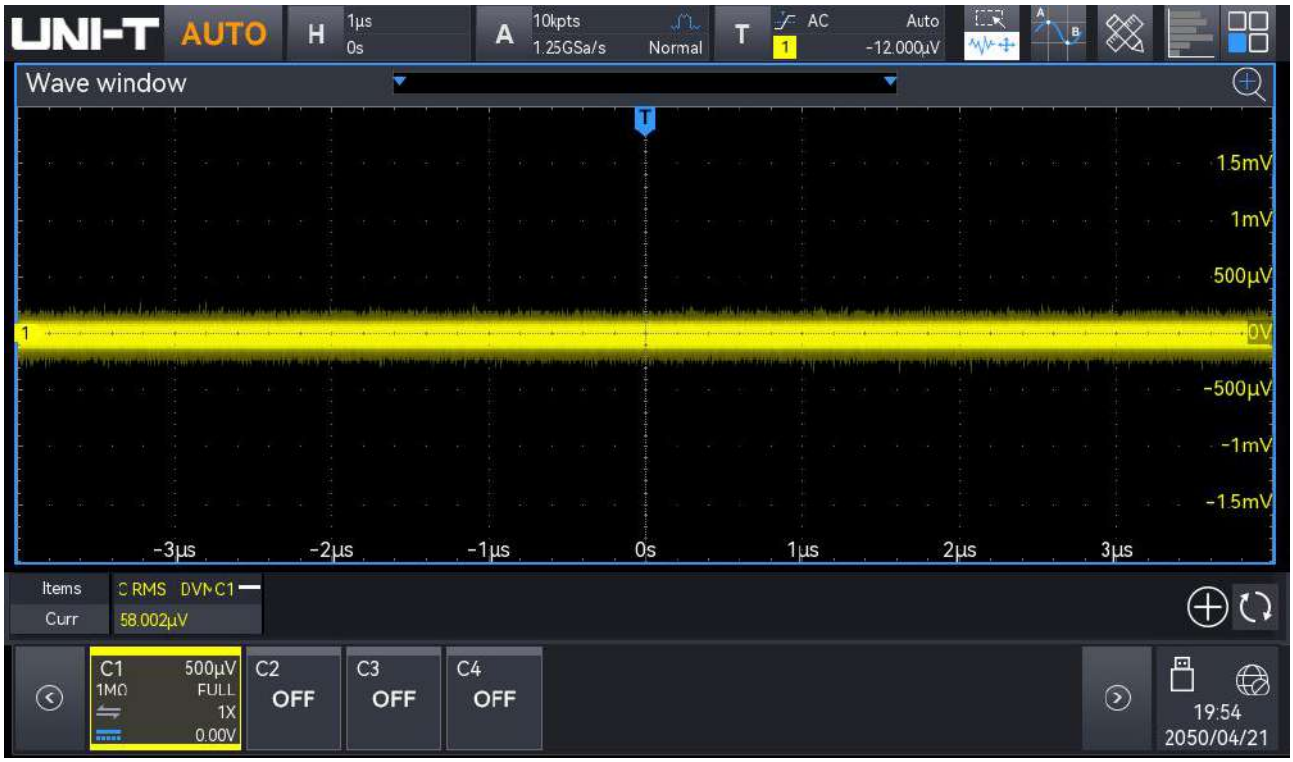
# Design Features

## 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.

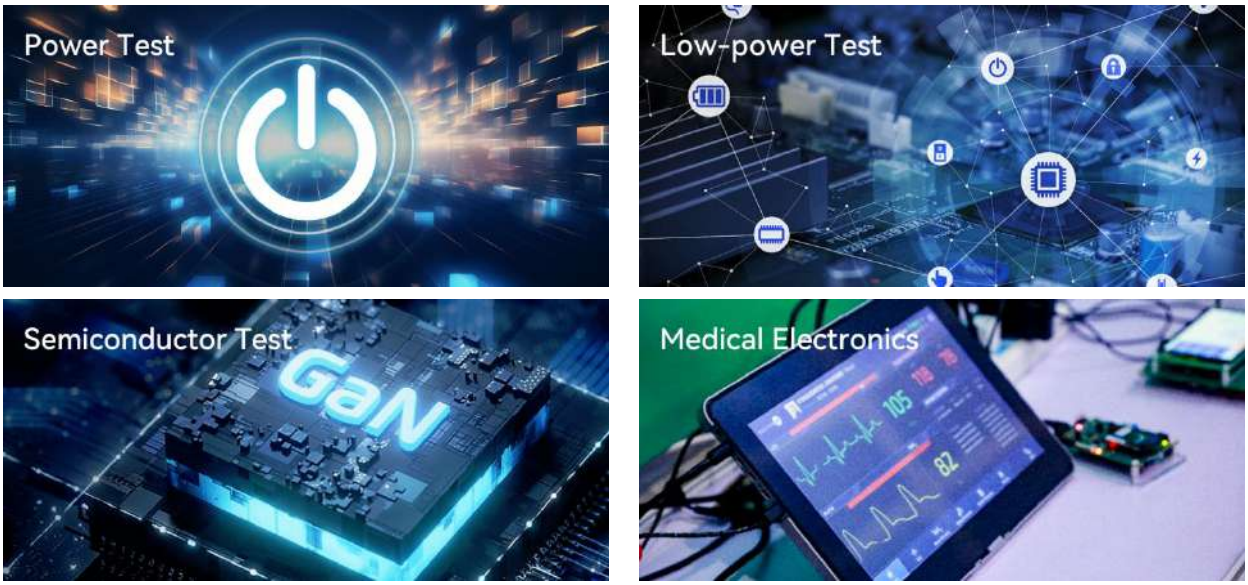
8-bit


12-bit




The excellent background noise, which is only 60 µVrms at the full bandwidth of 150 MHz, allows the 12-bit ADC to perform optimally.

