



Automotive Tablet Oscilloscope SATO Series DATASHEET

Официальный дистрибьютор в России



ООО «Техника-М»

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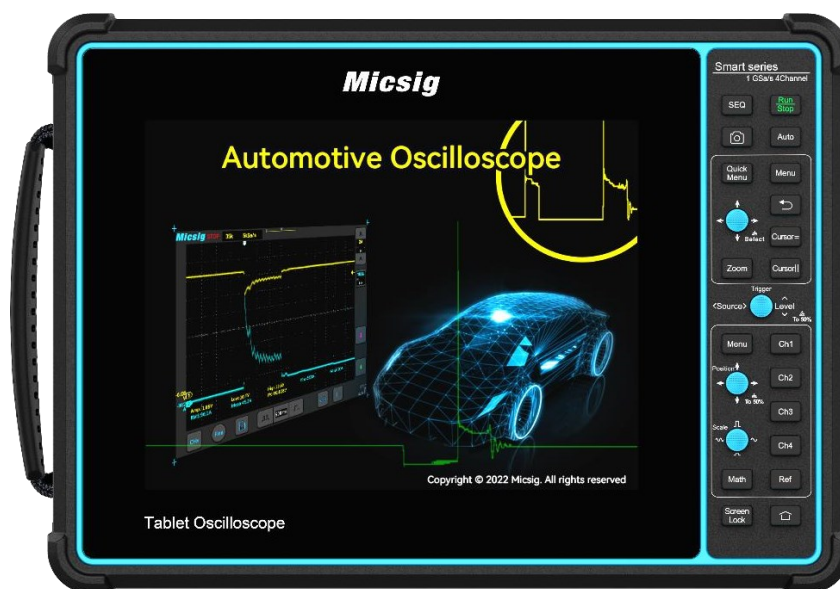
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PRODUCT OVERVIEW

Equipped with highly sensitive digital trigger system and comprehensive Automotive Diagnostic software preset, the SATO able to help mechanics quickly and easily find out all kinds of problem on all types of 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 SATO brings unparalleled operating experience to automotive users.



- ◆ Professional automotive diagnostic tests
- ◆ Compact portable design, best for field work
- ◆ 7500mAh large battery support 5-hour use
- ◆ Android-based OS, 32GB internal storage
- ◆ Deep memory to display all signal details
- ◆ Comprehensive serial bus protocol decodings
- ◆ Support Wi-Fi, USB, PC and SCPI control
- ◆ Hardware-based filter to eliminates interferences

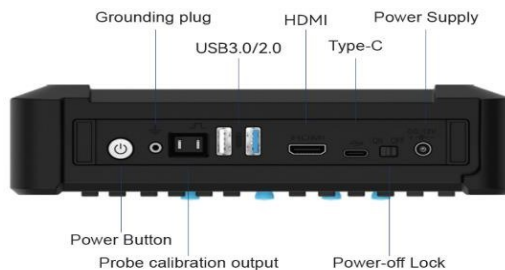
Key Specifications

| Model | SATO1004 | SATO2002 |
|------------------------------|--|----------|
| Analog Channels | 4 | 2 |
| Bandwidth | 100MHz | 200MHz |
| Sampling Rate (Max.) | 1GSa/S | |
| Memory Depth | 70Mpts | |
| 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) | |
| Dimension / Net Weight | 265*192*50mm / 1.9kg (with battery) | |
| Battery | 7.4V, 7500mAh, Li-ion battery | |

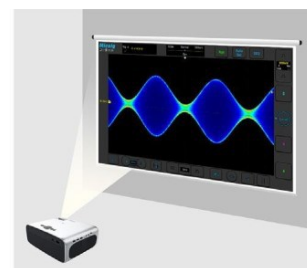
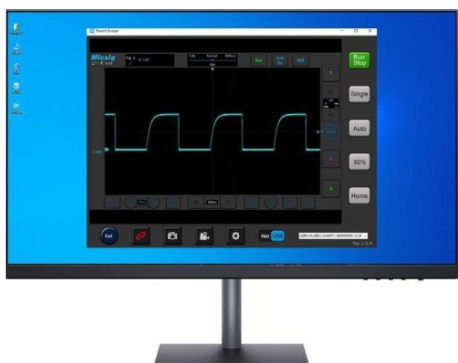
CHARACTERISTICS & FEATURES



