UNI-T®

Instruments.uni-trend.com

UTG9000T+ Series

Function/Arbitrary Waveform Generators

Data Sheet

V 1.1

January，2026

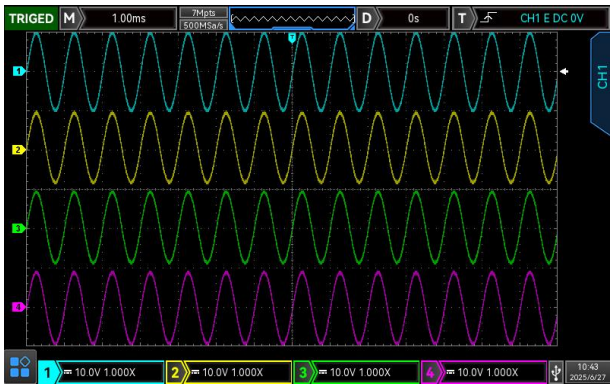
Key Features

- Four-channel standard configuration, with all channels offering equal performance and supporting independent channel output
- Maximum output amplitude: 20 Vpp
- Maximum sampling rate: 2.5 GSa/s; vertical resolution: 16-bit
- Waveform types: Sine, square, ramp, pulse, harmonic, noise, PRBS, DC, and arbitrary waveforms
- Sine wave phase noise: -130 dbc/Hz @10 kHz (Typ.)
- Adjustable noise bandwidth
- Sine wave output: Up to 500 MHz, 350 MHz, with 1 μHz frequency resolution across the full range
- Square wave output: Up to 170 MHz, 120 MHz, edge time < 2 ns and adjustable duty cycle
- Pulse output: Up to 120 MHz, featuring wide dynamic range, high-precision adjustable rise/fall times, and adjustable duty cycle
- Harmonic output: 2nd to 16th harmonics with independently adjustable phase and amplitude
- Support for point-by-point output, can output 8 pts to 128 Mpts arbitrary wave, super 200 sets of non-volatile digital arbitrary wave storage
- Storage capacity: 4 GB bytes for arbitrary waveform files (.bsv/.csv)
- USB compatibility: Supports reading arbitrary waveform and state files (.bsv/.csv) from USB flash drives
- Various modulation types: AM, FM, PM, DSB-AM, QAM, ASK, FSK, 3FSK, 4FSK, PSK, BPSK, QPSK, OSK, PWM, SUM
- Supports sweep and burst functions
- Digital protocol output: SPI, I^2C, UART
- Supports multi-pulse, multi-tone, sequence, I/Q, expression, and pattern output
- One-key SNR output
- Each channel supports independent or simultaneous internal/external modulation and internal/external/manual triggering
- Hardware frequency counter: 800 MHz, AC or DC coupling
- Powerful PC software and arbitrary waveform editor
- 10.1-inch capacitive touch screen, 1280 × 800 resolution
- Standard interfaces: USB Host, USB Device, LAN, and independent 10 MHz clock input/output
- Compatible with NeptuneLab laboratory system management software

Design Features

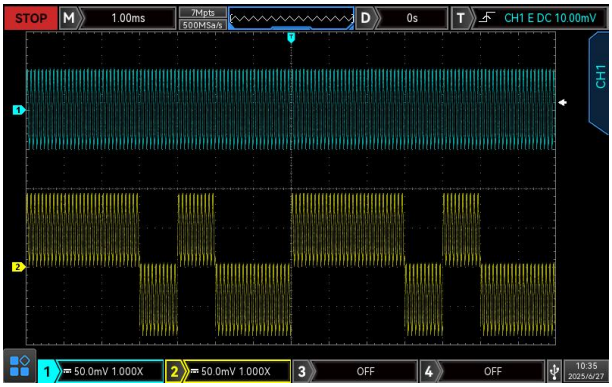
High-Performance Independent Four-Channel Simultaneous Output

UTG9000T+ series function/arbitrary waveform generator provides output frequencies of 350 MHz and 500 MHz to meet a wide range of signal frequency requirements, with all four channels supporting fully independent output.



Four equivalent-performance channels with 20 Vpp output

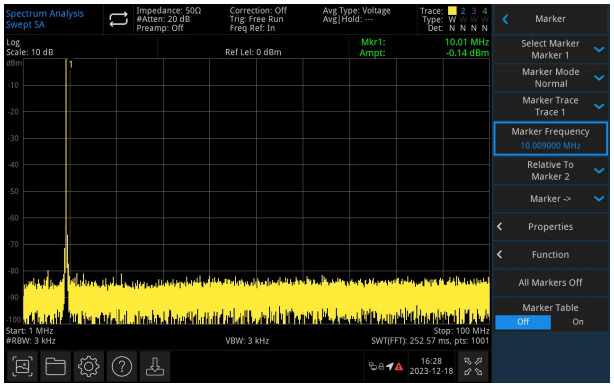
Channels can be freely coupled with configurable frequency, amplitude, and phase parameters. Channel outputs may also be combined as needed, such as CH2 = CH1; CH1 = CH1 + CH2 + CH3 + CH4.



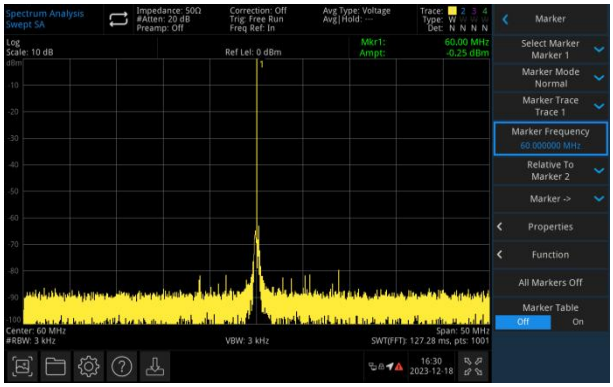
Waveform combination output

Low-Distortion Continuous Waveform Output

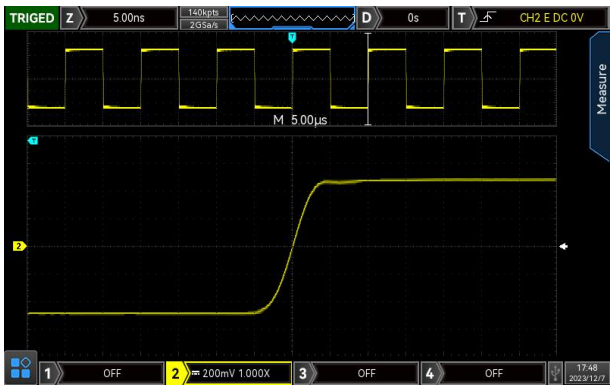
Generates sine, square, ramp, pulse, arbitrary, harmonic, noise, DC, and PRBS waveforms with low distortion, low jitter, and a high signal-to-noise ratio.



