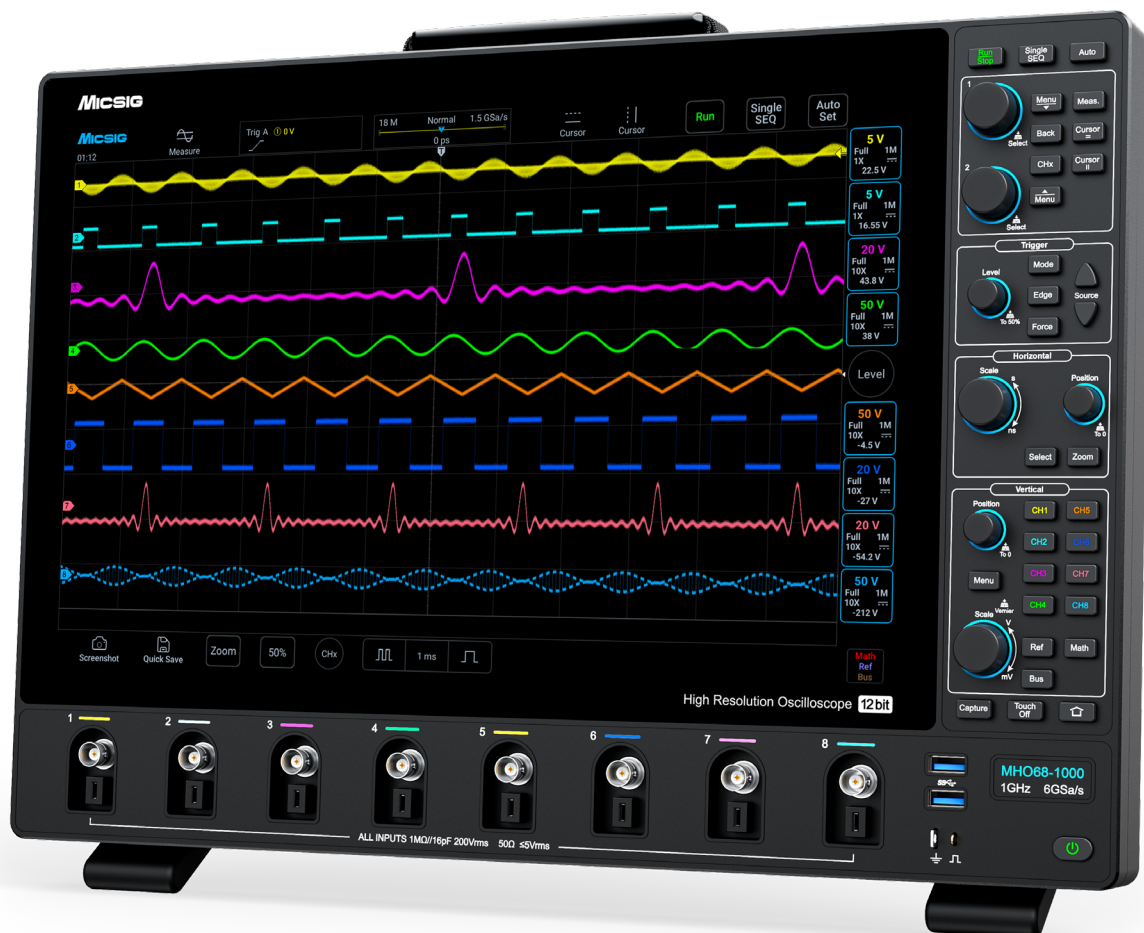


# High Resolution Oscilloscope

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.

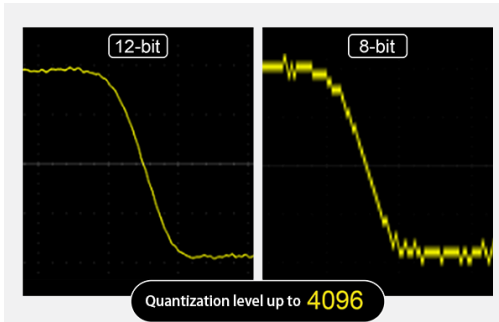
With its ultra-slim 3.76 cm design, it significantly saves valuable desktop space. Supported by a 16-inch touchscreen with a 1920\*1200 resolution, it still delivers a more comfortable visual experience even when you are analyzing waveform data from over 8 channels simultaneously.

## 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, I<sup>2</sup>C, ARINC-429, MIL-STD-1553B

## 12-Bit Vertical Resolution



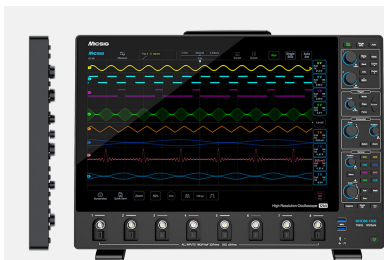
MHO 6 series has 12 bit ADC with a quantization level of up to 4096, it's 16 times that of traditional 8-bit ADC, present unmatched waveform details.

