High-resolution Oscilloscope

MO3 Series

500MHz 12bit 1% DC Accuracy 3 GSa/s Sampling Rate

Shenzhen Micsig Technology Co., Ltd.

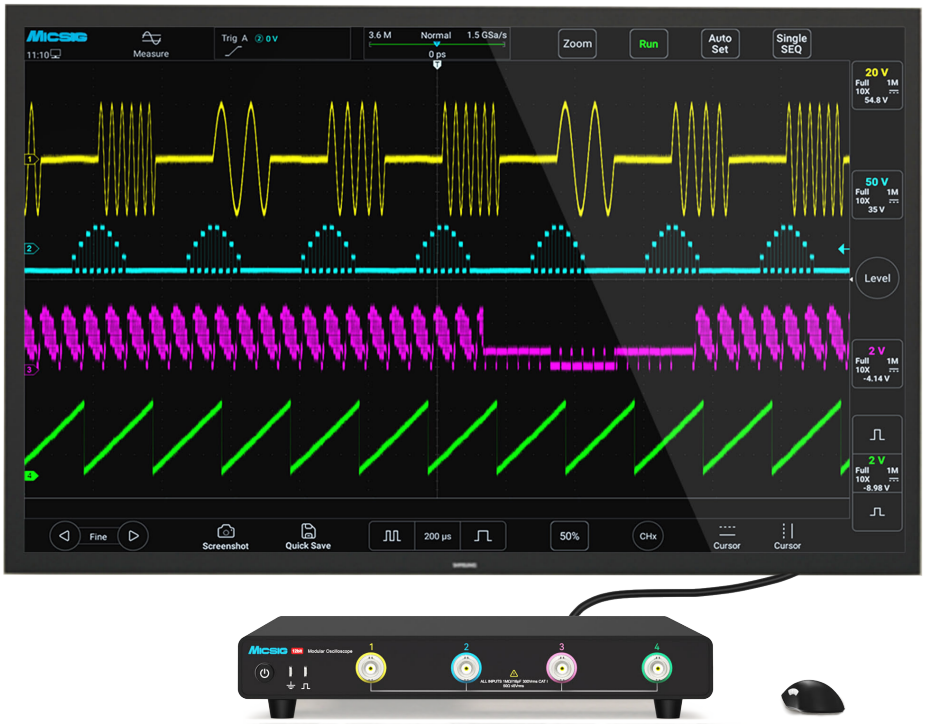
Tel: +86-(0)755-88600880 Email: sales@micsig.com Website: www.micsig.com

Add: 6F, Jinhuanyu Building, No. 56, Tiezai Rd, Bao'an District, Shenzhen, Guangdong, China.

Product Overview

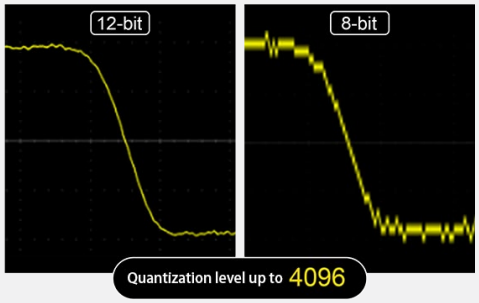
Micsig MO3 series high-resolution modular oscilloscope is only 3 cm high, making it the ultimate space-saving solution for desktops and test racks. The MO3 series features a 12-bit ADC, offering 500 MHz analog bandwidth, 3 GSa/s real-time sampling rate, 360 Mpts, and 4 analog channels; Supports HDMI 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 ⩽ 1%
- Simultaneous data saving on multi-channel
- High / Low pass bandwidth filtering
- Baseline noise of less than 85μVrms
- Segmented storage function
- Only 3 cm 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, I^2C, 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.