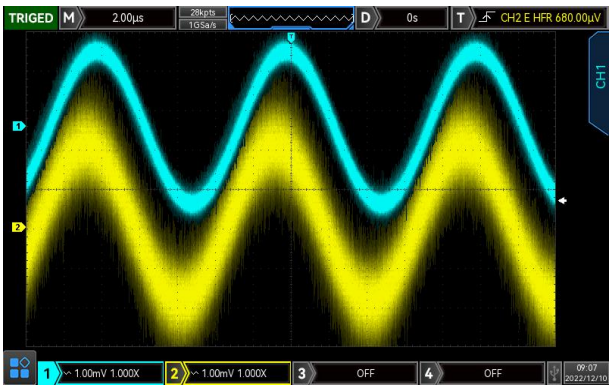
Reliable harmonic distortion



-80 dBc spurious free dynamic range



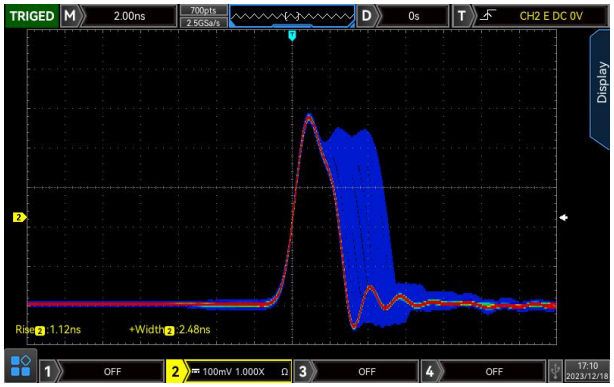
With digital sampling technology, the output waveform exhibits significantly lower jitter.



A small signal superimposed with a large DC results in a lower output noise and a higher SNR.

Pulse Wave and Fast Edge Time

The pulse wave features high-precision adjustable edge times, with a minimum pulse width of ⩾ 3 ns and fine adjustable increments as small as 100 ps. It can generate high harmonic content, delivering performance comparable to a dedicated pulse generator. Additionally, the edge time can be set independently for each pulse, with a minimum value of 2 ns.

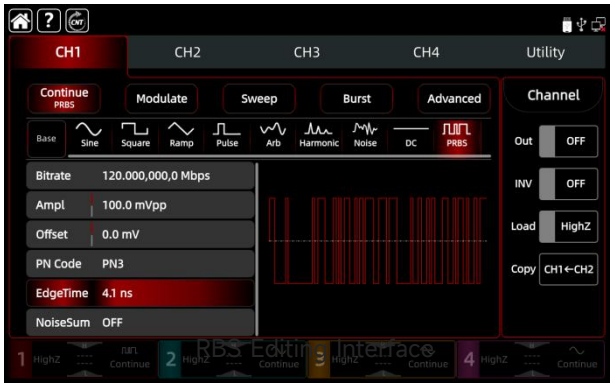


Pulse Wave with Fine Step Adjustment

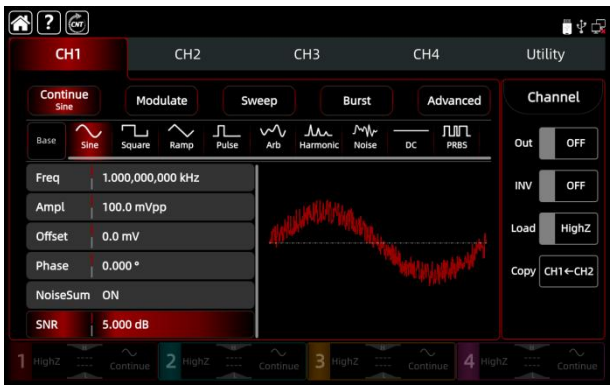
Pseudo-Random Binary Sequence (PRBS)

Supports multiple PRBS patterns from PRBS3 to PRBS33, with a bit rate ranging from 1 µbps to 300 Mbps.

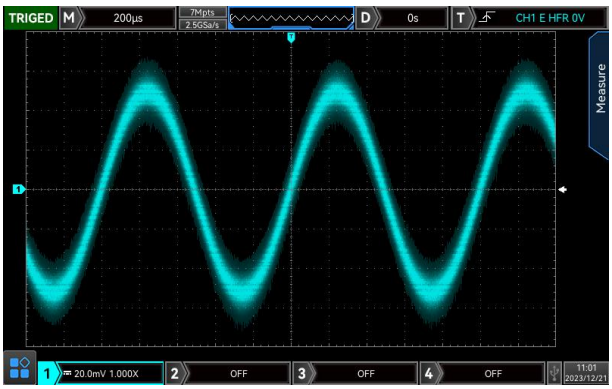
Edge time: 2 ns to 1 ks.



Continuous Waveform Noise Superposition



Noise Superposition Interface

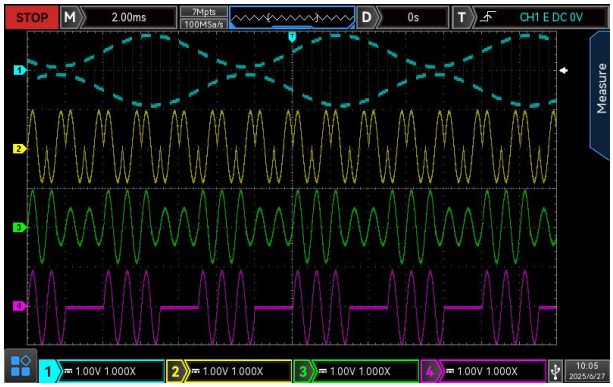


Noise-Superimposed Waveform Output Frequency Sweep Interface

Modulation, Frequency Sweep, and Pulse Train Functions

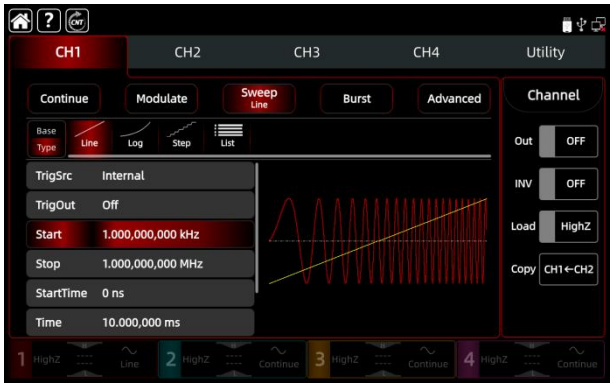
Modulation Function

Supports a wide range of modulation outputs: AM, FM, PM, DSB-AM, ASK, FSK, PSK, 3FSK, 4FSK, BPSK, QPSK, OSK, SUM, QAM, and PWM. In addition, it provides frequency sweep and burst generation functions.



