

# Automotive Tablet Oscilloscope SATO1000 Series DATASHEET

## **PRODUCT OVERVIEW**

SATO1000 is Micsig's New Generation of Automotive Tablet Oscilloscope, compared with previous ATO1000 series, the SATO1000 adopts integrated touch screen technology and upgraded the hardware and software system, featuring 4 channels, 100MHz bandwidth, has maximum 1G Sa/s sampling rate and up to 70Mpts of memory depth.

The SATO1000 equipped with highly sensitive digital trigger system, and a comprehensive Automotive Diagnostic software preset, able to help mechanics quickly and easily find out all kinds of problem on vehicles, including circuits on Charging/Start up, various Sensors and Actuators, Ignition system, and Networks (CAN, CAN FD, LIN, Flexray, K line) etc. Combined with Micsig's unique touch algorithm patented technology, the SATO1000 presents unparalleled operating experience to users.

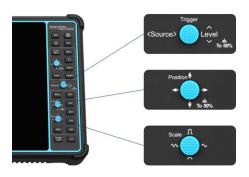


#### **Key Specifications**

Model / Ordering Number	SATO1004
Analog Channels	4
Bandwidth	100MHz
Sampling Rate (Max.)	1GSa/S (single channel)
Memory Depth	70Mpts (single channel)
Waveform Capture Rate (Max.)	130,000 wfms/s
Support Tests	Charging/Start Circuits, Sensors, Actuators, Ignition, Networks (CAN, CAN FD,
	LIN, Flexray, K line), Combination Tests
Bandwidth Filter	Full bandwidth, Low pass
Interfaces	Wi-Fi, USB 3.0/2.0 Host, USB Type-C, Grounding, HDMI, Trigger out
Display	Industrial 8" TFT-LCD (800*600), 14*10 grids
Dimension / Net Weight	265*192*50mm / 1.9kg (with battery)
Battery	7.4V, 7500mAh, Li-ion battery

## CHARACTERISTICS & FEATURES





 Highly integrated multifunction shortcut keys, deliver quick & accurate control.



Built-in 7500mAh Li-ion battery, up to 5 hours battery life, support Power-off lock, more secure to travel with.



Micsig Universal Probe Interface (UPI), intelligent bi-directional oscilloscope to probe communication, easy to set up attenuation and calibration.





## AUTOMOTIVE DIAGNOSTIC PRESETS



▲ SATO able to test the charging circuit and starting circuit to check whether the car charging /start-up circuit is working normally.



▲ SATO support multiple Actuator tests, including Carbon Canister and EGR solenoid valve, Fuel Pump Injectors, Cooling fan, Pressure Regulator, etc.

Micsig	RUN 14M 1GSa/s Ops A J DOV	Д
Charging Start Circuits	CAN H&L CH1 Vol CH2 Vol	5kV = F 5kX
Sensor		л
Actuators	Please connect Ch1 to CAN_H with with BNC-Banana,connect Ch2 to CAN_L with	2
Ignition	BNC-Banana.	
Combination		
Test		
CHx	Fine 11. 1ms 60 111	0554

▲ SATO is capable of acquiring and decoding CAN High /CAN Low, CAN FD, LIN, FlexRay, and K line signals, delivers professional Network communication tests on vehicles.



▲ SATO can directly measure the waveform of the sensors, by comparing with standard waveform, it helps user easily find out possible problem.

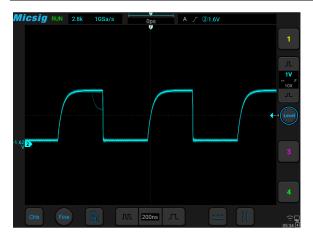
Micsig	RUN 14M	1GSa/s	Ops A	✓ ①0V	L L
Charging Start Circuits		Voltage(k)	V+) OVoltage		5kV
Sensor	Secondary	© Coil outpu	it test OVoltage		5kX T
Actuators	Primary+ Secondary	⊖Voltage(m			2
Ignition	Secondàry	СНТР			
Networks		CHI -V			
Combination Test		Please conn	ect Ch1 and the probe	of secondary	Lovel
		Ignition.			
СНх		a) m	1ms _L		

▲ The ignition system of a car is usually composed of primary and secondary coils and spark plugs. SATO can test both Primary and Secondary ignition signals, to find out possible malfunction.

Micsig	RUN 14M 1GSa/s	Ops A 1	DOV	л
Charging Start Circuits		CH1-Vol CH2+	-Vol	5kV F
Sensor	Crankshaft+ Primary Ignition			л.
Actuators	Primary Ignition+ Injector Vol	Please connect Ch1 to Cranksha signal with BNC-Banana,and		2
Ignition	Crankshaft+ Camshaft+Injector Vol+Secondary Ignition	connect Ch2 to Camshaft signal BNC-Banana.	with	
Networks	Vol+Secondary Ignition			Level
				15:57

▲ The electronic faults can be complicated, use SATO to perform combination tests, by comparing the collected various waveforms, it helps users judge faults by analyzing the timing and quantitative relationships between waveforms.





