Micsig 麦科信

12bit

8ch

High Resolution Oscilloscope 12bit

MHO 6 Series

High Resolution Oscilloscopes

Bandwidth
350MHz~1GHz

Sample Rate
6GSa/s

Memory Depth
1.8Gpts

DC Gain Accuracy
≤ 1% of the total number of channels

Number of Channels
8Ch

Vertical Resolution
12Bit

Shenzhen Micsig Technology Co.
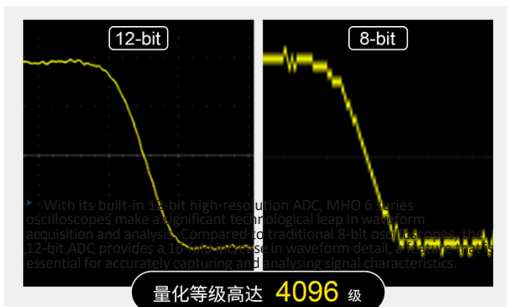
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Product Overview

MHO High Definition Oscilloscopes 6 Series, up to 1GHz bandwidth, 6GSa/s real-time sampling rate, 8 analogue channels, 1.8Gpts memory depth, 12-bit vertical resolution; its high bandwidth and 8-channel features are suitable for higher speed circuit analysis and more synchronous signal testing. Its 3.52cm ultra-thin design can significantly save your valuable desktop space; 16-inch touch screen, 1920 * 1200 resolution, ultra-clear waveform display to bring you a more comfortable visual experience.

Product Features

12bit **8Ch**

‣ 12bit vertical resolution

‣ 1GHz bandwidth, 8 channels

‣ Support multi-channel data saving at the same time

‣ Supports high and low pass filtering

‣ Standard segment storage function, providing up to 10000 segments

‣ Support advanced mathematical operations, FFT fast Fourier

‣ High waveform capture rate of 280,000 times / second

‣ 16-inch anti-glare touch screen, 1920 * 1200 resolution

‣ User-friendly UI design, five minutes to get started quickly

‣ Mic-OPI ™ patented probe interface, easy to plug and play, automatic adjustment of probe compensation

‣ Support mobile phone APP, host computer remote control, support SCPI commands

‣ 256G large storage, support pictures, videos, waveform data and other saving methods

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12-bit vertical resolution

量化等级高达 **4096** 级

▸ With its built-in 12-bit high-resolution ADC, MHO 6 series oscilloscopes make a significant technological leap in waveform acquisition and analysis. Compared to traditional 8-bit oscilloscopes, the 12-bit ADC provides a significant increase in waveform detail, essential for accurately capturing and analysing signal characteristics.

Remote Control

▸ MHO 6 series supports remote control of the oscilloscope by using the host computer or mobile phone app, and supports HDMI casting, so that users can see the interface of the oscilloscope in real time and operate all functions of the oscilloscope. Supporting the use of SCPI commands to control the oscilloscope, it is more flexible and efficient to help users realise automated measurements and improve work efficiency.

Excellent display, visual
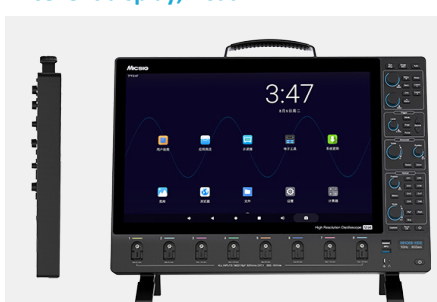
▸ Adopting 16" HD touch screen with high resolution up to 1920*1200, bringing delicate and clear visual experience. The ultra-thin body design, with a thickness of only 3.52cm, is both portable and aesthetically pleasing, making every operation a pleasure.

Rich

▸ Unique Mic-OPI ™ probe interface, one-key automatic compensation; standard BNC adapter, can be adapted to any BNC interface probe. Equipped with USB 3.0/2.0 Host, USB Type-C, LAN, HDMI, Aux In/Out (support external trigger input, trigger output), 10MHz clock signal In/Out and other rich ports.

Comprehensive coverage of

▸ Based on Micsig's comprehensive probe product line, MHO6 series oscilloscopes can be paired with MOIP series optical isolation probes, high-voltage differential probes, Roche coils, and high-frequency AC and DC current probes, etc. Each of these probes has its own special features, which can flexibly cope with a variety of test scenarios, providing a complete and reliable solution for power electronics testing.

