MICSIG 麦科信

High Resolution Oscilloscope

MHO 6 Series

12bit 8Ch 16”

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Product Overview

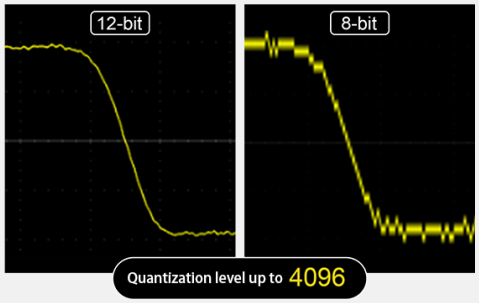
Equipped with a 12-bit high-resolution ADC, it boasts a sampling rate of 6 GSa/s, along with 350MHz to 1 GHz bandwidth, 8 analog channels, and a memory depth of 1800 Mpts. It is primarily designed for applications involving high-speed circuit analysis and multi-channel signal synchronization testing.

With its ultra-slim 3.76 cm design, it significantly saves valuable desktop space. Supported by a 16-inch touchscreen with a 1920*1200 resolution, it still delivers a more comfortable visual experience even when you are analyzing waveform data from over 8 channels simultaneously.

Product Features

- 12-bit vertical resolution
- 8 analog channels
- 3.76cm Ultra-Thin design
- 350MHz, 500MHz or 1GHz options available
- 6 GS/s sampling rate, 1800 Mpts memory depth
- 16-inch touch screen,1920*1200 resolution
- Simultaneous display for 40 measurement items
- Advanced math and FFT function
- Segmented storage function
- Simultaneous data saving on multi-channel
- High / Low pass bandwidth filtering
- Mobile APP, PC remote control, SCPI commands
- 256G internal storage to save large data
- Bus decodes: RS-232/422/485/UART, CAN, CAN FD, LIN, SPI, I²C, ARINC-429, MIL-STD-1553B

12-Bit Vertical Resolution

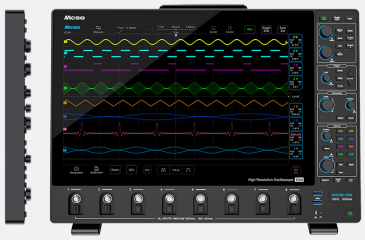


MHO 6 series has 12 bit ADC with a quantization level of up to 4096,it's 16 times that of traditional 8-bit ADC, present unmatched waveform details.

Remote Control

MHO 6 series support PC and smartphone remote control, also have HDMI port for demonstration purpose. Support SCPI programming commands control, helping engineers achieve automated measurements more flexibly and efficiently.

Excellent Display



Featuring a 16-inch high-definition touch screen with a resolution of 1920*1200. The ultra-thin body design, with a thickness of only 3.76cm, is both portable and aesthetically pleasing.

Complete Connectivity

Standard with BNC adapter. Equipped with abundant ports including USB 3.0/2.0 Host, USB Type-C, LAN, HDMI, Aux In/Out and 10MHz clock signal In/Out.

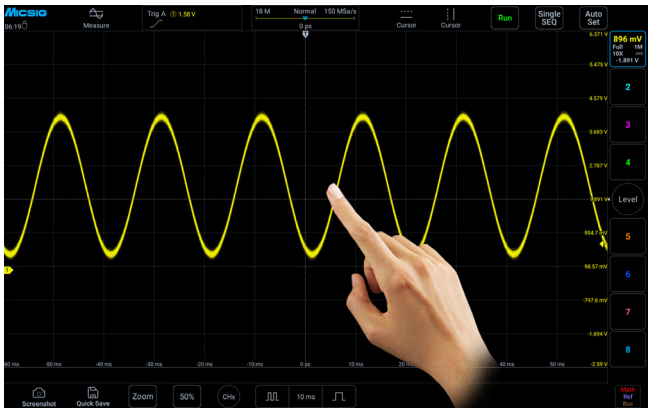
Comprehensive Selection of Probes

Based on Micsig's comprehensive probe product line, MHO6 series oscilloscopes can be paired with SigOFIT Optical-fiber Isolated Probe, high-voltage differential probes, Rogowski coils, and high-frequency AC/DC current probes, among others.