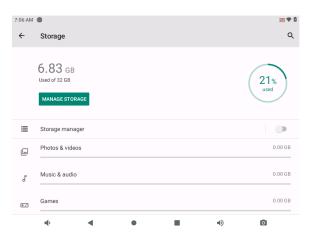
#### ▲ High Waveform Update Rate

With a waveform update rate of up to 130,000 wfm/s, the SATO series can easily capture unusual or low probability events.



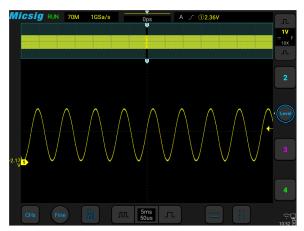
#### ▲ Powerful Trigger Functions

Support Edge, Pulse, Logic, N Edge, Runt, Slope, Timeout, Video and Serial trigger, most intuitive trigger settings, fast and easy trigger source switching.



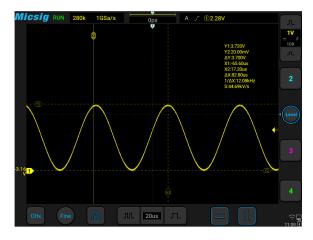
#### ▲ Large 32GB Internal Storage

user can wirelessly access/view mass files like pictures, videos of the oscilloscope via PC or mobile phone.



#### ▲ Ultra-deep Memory

Using hardware-based Zoom technique and memory depth of up to 70Mpts, users to move and browse waveforms much easier and quickly zoom in to focus on the area of interest.



#### ▲ Convenient Cursor Measurement

One touch to open horizontal and vertical cursors, each cursor can be moved separately or simultaneously, brings unmatched user experience.



#### Remote Control and Demonstration

Support PC software + Mobile App (Android / iOS) remote control, able to access internet for online upgrade, it also can be connected to HDMI port for training and education demonstrations.