Main Parameters

| Model	MHO68-1000	MHO68-500	MHO68-350
Maximum bandwidth (-3dB)@50Ω	1GHz	500MHz	350MHz
Bandwidth (-3dB)@1MΩ	500MHz	500MHz	350MHz
Rise Time @ 50Ω	≤ 0.4ns	≤ 0.7ns	≤ 1ns
Number of Analogue Channels	8	8	8
Maximum real-time sampling rate	6GSa/s	6GSa/s	6GSa/s
Maximum Storage Depth	1.8Gpts	1.8Gpts	1.8Gpts
Maximum Waveform Capture Rate	280,000 times/second	280,000 times/sec	280,000 times/sec
Interfaces	USB 3.0/2.0 Host, USB Type-C, LAN, HDMI, Aux In/Out (supports external trigger input, trigger output), 10MHz clock signal In/Out		
Vertical Resolution	12-bit		
Input Impedance	1MΩ ±1%, 14pF ±3pf‖ 50Ω ±1		
Display	16-inch touch screen, 1920*1200 resolution		
Size / Weight	443*307*35mm / 5.7kg		

Product Features
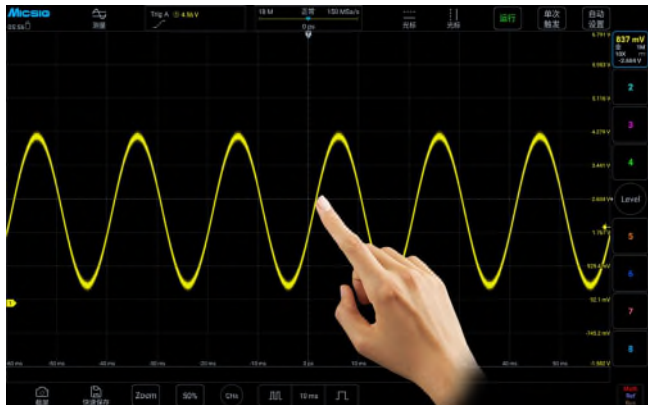
Silky smooth touch experience

The MHO 6 series has a 16-inch touchscreen display, and all oscilloscope operations can be completed by touch, which is more convenient and efficient.

Self-explanatory operation interface

The MHO 6 series is equipped with the SigTest UI system, a user-friendly UI design optimised by thousands of engineers and users, which allows you to get started in 5 minutes, and all operations can be completed quickly, simplifying complex work.
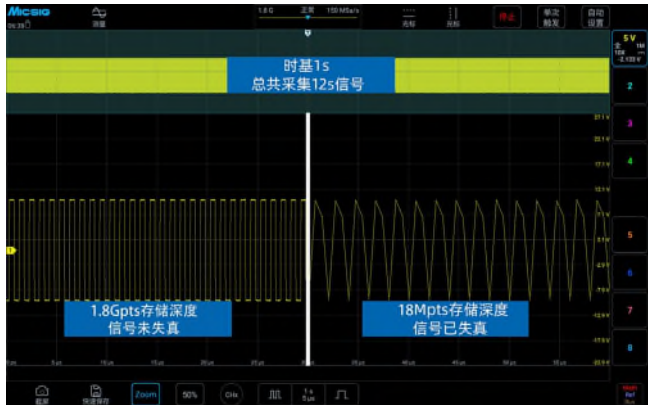

Ultra-high storage depth

Many people have encountered the problem of observing a signal for a long period of time, only to find that the signal is very different from what they expected after unfolding it, and it is completely distorted. This is a problem caused by insufficient storage depth. The MHO 6 series has a storage depth of up to 1.8Gpts, which allows you to open 2 channels at the same time without any cuts, giving you excellent signal fidelity in a large time base.