Frequency Sweep

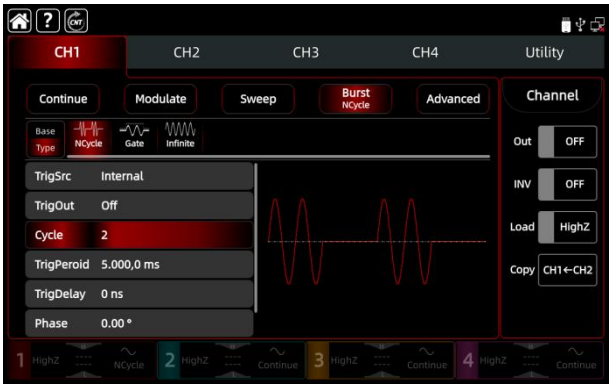
Supports four frequency sweep modes: Linear, logarithmic, step, and list.Three trigger sources: Internal, external, and manual.



Each channel can output modulated waveforms and pulse sequences independently

Pulse Train

Supports three burst modes: N-cycle, infinite, and gate. Three trigger sources: Internal, external, and manual.



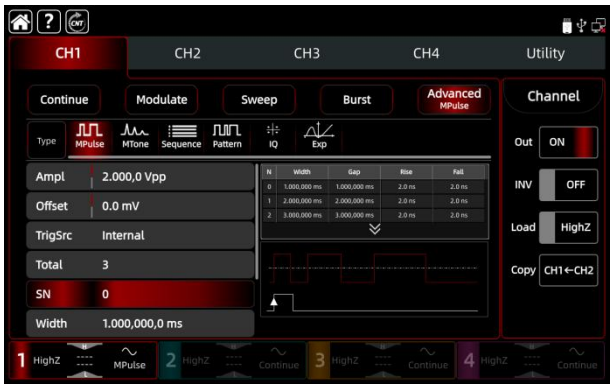
Pulse Train Interface

Rich Advanced Functions

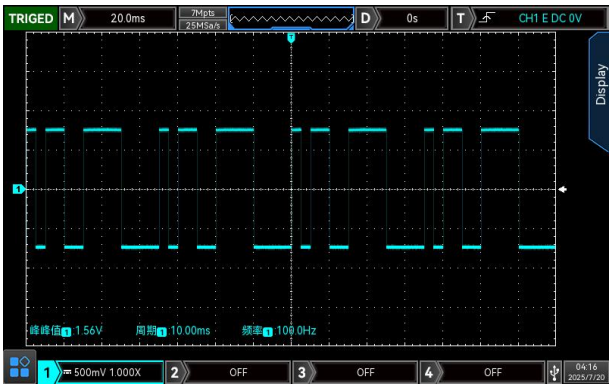
UTG9000T+ series function/arbitrary waveform generator comes standard with advanced waveform output capabilities, including multi-pulse, multi-tone, sequence, pattern, I/Q, and expression-based waveforms.

Multi-Pulse Function

Generates multi-pulse signals with independently adjustable edge times and pulse widths, enabling rapid and precise multi-pulse testing.



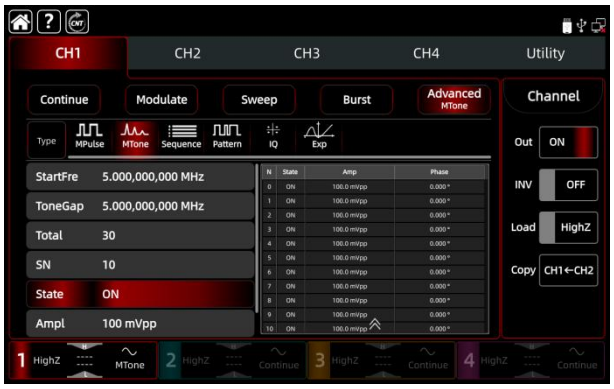
Multi-Pulse Setting Interface



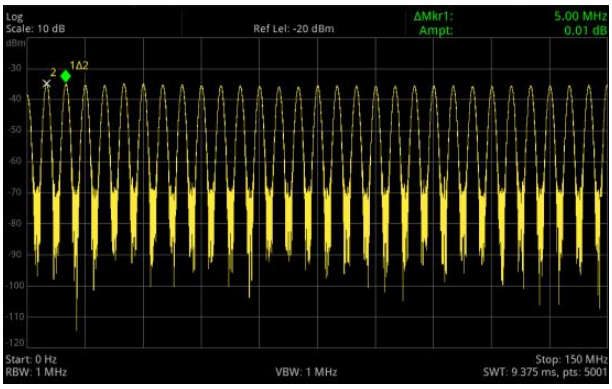
Multi-Pulse Test

Multi-Tone Function

Simulates complex signals by generating multiple frequency components simultaneously, allowing reproduction of multi-frequency signals in real-world scenarios. This helps verify device performance under complex spectral conditions. The multi-tone function also supports tests such as nonlinear distortion analysis, wideband system frequency response analysis, and communication system performance verification.



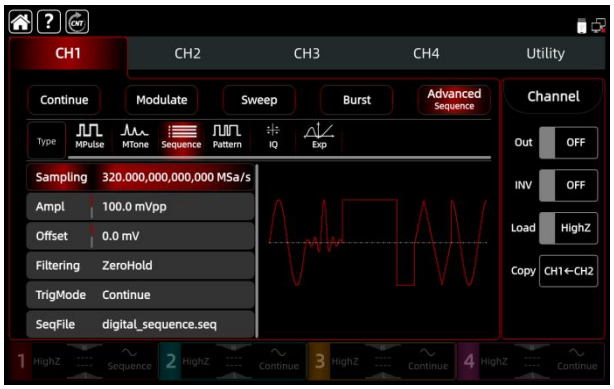
Multi-Tone Setting Interface



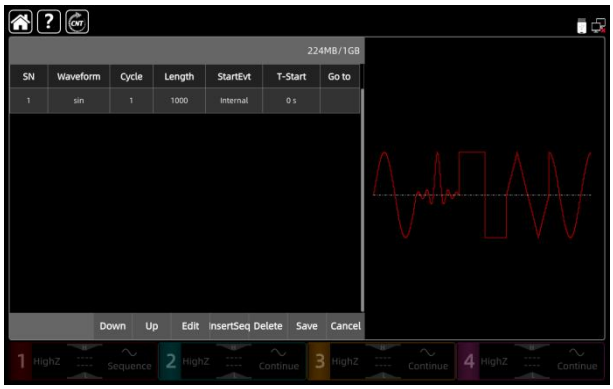
Multi-Tone Test

Sequence Function

Supports up to 1024 waveforms with a total length of 128 Mpts. The sequence supports continuous, cyclic, and gated modes, and the sequence segment supports internal, external edge, manual, timing, and other triggers, allowing one-time loading of multiple sequential test cases for seamless switching between test scenarios.