## Application Scope

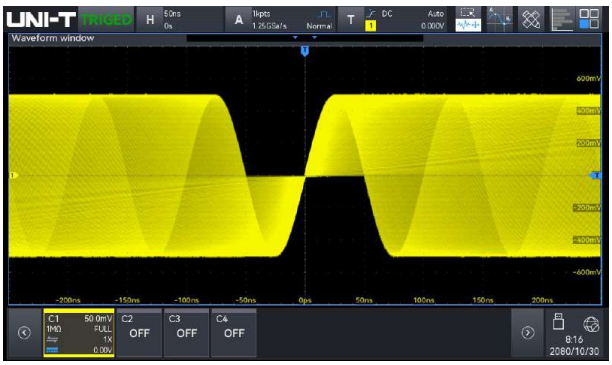



# Cost-effective, Six-in-one Integrated Oscilloscope

High-Resolution 1000HD series integrates six instrument functions, including a digital oscilloscope, spectrum analyzer, digital voltmeter, high-precision frequency meter, protocol analyzer, and power analyzer. This is a cost-effective oscilloscope for users.

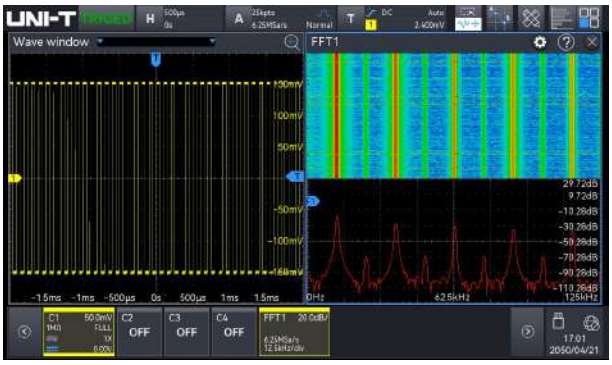
## Digital Oscilloscope

- Bandwidth: 150 MHz/80 MHz
- Maximum real-time sampling rate: 1.25 GSa/s
- Maximum memory depth: 100 Mpts
- 4 analog channels




## Spectrum Analyzer

- Standard enhanced FFT with up to 1 Mpts for 4-channel signal analysis
- Frequency range: 0 to 625 MHz
- 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

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

## Protocol Analyzer

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

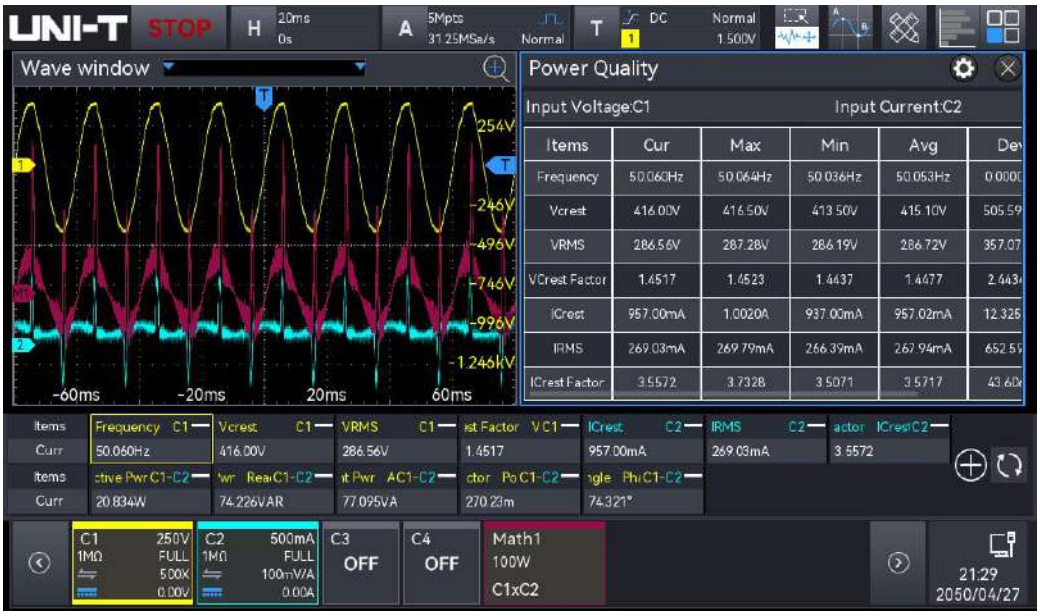

| Name | Description | Standard |
|---|---|---|
| Computer serial bus triggering and analysis | RS-232/422/485/UART | Standard |
| Embedded serial bus triggering and analysis | $I^2C$, SPI | Standard |
| Automobile serial bus triggering and analysis | CAN | Standard |
| Automobile serial bus triggering and analysis | LIN | Standard |

## Power Analyzer

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.

