



MO3 Series

High Resolution Modular Oscilloscope

Bandwidth

500MHz

Sampling Rate

3GSa/s

Memory Depth

360Mpts

DC Gain Accuracy

≤ 1%

Height

3cm

Vertical Resolution

12bit

Cascading

16 Ch



Micsig 麦科信 Shenzhen Micsig Technology Co., Ltd.

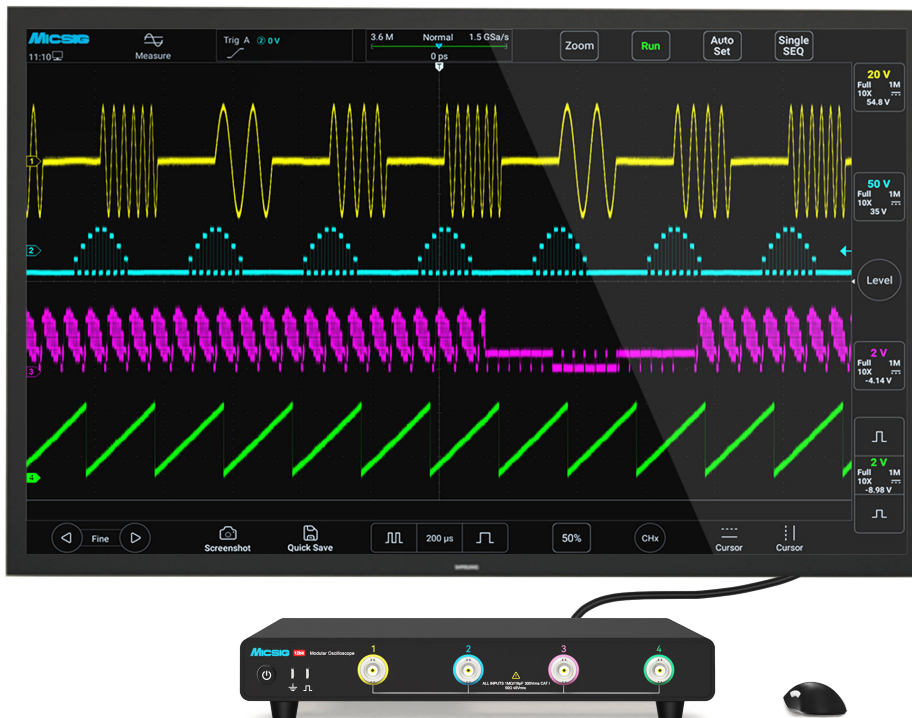
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Product Overview

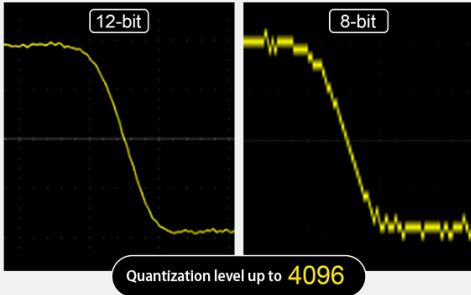
Micsig MO3 series high-resolution modular oscilloscope is only 3 cm high, making it the ultimate space-saving solution for desktops and test racks. The MO3 series features a 12-bit ADC, offering 500 MHz analog bandwidth, 3 GSa/s real-time sampling rate, 360 Mpts, and 4 analog channels; Supports HDMI direct connection for seamless access to large screens, with no software installation required. Users can control the oscilloscope using a mouse for simple and intuitive operation. Supports oscilloscope cascading with up to 16 channels, effectively reducing the cost of using multi-channel oscilloscopes. Supports PC-based oscilloscope remote control, SCPI protocol, secondary development, and high-speed data streaming, making it the top choice for system integration.

