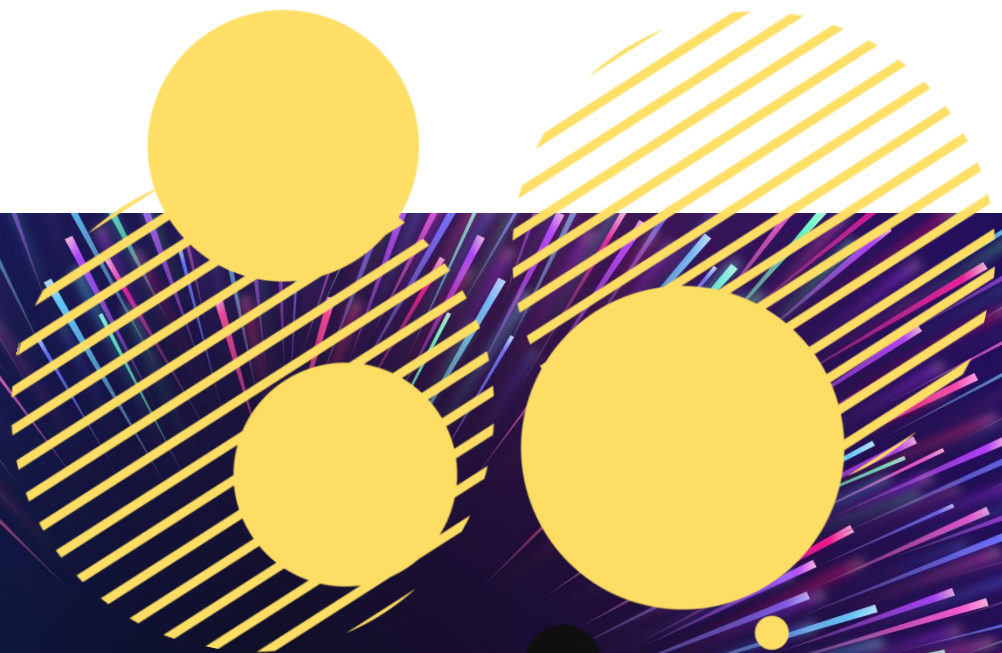


Hantek

The Hantek logo graphic consists of three yellow circles of varying sizes arranged in a triangular pattern. The circles are partially covered by a series of parallel yellow diagonal lines that create a sense of depth and movement. The background of the entire cover is a dark blue field filled with numerous thin, colorful lines (purple, pink, blue, green) radiating outwards from the center, creating a starburst or nebula-like effect.

Tablet1000 series

Tablet oscilloscope

Data Manual

2022.05

Warranties and Declarations

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Statement

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Product certification

Hantek certified Tablet1000 series oscilloscope to meet China's national industry standards and has passed the CE certification.

Contact us

If you have any questions when using the products of Qingdao Hantek Electronics Co., LTD., you can obtain service and support through the following ways:

Email: service@hantek.com, support@hantek.com

Website: <http://www.hantek.com>

1 Product features

Product features

- Multi touch large screen, resolution up to 800 * 480, friendly and easy-to-use UI, good interaction experience.
- Standard configuration of 4 or 2-channel oscilloscope, maximum bandwidth of 250MHz, maximum sampling rate of 1GSa/s, 8M large storage.
- Provide high-precision multimeter with data recording, storage, trend chart, statistical analysis and other functions.
- A variety of arbitrary waveforms are built into the signal generator, and the highest output frequency is 25MHz.
- One key waveform storage, convenient and fast.
- Suspension foot design, multi angle adjustment, anti falling and anti-seismic, put it on the go.
- Built in super large capacity lithium battery, full power, long endurance, standby for up to half a year.
- The standard 18W charger supports type-C fast charging, and can also share a set of charging equipment with mobile phones.

The new generation of TO1000 series multi-functional full touch screen oscilloscope has a thin body, light weight and is easy to carry; Unique hanging design, hands-free, anti falling and anti-seismic, sturdy and durable; It integrates oscilloscope, multimeter, signal generator and spectrum analyzer; Built in super large capacity battery, long endurance, support fast charging, and abundant power.