### Specifications

Vertical System         DC. AC. GND           Input Coupling         DC. AC. GND           Rise Time         3.3 iss           Input Impedance         140:21 % [14.5g F:3g F           Vertical Resolution         8 bits           DC Gain Accuracy (Amplitude Accuracy)         <22% (1MD (Input)           Input Sensitivity Range         1mV/dw-10V/div (1MD (Input)           Of-Ac-Ch Solid Tool C to Musimum Bandvidt MG (100.1)            Of-Ac-Ch Solid Tool C to Musimum Bandvidt MG (100.1)            Of-Ac-Ch Solid Tool C to Musimum Bandvidt MG (100.1)            Of-Ac-Ch Solid Tool C to Musimum Bandvidt MG (100.1)            Of-Ac-Ch Solid Tool C to Musimum Bandvidt MG (100.1)            Maximum Input Voltage         CAT I 300/rms (1MD Input)           Horizontal System            Time Base Delay Time Range         2msd/ur-18xd/u           Musimum Mathod         Real-Time           Pask Detect         Capture narrow gitches at all sweep speeds: CH - 1ms, dual CH - 2m, four CH - 4ms           Maximum duration at highest sampling rate         7ms           Maximum duration at highest sampling rate         30ms - 10s           Trigger Mode         Auto, Normal, Single           Trigger Coupling         Delate or negative slope on any channel. Coupling i		
Rise Time         ≤ 3.5m           Input Impedance         IMQ21%[14.5pF23pF           Vertical Resolution         B bits           DC Gain Accuracy (Amplitude Accuracy)         <22% (1MQ Input)           Input Sensitivity Renge         MVXdiv-10V/div (MQ Input)           Ch-to-Ch Isolation DC to Maximum Bandwidth         <24.02 (100.1)           Offset Range         <22.5V (Probe attenuation X1, <500mV/div), ±120V (Probe attenuation X1, 550mV/div)           Maximum Input Voitage         CAT I 300.Vrms (1MQ Input)           Forizontal System            Time Base         2mId/v-1kald/v           Time Base         2mId/v-1kald/v           Time Base         2mId/v-1kald/v           Time Base         2mId/v-1kald/v           Time Base Delay Time Range         4d/vstorts > 14/s0           Clock Orft         SEEppin J year           Sampling Method         Real-Time           Peak Detect         Capture narrow giltches at all sweep speeds: CH = 1ns, dual CH = 2ns, four CH = -4ns           Maximum duration at highest sampling rete         70ms           Average         Selectable from 2, 4, 8, 16, 32, 64, 128, 256, -           Frigger Mode         Auto, Normal, Single           Trigger Outget         Solame-10s           Trigger Outget         Positive or n	Vertical System	
Inspit impedance         IMC2 1% [14.5pE3pF           Vertical Resolution         8 bits           DC Gain Accuracy (Amplitude Accuracy)         *32% (1MC Input)           Input imped Sensitivity Range         ImVUde- 100/d/u (1MC Input)           Ch-to-Ch Isolation DC to Maximum Bandwithth         >4068 (100.1)           Offset Range         225 V (Probe attenuation X1. <500mV/dity), ±120V (Probe attenuation X1. ±500mV/dity)           Maximum Input Voltage         CAT 1 300/Vms (1ML Input)           Fortsontal System         235 Prof 1 448           Clock Drift         545 Prof 1 448           Clock Drift         545 Prof 1 448           Clock Drift         545 Prof 1 448           Sampling System         2010 Prof 148           Banging Method         Real-Time           Peak Detc1         Capture narrow glitches at all sweep speds: CH – 1ns, dual CH – 2ns, four CH – 4ns           Maximum duration at highest sampling rate         70ms           Proger         Selectable from 2, 4, 8, 16, 32, 64, 128, 256, -           Trigger Mode         Auto, Normal, Single           Trigger Coupling         Cub.C. Ligh Inspurency reject, noise reject           Trigger On width of positive or negative sispe on any channel. Coupling Includes DC, HF reject, LF reject, LF reject, LF reject, and noise reject           Trigger Types         200ns-10s	Input Coupling	DC, AC, GND
Vertical Resolution         5 bits           DC Gain Accuracy (Amplitude Accuracy)         <125% (1MQ Input)           Imput Sensitivity Range         1mV/dxv~10V/div (1MQ Input)           Ch-to-Ch Isolation DC to Maximum Bandwidth         24068 (100.1)           Offset Range         22.5V (1Poble attenuation X1, <500mV/div), ±120V (Probe attenuation X1, ≥500mV/div)           Maximum Input Voltage         CAT 1 300V/ms (1MQ Input)           Horizontal System         2106 (200.1)           Time Base Delay Time Range         14 divisions = 14ks           Clock Drift         5±5ppm / year           Time Base Delay Time Range         14 divisions = 14ks           Clock Drift         5±5ppm / year           Sampling Method         Real-Time           Peak Detect         Capture narrow glitches at all sweep speeds: CH – 1ns, dual CH – 2ns, four CH – 4ns           Maximum duration at highest sampling rate         70ms           Average         Selectable from 2, 4, 8, 16, 32, 64, 128, 256, =           Trigger Rouge         200sr–10s           Trigger Coupling         DC. AC, high frequency reject, low frequency reject, noise reject           Trigger Coupling         DC. AC, high frequency reject, low requency reject, noise reject           Trigger Outoff Range         Trigger on widin of positive or negative pulses that are >, <, s, # or within a period of lum of abs =	Rise Time	≤ 3.5ns
C Gain Accuracy (Amplitude Accuracy)         <42% (1MQ Input)           Input Sensitivity Range         ImVidiv-10Vidiv (1MQ Input)           Ch4o-Ch Isolation DC to Maximum Bandwidth         240dB (100:1)           Offset Range         42.5V (Probe attenuation X1, <500mV/div), ±120V (Probe attenuation X1, <500mV/div), Maximum Input Voltage           CAT 1300Vrms (1MQ Input)         CAT 1300Vrms (1MQ Input)           Horizontal System         2msdtw-1ks/div           Time Base         2msdtw-1ks/div           Time Base Accuracy         20ppm           Sampling System         Capture narrow glitches at all sweep speeds: CH - 1ns, dual CH - 2ns, four CH - 4ns           Maximum duration at highest sampling rato         70ms           Average         Selectable from 2, 4, 8, 16, 32, 64, 128, 256, =           Frigger Mode         Auto. Normal. Single           Trigger Rodef         Positive on any loing negative slope on any channel. Coupling Includes DC, HF reject, LF reject, Maximum and roise reject.           Frigger Types         Frigger on with of positive or negative slope on any channel. Coupling Includes DC, HF reject, LF reject, Maximum and roise reject.           Frigger Types         Frigger on with of positive or negative slope on any channel. Coupling Includes DC, HF reject, LF reject, LF reject,	Input Impedance	1MΩ±1%  14.5pF±3pF
Input Sensitivity Range         ImV/div (IMQ input)           Ch-to-Ch Isolation DC to Maximum Bandwidth         >40dB (100.1)           Offset Range         25V (Probe attenuation X1, <500mV/div), ±120V (Probe attenuation X1, 2500mV/div), Maximum Input Voltage           CAT I 300Vrms (IMQ Input)         CAT I 300Vrms (IMQ Input)           Horizontal System         2m/div-1kk/div           Time Base         2m/div-1kk/div           Time Base Accuracy         200pm           Sampling System         2m/div-1kk/div           Reak Detect         Capture narrow glitches at all sweep speeds: CH - 1ns, dual CH - 2ns, four CH - 4ns           Maximum duration at highest sampling rato         70ms           Average         Selectable from 2, 4, 8, 16, 32, 64, 128, 256           Envelope         Selectable from 2, 4, 8, 16, 32, 64, 128, 256, ~           Trigger Node         Auto, Normal, Single           Trigger Node         Auto, Normal, Single           Trigger Ocupiling         DC: AC, high frequency reject, noise reject.           Trigger Ocupiling         Trigger on with of positive or negative slope on any channel. Coupling includes DC, HF reject. EF reject.           Logic         Trigger on any logic pattern of the channel changes to >, < =, #, true value, false value within the set line torse.           Video         Trigger on any logic pattern of the signal and the tigger level. In thigger segnet	Vertical Resolution	8 bits