High-Resolution 1000HD 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
- Current harmonics
- Rds (on)
- Switching loss
- Conversion rate
- Safe operating area
- Modulation analysis
- Output ripple
- Startup/shutdown time
- Transient response *
- Power efficiency *

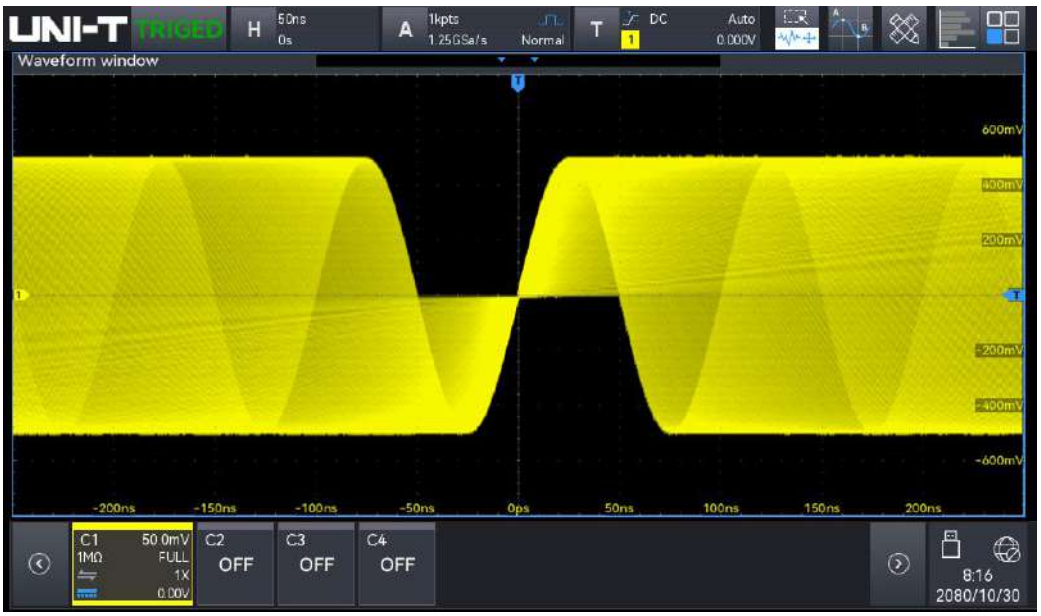



"*" indicates features being added. Power analysis support is subject to the latest firmware available on the official website.

## 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.

High-Resolution 1000HD 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 serial graphics mapping, with a processing rate of up to 20 Gbps and the waveform capture rate of up to 100,000 wfms/s, and up to 0.5 million 2.2 ns 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.

## Type-C for Power Supply

High-Resolution 1000HD series adopts the latest Type-C power supply method. When no power source is available outdoors, it can be powered by a portable charger.

## Wall-mounted Interface

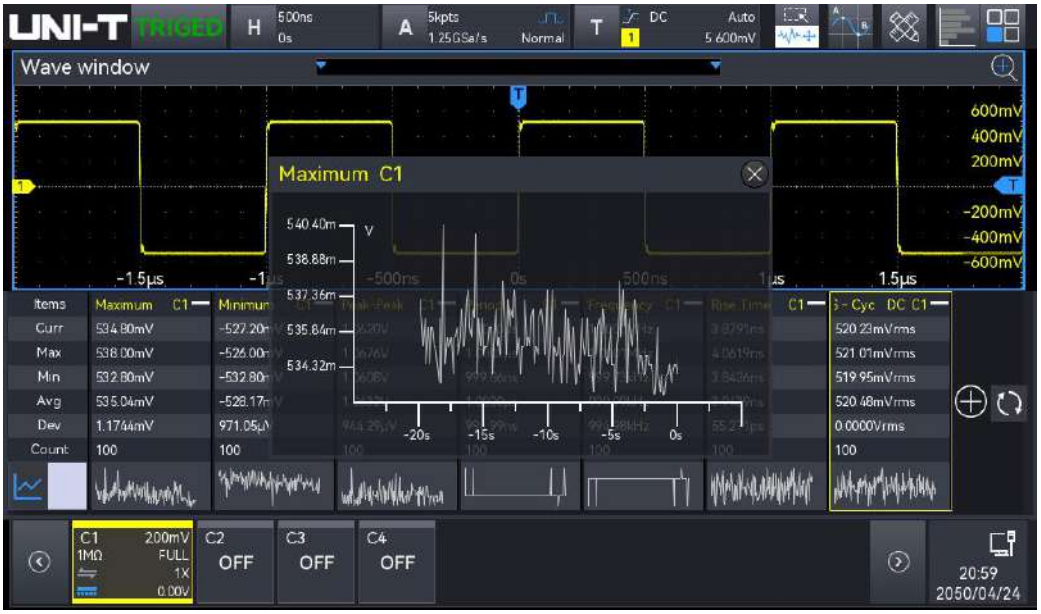
In a crowded laboratory or other limited-space environments, the wall-mounting option provides a more convenient and flexible way to use High-Resolution 1000HD series without occupying valuable workspace. The wall-mounted interface on the rear panel measures 100 mm x 100 mm.