2 Technical indicators

All technical specifications are applicable to the Tablet1000 series oscilloscopes. For detail, check the end of this chapter. To verify that an oscilloscope meets the technical specifications, it must first meet the following conditions:

- The oscilloscope must have been operating continuously for at least 20 minutes at the specified operating temperature.
- If the operating temperature varies by more than 5 degrees Celsius, the "self-calibrate" operation must be performed, which can be find under the [Utility](#) menu.
- The oscilloscope must be within the ex-factory calibration period.

All technical specifications are guaranteed to meet requirements except those marked "typical".

Technical indicators

Model	Bandwidth	Sampling rate
TO1112 (C/D)	110 MHz	250MSa/S
TO1152 (C/D)	150 MHz	1GSa/S
TO1202 (C/D)	200 MHz	1GSa/S
TO1252 (C/D)	250 MHz	1GSa/S
TO1204 (C/D)	200 MHz	1GSa/S
TO1254 (C/D)	250 MHz	1GSa/S
TO1154 (C/D)	150 MHz	1GSa/S
TO1204AUTO	200 MHz	1GSa/S
TO1254AUTO	250 MHz	1GSa/S
TO1154AUTO	150 MHz	1GSa/S

Horizontal system

Horizontal scale range	2ns/div ~ 100s/div 1, 2, and 5 steps
	Single, "sampling" mode
Incremental time accuracy (Full bandwidth)	± (1 sampling interval +100ppm× reading +0.6ns) > 16 times on average ± (1 sampling interval +100ppm× reading +0.4ns)

Sampling interval = seconds/grid ÷ 200	
Time base accuracy	$\pm 50 \text{ ppm} \pm 5 \text{ ppm/year}$
Time base delay range	Before trigger $\geq 1/2$ screen width
	After trigger 1 s or 100 div (take the greater)
Time interval (ΔT)	Measurement $\pm (1 \text{ sampling interval}) \pm (2 \text{ ppm} \times \text{reading})$
	$\pm 50 \text{ ppm}$
Range of offset correction between channels	$\pm 100 \text{ ns}$
Horizontal mode	YT Default
	XY 1= channel 1, 1= channel 2.
	ROLL Time base $\geq 100 \text{ ms/div.}$

Vertical system

Series	TO1000 Series (1G sampling rate)	TO1112 Series (250M sampling rate)
Input coupling	DC, AC or grounded	
Input impedance	$1 \text{ M}\Omega \pm 2\%$	
Input capacitance	$18 \text{ pF} \pm 3 \text{ pF}$	
Vertical scale range	2mV/div~10V/div	10mV/div~10V/div
Vertical resolution	8bit	
Offset range	$\pm 1 \text{ V} (2 \text{ mV/div} \sim 100 \text{ mV/div})$	$\pm 1 \text{ Vmax} (100 \text{ mV/div})$
	$\pm 10 \text{ V} (200 \text{ mV/div} \sim 1 \text{ V/div})$	$\pm 10 \text{ Vmax} (1 \text{ V/div})$
	$\pm 50 \text{ V} (2 \text{ V/div} \sim 10 \text{ V/div})$	$\pm 50 \text{ Vmax} (10 \text{ V/div})$
Dynamic range	$\pm 5 \text{ div} (8 \text{ bit})$	
Bandwidth limitation	20MHz, each channel is independent.	
DC gain accuracy	$\pm 3\% \text{ FullScale}$	
DC offset accuracy	$< 100 \text{ mV/div} (\pm 0.1 \text{ div} \pm 2 \text{ mV} \pm 1.5\% \text{ offset})$	
	$< 1 \text{ V/div} (\pm 0.1 \text{ div} \pm 2 \text{ mV} \pm 1\% \text{ offset})$	
	$> 2 \text{ V/div} (\pm 0.1 \text{ div} \pm 2 \text{ mV} \pm 1.0\% \text{ offset})$	

Series	TO1000 Series (1G sampling rate)	TO1112 Series (250M sampling rate)
Isolation degree between channels	40dB, DC to the maximum rated bandwidth of each model	
Supporting probe attenuation coefficient	0.01X, 0.02X, 0.05X, 0.1X, 0.2X, 0.5X, 1X, 2X, 5X, 10X, 20X, 50X, 100X, 200X, 500X, 1000X, 2000X, 5000X, 10000X	

Collect

A series of	TO1000 Series (1G sample)	TO1112 Series (250M sample)
Sampling method	Real-time sampling	
Maximum analog channel sampling rate	1 GSa/s	250MSa/s
Collection mode	Normal, average, peak, high resolution	
Waveform interpolation	(sin x)/x	
Maximum storage depth	8Mpts (single channel), 4Mpts (double channel), 2Mpts (triple and quadruple channels)	
Peak detection	Under all time base settings, capture burrs with a minimum of 8ns.	