## 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

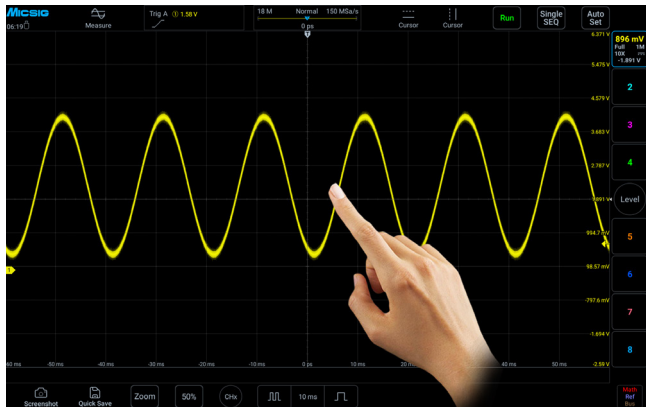


Based on Micsig's comprehensive probe product line, MHO6 series oscilloscopes can be paired with SigOFIT Optical-fiber Isolated Probe, high-voltage differential probes, Rogowski coils, and high-frequency AC/DC current probes, among others.

## Key Specifications

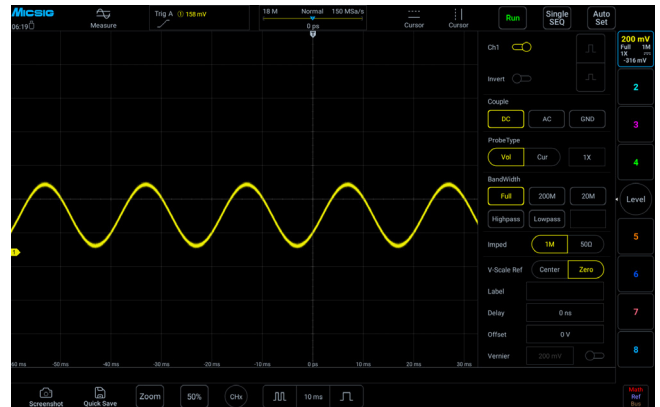
| Model                  | MHO68-1000                                                                      | MHO68-500      | MHO68-350      |
|------------------------|---------------------------------------------------------------------------------|----------------|----------------|
| Bandwidth(-3dB)@50Ω    | 1GHz                                                                            | 500MHz         | 350MHz         |
| Bandwidth(-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



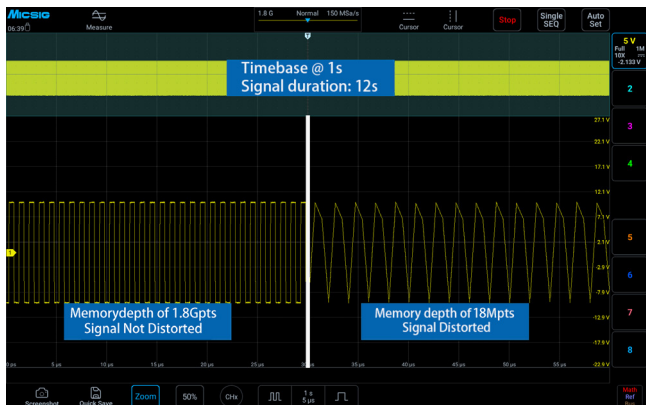
### Smooth Touch Control

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.



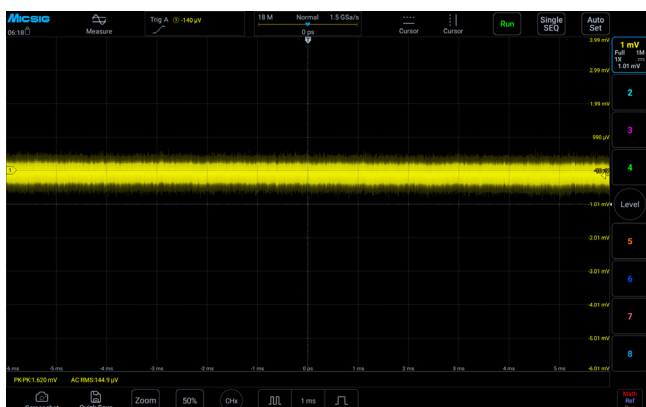
### Deep Memory

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.



