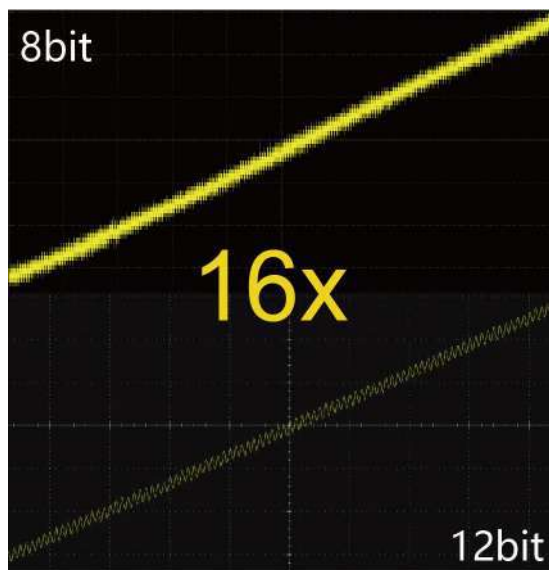




**Bandwidth : 200/400/800 MHz**

### Highlights

- Ultra low noise floor: 18  $\mu$ Vrms in minimum for cleaner signals, measuring small signals more accurately.
- High resolution of 12 bits ( $2^{12} = 4096$ ) to see the most signal detail.
- Up to 4 GSa/s real time sample rate.
- High sensitivity: 100  $\mu$ V vertical scale, allowing capture of small signals in the microvolt ( $\mu$ V) range.
- Wide vertical sensitivity range: 100  $\mu$ V/div to 10 V/div, capable of handling the smallest to the largest signals.
- Front panel flex knobs, bringing smoother interaction and easier measurements.
- Optional battery pack in a highly portable package.



## High Resolution

Digital Oscilloscopes see the Signal in great detail



## Applications



An oscilloscope is an important tool for making power supply measurements. With up to 12-bit vertical resolution, the DHO 4000 series makes it easy for you to perform ripple measurement and quality test.



This series digital oscilloscope provides a minimum vertical scale of 100  $\mu$ Vrms low noise floor, together with 12 bit high resolution to capture low power small signals effectively.



It sees intricate signal details by providing up to 4 GSa/s sample rate, 12 bit vertical resolution as well as higher DC gain accuracy.



The testing for the third generation of semiconductor materials represented by gallium nitride (GaN) usually has higher requirements for reduced quantization error of T & M equipment. The 12 bit high resolution and improved DC gain accuracy make it a perfect choice for semiconductor testing.

## Features

- Ultra low noise floor at 18  $\mu\text{V}_{\text{rms}}$  in minimum.
- 12 bit vertical resolution.
- 200/400/800 MHz analog bandwidth (selectable), 4 analog channels, and 1 EXT channel.
- Up to 4 GSa/s real time sample rate.
- Max. memory depth: 500 Mpts (optional).
- Min. Vertical sensitivity: 100  $\mu\text{V}/\text{div}$ .
- Up to 1,500,000 wfms/s waveform capture rate with the UltraAcquire mode.
- 10.1" 1280x800 HD touch display.
- User friendly flex knobs, bringing smoother interaction.
- Standard photoelectric encoder operating knobs, effectively prolonging its service life.
- Standard USB Device & Host, LAN, and HDMI interfaces.
- Optional battery pack in a highly portable package for unlimited freedom.
- Support online version upgrade.

---

DHO4000 series digital oscilloscope is designed to meet the designing, debugging, and testing requirements of the mainstream oscilloscope market. This series achieves a fast waveform capture rate of 1,500,000 wfms/s with the UltraAcquire mode, 500 Mpts memory depth, 12-bit vertical resolution, all combined with excellent noise floor performance and vertical accuracy to meet your requirements for more accurate measurements, bringing extraordinary T&M experience for you.

---

## Note:

[1]: 16 bits in high resolution mode.

### Technical Specifications

All the specifications are guaranteed except the parameters marked with "Typical" and the oscilloscope needs to operate for more than 30 minutes under the specified operation temperature.