## Multiple Parameter Measurements

Parameter measurement is a crucial function for engineers when using an oscilloscope. High-Resolution 1000HD series provides 56 measurement parameters, with the capability to display up to 21 measurement parameters simultaneously. Each page of measurement statistics displays 7 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. High-Resolution 1000HD series introduces a new amplitude calculation strategy, incorporating both top and bottom measurement methods. Parameters related to RMS (root mean square), burst, setup, and hold can be configured, making it easier for engineers to utilize the

parameter measurement function and enabling accurate, real-time analysis of channel measurement data.




## Mathematical Operation

High-Resolution 1000HD 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 and Math waveform

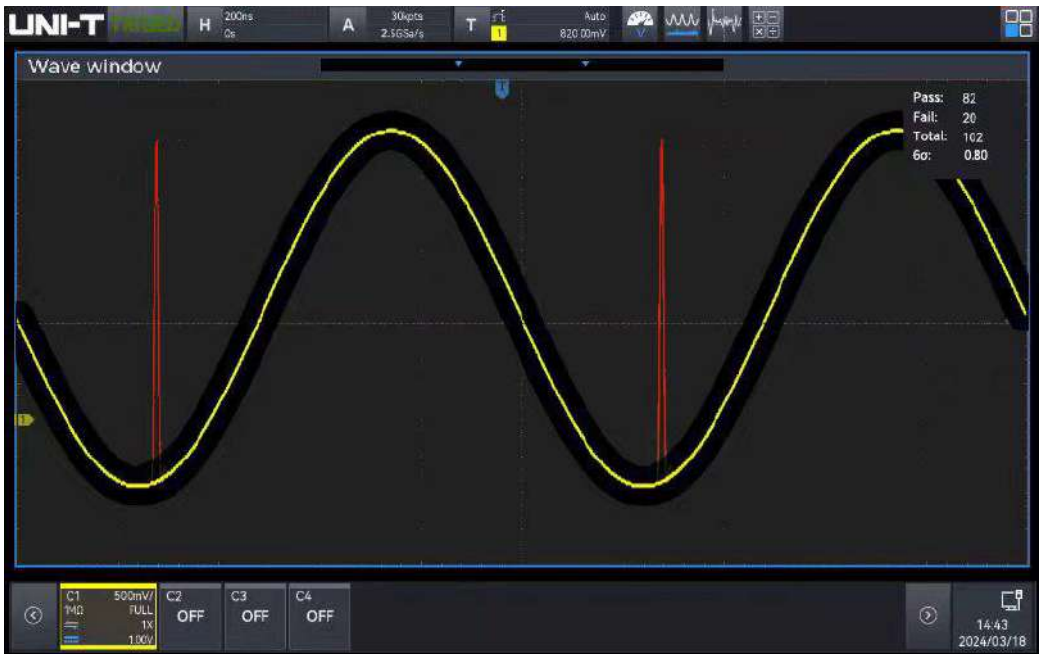
# Navigation and Search

The memory depth of High-Resolution 1000HD series is 100 Mpts, allowing it to capture tens of thousands of waveforms in one capture. Searching for waveforms manually can be time-consuming for engineers.

High-Resolution 1000HD 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.



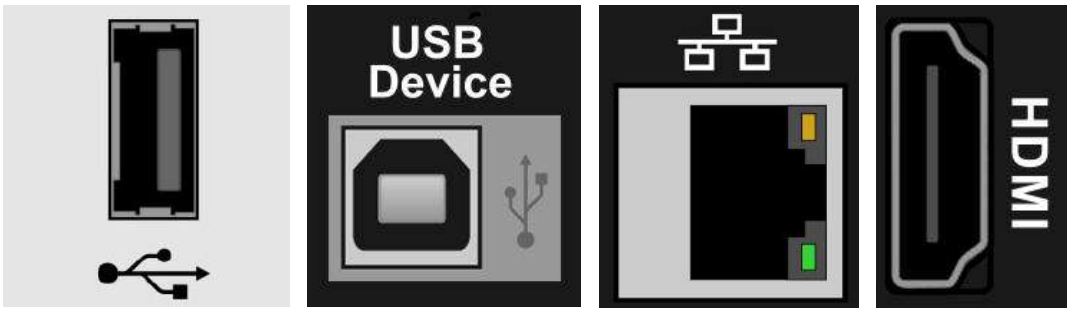

# Zone Trigger

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.