Segmented Storage

The MHO 6 series comes standard with a segmented storage function, which divides the limited storage space into multiple segments, bringing together multiple triggering events in a single storage space. Combined with the convenient analysis and viewing function, the free fusion display and display-by-display make analysis and positioning more accurate and efficient, making it possible to "find a needle in a sea of waves".
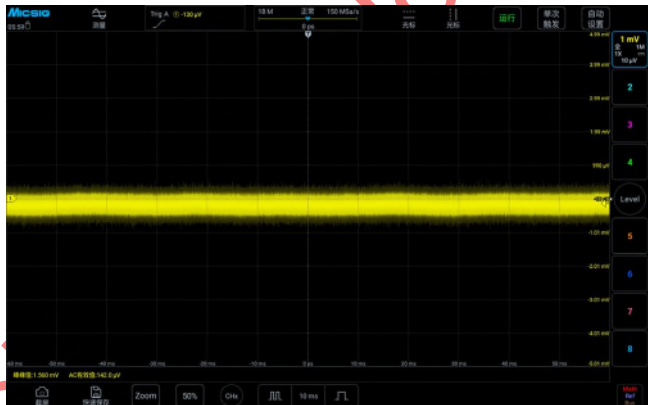

Extremely low noise floor

At full bandwidth, the MHO 6 series can achieve ultra-low noise floor, allowing you to accurately capture weak but important signals during circuit debugging and signal analysis.


Ultra-Fast Time Base Adjustment

While traditional oscilloscopes require step-by-step time base adjustment, the MHO 6 series not only has the traditional step-by-step method, but also has a time base matrix design, which allows you to adjust the time base in one step at any time point, further enhancing your work efficiency.

CH1：全带宽   **CH2：高通**   **CH3：低通**
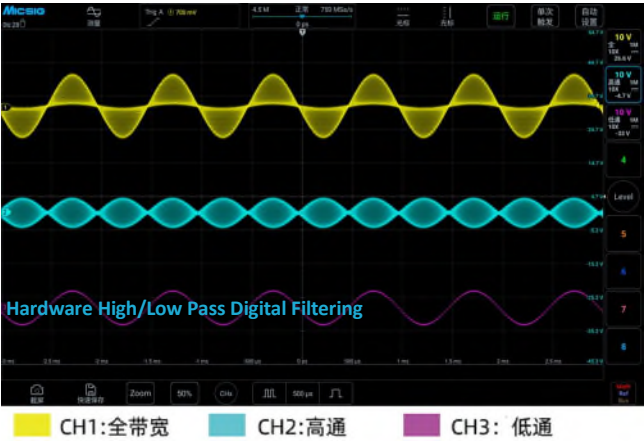
Hardware digital filtering effectively filters out interference and noise to improve signal accuracy and reliability. Digital filtering can selectively pass or block signal components in a specific frequency range.
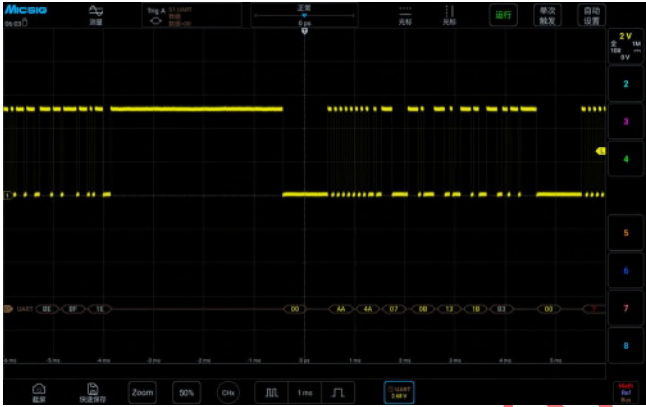
Serial Bus Decoding and Analysis

MHO 6 series supports 8 kinds of serial bus decoding (RS-232/422/485/UART, CAN, LIN, CAN FD, SPI, I2C, ARINC429, 1553B). With TXT decoding text mode, the decoded data can be exported to csv format to ensure that the data is not missed.

Abundant Trigger Modes

The MHO 6 series provides a variety of trigger modes, including edge trigger, pulse width trigger, logic trigger, N-edge trigger, under-amplitude trigger, slope trigger, serial trigger, etc. Whether you need to capture a specific edge or pulse width, the MHO 6 series provides a variety of trigger modes. Whether you need to capture a specific edge change, or are concerned with the duration or frequency of a signal, there is a trigger that will meet your needs.


Measurement statistics for up to tens of thousands of samples

The MHO 6 series provides a full range of measurement items, all of which can be selected in a single step, and the average, maximum, minimum, and mean square deviation of 10 measurement items can be counted up to 10,000 times at the same time. This ensures that each waveform data is truly recorded for a more accurate and comprehensive understanding of the measurement results.