Trigger

Model	Automatic, normal, single
Level	CH1 ~ CH4 or CH1 ~ CH2 ± 4 degrees from the center of the display
Release inhibition range	8ns~10s
Trigger level accuracy	CH1 ~ CH4 or CH1 ~ CH2 0.2 grid x volt/grid in ± 4 degrees from the center display
Trigger sensitivity	±0.87div(2mV/div) ±0.78div(5mV/div) ±0.69div(10mV/div) ±0.52div(20mV/div) ±0.47div(50mV/div) ±0.26div(100mV/div) ±0.26div(200mV/div) ±0.47div(500mV/div) ±0.26div(1V/div) ±0.26div(2V/div) ±0.26div(5V/div)

$\pm 0.26\text{div}(10\text{V/div})$

Edge-triggered

Slope	Rising edge, falling edge, double edge
Data source	CH1 ~ CH4 or CH1 ~ CH2

Pulse width trigger

Polarity	Positive polarity, negative polarity
Condition	<, >, !=, =
Data source	CH1 ~ CH4 or CH1~ CH2
Pulse width range	8ns~10s

Video trigger

Signal standard	NTSC, PAL, HDTV720p, HDTV1080p, HDTV1080i
Data source	CH1 ~ CH4 or CH1 ~ CH2
Synchronous	Scan lines, number of lines, odd field, even field, all fields

Slope trigger

Slope	Up, down
Condition	Scan lines, number of lines, odd field, even field, all fields
Data source	CH1 ~ CH4 or CH1 ~ CH2
Time range	8ns~10s

Timeout trigger

Data source	CH1 ~ CH4 or CH1 ~ CH2
Polarity	Positive polarity, negative polarity
Time range	8ns~10s

Measurement

Cursor	The voltage difference between the cursors ΔY
	The time difference between the cursors ΔX
	Reciprocal of ΔX in Hertz ($1/\Delta X$)
Automatic measurement	Frequency, double peak, on average, maximum, minimum, period, top, median, bottom, amplitude, RMS, rising edge overshoot, rising edge preshoot, period RMS, cycle average, rise time, fall time, positive pulse width, negative pulse width, positive duty ratio, negative duty ratio, FRR, FFF, falling edge overshoot, falling edge

preshoot, pulse width, FRF, FFR, LRR, LRF, LFR, LFF, maximum time, minimum time, positive phase difference, negative phase difference, variance, positive pulse number, negative pulse number, rising edge number, falling edge number, trigger count

Mathematical operation

Data source	CH1 ~ CH4 or CH1 ~ CH2	
Operator	+, -, ×, /, FFT	
FFT	Point	1024
	Window	Rectangle, Hanning, Hemming, Blackman, Bartlett, flat top
	Display	Display single or display all
	Vertical scale	dB, VRms

Storage

Save/call out (non-volatile)	Save and call out, including images, references, CSV, binary, settings
Save to external storage	Images, references, CSV, binary, settings

Arbitrary waveform generator

Channel number	1 channel arbitrary wave generator output (with signal generator function)	
	1 channel 1KHz output (without signal generator function)	
Sampling rate	200MSa/s	
Vertical resolution	12bit	
The highest frequency	25MHz	
Standard waveform	Sine wave, square wave, triangle wave, noise, DC	
Arbitrary waveform	Arb1, Arb2, Arb3, Arb4	
Sine wave	Frequency range	0.1 Hz ~ 25 MHz
Square wave/pulse	Frequency range	0.1 Hz ~ 10 MHz
	Duty ratio	0% ~ 100%
Triangle wave	Frequency range	0.1 Hz ~ 1 MHz
	Symmetry	0% ~ 100%