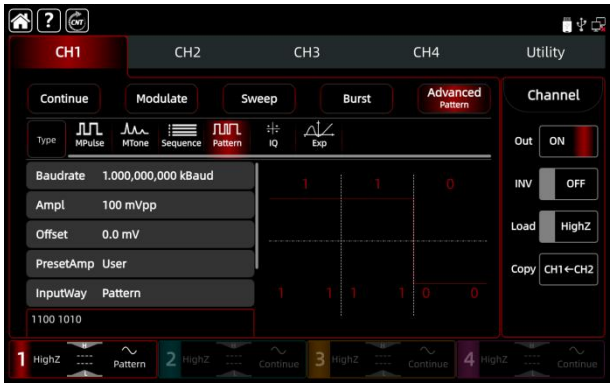
Sequence Setting Interface (1)



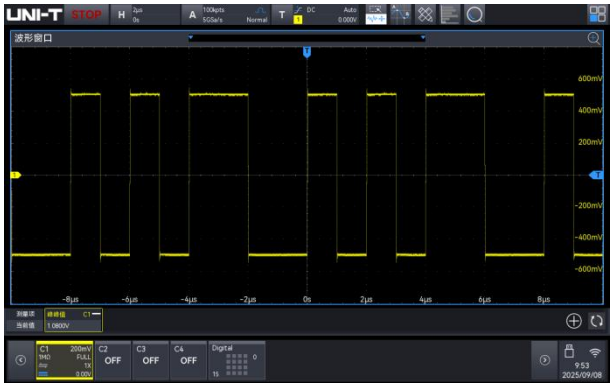
Sequence Setting Interface (2)

Pattern Function

Supports customizable pattern types for flexible signal generation.



Pattern Setting Interface



Pattern Signal Test

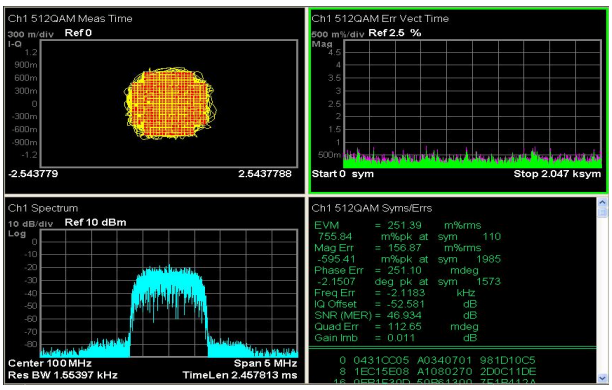
I/Q Signal

Quickly generates and edits I/Q signals for applications such as communication system performance verification and digital signal processing

When used with the PC software SignalStudio, it enables I/Q baseband configuration and output of I/Q signals.

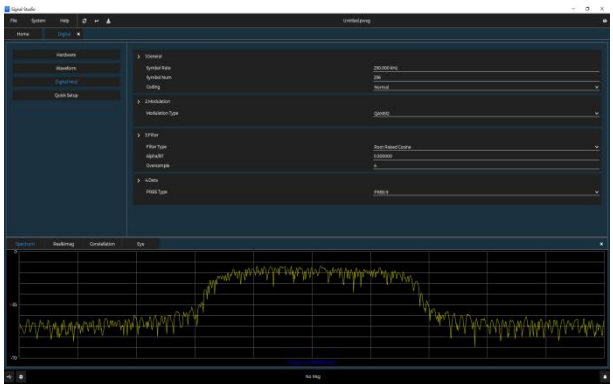
IQ Setting Interface

The system delivers high EVM performance at any symbol rate and can modulate the carrier of I/Q signals to any frequency within the maximum frequency range.



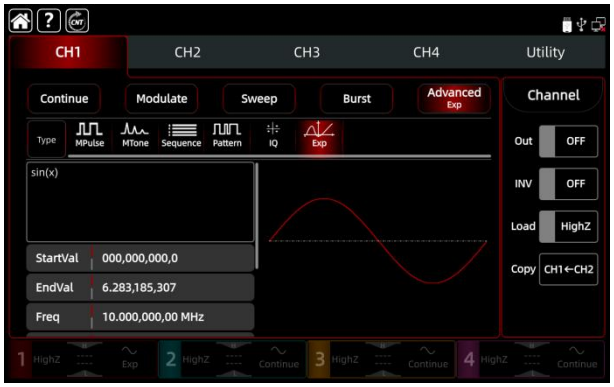
Measured EVM Performance for 512QAM

With the SignalStudio (Signal Generation) software, it can generate commonly used modulated I/Q signals: QAM, FSK, PSK, and ASK.



Expression Function

Allows users to create complex waveforms using mathematical formulas.

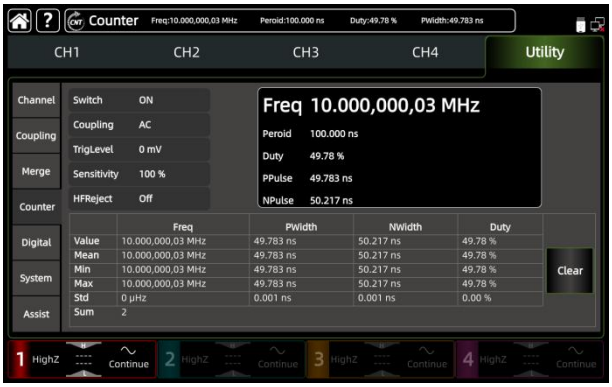


Digital Protocol Output

Digital protocol output: SPI, I²C, UART

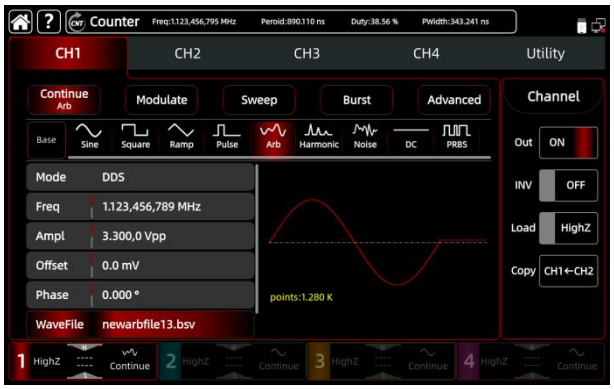
High-Precision Frequency Counter

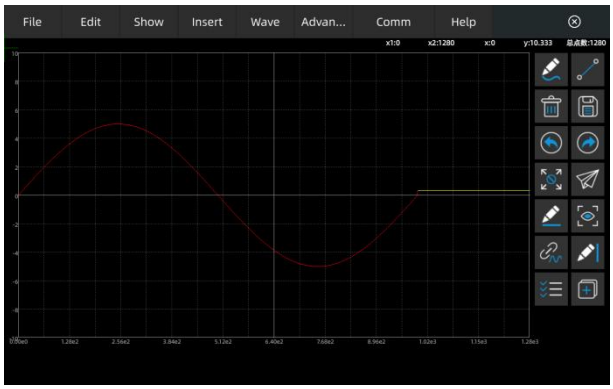
Equipped with a high-precision hardware frequency counter, capable of measuring frequencies from 100 mHz to 800 MHz.