Cheboth isolation DC to Maximum Bandwidth         240dB (100:1)           Offset Range         42.5V (Probe attenuation X1, <500mV/div), £120V (Probe attenuation X1, <500mV/div), Maximum Input Voltage	DC Gain Accuracy (Amplitude Accuracy)	<±2% (1MΩ Input)
Offset Range         ±2.5V (Probe attenuation X1, <500mV/div), ±120V (Probe attenuation X1, <500mV/div)	Input Sensitivity Range	1mV/div~10V/div (1MΩ Input)
Maximum Input Voltage         CAT 1 300Vrms (1MΩ Input)           Horizontal System         Znsidiv~1ks/div           Time Base         Znsidiv~1ks/div           Time Base Delay Time Range         14 divisions ~ 14ks           Clock Drift         S±5pm / year           Time Base Accuracy         ±20ppm           Sampling System         Capture narrow glitches at all sweep speeds: CH - 1ns, dual CH - 2ns, four CH - 4ns           Maximum duration at highest sampling rate         Real-Time           Peak Detect         Capture narrow glitches at all sweep speeds: CH - 1ns, dual CH - 2ns, four CH - 4ns           Maximum duration at highest sampling rate         70ms           Average         Selectable from 2, 4, 8, 16, 32, 64, 128, 256, °           Trigger System         Zoons-10s           Trigger Coupling         DC, AC, high frequency reject, low frequency reject, noise reject.           Trigger Types         Trigger on width of positive or negative slope on any channel. Coupling includes DC, HF reject, LF reject, LF reject, LF reject, CH reject, LF reject, CO find patterms on olock edges, Defines the assigned mote (ANO, O	Ch-to-Ch Isolation DC to Maximum Bandwidth	≥40dB (100:1)
Horizontal System           Time Base         2ns/div~1ks/div           Time Base Delay Time Range         14 divisions ~ 14ks           Clock Drift         545pm / year           Time Base Accuracy         ±20pm           Sampling System         5           Sampling Method         Real-Time           Peak Detect         Capture narrow glitches at all sweep speeds: CH – 1ns, dual CH – 2ns, four CH – 4ns           Maximum duration at highest sampling rate         70ms           Average         Selectable from 2, 4, 8, 16, 32, 64, 128, 256, ~           Envelope         Selectable from 2, 4, 8, 16, 32, 64, 128, 256, ~           Trigger System         70ms           Trigger Touge         DC, AC, high frequency reject, low frequency reject, noise reject           Trigger Touge         DC, AC, high frequency reject, low frequency reject, noise reject.           Trigger Touges         200ns-10s           Trigger Types         Edge           Pulse Width         Trigger on width of positive or negative pulses that are >, <, =, ≠ or within a period of time of 8ns - 10s.	Offset Range	±2.5V (Probe attenuation X1, <500mV/div), ±120V (Probe attenuation X1, ≥500mV/div)
Time Base         2nk/div~1kk/div           Time Base Delay Time Range         14 divisions ~ 14ks           Clock Drift         5±5ppm / year           Time Base Accuracy         ±20ppm           Sampling System         5           Sampling Method         Real-Time           Peak Detect         Capture narrow glitches at all sweep speeds: CH – 1ns, dual CH – 2ns, four CH – 4ns           Maximum duration at highest sampling rate         70ms           Average         Selectable from 2, 4, 8, 16, 32, 64, 128, 256, *           Envelope         Selectable from 2, 4, 8, 16, 32, 64, 128, 256, *           Trigger System         200ns~10s           Trigger Toylong         DC, AC, high frequency reject, low frequency reject, noise reject           Trigger Toylong         DC, AC, high frequency reject, low frequency reject, noise reject.           Trigger Types         Selectable or any logic pattern of the channel changes to >, < =, #, for within a period of time of 8ns ~ 10s.	Maximum Input Voltage	CAT I 300Vrms (1MΩ Input)
Time Base Delay Time Range         14 divisions ~ 14ks           Clock Drift         ≤s5ppm / year           Time Base Accuracy         ±20ppm           Sampling System         Real-Time           Sampling Method         Real-Time           Peak Detect         Capture narrow glitches at all sweep speeds: CH – 1ns, dual CH – 2ns, four CH – 4ns           Maximum duration at highest sampling rato         70ms           Average         Selectable from 2, 4, 8, 16, 32, 64, 128, 256           Envelope         Selectable from 2, 4, 8, 16, 32, 64, 128, 256, ~           Trigger System         Auto, Normal, Single           Trigger Coupling         DC, AC, high frequency reject, low frequency reject, noise reject           Trigger Holdoff Range         200ns-10s           Trigger Types         Edge           Edge         Positive or negative slope on any channel. Coupling includes DC, HF reject, LF reject, and noise reject.           Puise Width         Ting gr on any logic pattern of the channel changes to >, < =, #, or within a pariod of time for ans ~ 10s.	Horizontal System	
Clock Drift       545ppm / year         Time Base Accuracy       ±20ppm         Sampling System       Each Time         Peak Detect       Capture narrow glitches at all sweep speeds: CH – 1ns, dual CH – 2ns, four CH – 4ns         Maximum duration at highest sampling rate       70ms         Average       Selectable from 2, 4, 8, 16, 32, 64, 128, 256         Envelope       Selectable from 2, 4, 8, 16, 32, 64, 128, 256, ∞         Trigger System       Trigger Coupling         Trigger Forded       Auto, Normal, Single         Trigger Point       200ms-10s         Trigger Types       Edge         Edge       Positive or negative slope on any channel. Coupling includes DC, HF reject, LF reject, and sinse reject.         Pulse Width       Trigger on any logic pattern of the channel changes to >, <, ≡, ≠ or within a period of time of 8ns ~ 10s.	Time Base	2ns/div~1ks/div
Time Base Accuracy         ±20pm           Sampling System         Each Time           Sampling Method         Real-Time           Peak Detect         Capture narrow glitches at all sweep speeds: CH - 1ns, dual CH - 2ns, four CH - 4ns           Maximum duration at highest sampling rate         70ms           Average         Selectable from 2, 4, 8, 16, 32, 64, 128, 256           Envelope         Selectable from 2, 4, 8, 16, 32, 64, 128, 256, =           Trigger System         Trigger Coupling           Trigger Coupling         DC, AC, high frequency reject, low frequency reject, noise reject           Trigger Toyos         200ns-10s           Trigger Typos         Edge           Pulse Width         Trigger on width of positive or negative slope on any channel. Coupling includes DC, HF reject, LF reject, LF reject, LF reject, LF reject, Card noise reject.           Pulse Width         Trigger on width of positive or negative pulses that are >, <, =, ≠ or within a period of time of 8ns - 10s.	Time Base Delay Time Range	14 divisions ~ 14ks