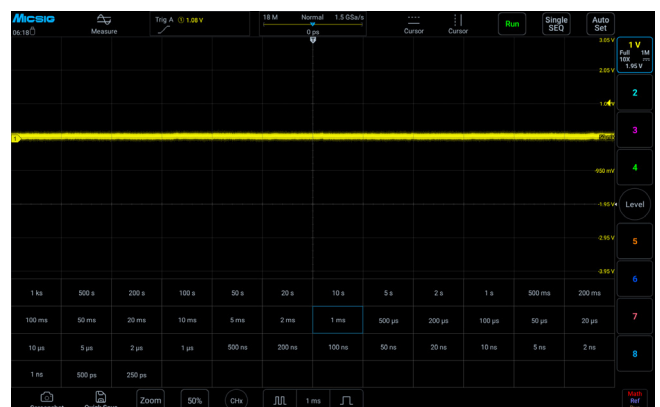
### Segmented Storage Acquisition

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.



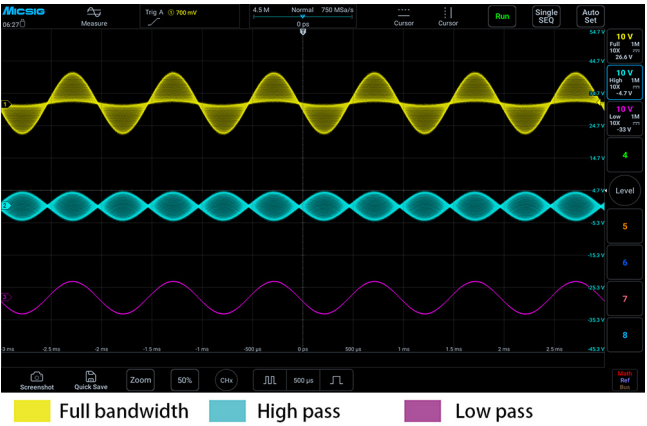
### Low Noise Floor

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.



### 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.



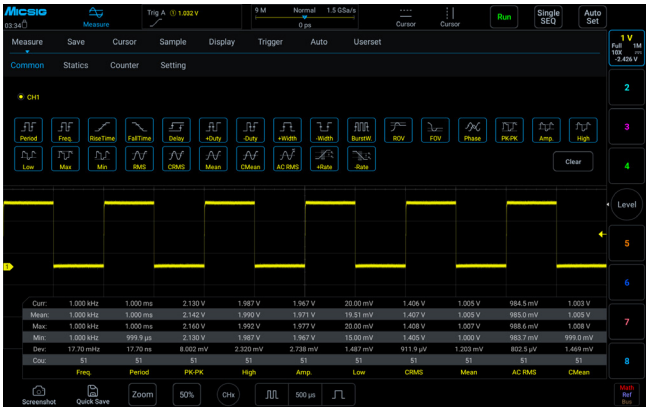
### Advanced Math Functions

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.



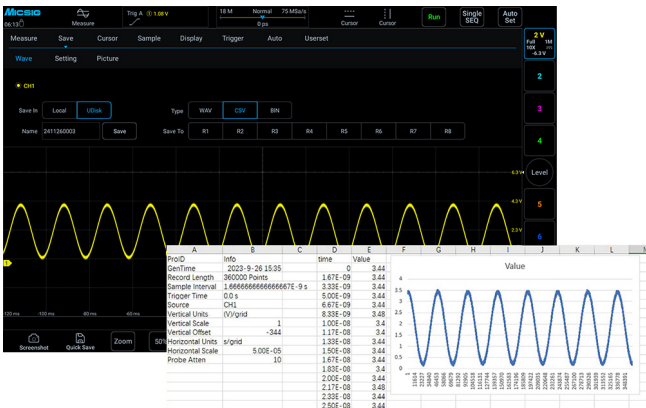
### Serial Bus Decoding and Analysis

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.



### 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.



### 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 divisions           | 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<br>*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;<br>Window: Rectangular, Hamming, Blackman, Hanning                                                                                                                                                                                                                                                                                                                                          |
| AX+B                       | A: $\pm 1k$ , Min. Resolution 1p or 4it<br>B: $\pm 1k$ , Resolution 1p or 5bit<br>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                       | 16" capacitive TFT touch screen, 1920*1200 resolution, 12*10 Divisions |
| Persistence                   | Auto, 10ms~10s, $\infty$                                               |
| 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.<br>* 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, 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               | 443.6*307.2*37.6mm |
| Net weight               | 5.5kg              |

## Standard Accessories

| Model                                | Standard Accessories |
|--------------------------------------|----------------------|
| MHO68-1000<br>MHO68-500<br>MHO68-350 | Main unit*1          |
|                                      | Passive Probe *8     |
|                                      | Power adapter *1     |
|                                      | Power cord *1        |
|                                      | Bracket*1 pair       |
|                                      | 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: $\pm 1\%$ , $\pm 2\%$ , |
|-----------|-------------------------------------------------------------------------------------------------------|

### Current Probes

|                                      |                                                              |
|--------------------------------------|--------------------------------------------------------------|
| HF AC/DC current probe CP series     | Bandwidth: up to 100MHz, Range: 5A-300A, Accuracy: $\pm 1\%$ |
| 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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