Key Specifications

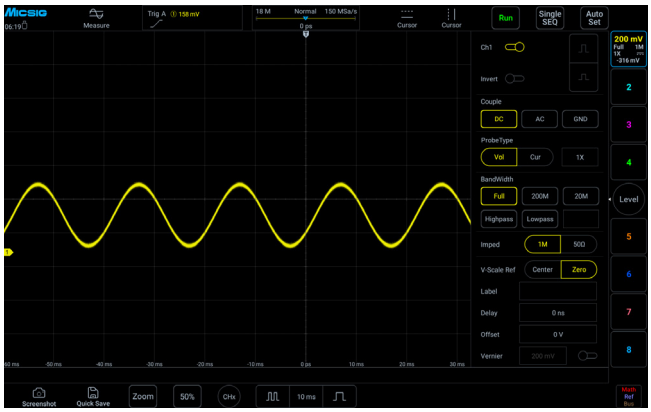
Model	MHO68-1000	MHO68-500	MHO68-350
Bandwith(-3dB)@50Ω	1GHz	500MHz	350MHz
Bandwith(-3dB)@1MΩ	500MHz	500MHz	350MHz
Rise time @ 50 Ω	≤ 0.4ns	≤ 0.7ns	≤ 1ns
Analog channels	8	8	8
Sampling rate	6GSa/s	6GSa/s	6GSa/s
Memory depth	1.8Gpts	1.8Gpts	1.8Gpts
Waveform capture rate	280,000 wfms/s	280,000 wfms/s	280,000 wfms/s
Interface	USB 3.0/2.0 Host, USB Type-C, LAN, HDMI, Aux In/Out, 10 MHz clock signal In/Out		
Vertical resolution	12 bit		
Input impedance	1MΩ±1%, 15pF±3pf ‖ 50Ω ±1%		
Display	16" TFT LCD touch screen, 1920*1200 resolution		
Dimension / Net weight	443.6*307.2*37.6mm / 5.5kg		

Product Features



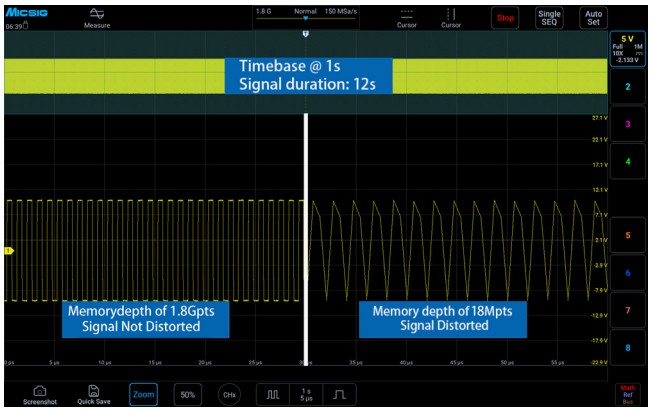
Smooth Touch Control

16" full-touch integrated display, all operations can be completed by touch, more intuitive and efficient than ever before.



Most Friendly UI

With accumulation of 10 years of UI design experience, the MHO 6 series simplifies all user interfaces, engineers can quickly learn to use in 5 minutes.

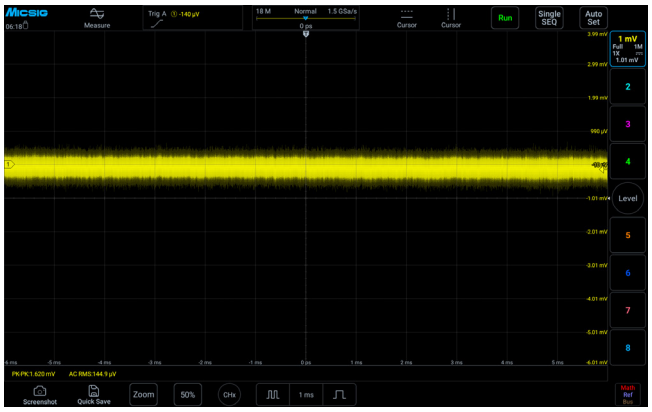


Deep Memory

Insufficient memory depth often leads to distortion when long timebase signals were expanded. With memory depth of up to 1.8Gpts, there is no reduction in performance even with two channels opened at the same time. The signals will still maintain excellent fidelity even at long period of time.