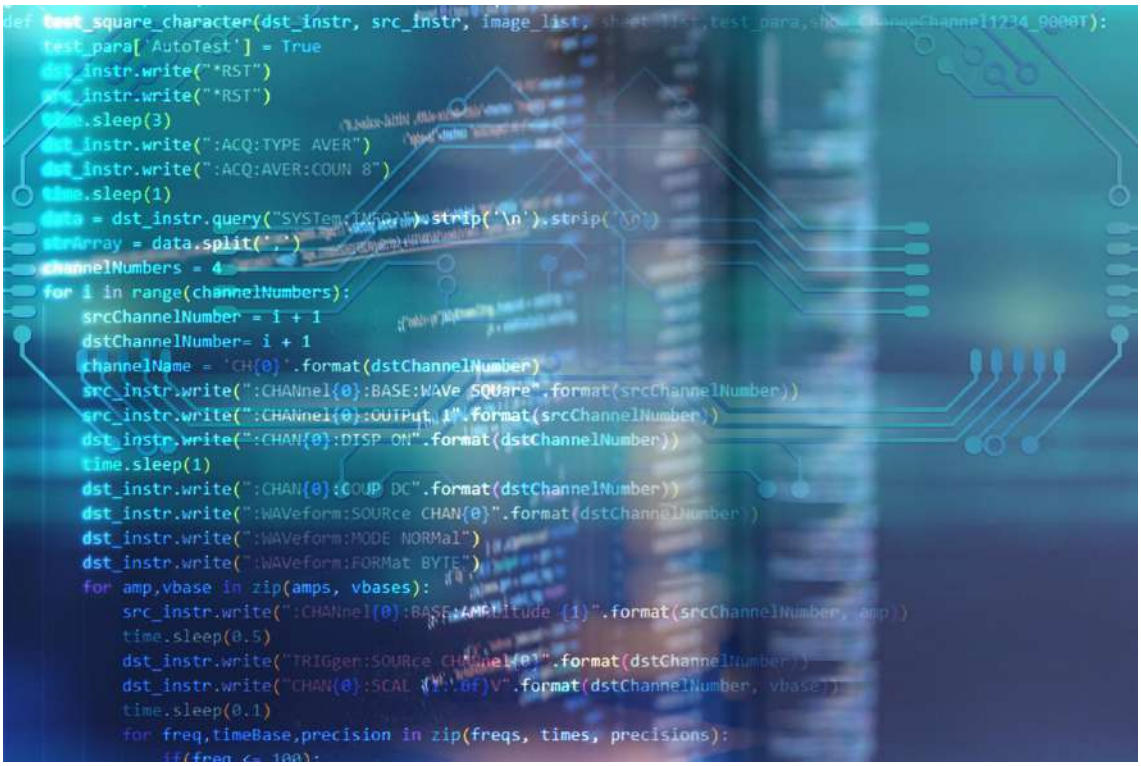
# Various Connection

High-Resolution 1000HD series offers a wide range of connections with flexibility and convenience.




# 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 or USB Device.

## WebServer

SCPI for remote checking and control

Export waveform files

Browsing the user manual online

PC/Mobile phone access

# Document Version and Revision

| Document Version | V1.0 |
|---|---|
| Document Revision | Original version |
| Firmware version: V1.00.0024 Logic version: V1.00.0006 Hardware version: V1.02.0000 | |
| Document Revision | Modify the detection rate |
| Firmware version: V1.00.0037 Logic version: V1.00.0009 Hardware version: V1.03.0000 | |

# Performance Characteristics

All specifications are guaranteed, except those marked "Typical (Typ.)".

Unless otherwise stated, all the performance characteristics are suitable for the probe attenuation ratio is set to 10x and High-Resolution 1000HD series high-resolution oscilloscopes.

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 | UPO1152HD | UPO1154HD | UPO1082HD | UPO1084HD |
|---|---|---|---|---|
| Analog bandwidth | 150 MHz | | 80 MHz | |
| Calculated rise time (10 to 90%) (typical) | ≤2.2 ns | | ≤4 ns | |
| Input/output channel number | 2 analog channels | 4 analog channels | 2 analog channels | 4 analog channels |
| Sampling mode | Real-time sampling | | | |
| Acquisition mode | Normal, peak detect, high resolution, averaging | | | |
| Maximum sample rate | Analog channel: 1.25 GSa/s (single channel), 625 MSa/s (dual channels), 312.5 MSa/s (four channel) | | | |
| 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 kpts, 250 kpts, 500 kpts, 5 Mpts, 50 Mpts, 100 Mpts | | | |
| Maximum waveform capture rate | 100,000 wfms/s | | | |
| | 500,000 wfms/s (sequence mode) | | | |
| Sequential sampling | Maximum 500,000 frames, minimum two trigger intervals < 2000 ns | | | |
| Hardware real-time waveform recording and playing | 100,000 frames | | | |
| Screen | 7 - inch 1024x600 HD capacitive touch screen | | | |
| **Vertical System (Analog channel)** | | | | |
| Input coupling | DC, AC, GND | | | |
| Input impedance | (1 MΩ ± 2%) ‖ (17 pF ± 2 pF) | | | |
| Probe attenuation factor | Voltage probe ratio: 0.001X, 0.01X, 0.1X, 1X, 10X, 100X, 1000X, Custom<br>Current probe ratio: 5 mV/A, 10 mV/A, 50 mV/A, 100 mV/A, 200 mV/A, 500 | | | |