► Built-in 7500mAh Li-ion battery support 5-hour outdoor use



► Complete connectivity (* switch Power-off lock to ON for first-time use)



► The SATO series supports PC software + Mobile App (Android / iOS) remote control via Wi-Fi, USB to access internet for online upgrade, it also can be projected through HDMI port for demonstrations for training and education purpose.

AUTOMOTIVE DIAGNOSTIC PRESETS



▲ Support 12/24V Charging & Start circuit, AC Ripple, Cranking Current tests



▲ Directly measure the waveform of various Sensors, by comparing with standard waveform, helps user easily find out possible problem.



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



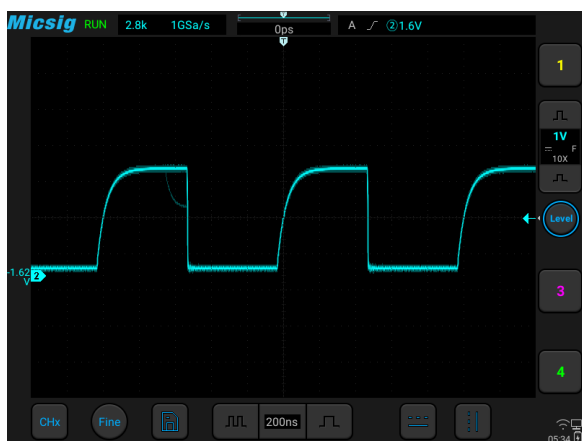
▲ The ignition system of a car is usually composed of primary and secondary coils and spark plugs. Can test both Primary and Secondary ignition signals, to find out possible malfunction.



▲ 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.

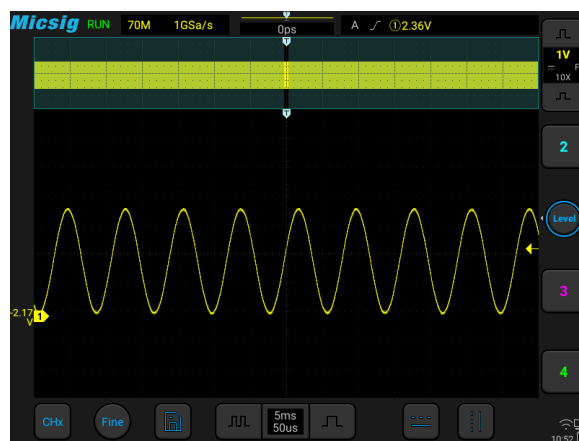


▲ The electronic faults can be complicated, by comparing the collected various waveforms, users judge faults by analyzing the timing and quantitative relationships between waveforms.



▲ High Waveform Update Rate

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



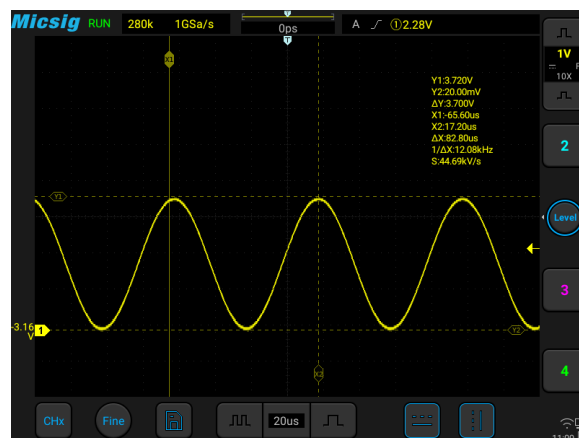
▲ Ultra-deep Memory

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.