### Overview of the DHO4000 Series Technical Specifications

Overview of the DHO4000 Series Technical Specifications			
Model	DHO4204	DHO4404	DHO4804
Analog Bandwidth (50 $\Omega$ , -3 dB)	200 MHz	400 MHz	800 MHz
Analog Bandwidth (1 M $\Omega$ , -3 dB)	200 MHz	400 MHz	500 MHz
Calculated Rise Time under 50 $\Omega$ (10% to 90%, Typical)	$\leq 1.75$ ns	$\leq 875$ ps	$\leq 500$ ps
Input Channels	4 analog channel inputs, 1 EXT channel input		
Sampling Mode	Real-time sampling		
Max. Sample Rate of Analog Channels	4 GSa/s (single channel <sup>[1]</sup> ), 2 GSa/s (half channels <sup>[2]</sup> ), 1 GSa/s (all channels <sup>[3]</sup> ) Note: The sample rate reaches 1 GSa/s when all channels are enabled. For DHO4804, the maximum analog bandwidth is only 400 MHz.		
Max. Memory Depth	Standard: 250 Mpts (single channel <sup>[1]</sup> ), 125 Mpts (half channels <sup>[2]</sup> ), 62.5 Mpts (all channels <sup>[3]</sup> ) Optional: 500 Mpts (single channel <sup>[1]</sup> ), 250 Mpts (half channels <sup>[2]</sup> ), 125 Mpts (all channels <sup>[3]</sup> )		
Max. Waveform Capture Rate	50,000 wfms/s (Vector Mode) 1,500,000 wfms/s (UltraAcquire Mode)		
Vertical Resolution	12 bits		
Hardware Real-time Waveform Recording and Playing	Up to 500,000 frames		
Peak Detect	Capture glitches as narrow as 500 ps		
Display Size and Type	10.1-inch capacitive multi-touch display		



### Overview of the DHO4000 Series Technical Specifications

Display Resolution      1280 x 800

## Vertical System Analog Channels

### Vertical System Analog Channels

Input Coupling	DC, AC, or GND	
Input Impedance	1 M $\Omega$ $\pm$ 1%, 50 $\Omega$ $\pm$ 1%	
Input Capacitance	19 pF $\pm$ 3 pF	
Probe Attenuation Ratio	0.001X, 0.002X, 0.005X, 0.01X, 0.02X, 0.05X, 0.1X, 0.2X, 0.5X, 1X, 2X, 5X, 10X, 20X, 50X, 100X, 200X, 500X, 1000X, 2000X, 5000X	
Probe Recognition	Auto-recognized RIGOL probe	
Maximum Input Voltage	1 M $\Omega$	CAT I 300 V <sub>rms</sub> , 400 V <sub>pk</sub> (DC + V <sub>peak</sub> )
	50 $\Omega$	5 V <sub>rms</sub>
	Remarks	No transient overvoltage allowed for 50 $\Omega$ or 1 M $\Omega$ routes whether the probe is used or not. Use this instrument only for measurements within its specified measurement category (not rated for CAT II, III, IV).
Vertical Resolution	12 bits	
Effective Number of Bits (ENOB, Typical)	>8	
Input Sensitivity Range <sup>[4]</sup>	1 M $\Omega$	100 $\mu$ V/div to 10 V/div
	50 $\Omega$	100 $\mu$ V/div to 1 V/div
Offset Range		$\pm$ 0.5 V (<500 $\mu$ V/div)
		$\pm$ 1 V ( $\geq$ 500 $\mu$ V/div, $\leq$ 65 mV/div)
	1 M $\Omega$	$\pm$ 10 V (>65 mV/div, $\leq$ 270 mV/div)
		$\pm$ 20 V (>270 mV/div, $\leq$ 2.75 V/div)
		$\pm$ 100 V (>2.75 V/div, $\leq$ 10 V/div)
	50 $\Omega$	$\pm$ 1 V ( $\leq$ 135 mV/div) $\pm$ 4 V (>135 mV/div)