| | | |
|---|---|---|
| | mV/A, 1V/A, Custom | |
| Maximum input voltage | 400 V (DC+ACVpk) 135 $V_{RMS}$ | |
| Vertical resolution | 12-bit | |
| Vertical scale | 500 μV/div to 10 V/div | |
| Offset range | 500 μV/div to 50 mV/div: ± 2 V<br>51 mV/div to 1 V/div: ± 25 V<br>1.02 V/div to 10 V/div: ± 250 V<br>Vertical offset reading: V | |
| Band limit (typical) | 20 MHz, Full | |
| 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-channel isolation(typical) | DC to maximum bandwidth: > 40 dB | |
| **Horizontal System (Analog channel)** | | |
| Time base range | 2 ns/div to 1 ks/div<br>(simultaneously display the current sampling rate and memory depth) | 5 ns/div to 1 ks/div<br>(simultaneously display the current sampling rate and memory depth) |
| Time base accuracy | ± 25 ppm | |
| Time base delay time range | Pre-trigger (negative delay): ≥ 1 screen width<br>Post-trigger (positive delay): 1 s to 4 ks | |
| Time base mode | Y-T (default) | |
| | X-Y (CH1-CH2, CH1-CH3, CH1-CH4, CH2-CH3, CH2-CH4, CH3-CH4) | |
| | Roll, time base ≥ 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 Sensitivity | CH1-CH4:<br>≤ 10 mV/div, The larger value of 1div or 5 mVpp<br>> 10 mV/div, 0.5 div | |
| | Enable the noise rejection, with trigger sensitivity reducing half | |
| | Trigger sensitivity can be customized, with the default set to 50% | |
| Trigger level range | Internal: ± 4 div from the center of the screen | |
| Trigger modes | Auto, Normal, Single | |

| | |
|---|---|
| Trigger holdoff range | 0.0 ps to 10 s |
| Trigger coupling (Typ.) | DC: Allows all signals to pass |
| | AC: Blocks the DC component of the input signal |
| | HF reject: Suppresses high-frequency components of signals above 40 kHz |
| | LF reject: Suppresses low-frequency components of signals below 40 kHz |
| Noise reject | Suppress the high-frequency noise of signal, to reduce the error-touched possibility<br>Enable the noise rejection, with trigger sensitivity reducing half |
| **Zone Triggering** | |
| Zone | 2 zones; source: CH1-CH4; Feature: Must Intersect, Must Not Intersect |
| **Edge** | |
| Slope | Rising, Falling, Either |
| Source | CH1-CH4 |
| **Runt** | |
| Trigger condition | >, <, ≤ ≥, None |
| Polarity | Positive, Negative |
| Pulse width | 6.4 ns to 10 s |
| Source | CH1-CH4 |
| **Window** | |
| Polarity | Rising, Falling, Either |
| Trigger condition | Enter, Exit, Time |
| Set | 6.4 ns to 10 s |
| Source | CH1-CH4 |
| **Nth edge** | |
| Slope | Rising, Falling |
| Idle time | 6.4 ns to 10 s |
| Edge number | 1 to 65535 |
| Source | CH1-CH4 |
| **Delay** | |
| Edge type | Rising, Falling |
| Trigger condition | >, <, ≤ ≥, > < |
| Delay time | 6.4 ns to 10 s |
| Source | CH1-CH4 |
| **Timeout** | |
| Slope | Rising, Falling, Either |

| | |
|---|---|
| Timeout | 6.4 ns to 10 s |
| Source | CH1-CH4 |
| **Duration** | |
| Code pattern | H, L, X |
| Trigger condition | >, <, ≤ ≥ |
| Duration | 6.4 ns to 10 s |
| Source | CH1-CH4 |
| **Setup and Hold** | |
| Clock edge | Rising, Falling |
| Data type | H, L |
| Setup | 6.4 ns to 10 s |
| Hold | 6.4 ns to 10 s |
| Source | CH1-CH4 |
| **Pulse Width** | |
| Polarity | Positive, Negative |
| Trigger condition | >, <, ≤ ≥ |
| Pulse Width | 1.6 ns to 4 s |
| Source | CH1-CH4 |
| **Slope** | |
| Slope | Positive, Negative |
| Trigger condition | >, <, ≤ ≥ |
| Time | 3.2 ns to 1 s |
| Source | CH1-CH4 |
| **Video** | |
| Standard | PAL, NTSC, SECAM, 525 p/60, 625 p/50, 720 p/24, 720 p/25, 720 p/30, 720 p/50, 720 p/60, 1080 i/25, 1080 i/30, 1080 p/24, 1080 p/25, 1080 p/30, 1080 pfs/24 |
| Source | CH1-CH4 |
| **Pattern** | |
| Code pattern | H, L, X, Rising, Falling |
| Source | CH1-CH4 |
| **RS232/UART** | |
| Trigger condition | Start, StopBit, 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-CH4 |
| **I²C** | |
| Trigger condition | 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-CH4 |
| **SPI** | |
| Mode | Timeout, CS |
| Trigger condition | Start, Data |
| Timeout | 96 ns to 1 s |
| Data bit | 4 bits to 32 bits |
| Source | CH1-CH4 |
| **CAN** | |
| Signal type | CAN_H, CAN_L |
| Trigger condition | Start, Data Frame, Remote Frame, Error Frame, Over-Load, Identifier, Data, Identifier&Data, End of Frame, Missing Ack, Biterror, CRC, Error, ALL Errors |
| Data rate | 10 kbps, 19.2 kbps, 20 kbps, 33.3 kbps, 38.4 kbps, 50 kbps, 57.6 kbps, 62.5 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-CH4 |
| **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-CH4 |
| **Decoding** | |
| Number of decodes | 4 |
| Decoding type | Standard: RS232/UART, I2C, SPI CAN, LIN |
| Source | CH1-CH4 |
| **Measurement** | |
| Cursor | Voltage difference between cursors (△Y)<br>Time difference between cursors (△X)<br>Reciprocal of △X (Hz) (1/△X) |