Product Features



- ▶ 12-bit vertical resolution
- ▶ Up to 500MHz bandwidth
- ▶ DC gain accuracy $\leq 1\%$
- ▶ Simultaneous data saving on multi-channel
- ▶ High / Low pass bandwidth filtering
- ▶ Baseline noise of less than $80\mu\text{Vrms}$
- ▶ Segmented storage function
- ▶ Only 3.1cm height, easily installed in a rack
- ▶ Advanced math and FFT function
- ▶ Supports multiple saving formats
- ▶ Support multi-channel cascading of oscilloscopes
- ▶ Support high-speed data transmission
- ▶ Supports rack-mounted installation
- ▶ Supports HDMI direct connection to the display
- ▶ Supports 6-digit hardware frequency counter
- ▶ Supports SCPI and secondary development
- ▶ Compatible with mobile apps and PC remote control
- ▶ Support trigger waveform input and output
- ▶ Standard decodes: RS-232/422/485/UART, CAN, CAN FD, LIN, SPI, I²C, ARINC-429, MIL-STD-1553B

12-bit vertical resolution



- ▶ MO3 series has 12 bit high-resolution ADC with a quantization level of up to 4096, it's 16 times that of traditional 8-bit ADC, present unmatched waveform details.

HDMI Direct Connection Display



- ▶ MO3 series supports HDMI direct connection for unlimited large screen viewing. Mouse operation is simple and easy to learn.
- ▶ MO3 Series supports remote control of the oscilloscope via PC-based software and can be operated using SCPI commands.

System Integration



- ▶ Only 3 cm high and compact in size, it fits easily into a rack and supports test system integration.

Cost-Effective Choice for Multi-Channel Oscilloscope



- ▶ Achieve oscilloscope cascading with up to 16 channels through the MOS4 synchronizer, effectively reducing the cost of using multi-channel oscilloscopes.

Diversified interfaces

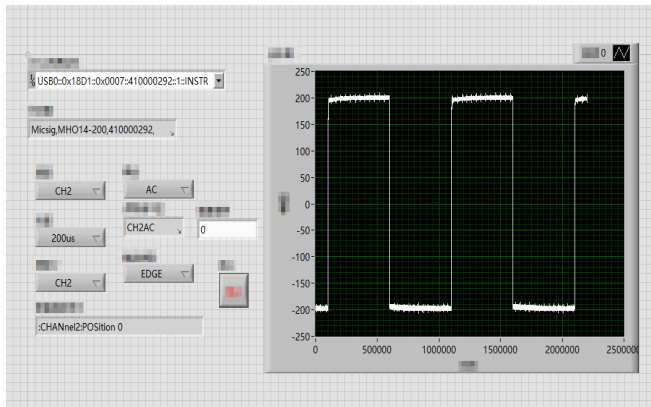


- ▶ Equipped with rich interfaces including USB 3.0/2.0 Host, USB Type-C, LAN, SFP+, HDMI, Trigger In/Out, and 10MHz Clock In/Out.
- ▶ Supports host computer control of oscilloscopes, SCPI, secondary development, and high-speed data transmission.

Key Specifications

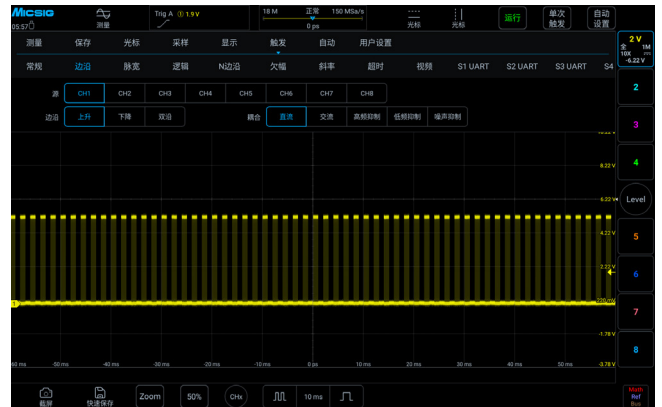
| Model | MO34-500Pro | MO34-350Pro | MO34-250Pro | MO34-500 | MO34-350 | MO34-250 |
|-----------------------|--|-------------|-------------|----------------|----------|----------|
| Bandwidth | 500MHz | 350MHz | 250MHz | 500MHz | 350MHz | 250MHz |
| Rise time | ≤ 0.7ns | ≤ 1ns | ≤ 1.4ns | ≤ 0.7ns | ≤ 1ns | ≤ 1.4ns |
| Analog channels | 4CH | 4CH | 4CH | 4CH | 4CH | 4CH |
| Sampling rate | 3GSa/s | 3GSa/s | 3GSa/s | 3GSa/s | 3GSa/s | 3GSa/s |
| Memory depth | 360Mpts | | | 360Mpts | | |
| Waveform capture rate | 230,000wfms/s | | | 230,000wfms/s | | |
| Configuration | Software used for system integration | | | Basic Software | | |
| Baseline Noise | < 85μVrms | | | | | |
| Vertical Resolution | 12 bit | | | | | |
| Input Impedance | 50Ω / 1MΩ | | | | | |
| Bus decoding | RS-232/422/485/UART、CAN、CAN FD、LIN、SPI、I ² C、ARINC429、1553B | | | | | |
| Interface | USB 3.0/2.0 Host、USB Type-C、LAN、SFP+、HDMI、Trigger in/out、10MHz in/out | | | | | |
| Trigger | Edge、Pulse width、Logic、Nth-edge、Runt、Slope、Timeout、Video、Serial bus | | | | | |
| Dimension | 224.5*30*264.3mm (Width x Height x Depth) | | | | | |