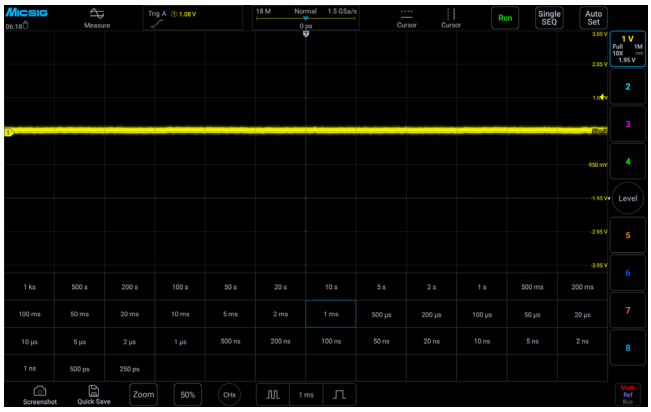
Segmented Storage Acquisition

Traditional Single acquisitions can only capture signals continuously,wasted storage depth when testing intermittent signals like laser pulses or serial buses, also difficult to trace back captured events. While the segmented storage acquisition can capture the target signal and allows to play back captured ones, effectively captures target signals multiple times over a long period of time.



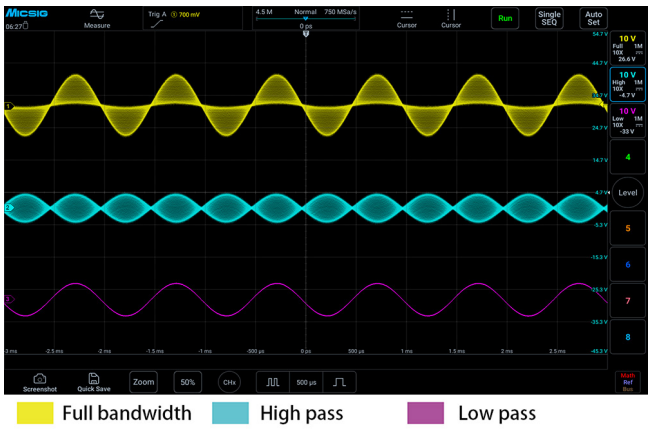
Low Noise Floor

Even at its full bandwidth, the noise floor of the MHO 6 series still low, allow engineers accurately capture weak but important signals during daily circuit debugging and signal analysis.



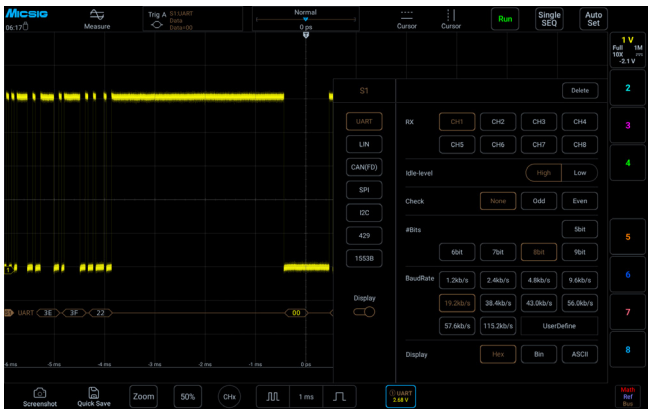
Faster Time Base Adjustment

Traditional oscilloscopes need to step in a sequential manner when adjusting the time base. In addition to traditional sequential steps, the MHO 6 series also has a time base matrix, allows user to select any time base in one click.



Hardware Digital Filtering

Digital filtering can selectively allow or block signal components within specific frequency ranges.

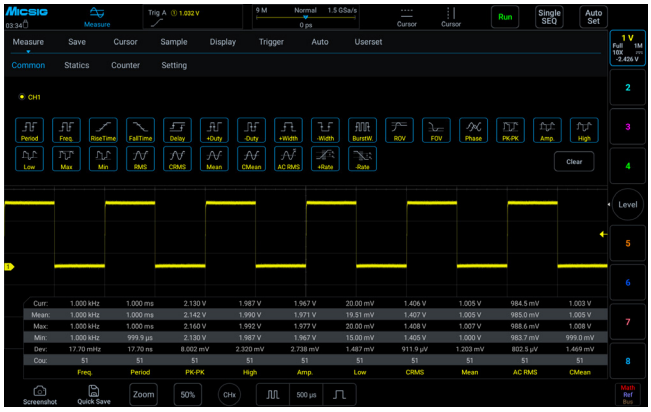


Serial Bus Decoding and Analysis

The MHO 6 series standard with 8 serial bus decodes: RS-232/422/485/ UART, CAN, LIN, CAN FD, SPI, I2C, 429, 1553B. With the TXT decoding text mode, the data can be transferred to CSV format.