Sampling System           Sampling Method         Real-Time           Peak Detect         Capture narrow glitches at all sweep speeds: CH – 1ns, dual CH – 2ns, four CH – 4ns           Maximum duration at highest sampling rate         70ms           Average         Selectable from 2, 4, 8, 16, 32, 64, 128, 256           Envelope         Selectable from 2, 4, 8, 16, 32, 64, 128, 256, ~           Trigger System         Trigger System           Trigger Coupling         DC, AC, high frequency reject, low frequency reject, noise reject           Trigger Holdoff Range         200ns~10s           Trigger Types         Edge           Edge         Positive or negative slope on any channel. Coupling includes DC, HF reject, LF reject, and noise reject.           Pulse Width         Trigger on width of positive or negative pulses that are >, < =, ≠ or within a period of time of 8ns ~ 10s.	Clock Drift	≤±5ppm / year
Sampling Method         Real-Time           Peak Detect         Capture narrow glitches at all sweep speeds: CH – 1ns, dual CH – 2ns, four CH – 4ns           Maximum duration at highest sampling rate         70ms           Average         Selectable from 2, 4, 8, 16, 32, 64, 128, 256           Envelope         Selectable from 2, 4, 8, 16, 32, 64, 128, 256, ~           Trigger System         Trigger System           Trigger Coupling         DC, AC, high frequency reject, low frequency reject, noise reject           Trigger Holdoff Range         200ns~10s           Trigger Types         Positive or negative slope on any channel. Coupling includes DC, HF reject, LF reject, and noise reject.           Pulse Width         Trigger on width of positive or negative pulses that are >, <, =, ≠ or within a period of time of 8ns ~ 10s.	Time Base Accuracy	±20ppm
Peak Detect       Capture narrow glitches at all sweep speeds: CH – 1ns, dual CH – 2ns, four CH – 4ns         Maximum duration at highest sampling rate       70ms         Average       Selectable from 2, 4, 8, 16, 32, 64, 128, 256         Envelope       Selectable from 2, 4, 8, 16, 32, 64, 128, 256, ~         Trigger System       Trigger System         Trigger Mode       Auto, Normal, Single         Trigger Coupling       DC, AC, high frequency reject, low frequency reject, noise reject         Trigger Holdoff Range       200ns~10s         Trigger on width of positive or negative slope on any channel. Coupling includes DC, HF reject, LF reject, and noise reject.         Pulse Width       Trigger on width of positive or negative pulses that are >, <, =, ≠ or within a period of time of 8ns ~ 10s.         Logic       Trigger on video (AND, OR, NANDN, ONG) of all input channels as high, how or irrelevant doe (AND, OR, NANDN, ONG) of all input channels as high, how or irrelevant doe (AND, OR, NANDN, ONG) of all input channels as high, how or irrelevant dwen the duration above (or below) the trigger level, the trigger is generated when the duration above (or below) for the trigger is generated when the duration above (or below) the trigger level, the trigger is generated when the duration above (or below) the trigger level meets the set time condition         Runt Pulse (Runt)       Trigger on a pulse that crosses one threshold but fails to cross a second threshold before crossing the first again.	Sampling System	
Maximum duration at highest sampling rate       70ms         Average       Selectable from 2, 4, 8, 16, 32, 64, 128, 256         Envelope       Selectable from 2, 4, 8, 16, 32, 64, 128, 256, «         Trigger System       Trigger System         Trigger Mode       Auto, Normal, Single         DC, AC, high frequency reject, low frequency reject, noise reject       200ms~10s         Trigger Holdoff Range       200ms~10s         Trigger Types       Positive or negative slope on any channel. Coupling includes DC, HF reject, LF reject, and noise reject.         Pulse Width       Trigger on width of positive or negative pulses that are >, <, =, ≠ or within a period of time of 8ms ~ 10s.	Sampling Method	Real-Time
Average       Selectable from 2, 4, 8, 16, 32, 64, 128, 256         Envelope       Selectable from 2, 4, 8, 16, 32, 64, 128, 256, ~         Trigger System       Trigger System         Trigger Mode       Auto, Normal, Single         Trigger Coupling       DC, AC, high frequency reject, low frequency reject, noise reject         Trigger Holdoff Range       200ns~10s         Trigger Types       Edge         Positive or negative slope on any channel. Coupling includes DC, HF reject, LF reject, and noise reject.         Pulse Width       Trigger on width of positive or negative pulses that are >, <, =, ≠ or within a period of time of 8ns ~ 10s.         Logic       Trigger on any logic pattern of the channel changes to >, <, =, ≠, true value, false value within the set time range. Any input can be used as a clock to find patterns on clock edges. Defines the assigned mode (AND, OR, NAND, NOR) of all input channels as high, low or irrelevant         Video       Starting from the intersection of the signal and the trigger level, the trigger is generated when the duration above (or below) the trigger level exercises the set time condition         Stoppe       Trigger on a pulse that crosses one threshold but fails to cross a second threshold before crossing the first again.	Peak Detect	Capture narrow glitches at all sweep speeds: CH – 1ns, dual CH – 2ns, four CH – 4ns
Envelope       Selectable from 2, 4, 8, 16, 32, 64, 128, 256, ∞         Trigger System       Trigger Node         Auto, Normal, Single       DC, AC, high frequency reject, low frequency reject, noise reject         Trigger Coupling       DC, AC, high frequency reject, low frequency reject, noise reject         Trigger Holdoff Range       200ns~10s         Trigger Types       Trigger on regative slope on any channel. Coupling includes DC, HF reject, LF reject, and noise reject.         Pulse Width       Trigger on width of positive or negative pulses that are >, <, =, ≠ or within a period of time of 8ns ~ 10s.	Maximum duration at highest sampling rate	70ms
Trigger System         Trigger Mode       Auto, Normal, Single         Trigger Coupling       DC, AC, high frequency reject, low frequency reject, noise reject         Trigger Holdoff Range       200ns~10s         Trigger Types       Positive or negative slope on any channel. Coupling includes DC, HF reject, LF reject, and noise reject.         Pulse Width       Trigger on width of positive or negative pulses that are >, <, =, ≠ or within a period of time of 8n s ~ 10s.	Average	Selectable from 2, 4, 8, 16, 32, 64, 128, 256
Trigger Mode       Auto, Normal, Single         Trigger Coupling       DC, AC, high frequency reject, low frequency reject, noise reject         Trigger Holdoff Range       200ns~10s         Trigger Types       Positive or negative slope on any channel. Coupling includes DC, HF reject, LF reject, and noise reject.         Pulse Width       Trigger on width of positive or negative pulses that are >, <, =, ≠ or within a period of time of 8ns ~ 10s.         Logic       Trigger on any logic pattern of the channel changes to >, <, =, ≠, true value, false value within the set time range. Any input can be used as a clock to find patterns on clock edges. Defines the assigned mode (AND, OR, NAND, NOR) of all input channels as high, low or irrelevant         Video       Trigger on video signals varies according to different video formats, generally PAL/625, SECAM, NTSC/525, 720P, 1080I, 1080P, etc.         Stope       Trigger on the time of the waveform from one level to another level meets the set time condition         Runt Pulse (Runt)       Trigger on a pulse that crosses one threshold but fails to cross a second threshold before crossing the first again.	Envelope	Selectable from 2, 4, 8, 16, 32, 64, 128, 256, ∞