| | |
|---|---|
| | Voltage and time of waveform point |
| | Display the cursor in the automatic measurement |
| Automatic measurements | **Analog channel: 56 kinds of parameter**<br>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, +Width, -Width, +Duty, -Duty, +Pulse count, -Pulse count, Rising edge count, 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, FFLR, FFLF, Delay(r-r), Delay(f-f),Phase(r-r), Phase(f-f) |
| Measurement mode | Common measurement and accuracy measurement (Full memory hardware measurements) |
| Measurement type | Simultaneously display 21 kinds of parameter measurement |
| Measurement range | Main time base, Zoom time base, Cursor area |
| Measurement statistics | Mean, Maximum, Minimum, Std Dev, Count, Tendency chart, Bar Chart |
| XY measurement | Time, Cartesian, Polar, Product, Ratio |
| Analysis | Frequency Counter, DVM, Pass/Fail, Waveform recording, Power Analysis |
| **Power Analysis** | |
| Measure | Power quality, Current harmonics, Surge current, Rds(on), Switching Loss, Conversion rate, Safe operating area, Modulation analysis, Output ripple, Startup/shutdown time, Transient response, Power efficiency |
| **Histogram** | |
| Source | CH1 to CH4 |
| Type | Horizontal, Vertical |
| **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,sign |
| **FFT** | |
| Channel number | 4 |
| Window types | Hanning, Hamming, Rectangle, Blackman |
| FFT count | Up to 1 Mpts |
| FFT vertical scale | Vrms, dB |

| | |
|---|---|
| FFT | Waterfall: ON, OFF |
| | Spectrum range: Start frequency, Stop frequency, Center frequency, Span |
| | 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) |
| Image | Image storage (*.bmp) (*.png) (*.jpg) |
| Report | Decoding Event List (*.csv) (*.pdf) (*.html) |
| **DVM (typical)** | |
| 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 Counter** | |
| Source | Any analog channel |
| Measurement | Frequency, Period, Totalizer |
| Counter | The maximum effective digits are 6, and the refresh time and effective digits are adjustable. |
| Maximum measurement frequency | Maximum bandwidth of analog channel |
| Time reference | Internal reference: ± 25 ppm |
| **Interface** | |
| USB-Host 2.0 | 1 on the front panel |
| USB-Device 2.0 | 1 on the rear panel |
| LAN | LAN (VXI11), 10/100 Base-T, RJ-45 |
| AUX Out | Trig Out, Pass/Fail, DVM |
| HDMI[1] | 1 port for external display or projector |
| **General technical specification** | |
| **Probe compensator output** | |
| Output voltage | 3 Vpp |
| Frequency | 10 Hz ,100 Hz, 1 kHz (default), 10 kHz |
| **Power Source** | |
| Power source voltage | Power is greater than or equal to 12 V/3 A<br>Supports Type-C or a portable charger with PD protocol |

| | | | |
|---|---|---|---|
| Power consumption | 65 W Max | | |
| Fuse | 1.6 A | | |
| **Environmental** | | | |
| Temperature | Operating: 0°C to +40°C | | |
| | Non-operating: -20°C to +60°C | | |
| Cooling | Forced cooling by fan | | |
| Humidity | Operating: below +35 °C, relative humidity ≤90%<br>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 Specifications** | | | |
| Dimension (W×H×D) | 282 mm×175 mm×49 mm | | |
| Weight | 1.56 kg | | |
| **Calibration interval** | | | |
| Calibration interval | 1 year | | |
| **Safety Regulations** | | | |
| Electromagnetic compatibility | Compliance with EMC directive (2014/30/EU), compliance with or superior to IEC 61326-1:2021/ EN61326-1:2021,<br>IEC 61326-2-1:2021/ EN61326-2-1:2021 | | |
| | Conducted disturbance | 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),<br>±8.0 kV (air) |
| | Radio sensitivity | IEC 61000-4-3/EN 61000-4-3 | 3V/m (80 MHz to 1 GHz);<br>3V/m (1.4 GHz to 6 GHz); |
| | Electrical fast transient (EFT) | IEC 61000-4-4/EN 61000-4-4 | ±1 kV (AC input) |
| | Surge | IEC 61000-4-5/EN 61000-4-5 | ±0.5 kV (live to zero)<br>±1 kV (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 | Voltage dip: |

| | | | |
|---|---|---|---|
| | interruption | 61000-4-11 | 0% UT during 0.5 cycle;<br>0% UT during 1 cycle;<br>70% UT during 25/30 cycles<br>Short-term interruption:<br>0% UT during 250/300 cycles |
| Safety specification | EN 61010-1:2010+A1:2019<br>EN IEC61010-2-030:2021+A11:2021<br>UL61010-1:2012 Ed.3+ R:19 Jul2019<br>UL61010-2-030:2018 Ed.2<br>CSA C22.2#61010-1:2012 Ed.3+U1;U2;A1<br>CSA C22.2#61010-2-030:2018 Ed.2 | | |