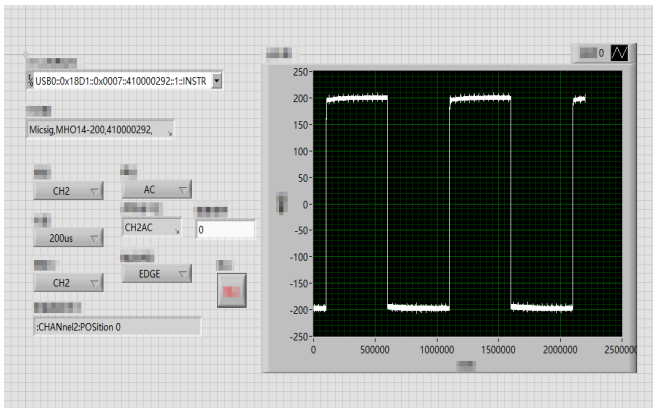
Diversified interfaces

- 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

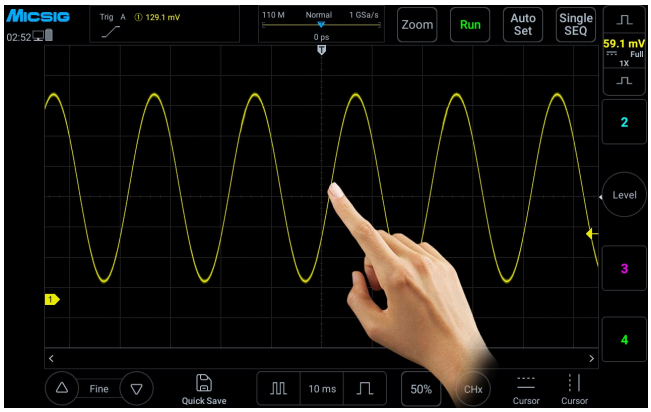
Model	MO34-500Pro	MO34-350Pro	MO34-250Pro	MO34-500	MO34-350	MO34-250
Bandwith	500MHz	350MHz	250MHz	500MHz	350MHz	250MHz
Rise time	⩽ 0.7ns	⩽ 1ns	⩽ 1.4ns	⩽ 0.7ns	⩽ 1ns	⩽ 1.4ns
Analog channels	4CH	4CH	4CH	4CH	4CH	4CH
Sampling rate	3GSa/s	3GSa/s	3GSa/s	3GSa/s	3GSa/s	3GSa/s
Memory depth	360Mpts			360Mpts		
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^2C、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.

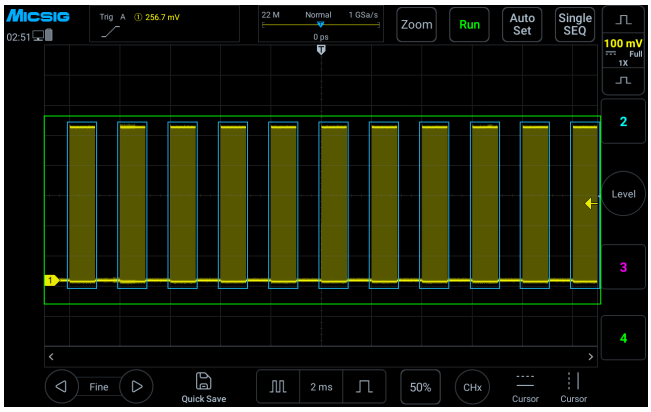


Most friendly UI

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.

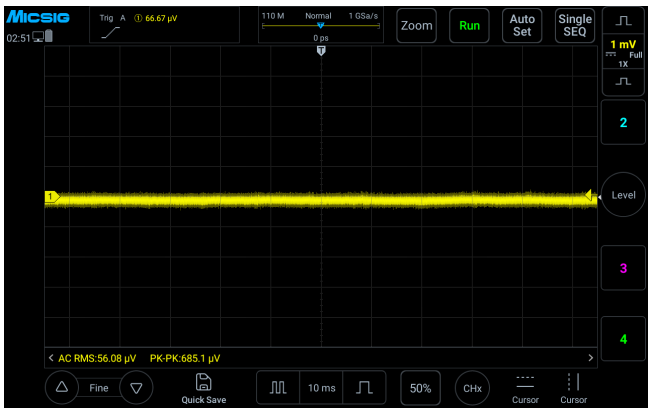
Deep memory

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.



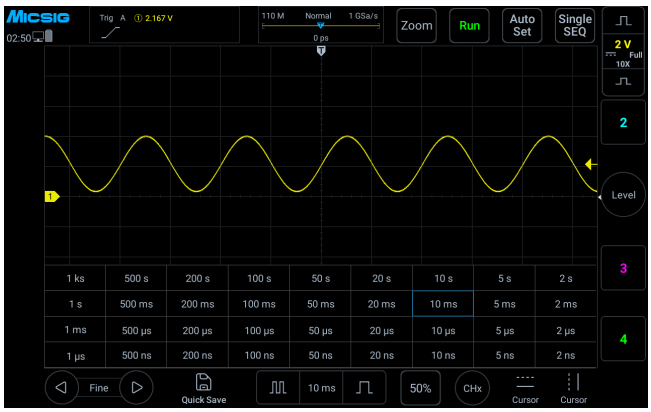
Segmented storage acquisition

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 play back 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.