Trigger Coupling       DC, AC, high frequency reject, low frequency reject, noise reject         Trigger Holdoff Range       200ns~10s         Trigger Types       Edge         Positive or negative slope on any channel. Coupling includes DC, HF reject, LF reject, and noise reject.       Preject, LF reject, and noise reject.         Pulse Width       Trigger on width of positive or negative pulses that are >, <, =, ≠ or within a period of time of 8ns ~ 10s.	Trigger System	
Trigger Holdoff Range       200ns~10s         Trigger Types       Positive or negative slope on any channel. Coupling includes DC, HF reject, LF reject, and noise reject.         Pulse Width       Trigger on width of positive or negative pulses that are >, <, =, ≠ or within a period of time of 8ns ~ 10s.	Trigger Mode	Auto, Normal, Single
Trigger Types         Edge       Positive or negative slope on any channel. Coupling includes DC, HF reject, LF reject, and noise reject.         Pulse Width       Trigger on width of positive or negative pulses that are >, <, =, ≠ or within a period of time of 8ns ~ 10s.	Trigger Coupling	DC, AC, high frequency reject, low frequency reject, noise reject
Edge       Positive or negative slope on any channel. Coupling includes DC, HF reject, LF reject, and noise reject.         Pulse Width       Trigger on width of positive or negative pulses that are >, <, =, ≠ or within a period of time of 8ns ~ 10s.         Logic       Trigger on any logic pattern of the channel changes to >, <, =, ≠, true value, false value within the set time range.         Any input can be used as a clock to find patterns on clock edges. Defines the assigned mode (AND, OR, NAND, NOR) of all input channels as high, low or irrelevant         Video       Trigger on video signals varies according to different video formats, generally PAL/625, SECAM, NTSC/525, 720P, 1080I, 1080P, etc.         Slope       Trigger on the time of the waveform from one level to another level meets the set time condition         Runt Pulse (Runt)       Trigger on a pulse that crosses one threshold but fails to cross a second threshold before crossing the first again.	Trigger Holdoff Range	200ns~10s
Edge       and noise reject.         Pulse Width       Trigger on width of positive or negative pulses that are >, <, =, ≠ or within a period of time of 8ns ~ 10s.	Trigger Types	
Puise Width       time of 8ns ~ 10s.         Logic       Trigger on any logic pattern of the channel changes to >, <, =, ≠, true value, false value within the set time range. Any input can be used as a clock to find patterns on clock edges. Defines the assigned mode (AND, OR, NAND, NOR) of all input channels as high, low or irrelevant         Video       Trigger on video signals varies according to different video formats, generally PAL/625, SECAM, NTSC/525, 720P, 1080I, 1080P, etc.         Time Out       Starting from the intersection of the signal and the trigger level, the trigger is generated when the duration above (or below) the trigger level reaches the set time condition         Runt Pulse (Runt)       Trigger on a pulse that crosses one threshold but fails to cross a second threshold before crossing the first again.	Edge	
Logicwithin the set time range. Any input can be used as a clock to find patterns on clock edges. Defines the assigned mode (AND, OR, NAND, NOR) of all input channels as high, low or irrelevantVideoTrigger on video signals varies according to different video formats, generally PAL/625, SECAM, NTSC/525, 720P, 1080I, 1080P, etc.Time OutStarting from the intersection of the signal and the trigger level, the trigger is generated when the duration above (or below) the trigger level reaches the set timeSlopeTrigger on the time of the waveform from one level to another level meets the set time conditionRunt Pulse (Runt)Trigger on a pulse that crosses one threshold but fails to cross a second threshold before crossing the first again.	Pulse Width	
Video       SECAM, NTSC/525, 720P, 1080I, 1080P, etc.         Time Out       Starting from the intersection of the signal and the trigger level, the trigger is generated when the duration above (or below) the trigger level reaches the set time         Slope       Trigger on the time of the waveform from one level to another level meets the set time         Runt Pulse (Runt)       Trigger on a pulse that crosses one threshold but fails to cross a second threshold before crossing the first again.		
Time Out       when the duration above (or below) the trigger level reaches the set time         Slope       Trigger on the time of the waveform from one level to another level meets the set time condition         Runt Pulse (Runt)       Trigger on a pulse that crosses one threshold but fails to cross a second threshold before crossing the first again.	Logic	within the set time range. Any input can be used as a clock to find patterns on clock edges. Defines the assigned
Stope     condition       Runt Pulse (Runt)     Trigger on a pulse that crosses one threshold but fails to cross a second threshold before crossing the first again.		within the set time range. Any input can be used as a clock to find patterns on clock edges. Defines the assigned mode (AND, OR, NAND, NOR) of all input channels as high, low or irrelevant Trigger on video signals varies according to different video formats, generally PAL/625,
before crossing the first again.	Video	<ul> <li>within the set time range.</li> <li>Any input can be used as a clock to find patterns on clock edges. Defines the assigned mode (AND, OR, NAND, NOR) of all input channels as high, low or irrelevant</li> <li>Trigger on video signals varies according to different video formats, generally PAL/625, SECAM, NTSC/525, 720P, 1080I, 1080P, etc.</li> <li>Starting from the intersection of the signal and the trigger level, the trigger is generated</li> </ul>
N Edge Trigger on the Nth rising/falling edge of the waveform	Video Time Out	<ul> <li>within the set time range.</li> <li>Any input can be used as a clock to find patterns on clock edges. Defines the assigned mode (AND, OR, NAND, NOR) of all input channels as high, low or irrelevant</li> <li>Trigger on video signals varies according to different video formats, generally PAL/625, SECAM, NTSC/525, 720P, 1080I, 1080P, etc.</li> <li>Starting from the intersection of the signal and the trigger level, the trigger is generated when the duration above (or below) the trigger level reaches the set time</li> <li>Trigger on the time of the waveform from one level to another level meets the set time</li> </ul>
	Video Time Out Slope	<ul> <li>within the set time range.</li> <li>Any input can be used as a clock to find patterns on clock edges. Defines the assigned mode (AND, OR, NAND, NOR) of all input channels as high, low or irrelevant</li> <li>Trigger on video signals varies according to different video formats, generally PAL/625, SECAM, NTSC/525, 720P, 1080I, 1080P, etc.</li> <li>Starting from the intersection of the signal and the trigger level, the trigger is generated when the duration above (or below) the trigger level reaches the set time</li> <li>Trigger on the time of the waveform from one level to another level meets the set time condition</li> <li>Trigger on a pulse that crosses one threshold but fails to cross a second threshold</li> </ul>