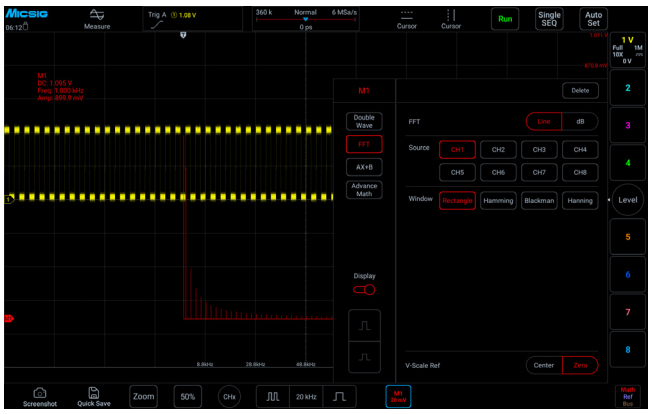
Multiple Trigger Functions

The MHO 6 series provide multiple triggers, including edge, pulse width, logic, Nth edge, Runt, slope, bus decoding, etc. Whether you need to capture specific edge transitions, or observe duration and frequency, it meets your requirement at ease.



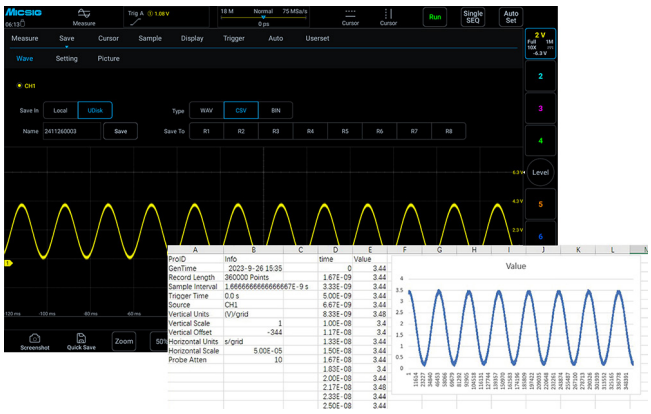
Statistics Measurement

Simultaneously calculate the average, maximum, minimum, and root mean square of more than 35 measurement items, with a max count of up to 10,000, every waveform data is accurately recorded, provide more accurate and comprehensive readings.



Advanced Math Functions

Support various mathematical calculations: addition, subtraction, multiplication, division, integration, differentiation, etc.
Support custom function formula for advanced signal analysis. Also support FFT (Fast Fourier Transform) for real-time spectral analysis of collected waveform signals.



Diverse File Saving

Users can save waveforms and measurement results as BIN or CSV format files for data analysis using Matlab or Excel. Also support saved as WAV format, direct open & analysis inside the oscilloscope. Additionally, user can save waveforms as images or record videos.

Product Specifications

Vertical system	
Bandwidth filter	20MHz、200MHz、High Pass / Low Pass
Coupling	DC、AC、GND
Input impedance and accuracy	1MΩ±1%，15pF±3pf ‖ 50Ω ±1%
Vertical resolution	12 Bit
Vertical divisons	10div
Vertical scale factor	1mV/div~10V/div（1MΩ） 1mV/div~1V/div（50Ω）
Max. input voltage	CAT I 300Vrms 400Vpk（1MΩ），5Vrms（50Ω）
Channel isolation	> 40dB（≤ 100MHz），> 35dB（> 100MHz）
Vertical expansion reference	Screen center, channel zero point
Probe Attenuation Ratio	1mX~10kX, 1-2-5 sequence, support customization

Horizontal system	
Horizontal scale	200ps/div~1ks/div
Roll mode range	100ms/div~1ks/div
Time base accuracy	2.5ppm
Horizontal divisions	12div
Time base delay time range	-12 div ~ 12ks, resolution: 1 pixel

Trigger System	
Trigger mode	Auto, Normal, Single
Trigger level range	±5div from screen center, analog channel
Hold off range	200ns~10s
Trigger types	Edge, Pulse Width, Logic, N Edge, Runt Pulse (Runt), Slope, Time Out, Video, Serial
Bus decoding	RS-232/422/485/UART、CAN、CAN FD、LIN、SPI、I2C、ARINC429、1553B

Sampling System	
Real-time sampling rate(Max.)	6G Sa/s (single channel); 3G Sa/s (half channel);
Memory depth (Max.)	1.8Gpts (single channel); 900Mpts (half channel); 450Mpts (Full channel)
Peak sampling interval	single channel: 160ps，half channel: 320ps，Full channel: 666ps
Average times	2,4,8,16,32,64,128,256
Envelope times	2,4,8,16,32,64,128,256, ∞

*single channel: Open CH1 or CH2 or CH3 or CH4 separately; Open CH5 or CH6 or CH7 or CH8 separately;
half channel: CH1 and CH2 are opened simultaneously; or CH3 and CH4 are opened simultaneously; or CH5 and CH6 are opened simultaneously; or CH7 and CH8 are opened simultaneously;
Full channel: CH1 and CH2 and CH3 and CH4 are opened simultaneously; CH6 and CH7 and CH8 and CH9 are opened simultaneously.