Product Features



Secondary development

MO3 Series supports secondary development and high-speed data streaming, meeting the demands of automated testing, system integration, and customized development.



Most friendly UI

With accumulation of 10 years of UI design experience, the MO3 series simplifies all user interfaces, engineers can quickly learn to use in 5 minutes.



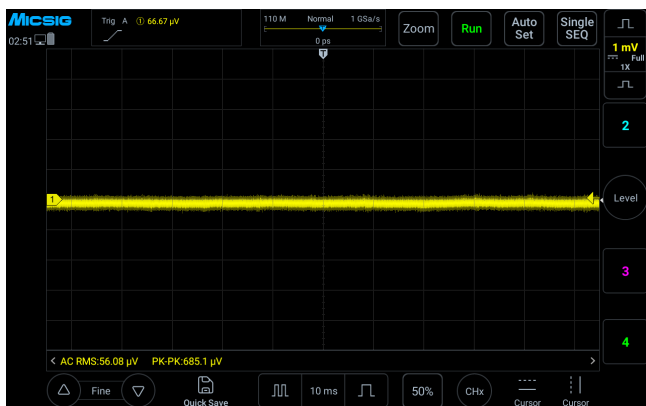
Deep memory

Insufficient memory depth often leads to distortion when long timebase signals were expanded. With memory depth of up to 360Mpts, 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.



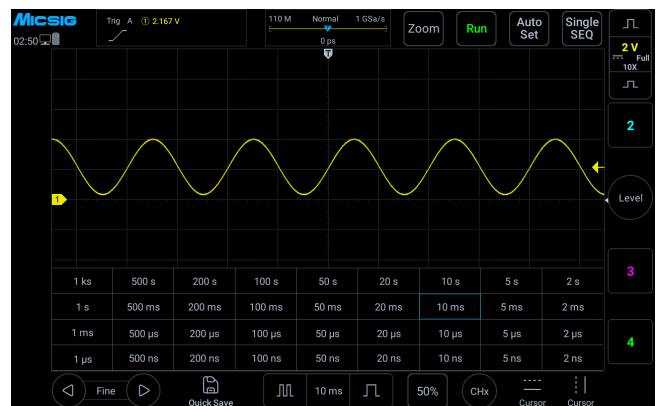
Segmented storage acquisition

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 playback captured ones, effectively captures target signals multiple times over a long period of time.



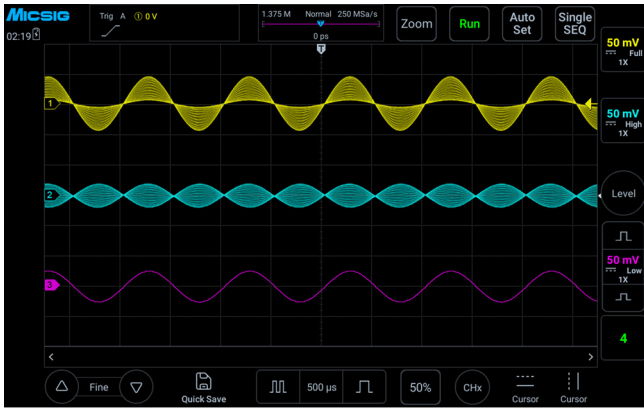
Low noise

Even at its full bandwidth, the noise floor of the MO3 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 MO3 series also has a time base matrix, allows user to select any time base in one click.