Built-in Arbitrary Waveform Editor

The arbitrary waveform editor provides multiple generation methods: users can insert standard waveforms or freely draw custom waveforms, with real-time playback of the currently drawn waveform. This function is integrated into the UTG9000T+ series system and can also be installed on a PC, allowing interaction with the UTG9000T+ via USB or LAN interfaces.





Arbitrary Waveform Editing Software

The software provides powerful arbitrary waveform editing capabilities, supporting multiple generation methods such as manual drawing, line drawing, and expression-based drawing. It can interact with the UTG9000T+ via USB or LAN interfaces.

Remote Control

Connects to a computer through standard USB or LAN interfaces, supporting remote control.

Users can perform operations via the corresponding control software, enabling automated testing and remote monitoring.

10.1-inch Capacitive Touch Screen

Features a 10.1-inch high-definition display with touch operation, allowing faster and more convenient instrument control.

Technical Specifications

Definition and Conditions

- **Technical Specifications** provide detailed descriptions of the performance parameters covered under the product warranty. Unless otherwise stated, these specifications apply to an ambient temperature range of 20 °C to 30 °C.
- **Typical Values** (Typ.) refer to performance characteristics not included in the product warranty. When performance exceeds the warranted specifications, 80% of units typically meet the stated values with 95% confidence within the 20 °C to 30 °C temperature range. Typical values do not include measurement uncertainty.
- **Nominal Values** (Nom.) indicate expected or target performance that is useful for product application but is not covered by the product warranty.
- The product meets its warranted specifications under the following conditions:
  It is within its calibration interval and has been warmed up for at least 30 minutes. If the instrument has been stored within its allowable storage temperature range but outside the allowable operating temperature range, it must be placed within the allowable operating temperature range for at least two hours before use.

Basic Waveform Characteristics

Fundamental Wave Characteristics		
Model	UTG9504T+	UTG9354T+
Channel	Four equivalent-performance channels	
Maximum output frequency	500 MHz	350 MHz
Sample rate	2.5 GSa/s (2x interpolation)	
Vertical resolution	16-bit	
Arbitrary wavelength	(point-by-point)	8 pts to 128 Mpts/CH (expandable to 256 Mpts/CH when using the PC software)
	DDS mode	8 kpts
Operating mode	Continuous, modulation, sweep, burst, frequency counter, digital bus, advanced function	
Continuous waves	Sine, square, ramp, pulse, harmonic, noise, PRBS, DC, arbitrary waves	
Modulation type	AM, FM, PM, DSB-AM, ASK, FSK, PSK, 3FSK, 4FSK, BPSK, QPSK, OSK, SUM, QAM, PWM	
Frequency sweep type	Linear, logarithm, list, step	

Burst type	N cycle, gate, infinite		
Digital bus	SPI, I^2C, UART		
Advanced function	Multi-pulse, multi-tone, sequence, pattern, I/Q, and expression		
Hardware frequency meter	100 mHz to 800 MHz		
Frequency Characteristics			
Resolution	1 μHz		
Reference frequency	Frequency: 10.0000 MHz		
	Initial accuracy: ±0.5 ppm, 25°C		
	Temperature stability: ±0.5 ppm, 0°C to 40°C		
	Aging rate: ±1 ppm (first year)		
Sine Wave Characteristics			
Model	UTG9504T+	UTG9354T+	
Frequency	1 μHz to 500 MHz	1 μHz to 350 MHz	
Frequency resolution	1 μHz		
Harmonic distortion	Output power: 0 dBm (Typ.)	DC to 10 MHz	≤ -65 dBc
		10 MHz to 100 MHz	≤ -60 dBc
		100 MHz to 150 MHz	≤ -50 dBc
		150 MHz to 200 MHz	≤ -40 dBc
		200 MHz to 400 MHz	≤ -30 dBc
		400 MHz to 500 MHz	≤ -28 dBc
Non-harmonic spurious	≤ 10 MHz, output power: 0 dBm	<-70 dBc (Typ.)	
	> 10 MHz, output power: 0 dBm	<-70 dBc + 6 dB/octave (Typ.)	
Total harmonic distortion	0 dBm, DC to 20 kHz	<0.07 %	
Flatness	Relative to a 1 kHz, 1 Vpp sine wave, 50 Ω	≤ 10 MHz, ±0.1 dB (Typ.)	
		≤ 60 MHz, ±0.2 dB (Typ.)	
		≤ 80 MHz, ±0.4 dB (Typ.)	
		≤ 500 MHz, ±0.8 dB (Typ.)	
Noise superposition amplitude	Noise voltage ≤ 1 Vrms		
Phase characteristics	-360.000° to 360.000°		
Phase noise	10 MHz, 10 kHz offset,	≤ -130 dBc/Hz (Typ.)	

	output power: 0 dBm	
Square Wave Characteristics		
Model	UTG9504T+	UTG9354T+
Frequency	1 μHz to 170 MHz	1 μHz to 120 MHz
Frequency resolution	1 μHz	
Rise/fall time	1 kHz, 1 Vpp, 50 Ω	< 2 ns (Typ.)
Overshoot	100 kHz, 1 Vpp, 50 Ω	< 2% (Typ.)
Duty ratio	0.000,000,000,1% to 99.999,999,99% (range limited by operating frequency)	
Symmetry	50% duty ratio	1% + 4 ns of the cycle
Jitter (RMS)	Typ. (1 MHz, 1 Vpp, 50 Ω)	≤ 5 MHz: 2 ppm+200 ps
		> 5 MHz: 200 ps
Phase characteristics	-360.000° to 360.000°	
Noise superposition amplitude	Noise voltage ≤ 1 Vrms	
Pulse Wave Characteristics		
Model	UTG9504T+	UTG9354T+
Frequency	1 μHz to 120 MHz	1 μHz to 120 MHz
Frequency resolution	1 μHz	
Variable edge	2 ns to 500 s (range limited by operating frequency)	
Overshoot	Typ. (1 mHz, edge ≥2 ns, 1 Vpp, 50 Ω)	< 2%
Duty ratio	0.000,000,000,1% to 99.999,999,99% (range limited by operating frequency)	
Minimum pulse width	3 ns (Typ.)	
Jitter	200 ps (1 Vpp, 50 Ω)	
Phase characteristics	-360.000° to 360.000°	
Noise superposition amplitude	Noise voltage ≤ 1 Vrms	
Ramp Wave Characteristics		
Frequency	1 μHz to 20 MHz	
Frequency resolution	1 μHz	
Symmetry	0.00% to 100.00%	
Linearity	1 kHz, 1 Vpp, symmetry 100%	< 1% of peak output (Typ.)
Phase characteristics	-360.000° to 360.000°	
Noise superposition amplitude	Noise voltage ≤ 1 Vrms	