Noise	Bandwidth	> 25 MHz	
DC	Offset	$\pm 1.5V$ （50 Ω ）、 $\pm 3V$ (high resistance)	
	Resolution	100 μ V	
	Precision	2% (1 KHz)	
Arbitrary wave	Frequency range	0.1 Hz ~ 10 MHz	
	Support upper computer download, and external memory calling out		
Amplitude	0mV~3Vpp (50 Ω)		
	0mV~6Vpp (high resistance)		
Wavelength	4KSa		
Frequency resolution	0.1 Hz or 4 bits, take the greater one of the two		
Frequency accuracy100 ppm (< 10 kHz) 50 ppm (> 10 kHz)			
Output impedance	50 Ω $\pm$ 2%		
Modulation	FM	Modulation waveform	Sine wave, square wave, triangle wave
		Modulation frequency	1Hz~50KHz
		Modulation deviation	0.1Hz~1KHz
	AM	Modulation waveform	Sine wave, square wave, triangle wave
		Modulation frequency	1Hz~50KHz
		Modulation depth	0% - 120%.
Burst	Type	Multi-period, infinite	
	Cycle number	1-2000000000	
	Trigger source	Manual	
Multimeter			
Maximum resolution 4000 points			
Measuring method	Voltage, current, resistance, capacitance, diode, on-off measurement		

Maximum input voltage	AC:600V, DC: 600V
Maximum input current	AC: 10A, DC:10A
Input impedance	10M Ω

Multimeter gear

Measurement item	Range	Precision	Resolution
Direct current voltage	400mV	$\pm (1\% + 2)$	100uV
	4.000V		1mV
	40.00V		10mV
	400.0V		100mV
	600.0V		1V
	Overload protection: 250V for the 400mv range, 600Vrms for the rest ranges.		
Alternating current voltage	4.000 V	$\pm (1.2\% + 5)$	1mV
	40.00V		10mV
	400.0V		100mV
	600.0V	$\pm (1.5\% + 5)$	1V
Frequency range: 40Hz ~ 400Hz			
Frequency range of 400V and 600V range: 40Hz ~ 100Hz			
Direct current	40.00 mA	$\pm (1\% + 2)$	10uA
	200.0 mA	$\pm (1.5\% + 2)$	100uA
	4.000 A	$\pm (1.8\% + 2)$	1mA

Measurement item	Range	Precision	Resolution
Alternating current	10.00 A	$\pm (3\% + 2)$	10mA
	Overload protection: self-recovery fuse 200mA/250V, no fuse for 4A and 10A range		
	40.00 mA	$\pm (1.3\% + 2)$	10uA
	400.0 mA	$\pm (1.8\% + 2)$	100uA
	4.000 A	$\pm (2\% + 3)$	1mA
	10.00 A	$\pm (3\% + 5)$	10mA
	Frequency range: 40Hz~400Hz;		
	Self-recovery fuse: 200mA/250V, no fuse for 4A and 10A range		
	400.0 Ω	$\pm (1\% + 3)$	0.1 Ω
	4.000K Ω	$\pm (1.2\% + 5)$	1 Ω
Resistance	60.00K Ω		10 Ω
	400.0K Ω		100 Ω
	4.000M Ω		1K Ω
	40.00M Ω	$\pm (1.5\% \pm 3)$	10K Ω
	Overload protection: 220V effective value		
Capacitance	40.00nF		10pF
	400.0nF	$\pm (3\% + 5)$	100pF
	4.000uF		1nF

Measurement item	Range	Precision	Resolution
	40.00uF		10nF
	100.0uF		100nF
	Overload protection: 220V effective value		
Diode	0V ~ 1.0V		
On and off measurement	< 50 Ω		
Display			
Screen type	7 "TFT LCD		
Display resolution	800 (horizontal) *480 (vertical) pixels		
Display type	Point, vector		
Waveform	Adjustable		
Brightness			
Grid type	Solid line, dotted line, none		
Grid brightness	Adjustable		
Screen brightness	Adjustable		
Afterglow	1S, 5s, 10S, 30s, Infinite, off		
Interface			
Standard interface	USB Host and USB Device		
Power supply			
Power supply	AC 100 ~ 240V, 50 ~ 60Hz; DC input 5V3A/9V2A/12v1.5A		
Power	< 8 w		
Quick charge	Support quick charge		
Battery	3.7V 2600mAh *4 in parallel 3.7V 2600mAh *2 in parallel		