Waveform Measurements		
Cursors	Horizontal, Vertical, Cross	
Automated Measurements	31 types, of which up to 10 types can be displayed on-screen at any time. Including: Period, Frequency, Rise Time, Fall Time, Delay, Positive Duty Cycle, Negative Duty Cycle, Positive Pulse Width, Negative Pulse Width, Burst Width, Positive Overshoot, Negative Overshoot, Phase, Peak-to-Peak, Amplitude, High, Low, Maximum, Minimum, RMS, Cycle RMS, Mean, Cycle Mean	
Hardware Frequency Meter	6 digits	
Waveform Math		
Dual Waveform	Add, Subtract, Multiply, Divide	
FFT	Spectral magnitude. Set FFT vertical scale to linear RMS or decibel dBV RMS, set FFT window to Rectangular, Hamming, Hanning or Blackman-Harris	

Display System	
Display Type	8-inch TFT LCD multi-point capacitive touch screen
Display Resolution	800*600 pixels
Operation Method	Touch, Button, Touch + Button
Persistence Duration	Auto, 10ms~10s, ∞
Time Base Mode	YT, XY, Zoom, Roll (scroll waveforms right to left across the screen at sweep speeds slower than or equal to 200 ms/div)
Expand Benchmark	Center, Trigger position
Waveform Display	Vectors, Line, brightness adjustable
Graticules	14 x 10, brightness adjustable
Waveform Update Rate	130,000 wfms/s
Clock	Real time, user adjustable
Language	English, Chinese, German, French, Czech, Korean, Spanish, Italian, etc.