Remarks

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

# Order Information

| | Description | Order No. |
|---|---|---|
| Model | UPO 1152HD (150 MHz, 2 analog channels) | UPO 1152HD |
| | UPO 1154HD (150 MHz, 4 analog channels) | UPO 1154HD |
| | UPO 1082HD（80MHz, 2 analog channels) | UPO 1082HD |
| | UPO 1084HD（80MHz, 4 analog channels) | UPO 1084HD |
| Standard accessories | National standard cable x 1 | |
| | USB2.0 cable x 1 | UT-D14 |
| | Passive probe (200MHz/100MHz)（4/2） | UT-P05/ UT-P04 |
| Optional accessories | Isolation transformer | UT-ISOT |
| | Deskew Fixture | UT-DF01 |
| | High voltage probe | UT-V23/UT-P21/UT-P20 |
| | High voltage differential probe | UT-P30/UT-P31/UT-P32/ UT-P33/UT-P35/UT-P36 |
| | Current probe | UT-P40/UT-P41/UT-P42/ UT-P43/UT-P44/UT-P4030D/UT-P4150/UT-P4500/P4100A/P4100B |

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

# Oscilloscope Probes and Accessories

## Passive Probe

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

| | | |
|---|---|---|
| UT-P08A<br>  | High resistance probe | 10X: DC to 350 MHz<br>Input resistance: 10 MΩ<br>Maximum operating voltage: < 600V pk<br>Oscilloscope compatibility:<br>All UNI-T series |
| UT-P20<br>  | High resistance probe | DC to 100 MHz<br>Probe coefficient 100:1<br>Maximum operating voltage: 1500 Vrms<br>Oscilloscope compatibility:<br>All UNI-T series |
| UT-V23<br>  | High voltage probe | DC to 100 MHz<br>Probe coefficient 100:1<br>Input resistance: 100 MΩ ± 2%<br>Maximum operating voltage: 2000 Vpp<br>Oscilloscope compatibility:<br>All UNI-T series |
| UT-P21<br>  | High voltage probe | DC to 50 MHz<br>Probe coefficient 1000:1<br>Maximum operating voltage: DC 15 kVrms, AC 10 kV (sine wave)<br>Oscilloscope compatibility:<br>All UNI-T series |

# Current Probe

| Model | Type | |
|---|---|---|
| UT-P40<br>  | Current probe | DC to 100 kHz<br>Range: 50 mV/A, 5 mV/A<br>Current range: 0.4 A to 60 A<br>Maximum operating voltage: 600 Vrms<br>Oscilloscope compatibility: All UNI-T series |
| UT-P41<br>  | Current probe | DC to 100 kHz<br>Range: 100 mV/A, 10 mV/A<br>Current range: 0.4 A to 100 A<br>Maximum operating voltage: 600 Vrms<br>Oscilloscope compatibility: All UNI-T series |

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

| | | |
|---|---|---|
| | | Oscilloscope compatibility:<br>All UNI-T series |
| UT-P4100A<br>  | Low-frequency current probe | Bandwidth: DC to 600 kHz<br>Rising time: ≤ 583 ns<br>Maximum test current: 100 A<br>Range selection: 100 A/10 A<br>Range sensitivity: 0.1 V/A, 0.01 V/A<br>Common-mode voltage RMS: CATI 600 V CATII 600 V CATIII 300 V<br>Oscilloscope compatibility:<br>All UNI-T series |
| UT-P4100B<br>  | Low-frequency current probe | Bandwidth: DC to 2 MHz<br>Rising time: ≤ 175 ns<br>Maximum test current: 100 A<br>Range selection: 100 A/10 A<br>Range sensitivity: 0.1 V/A, 0.01 V/A<br>Common-mode voltage RMS: CATI 600 V CATII 600 V CATIII 300 V<br>Oscilloscope compatibility:<br>All UNI-T series |

## Active Probe

| Model | Type | |
|---|---|---|
| UT-P30<br>  | High voltage differential probe | DC to 100 MHz<br>Attenuation ratio 100:1,10:1<br>Input differential-mode voltage: ± 800 Vpp<br>Oscilloscope compatibility: All UNI-T series |
| UT-P31<br>  | High voltage differential probe | DC to 100MHz<br>Attenuation ratio 1000:1,100:1<br>Input differential-mode voltage: ± 1.5 kVpp<br>Oscilloscope compatibility: All UNI-T series |

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

# 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 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: www.uni-trend.com

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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