■ Full bandwidth
 ■ High pass
 ■ Low pass
Hardware digital filtering

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



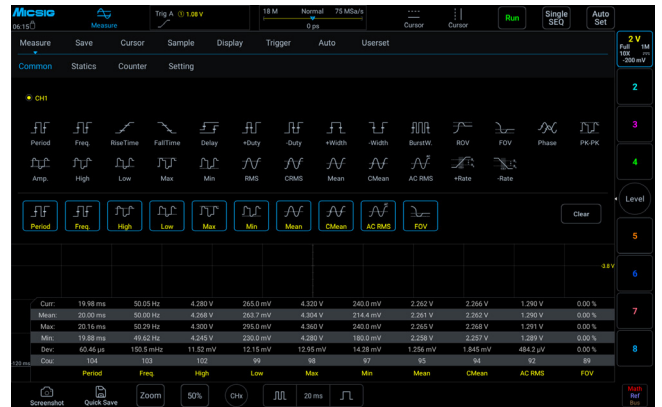
Serial bus decoding and analysis

The MO3 series standard with 8 serial bus decodes: RS-232/422/485/ UART, CAN, LIN, CAN FD, SPI, I2C, ARINC-429, 1553B. With the TXT decoding text mode, the data can be transferred to CSV format.



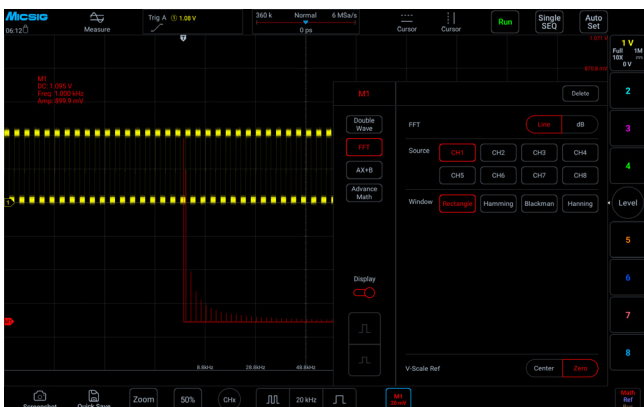
Multiple Trigger Functions

The MO3 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 of the target signal, it meets your requirement at ease.