Noise Characteristics		
Model	UTG9504T+	UTG9354T+
Bandwidth	1 mHz to 500 MHz	1 mHz to 350 MHz
Arbitrary Characteristics		
Frequency range (DDS)	1 μHz to 50 MHz	
Sample rate (DDS)	2.5 GSa/s	
Sample rate (point-by-point)	1 μSa/s to 1.25 GSa/s	
Wavelength (point-by-point)	8 pts to 128 Mpts	
Wavelength (DDS)	8 kpts (Fixed)	
Vertical resolution	16-bit (including sign)	
Built-in arbitrary waves	Over 200	
Minimum rise/fall time	1 Vpp, 50 Ω	< 5 ns (Typ.)
Phase characteristics	-360.000° to 360.000°	
Jitter	150 ps	
Noise superposition amplitude	Noise voltage ≤ 1 Vrms	
Point-by-point filter mode	Zero-order hold, linear interpolation	
PRBS Characteristics		
Bitrate	1 μbps to 300 Mbps	
Edge time	2 ns to 1 ks	
Symbol	PN3, PN5, PN7, PN9, PN11, PN13, PN15, PN17, PN21, PN23, PN25, PN27, PN29, PN31, PN33	
Noise superposition amplitude	Noise voltage ≤ 1 Vrms	
Harmonic Characteristics		
Model	UTG9504T+	UTG9354T+
Frequency range	1 μHz to 250 MHz	1 μHz to 175 MHz
Harmonic order	2 to 16	
Harmonic type	Even, odd, all, custom	
Harmonic amplitude	1 mV to 10 Vpp(50 Ω)	
	Adjustable based on the selected harmonic order	
Harmonic phase	-360.00° to 360.00°	
	Adjustable based on the selected harmonic order	

Output Characteristics

Output Characteristics		
Output impedance	50 Ω (Typ.)	
Protection	Short-circuit protection; overload condition automatically disables waveform output	
Output amplitude (high resistance load)	≤ 40 MHz	2 mVpp to 20 Vpp
	> 40 MHz to ≤ 80 MHz	2 mVpp to 15 Vpp
	> 80 MHz to ≤ 120 MHz	2 mVpp to 10 Vpp
	> 120 MHz to ≤ 160 MHz	2 mVpp to 5 Vpp
	> 160 MHz to ≤ 250 MHz	2 mVpp to 3.5 Vpp
	> 250 MHz to ≤ 320MHz	2 mVpp to 2.5 Vpp
	> 320 MHz to ≤ 400MHz	2 mVpp to 2 Vpp
	> 400 MHz to ≤ 500MHz	2 mVpp to 1.5 Vpp
Output amplitude (50 Ω load)	≤ 40 MHz	1 mVpp to 10 Vpp
	> 40 MHz to ≤ 80 MHz	1 mVpp to 7.5 Vpp
	> 80 MHz to ≤ 120 MHz	1 mVpp to 5 Vpp
	> 120 MHz to ≤ 160 MHz	1 mVpp to 2.5 Vpp
	> 160 MHz to ≤ 250 MHz	1 mVpp to 1.75 Vpp
	> 250 MHz to ≤ 320MHz	1 mVpp to 1.25 Vpp
	> 320 MHz to ≤ 400MHz	1 mVpp to 1 Vpp
	> 400 MHz to ≤ 500MHz	1 mVpp to 0.75 Vpp
Amplitude accuracy	1 kHz sine wave, 0 V offset, > 10 mVpp	±(1% of the set amplitude + 1 mVpp) (Typ.)
DC offset range	50 Ω: ±5 V (Peak AC+DC)	
	High resistance: ±10 V (Peak AC+DC)	
DC offset accuracy	±1% of the set offset ±0.5% of the set amplitude ±2 mV	
Flatness	Relative to 1 kHz sine wave, 1 Vpp, 50 Ω	≤ 10 MHz: ±0.1 dB (Typ.)
		≤ 60 MHz: ±0.2 dB (Typ.)
		≤ 80 MHz: ±0.4 dB (Typ.)
		≤ 500 MHz: ±0.8 dB (Typ.)

Modulation Characteristics

AM (Amplitude Modulation)		
Carrier type	Sine, square, pulse, ramp, arbitrary waves	
Modulation source	Internal, external	
Modulation waveform type	Sine, square, rising ramp, falling ramp, noise, arbitrary waves	
Modulation depth	0.00% to 120.00%	
Modulation frequency	1 μHz to 2 MHz (modulation source: internal)	
DSB-AM (Double-Sideband Amplitude Modulation)		
Carrier type	Sine, square, pulse, ramp, arbitrary waves	
Modulation source	Internal, external	
Modulation waveform type	Sine, square, rising ramp, falling ramp, noise, arbitrary waves	
Modulation depth	0.00% to 100.00%	
Modulation frequency	1 μHz to 2 MHz (modulation source: internal)	
FM (Frequency Modulation)		
Model	UTG9504T+	UTG9354T+
Frequency offset	0 μHz to 250 MHz	0 μHz to 175 MHz
Carrier type	Sine, square, pulse, ramp, arbitrary waves	
Modulation source	Internal, external	
Modulation waveform type	Sine, square, rising ramp, falling ramp, noise, arbitrary waves	
Modulation frequency	1 μHz to 2 MHz (modulation source: internal)	
PM (Phase Modulation)		
Carrier type	Sine, square, ramp, arbitrary waves	
Modulation source	Internal, external	
Modulation waveform type	Sine, square, rising ramp, falling ramp, noise, arbitrary waves	
Phase offset	0.00° to 360.00°	
Modulation frequency	1 μHz to 2 MHz (modulation source: internal)	
ASK (Amplitude Shift Keying)		
Carrier type	Sine, square, pulse, ramp, arbitrary waves	
Modulation source	Internal (50% duty ratio square wave), external (TTL level)	
Modulation frequency	1 μHz to 2 MHz (modulation source: internal)	
FSK (Frequency Shift Keying)		
Carrier type	Sine, square, pulse, ramp, arbitrary waves	