Storage	
Storage Medium	Local, USB drive
Internal Storage	32G
Waveform Storage Format	csv, wav, bin
Store Waveform Quantity	Unlimited
Stored Waveform Rename	Support
Reference Waveform Display	4 internal waveforms
Quick Screenshot	Support
User Setting Storage	10 internal setups
User Settings Rename	Support
USB Flash Drive	Support industry standard flash drives

Input / Output Ports	
USB3.0 Port	Support one USB mass storage device, read and edit
USB2.0 Port	One, read and edit
USB Type-C	One, read and edit
DC Port	One
Probe Compensator	1KHz, 2Vpk-pk
НДМІ	HDMI 1.4
Wi-Fi	Support
Android/iOS Remote Control Application	Support



Power Source	
Power Voltage Range	100~240VAC, 50/60Hz
Power Consumption	< 60W
Adapter Output	12V DC, 4A
Battery	7.4V, 7500mAh Li-ion battery

Environment	
Temperature	
Operating	0°C ~ 45°C
Non-operating	-40°C ~ 60°C
Humidity	
Operating	5% ~ 85%, 25°C
Non-operating	5% ~ 90%, 25°C
Altitude	
Operating	< 3000m
Non-operating	< 12000m

Physical Characteristics	
Dimensions (W x H x D)	265*192*50mm
Weight	Net: 1.9kg (with battery), Shipping: 4.5kg

Standard Accessories	
Passive Probe	Measuring voltage: 10X: < 600V AC pk, one per channel
Power Adapter	One (Localized)
Power Cord	One
Warranty	Three-year warranty for Base Unit only, probes, battery and related accessories are valid for 180 days

Instrument Options	
Customized Battery (Standard)	7.4V, 7500mAh Li-ion battery
Bus Decoding	Standard: UART, LIN, CAN, SPI, I <sup>2</sup> C; Optional: ARINC-429, MIL-STD-1553B
Recommended Accessory	Customized nylon handbag, hard shell suitcase, screen protective mask



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