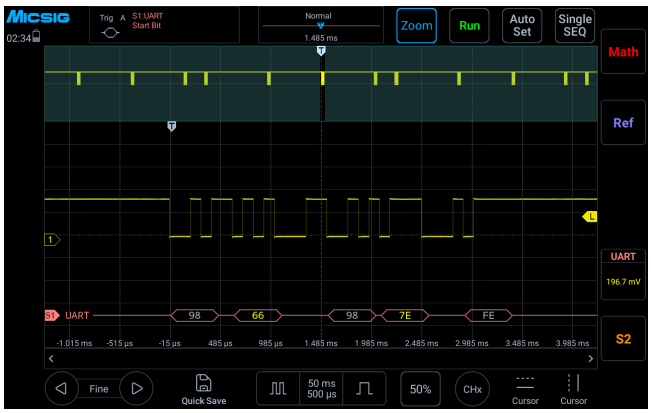


Faster time base adjustment

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.

Hardware digital filtering

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

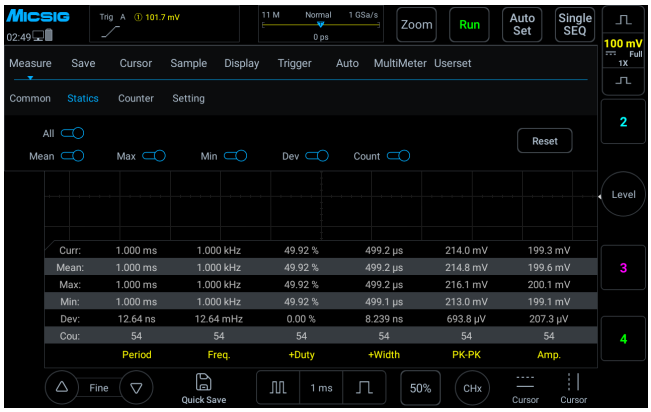


Serial bus decoding and analysis

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.

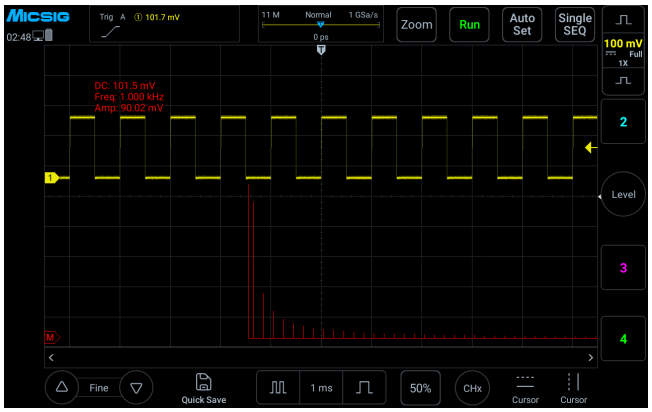
Multiple Trigger Functions

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	1MΩ±1% || 50Ω±1%
Vertical resolution	12 bits
Vertical divisons	10div
Vertical scale factor	1mV/div~10V/div（1MΩ） 1mV/div~1V/div（50Ω）
DC gain accuracy	⩽ ±1.0%
Vertical offset range(1MΩ/50Ω)	±2.5V（@probe X1，＜500mV/div），±125V（@probe X1，⩾500mV/div）
Noise	⩽ 85μVrms（1mV/div，1MΩ）
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	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)	±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: ±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	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+	Available on Pro models
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
MO34-250 MO34-350 MO34-500	Passive Probe *4
	Power adapter *1
	Power cord *1
	Calibration certificate*1
	Quick Guide *1
MO34-250Pro MO34-350Pro MO34-500Pro	Passive Probe *4
	Power adapter *1
	Power cord *1
	Calibration certificate*1
	Quick Guide *1
	High-Speed Transmission Kit *1 (includes hardware and software)