Modulation source	Internal (50% duty ratio square wave), external (TTL level)
Modulation frequency	1 μHz to 2 MHz (modulation source: internal)
Hopping frequency	Selectable at any frequency within the carrier signal range
PSK (Phase Shift Keying)	
Carrier type	Sine, square, ramp, arbitrary waves
Modulation source	Internal (50% duty ratio square wave), external (TTL level)
Modulation frequency	1 μHz to 2 MHz (modulation source: internal)
Hopping phase	0.00° to 360.00°
3FSK (3-Level Frequency Shift Keying)	
Carrier type	Sine, square, pulse, ramp, arbitrary waves
Modulation source	Internal (50% duty ratio square wave)
Modulation frequency	1 μHz to 2 MHz
Hopping frequency 1	Selectable at any frequency within the carrier signal range
Hopping frequency 2	Selectable at any frequency within the carrier signal range
4FSK (4-Level Frequency Shift Keying)	
Carrier type	Sine, square, pulse, ramp, arbitrary waves
Modulation source	Internal (50% duty ratio square wave)
Modulation frequency	1 μHz to 2 MHz
Hopping frequency 1	Selectable at any frequency within the carrier signal range
Hopping frequency 2	Selectable at any frequency within the carrier signal range
Hopping frequency 3	Selectable at any frequency within the carrier signal range
BPSK (Binary Phase Shift Keying)	
Carrier type	Sine, square, ramp, arbitrary waves
Modulation source	Internal
Symbol	PN3, PN5, PN7, PN9, PN11, PN13, PN15, PN17, PN21, PN23, PN25, PN27, PN29, PN31, PN33
Symbol bit rate	1 μbps to 2 Mbps
Phase 1	0.00° to 360.00°
Phase 2	0.00° to 360.00°
QPSK (Quadrature Phase Shift Keying)	
Carrier type	Sine, square, ramp, arbitrary waves
Modulation source	Internal
Symbol	PN3, PN5, PN7, PN9, PN11, PN13, PN15, PN17, PN21, PN23, PN25, PN27, PN29, PN31, PN33
Symbol bit rate	1 μbps to 2 Mbps
Phase 1	0.00° to 360.00°

Phase 2	0.00° to 360.00°
Phase 3	0.00° to 360.00°
Phase 4	0.00° to 360.00°
OSK (Oscillation Shift Keying)	
Carrier type	Sine wave
Trigger source	Internal, external
Modulation frequency	1 μHz to 2 MHz (modulation source: internal)
Oscillation time	5 ns to 500 ks
SUM (Sum Modulation)	
Carrier type	Sine, square, pulse, ramp, arbitrary waves, harmonic, noise, harmonic waves
Modulation source	Internal, external
Modulation waveform type	Sine, square, rising ramp, falling ramp, noise, arbitrary waves
Modulation frequency	1 μHz to 2 MHz (modulation source: internal)
Modulation depth	0.00% to 100.00%
QAM (Quadrature Amplitude Modulation)	
I/Q map	QAM4, QAM8, QAM16, QAM32, QAM64, QAM128, QAM256
Symbol	PN3, PN5, PN7, PN9, PN11, PN13, PN15, PN17, PN21, PN23, PN25, PN27, PN29, PN31, PN33
Modulation bitrate	1 μbps to 2 Mbps
PWM (Pulse Width Modulation)	
Carrier type	Pulse wave
Modulation source	Internal, external
Modulation waveform type	Sine, square, rising ramp, falling ramp, noise, arbitrary waves
Modulation frequency	1 μHz to 2 MHz (modulation source: internal)
Pulse width offset	0.00% to 49.99% (range limited by operating frequency)

Sweep Characteristics

Frequency Sweep	
Carrier type	Sine, square, pulse, ramp, arbitrary waves
Type	Linear, logarithmic, list, step
Trigger source	Manual, external rising edge, external falling edge, internal
Trigger output	Off, rising edge, falling edge

Start time	0 ns to 500 s ±0.1% (linear, logarithmic)
Sweep time	1 ms to 500 s ±0.1% (linear, logarithmic)
Duration	0 ns to 500 s ±0.1% (linear, logarithmic)
Return time	0 ns to 500 s ±0.1% (linear, logarithmic)
Dwell time	1 ms to 500 s ±0.1% (list, step)
List file	A single file can contain up to 2048 frequency points (list)
Trigger delay	0 ns to 1 ks (list, step)
Step	2 to 2,048

Burst

N Cycle	
Waveform	Sine, square, pulse, ramp, arbitrary waves
Trigger source	Internal, external rising edge, external falling edge, manual
Trigger output	Off, rising edge, falling edge
Trigger cycle	1 μs to 1 ks
Cycle number	1 to 1,000,000
Start phase	0.00° to 360.00°
Trigger delay	0 ns to (trigger cycle − 10 ns)
Idle mode	Default, highest, lowest, custom
Gate	
Waveform	Sine, square, pulse, ramp, arbitrary waves
Polarity	Positive, negative (TTL level input)
Start phase	0.00° to 360.00°
Idle mode	Default, highest, lowest, custom
Pulse Train	
Waveform	Sine, square, pulse, ramp, arbitrary waves
Trigger source	Internal, external rising edge, external falling edge, manual
Trigger output	Off, rising edge, falling edge
Start phase	0.00° to 360.00°
Idle mode	Default, highest, lowest, custom

Advanced Function

Multi-Pulse		
Trigger mode	Internal, external, manual	
Trigger delay	0 to 1 ks	
Pulse number	2 to 30	
Variable edge	2 ns to 500 s	
High level time	20 ns to 1 ks	
Gap time	20 ns to 1 ks	
Multi-Tone		
Model	UTG9504T+	UTG9354T+
Tone number	2 to 8	
Frequency range	1 kHz to 400 MHz	1 kHz to 350 MHz
Sequence		
Sample rate	1 μSa to 1.25 GSa/s	
Wavetable length	8 pts to 128 Mpts/CH	
Sequence number	1 to 1,024	
Sequence cycle number	1 to 65,535	
Start event	Internal, external rising edge, external falling edge, manual, timer	
Go to	Next, selected serial number	
Timer	0 ns to 400 s	
Filter mode	Zero-order hold, linear interpolation	
I/Q		
Model	UTG9504T+	UTG9354T+
Symbol rate	1 μSa to 1.25 GSa/s	
Gain balance	±20 dB	
Phase adjustment	-360° to 360°	
IQ offset	-4.9995 V to 4.9995 V	
Center frequency	0 Hz to 500 MHz	0 Hz to 350 MHz
Pattern		
Baud rate	1 μBaud to 100 MBaud	
Input data type	Pattern, File	
Code type	NRZ, RZ, Manchester	
Data format	Binary, hexadecimal	