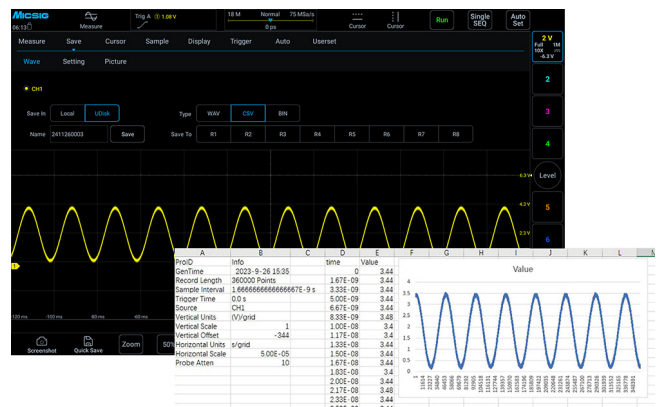
Statistics Measurement

Simultaneously calculate the average, maximum, minimum, and root mean square of 10 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 binary (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、High Pass / Low Pass |
| Coupling | DC、AC、GND |
| Input impedance and accuracy | $1M\Omega \pm 1\% \parallel 50\Omega \pm 1\%$ |
| Vertical resolution | 12 bits |
| Vertical divisions | 10div |
| Vertical scale factor | 1mV/div~10V/div (1M Ω) 1mV/div~1V/div (50 Ω) |
| DC gain accuracy | $\leq \pm 1.0\%$ |
| Vertical offset range(1M Ω /50 Ω) | $\pm 2.5V$ (@probe X1 , < 500mV/div) , $\pm 125V$ (@probe X1, $\geq 500mV/div$) |
| Noise | $\leq 85\mu V_{rms}$ (1mV/div, 1M Ω) |
| Max. input voltage | CAT I 300Vrms 400Vpk (1M Ω) , 5Vrms (50 Ω) |
| Channel isolation | > 40dB ($\leq 100MHz$) , > 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 | 1ns/div~1ks/div |
| Roll mode range | 100ms/div~1ks/div |
| Time base accuracy | 20ppm |
| Horizontal divisions | 12div |
| Time base delay time range | -12 div ~ 12ks, resolution: 1 pixel |

| Trigger System | |
|---|---|
| Trigger mode | Auto, Normal, Single |
| Trigger level range (analog) | $\pm 5div$ from screen center, analog channel |
| Hold off range | 200ns~10s |
| Trigger coupling and frequency (analog) | DC, AC(110Hz), low frequency (58kHz), high frequency (58kHz), noise (18MHz) |
| 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.) | 3GSa/s (Either one of CH1 & CH2 is open, and either one of CH3 & CH4 is open); 1.5GSa/s (Both CH1 and 2CH, or both CH3 and CH4 are open) |
| Memory depth (Max.) | 360Mpts/36M/3.6M/360K/36K/3.6K/Auto (Either one of CH1 & CH2 is open, and either one of CH3 & CH4); 180Mpts/18M/1.8M/180K/18K/1.8K/Auto (Both CH1 and 2CH, or both CH3 and CH4 are open) |
| Peak sampling interval | single channel: 333ps, Full channel: 666ps |
| Average times | 2,4,8,16,32,64,128,256 |
| Envelope times | 2,4,8,16,32,64,128,256, ∞ |

| 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: $\pm 1k$, Min. Resolution 1p or 4it B: $\pm 1k$, Resolution 1p or 5bit X: Analog channel |
| Advanced math | Advanced input, including +, -, *, /, <, >, \leq , \geq , ==, !=, &&, , (,), !, sqrt, abs, deg, rad, exp, diff, ln, sin, cos, tan, intg, lg, asin, acos, atan |
| Display | |
| Display | Support HDMI screen projection, 1920*1200 resolution, 12*10 grids |
| 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 | 230,000 wfms/s |
| Storage | |
| Storage media | Local, USB drive |
| ROM storage | 32G |
| Storage format | WAV, CSV, BIN |
| Quantity of stored waveforms | No limit |
| Stored waveform rename | Chinese, English |
| REF waveforms display | 4 |
| Screenshot | Support |
| Quantity of user setting | 10 |
| User setting rename | Support |
| Flash memory | Industry standard |
| Video recording | Support |

| System | |
|------------------|---|
| Self-calibration | Support |
| Languages | Support Chinese, English, Spanish, Portuguese, Russian, Turkish, Japanese, Korean, French, Arabic, 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 | Support 1 USB 3.0 and 1 USB 2.0 storage devices, readable and writable |
| USB Type-C | 1, readable and writable |
| LAN | 1 |
| 4-pin aviation power socket | 1 |
| Probe calibration signal | 1kHz、2Vpk-pk |
| HDMI | HDMI 1.4 |
| SFP+ | Support |
| Trigger in | Support |
| 10MHz clock in/out | Support |

| Power supply | |
|-------------------|----------------------|
| Adapter input | 100~240V AC, 50/60Hz |
| Power consumption | < 120W |
| Adapter output | 24V DC, 5A |
| Power cord | Local |

| 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 | 224.5*36.3*273.7mm (Width*Height*Depth) |
| Net Weight | 1842g |

Standard Accessories

| Model | Standard Accessories |
|-------------|---|
| M034-250 | Passive Probe *4 |
| M034-350 | Power adapter *1 |
| M034-500 | Power cord *1 |
| | Quick Guide *1 |
| M034-250Pro | Passive Probe *4 |
| M034-350Pro | Power adapter *1 |
| M034-500Pro | Power cord *1 |
| | Quick Guide *1 |
| | High-Speed Transmission Kit *1 (includes hardware and software) |

Micsig Product Catalog



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