Optional Instruments

Optional Instruments	
DP700	High Voltage Differential Probe: 100MHz, 70V (20X) / 700V (200X), Accuracy: ±2% (Customizable 1% accuracy)
DP702	High Voltage Differential Probe: 200MHz, 70V (20X) / 700V (200X), Accuracy: ±2% (Customizable 1% accuracy)
DP1500	High Voltage Differential Probe: 100MHz, 150V (50X) / 1500V (500X), Accuracy: ±2% (Customizable 1% accuracy)
DP1502	High Voltage Differential Probe: 200MHz, 150V (50X) / 1500V (500X), Accuracy: ±2% (Customizable 1% accuracy)
DP3000	High Voltage Differential Probe: 100MHz, 300V (100X) / 3000V (1000X), Accuracy: ±2% (Customizable 1% accuracy)
DP3002	High Voltage Differential Probe: 200MHz, 300V (100X) / 3000V (1000X), Accuracy: ±2% (Customizable 1% accuracy)
DP7000	High Voltage Differential Probe: 100MHz, 700V (100X) / 7000V (1000X), Accuracy: ±2% (Customizable 1% accuracy)
DP7002	High Voltage Differential Probe: 200MHz, 700V (100X) / 7000V (1000X), Accuracy: ±2% (Customizable 1% accuracy)
CP3008	High Frequency AC / DC Current Probe: DC-8MHz, 300Arms, 500Apk, Output Sensitivity: 1V/10A, 1V/100A
CP3005	High Frequency AC / DC Current Probe: DC-5MHz, 300Arms, 500Apk, Output Sensitivity: 1V/10A, 1V/100A
CP1510	High Frequency AC / DC Current Probe: DC-10MHz, 150Arms, 300Apk, Output Sensitivity: 1V/10A, 1V/100A
CP1003B	High Frequency AC / DC Current Probe: DC-100MHz, 30Arms, 50Apk, Output Sensitivity: 1V/1A, 1V/10A
CP503B	High Frequency AC / DC Current Probe: DC-50MHz, 30Arms, 50Apk, Output Sensitivity: 1V/1A, 1V/10A
MOIP200P	SigOFIT Optical-fiber Isolated Probe: DC-200MHz, CMRR 180dB, DC Gain Accuracy 1%, 0dB/20dB Switch, Measure both differential and common-mode voltage
MOIP350P	SigOFIT Optical-fiber Isolated Probe: DC-350MHz, CMRR 180dB, DC Gain Accuracy 1%, 0dB/20dB Switch, Measure both differential and common-mode voltage

Optional Instruments (Continued from above)	
MOIP500P	SigOFIT Optical-fiber Isolated Probe: DC-500MHz, CMRR 180dB, DC Gain Accuracy 1%, 0dB/20dB Switch, Measure both differential and common-mode voltage
MOIP1000P	SigOFIT Optical-fiber Isolated Probe: DC-1GHz, CMRR 180dB, DC Gain Accuracy 1%, 0dB/20dB Switch, Measure both differential and common-mode voltage
RCP-XS Series	Rogowski AC Current Probe: Peak current12000Apk, coil cross-section ϕ1.6mm, coil circumference 80mm/200mm The coil's cross-sectional diameter, circumference, lead length, peak coil isolation voltage, and working temperature are all customizable.
RCP-S Series	Rogowski AC Current Probe: Peak current12000Apk, coil cross-section ϕ3.0mm, coil circumference 200mm/700mm The coil's cross-sectional diameter, circumference, lead length, peak coil isolation voltage, and working temperature are all customizable.
RCP-M Series	Rogowski AC Current Probe: Peak current12000Apk, coil cross-section ϕ4.5mm, coil circumference 200mm/700mm The coil's cross-sectional diameter, circumference, lead length, peak coil isolation voltage, and working temperature are all customizable.
RCP-L Series	Rogowski AC Current Probe: Peak current12000Apk, coil cross-section ϕ8.0mm, coil circumference 700mm The coil's cross-sectional diameter, circumference, lead length, peak coil isolation voltage, and working temperature are all customizable.
CP2100A	Low Frequency AC/DC Current Probe: DC-800kHz, Peak current 100Apk, Max. conductor diameter 13mm
CP2100B	Low Frequency AC/DC Current Probe: DC-2.5MHz, Peak current 100Apk, Max. conductor diameter 13mm

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