Professional Maths Operations

MHO 6 series supports various mathematical operations, such as addition, subtraction, multiplication, division, integration and differentiation. It also supports custom function expressions to help users perform more advanced signal analysis.
Supports FFT Fast Fourier Transform (FFT) function, which can analyse the spectrum of the acquired waveform signal in real time. This helps to identify individual frequency components in the signal, as well as detect and analyse spectral features.
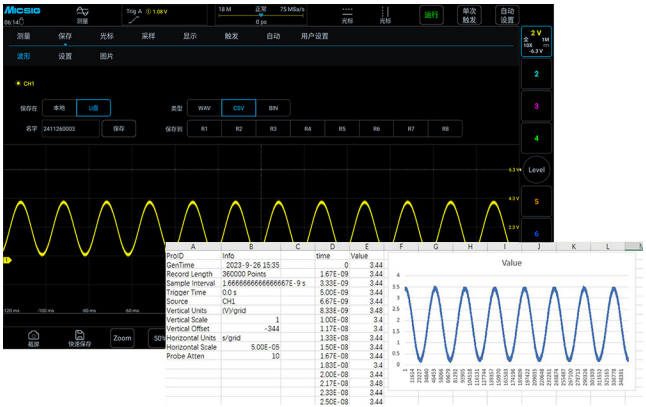
Multiple File Saving

The MHO 6 series supports saving waveforms and measurement results as binary BIN or CSV files for data analysis using Matlab o r Excel. You can also save the waveforms in wav format and open the saved signals directly in the oscilloscope for measurement and analysis. In addition, users can also save the waveform as a picture or make a video recording.

Product Parameters

Vertical System	
Bandwidth limitation	20MHz, 200MHz, High/Low pass
Coupling method	DC, AC, GND
Input Impedance and Capacitance	1MΩ ±1%, 14pF ±3pf‖50Ω ±1%
Vertical Resolution	12 bits
Vertical Gauge	10div
Vertical scale factor	1mV/div~5V/div (1MΩ) 1mV/div~500mV/div (50Ω)
Maximum Input Voltage	CAT I 300Vrms 400Vpk (1MΩ), 5Vrms (50Ω)
Channel Isolation	＞40dB (≤ 100MHz), > 35dB (> 100MHz)
Vertical Expansion Reference	Screen Centre, Channel Zero
Probe Scale	1mX~10kX, step by 1, 2, 5, support customisation

Horizontal system	
Horizontal gear	200ps/div~1ks/div
Rolling Screen Gear	100ms/div~1ks/div
Time base accuracy	20ppm
Number of horizontal frames	12div
Time base delay time range	-12 frames ~12ks, Resolution: 1 pixel

Trigger System	
Trigger Mode	Auto, Normal, Single
Trigger Source	CH1, CH2, CH3, CH4, CH5, CH6, CH7, CH8, Aux In
Trigger inhibit range	200ns~10s
Trigger Level Range (Analogue)	±5div from screen centre, analogue channel
Trigger Type	Edge, Pulse Width, Logic, N-Edge, Under-Amplitude, Slope, Timeout, Video, Serial
Bus Decode	RS-232/422/485/UART, CAN, CAN FD, LIN, SPI, I2C, ARINC429, 1553B

Sampling System	
Maximum real-time sampling rate	6GSa/s: CH1/CH2/CH5/CH6,CH1/CH2+CH5/CH6. 3GSa/s: CH1+CH2 and/or CH5+CH6. 1.5GSa/s: either CH3/CH4/CH7/CH8.
Maximum Record Length	1.8Gpts: CH1/CH2/CH5/CH6,CH1/CH2+CH5/CH6. 900Mpts: CH1+CH2 and/or CH5+CH6. 450Mpts: either CH3/CH4/CH7/CH8 on.
Peak Sampling Interval	Single channel 160ps, half channel 320ps, full channel 666ps
Average number of times	2,4,8,16,32,64,128,256
Envelope	2,4,8,16,32,64,128,256, ∞

Waveform measurement	
Automatic measurement	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, Mean, C Mean, AC RMS, Positive Slope, Negative Slope *C stands for the first cycle, indicating a value in the first cycle of the waveform.
Hardware Frequency Meter and Resolution	Supports each analogue channel, 6bit, 2Hz~ Maximum bandwidth, peak-to-peak > 0.8div
Cursors	Horizontal cursor, vertical cursor, cross cursor
Cursor resolution	1 pixel