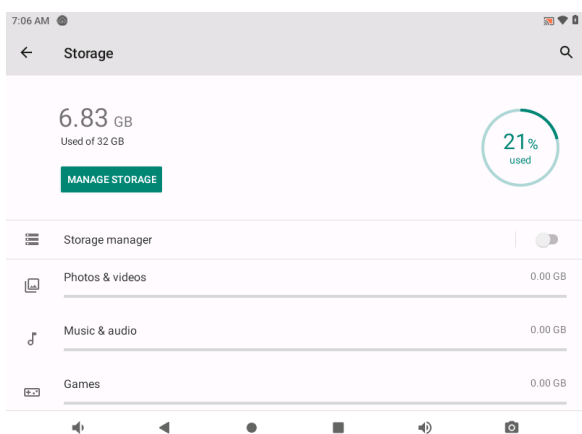
▲ Powerful Trigger Functions

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



▲ Convenient Cursor Measurement

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



▲ Large 32GB Internal Storage

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



▲ Serial Bus Decoding and Analysis

Support RS-232/422/485/UART, LIN, CAN, CAN FD, I²C, SPI serial bus decoding and triggering options, display waveform and data at the same time.

Specifications

| Vertical System | |
|--|--|
| Input Coupling | DC, AC, GND |
| Bandwidth Filter | 20MHz, High & Low pass (30kHz~max bandwidth) |
| Input Impedance | 1MΩ±1% 14.5pF±3pF |
| Vertical Resolution | 8 bits |
| DC Gain Accuracy (Amplitude Accuracy) | <±2% (1MΩ Input) |
| Input Sensitivity Range | 1mV/div~10V/div (1MΩ Input) |
| Ch-to-Ch Isolation DC to Maximum Bandwidth | ≥40dB (100:1) |
| Offset Range | ±2.5V (Probe attenuation X1, <500mV/div), ±120V (Probe attenuation X1, ≥500mV/div) |
| Maximum Input Voltage | CAT I 300Vrms (1MΩ Input) |
| Horizontal System | |
| Time Base | 2ns/div~1ks/div |
| Time Base Delay Time Range | 14 divisions ~ 14ks |
| Clock Drift | ≤±5ppm / year |
| Time Base Accuracy | ±20ppm |
| 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 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 | 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 |
| 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. |
| N Edge | Trigger on the Nth rising/falling edge of the waveform |

| 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 | Points: max. 275KdBVrms; Source: Analog channel; Resolution: Max 100Kpts Window: Rectangular, Hamming, Blackman, Hanning |
| Display System | |
| Display Type | 8-inch TFT LCD capacitive, 14*10 divisions |
| 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, Russia, 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 |
| HDMI | 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), Volume Weight: 4.5kg |

| Standard Accessories | |
|----------------------|---|
| Accessories | <ul style="list-style-type: none"> ◇ Passive BNC probes * 2 / 4 pcs ◇ Power adaptor * 1 pc ◇ Power plug (Local) * 1 pc ◇ Battery (Built-in) * 1 pc ◇ 8" Screen protector * 1 pc ◇ Alligator clips * 2 pairs ◇ BNC to banana cable * 4 pcs ◇ Flexible needle * 2 pairs ◇ Hard case * 1 pc (Master Kit) ◇ Multimeter probe * 1 / pair (Master kit) ◇ Secondary ignition pickup * 1 pc (Master kit) |
| Warranty | Three years for Base Unit; 180 days for accessories. |

| Options | |
|----------------------------------|--|
| Bus Decoding | Standard: UART, LIN, CAN, SPI, I ² C; Optional: ARINC-429, MIL-STD-1553B |
| Recommended accessory (Optional) | Customized handbag, hard shell suitcase; High-frequency AC/DC current probe: 50MHz-100MHz, 6A/30A; Low-frequency AC/DC current probe: 800KHz-2.5MHz, 10A/100A ; High-voltage differential probe: 100MHz, 700Vpk-5600Vpk; SigOFIT optical-fiber isolated probe: 100MHz - 1GHz, 60kVpk, CMRR: DC -160dB. |

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