Environment

Operating temperature 0 °C ~ 50 °C

Storage temperature- 20 °C ~ 70 °C

Humidity $\leq +104^{\circ}\text{F}$ ($\leq +40^{\circ}\text{C}$): relative humidity $\leq 90\%$
 $106^{\circ}\text{F} \sim 122^{\circ}\text{F}$ ($+41^{\circ}\text{C} \sim 50^{\circ}\text{C}$): relative humidity $\leq 60\%$

Cooling Convection

Altitude	Operating and not operating	3,000m (10,000 ft)
	Random vibration	0.31g RMS at 50Hz to 500Hz, 10 minutes in each axial direction
	Not operating	2.46g RMS at 5Hz to 500Hz, 10 minutes in each axial direction

Mechanical parts

Oscilloscope size 248mm*176mm*54mm (length * width * height)

Weight 1.2kg (including batteries)

3 Order information and warranty period

Order information

Order information	Order no.
Host model	
250MSa/S, 110MHz, 2-channel oscilloscope	TO1112
250MSa/S, 110MHz, 2-channel oscilloscope + multimeter	TO1112C
250MSa/S, 110MHz, 2-channel oscilloscope + multimeter + signal source	TO1112D
1GSa/S, 150MHz, 2-channel oscilloscope	TO1152
1G Sa/S, 200MHz, 2-channel oscilloscope	TO1202
1G Sa/S, 250MHz, 2-channel oscilloscope	TO1252
1G Sa/S, 150MHz, 2-channel oscilloscope + multimeter	TO1152C
1G Sa/S, 200MHz, 2-channel oscilloscope + multimeter	TO1202C
1G Sa/S, 250MHz, 2-channel oscilloscope + multimeter	TO1252C
1G Sa/S, 150MHz, 2-channel oscilloscope + multimeter + signal source	TO1152D
1G Sa/S, 200MHz, 2-channel oscilloscope + multimeter + signal source	TO1202D

Order information	Order no.
multimeter + signal source	
1G Sa/S, 250MHz, 2-channel oscilloscope +	TO1252D
multimeter + signal source	
1G Sa/S, 150MHz, 4-channel oscilloscope	TO1154
1G Sa/S, 200MHz, 4-channel oscilloscope	TO1204
1G Sa/S, 250MHz, 4-channel oscilloscope	TO1254
1G Sa/S, 150MHz, 4-channel oscilloscope +	TO1154C
multimeter	
1G Sa/S, 200MHz, 4-channel oscilloscope +	TO1204C
multimeter	
1G Sa/S, 250MHz, 4-channel oscilloscope +	TO1254C
multimeter	
1G Sa/S, 150MHz, 4-channel oscilloscope +	TO1154D
multimeter + signal source	
1G Sa/S, 200MHz, 4-channel oscilloscope +	TO1204D
multimeter + signal source	
1G Sa/S, 250MHz, 4-channel oscilloscope +	TO1254D
multimeter + signal source	
1G Sa/S, 150MHz, 4-channel oscilloscope +	TO1154AUTO
multimeter + signal source	

Order information	Order no.
1G Sa/S, 200MHz, 4-channel oscilloscope + TO1204AUTO multimeter + signal source	
1G Sa/S, 250MHz, 4-channel oscilloscope + TO1254AUTO multimeter + signal source	
Standard accessories	
9V2A/5V3A/12V1.5A adapter	--
USB cable	--
Multimeter Pen *1 (only for TO1000C/D series)	--
	PP150B (110 MHz)
Oscilloscope probe (one for 2-channel series, two for 4-channel series)	PP150B (150 MHz) PP200 (200 MHz) PP250 (250 MHz)
Crocodile clip (one for 2-channel series, two for 4-channel series)	HT324

Warranty period

The host machine is guaranteed for 3 years, not including probe and accessories.



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