Maths waveforms	
Dual waveforms	+, -, *, /, analogue channel
FFT	Number of dots: 360k max; Source: Analogue channel; Windows: Rectangular, Hamming, Blackman, Hanning
AX+B	A: ±1k, resolution min. 1p or 4bit B: ±1k, resolution 1p or 5bit X: analogue channels
Advanced Maths	Advanced expression input with +, -, *, /, <, >, ≤, ≥, ==, ! =, &&, ||, (,), ! (, sqrt, abs, deg, rad, exp, diff, ln, sin, cos, tan, intg, lg, asin, acos, atan

Display system	
Display	16-inch touch screen, 1920 * 1200 resolution, 12 * 10 grid
Afterglow Time	Auto , 10ms~10s, ∞
Time base mode	YT, XY, Roll, Zoom
Expanded reference	Centre, Trigger Position
Waveform Display	Dot, line, adjustable brightness
Maximum Waveform Capture Rate	280,000 wfms/s

Memory	
Storage media	Native, USB stick
Internal Storage	256G
Storage Format	WAV, CSV, BIN
Number of stored waveforms	Unlimited
Naming of stored waveforms	Support Chinese and English
Number of reference waveforms displayed at the same time	8
Quick Screenshot	Supported
Number of stored user settings	10
User Settings Naming	Support
Flash Memory Specifications	Industry-standard generic flash memory
Screenshots, video recording	Supported

Self-calibrating

Self-calibration	Supported
Languages	Support Chinese, English, German, French, Czech, Korean, Spanish, Italian, etc.
Operating System	Android
Built-in APP	App Store, Browser, Oscilloscope, Calendar, Clock, Gallery, Calculator, User's Guide, E-Tools, File Manager
Warranty	The MHO 6 Series is covered by a three-year warranty on the main unit. Probes and accessories are not covered by the oscilloscope warranty or service. Please refer to the datasheet for each probe and accessory for the terms of their respective warranties (for extended warranties, please contact us)

Interfaces and others

USB3.0/2.0	Supports 4 USB mass storage devices, readable and writable
USB Type-C	1x, read/write
LAN	1pc
4-pin aviation power jack	1x to power oscilloscope
Probe calibration signal	1kHz, 2Vpk-pk
HDMI	HDMI 1.4
Host computer	Support
Android/iOS Remote Control App	Support
SCPI	Support

Power Supply

Adapter Input	100~240V AC, 50/60Hz
Adapter Power	< 120W
Adapter Output	24V DC, 5A
Power cord plug	All specifications are supported, users can choose according to the region.

Environment

Temperature and humidity	
Working Condition	0℃~ 45℃
Non-working condition	-40℃~ 60℃
Humidity	
Working Condition	5% ~ 85%, 25℃
Non-Operating Condition	5% ~ 90%, 25℃
Height	
Working Condition	< 3000m
Non-working Condition	< 12000m

Physical Characteristics

Appearance size	443*307*35mm
Net weight	5.7kg

Standard Accessories

Model	Accessory Name
	Passive Probe *8
	MSP-BNC Adaptor *8 Power
	Adaptor *1
MHO68-1000	Power cord *1
MHO68-500	Wireless Network Card *1
MHO68-350	Calibration Certificate *1
	Quick Operation Guide
	*1
	Packing List *1

Optional Accessories

Optical Isolation	
Probes	Bandwidth: 100MHz~ 1GHz, Common Mode Voltage: 85kVpk, DC Gain Accuracy: 1%, Common Mode Rejection Ratio: up to 180dB.

High Voltage Differential	
Probes	Bandwidth: 100MHz~ 500MHz, Maximum differential voltage (DC+AC PK): 700V - 7000V, Accuracy: ±2%.

Current Probes	
High Frequency AC/DC Current Probe Series Low Frequency AC/DC Current Probe Series Roche Coil Current Probe Series AC Current Probe Series	Bandwidth: up to 100MHz, Range: 5A/30A, Accuracy: ±1% Bandwidth: up to 2.5MHz, Range: 10A/100A Bandwidth: up to 30MHz, Peak current: 12000Apk, Accuracy: 2% Bandwidth: 10Hz-100kHz, Measuring range: 0.1Apk-1000Apk

Bag	
McKesson Oscilloscopes customised	Black, nylon, oscilloscope customised model
carrying case McKesson	Anti-fall, anti-shock, anti-pressure, dust-proof, moisture-proof,

The right of explanation belongs to McKesson; if there is any update, no further notice.

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