Measurements	
Auto measurements	Period, frequency, rise time, fall time, delay, positive duty cycle, negative duty cycle, positive pulse width, negative pulse width, burst pulse width, positive overshoot, negative overshoot, phase, peak-to-peak, Amplitude, High, Low, Maximum, Minimum, RMS, C RMS, Average, C Average, AC RMS, Positive Slope, Negative Slope *C represents the first period, indicating a certain value in the first period of the waveform
Hardware frequency counter	Support each analog channel, 6bit, 2Hz~max. bandwidth, pk-pk > 0.8div
Cursor	Horizontal, Vertical, Cross
Cursor resolution	1 pixel
Math	
Dual waveform	+, -, *, /, Analog channel
FFT	Points: max. 360k; Source: Analog channel; Window: Rectangular, Hamming, Blackman, Hanning
AX+B	A: ±1k, Min. Resolution 1p or 4it B: ±1k, Resolution 1p or 5bit X: Analog channel
Advanced math	Advanced input, including +、-、*、/、<、>、≤、≥、==、!=、&&、‖、（、）、!(、sqrt、abs、deg、rad、exp、diff、ln、sin、cos、tan、intg、lg、asin、acos、atan

Display	
Display	16" capacitive TFT touch screen, 1920*1200 resolution, 12*10 Divisions
Persistence	Auto, 10ms~10s, ∞
Time base mode	YT、XY、Roll、Zoom
Expand base	center, trigger position
Waveform Display	Dot, line, adjustable brightness
Maximum waveform capture rate	280,000 wfms/s

Storage	
Storage media	Local , USB drive
ROM storage	256G
Storage format	WAV、CSV、BIN
Quantity of stored waveforms	No limit
Stored waveform rename	Chinese, English
REF waveforms display	8
Quick screenshot	Support
Quantity of user setting	10
User setting rename	Support
Flash memory	Industry standard
Screenshot, video recording	Support

System	
Self-calibration	Support
Languages	English, Chinese, German, French, Czech, Korean, Spanish, Italian, etc
Operating system	Android
Built-in app	App Store, Browser, Oscilloscope, Calendar, Clock, Gallery, Calculator, User Guide, Electronic Tools, File Manager
Warranty	Three-year for mainframe. Probes and accessories are not covered. * Please refer to the data sheet of each probe and accessory for the respective warranty terms. (contact us for extended warranty)

Interfaces	
USB3.0/2.0	4, read and edit
USB Type-C	1, read and edit
LAN	1
4-pin aviation power socket	1
Probe calibration signal	1kHz、2Vpk-pk
HDMI	HDMI 1.4
PC software	Support
Android/iOSremote control APP	Support
SCPI	Support

Power Supply	
Adapter input	100~240V AC, 50/60Hz
Power consumption	< 120W
Adapter output	24V DC, 7.5A
Power cord	Local

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

Physical Characteristics	
Dimensions	443.6*307.2*37.6mm
Net weight	5.5kg

Standard Accessories

Model	Standard Accessories
MHO68-1000 MHO68-500 MHO68-350	Main unit*1
	Passive Probe *8
	Power adapter *1
	Power cord *1
	Bracket*1 pair
	Calibration Certificate*1
	Quick Guide *1

Optional Instruments

Optical-fiber Isolated Probe	
SigOFIT series	Bandwidth: up to 1GHz, Common mode voltage: 85kVpk, DC gain accuracy: 1%, CMRR: up to 180dB

High-Voltage Differential Probe	
DP series	Bandwidth: up to 500MHz; Differential voltage (DC+AC PK) Max.7000V; Accuracy: ±1%, ±2%,

Current Probes	
HF AC/DC current probe CP series	Bandwidth: up to 100MHz, Range: 5A-300A, Accuracy: ±1%
LF AC/DC current probe CP2100 series	Bandwidth: up to 2.5MHz, Range: 10A/100A
Rogowski AC current probe RCP series	Bandwidth: 2Hz - 30MHz, Range: 6000Apk, Accuracy: 2%
AC Current Probe ACP1000	Bandwidth: 10Hz -100KHz, Range: 0.1Apk-1000Apk

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