Maximum data length	Pattern	4,000 characters (binary)	1,000 characters (hexadecimal)
	File	64M characters (binary)	16M characters (hexadecimal)
Amplitude standard	TTL, CMOS5.0, CMOS3.3, CMOS2.5, CMOS1.8, ECL, PECL		
Expression			
Frequency range	1 μHz to 25 MHz		
Function	Sin, cos, tan, sinc, abs, ln, sqrt, acos, asin, atan, sinh, tanh, ceil, exp, fabs, floor		
Operation	+, -, *, /, ^		
Unit of variable value	°, rad		
Frequency counter			
Parameter	Frequency, period, duty ratio, positive pulse width, negative pulse width		
Accuracy	±5 ppm		
Measurement accuracy	8-digit		
Frequency range	100 mHz to 800 MHz	100 mHz to 60 MHz	⩾ 100 mVrms
		60 MHz to 300 MHz	⩾ 200 mVrms
		300 MHz to 500 MHz	⩾ 500 mVrms
		500 MHz to 800 MHz	⩾ 1 Vrms
Coupling mode	AC, DC, high frequency reject		
Input level	TTL compatible		
Input impedance	1 MΩ		
Sensitivity	0% to 100%		
Digital Protocol	**SPI Characteristics**		
Interface	CH2 - SCLK, CH3 - nCS, CH4 - MOSI		
Amplitude	1 mV to 10 V		
Clock frequency	1 Hz to 50 MHz		
Transmit mode	Auto, manual		
Interval time	20 ns to 1,000 s (when transmit mode is set to Auto)		
Data format	Hexadecimal, character		
Data depth	Maximum 2,048 bytes		
Digital Protocol	**I^2C Characteristics**		
Interface	CH3 - SCL, CH4 - SDA		
Amplitude	1 mV to 10 V		
Clock frequency	1 Hz to 50 MHz		

Address	7-bit, 10-bit
Transmit mode	Auto, manual
Interval time	20 ns to 1,000 s (when Transmit mode is set to Auto)
Data format	Hexadecimal, character
Data depth	Maximum 2,048 bytes
Digital Protocol	**UART Characteristics**
Interface	CH4 - TX
Amplitude	1mV to 10V
Baud rate	1 to 1,000,000 (custom)
Data bit	4, 5, 6, 7, 8
Stop bit	1-bit, 2-bit
Parity bit	None, odd, even
Transmit mode	Auto, manual
Interval time	20 ns to 1,000 s (when transmit mode is set to Auto)
Data format	Hexadecimal, character
Data depth	Maximum 2,048 bytes
Channel Coupling	
Channel coupling	All channels
Frequency coupling - ratio	0.000,1 to 10,000
Frequency coupling - offset	±(Maximum frequency of sine wav - 1 μHz)
Amplitude coupling - ratio	0.000,1 to 10,000
Amplitude coupling - offset	± (Maximum amplitude -1 mVpp) (50 Ω)
Phase coupling -ratio	0.000,1 to 10,000
Phase coupling -offset	±720°
Channel Merging	
Channel merging	Allows channels to be combined and arranged in any configuration

Interface and Display

Communication Interface	
Standard	USB Host, USB Device, LAN, HDMI
Sync Output	
Level range	TTL compatible
Output frequency	1 μHz to 10 MHz (CH3 is synchronized with CH1, CH4 is synchronized with CH2, CH3 can't synchronize with CH4)
Output impedance	50 Ω (Typ.)
Couple mode	DC
External Modulation Input	
Input frequency	< 50 kHz
Modulation depth	±5 Vpk = 100%
Input impedance	5 kΩ (Typ.)
External Reference Input	
Input frequency	10 MHz ±50 Hz
Level range	TTL compatible
Input impedance	10 kΩ (Typ., DC couple)
Locking time	< 1 s
Internal Reference Output	
Output frequency	10 MHz ±50 Hz
Level range	TTL compatible
Output impedance	50 Ω (Typ., DC couple)
Trigger Input	
Level range	TTL compatible
Slope	Rise or fall
Pulse width	> 100 ns
Input impedance	10 kΩ (Typ., DC couple)
Response time	< 1 μs (Typ.)
Trigger Output	
Output level	TTL compatible
Pulse width	> 400 ns (Typ.)
Output impedance	50 Ω (Typ.)
Display	
Type	10.1-inch TFT capacitive touch
Resolution	1280*800

General Technical Specification

Power Supply		
Supply voltage	100 to 240 VACrms (Fluctuation: ±10%), 50 Hz/60 Hz 100 to 120 Vrms (Fluctuation: ±10%), 400 Hz	
Power consumption	< 50W	
Fuse	2A, T-class, 250 V	
Environmental Requirements		
Temperature range	Operating: +10°C to +40°C	
	Non-operating: -20°C to +60°C	
Cooling method	Forced cooling by fan	
Humidity range	Below +35°C: ≤ 90% RH	
	+35°C to +40°C: ≤ 60% RH	
Altitude	Operating: Below 2,000	
	Non-operating: Below 15,000	
Pollution degree	2	
Operating environment	Indoor use	
Mechanical Specifications		
Dimensions	361 mm × 209 mm × 106 mm (W × H × D)	
Weight	4.5 kg	
Calibration interval	One year	
Regulatory Standards		
EMC	Compliance with EMC directives (2014/30/EU), conform to or better than IEC 61326-1:2021/EN61326-1:2021, IEC 61326-2-1:2021/EN61326-2-1:2021	
Conductive disturbance	CISPR 11/EN 55011	CLASS B group 1, 150kHz-30 MHz
Radiation disturbance	CISPR 11/EN 55011	CLASS B group 1, 30 MHz-1GHz
Electrostatic discharge (ESD)	IEC 61000-4-2/EN 61000-4-2	±4.0 kV (Contact), ±8.0 kV (Air)
Radio frequency electromagnetic field immunity	IEC 61000-4-3/EN 61000-4-3	3 V/m (80 MHz to 1 GHz) 1 V/m (1.4 GHz to 6 GHz)
Electrical fast transient burst (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 line to zero line) ±1 kV (live/zero line to ground)

Immunity to RF continuous conduction	IEC 61000-4-6/EN 61000-4-6	3V,0.15-80 MHz
Voltage dips and short interruptions	IEC 61000-4-11/EN 61000-4-11	Voltage dip: 0% UT during 0.5 cycle 0% UT during 1 cycle 70% UT during 25/30 cycles Short interruption: 0% UT during 250/300 cycles
Safety Regulations		
	EN 61010-1:2010+A1:2019 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	

Order Information and Warranty Period

	Description	Order No.
Model	Maximum output frequency 500 MHz	UTG9504T+
	Maximum output frequency 350 MHz	UTG9354T+
Accessories	Power cable x1	
	USB data cable x1	UT-D14
	BNC-BNC x4	UT-L45

Note: Please order the product and accessories from your local UNI-T distributor.

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.

Headquarter

UNI-TREND TECHNOLOGY (CHINA) CO., Ltd.
Address: No.6, Industrial North 1st Road, Songshan Lake Park, Dongguan City, Guangdong Province, China
Tel: (86-769) 8572 3888

Europe

UNI-TREND TECHNOLOGY EU GmbH
Address: Affinger Str. 12
86167 Augsburg Germany
Tel: +49 (0)821 8879980

North America

UNI-TREND TECHNOLOGY US INC.
Address: 3171 Mercer Ave STE 104, Bellingham, WA 98225
Tel: +1-888-668-8648