### Vertical System Analog Channels

Dynamic Range	±4 div (12 bits)
Bandwidth Limits (Typical)	20 MHz, 250 MHz, FULL; selectable for each channel
DC Vertical Gain Accuracy <sup>[4]</sup>	±2% full scale
DC Vertical Offset Accuracy	≤200 mV/div (± 0.1 div ± 2 mV ± 1.5% of offset setting) >200 mV/div (± 0.1 div ± 2 mV ± 1.0% of offset setting)
Channel-to-channel Isolation	≥100:1 (from DC to 500 MHz), ≥30:1 (> 500 MHz to full bandwidth)
ESD Tolerance	±8 kV (for input BNC)

### Horizontal System Analog Channels

#### Horizontal System Analog Channels

Time Base Range	500 ps/div to 1 ks/div
	Time base fine adjustment setting available
Time Base Resolution	100 ps
Time Base Accuracy	±1.5 ppm ± 1 ppm/year
Time-base Delay Time Range	Pre-trigger -5 div Post-trigger 1 s or 100 div, whichever is greater
Δ Time Accuracy	± (time base accuracy x reading) ± (0.001 x screen width) ± 20 ps
Channel-to-channel Deskew	Channel-to-channel deskew range: ±100 ns, accuracy: ±1 ps
Analog Channel-to-Channel Delay (Typical)	≤500 ps <sup>[5]</sup>

### Horizontal System Analog Channels

Horizontal Mode	YT	Default mode
	XY	On channel 1/2/3/4
	SCAN	Time base $\geq 200$ ms/div
	ROLL	Time base $\geq 50$ ms/div or $\geq 100$ ms/div (selectable), available to enter or exit the ROLL mode by turning the horizontal timebase knob

## Acquisition System

### Acquisition System

Max. Sample Rate of Analog Channels	4 GSa/s (single channel <sup>[1]</sup> ), 2 GSa/s (half channels <sup>[2]</sup> ), 1 GSa/s (all channels <sup>[3]</sup> )	
Max. Memory Depth of Analog Channels	Standard: 250 Mpts (single channel <sup>[1]</sup> ), 125 Mpts (half channels <sup>[2]</sup> ), 62.5 Mpts (all channels <sup>[3]</sup> )	
	Optional: 500 Mpts (single channel <sup>[1]</sup> ), 250 Mpts (half channels <sup>[2]</sup> ), 125 Mpts (all channels <sup>[3]</sup> )	
Acquisition Mode	Normal	Default mode
	Peak Detect	Capture glitches as narrow as 500 ps
	Average	Selectable from 2, 4, 8, 16...to 65,536
	High Resolution	14 bits, 16 bits
	UltraAcquire	Up to 1,500,000 wfms/s waveform capture rate

## Trigger System

### Trigger System

Trigger Sources	Analog channel (1~4), EXT TRIG, AC Line
Trigger Mode	Auto, Normal, and Single

### Trigger System

Trigger Coupling	DC	DC coupled trigger
	AC	AC coupled trigger
	HF Reject	High frequency reject, cutoff frequency ~75 kHz (internal trigger only)
	LF Reject	Low frequency reject, cutoff frequency ~75 kHz (internal trigger only)
Noise Rejection		Increase delay for the trigger circuit (internal trigger only), on/off
Trigger Holdoff Range		8 ns to 10 s
Trigger Bandwidth	Internal	Analog bandwidth
	External	200 MHz
Trigger Sensitivity	Internal	0.50 div, $\geq 50$ mV/div 0.7 div (with noise rejection enabled)
	External	200 mVpp, from DC to 100 MHz 500 mVpp, from 100 MHz to 200 MHz
EXT TRIG	Input Impedance	1 M $\Omega$ $\pm$ 1%, BNC connector
	Trigger Jitter (Typical)	< 1 ns <sub>rms</sub> Normal acquisition, Edge trigger, trigger level located near 50% of EXT input signal
Trigger Level Range	Internal	$\pm 5$ div from center screen
	External	$\pm 5$ V
	AC Line	fixed 40%-60%

### Trigger Type

#### Trigger Type

Trigger Type	Standard: Edge trigger, Pulse trigger, Slope trigger, Video trigger, Pattern trigger, Duration trigger, Timeout trigger, Runt trigger, Window trigger, Delay trigger, Setup/Hold trigger, Nth Edge trigger, I2C, SPI, RS232/UART, CAN Optional: CAN-FD, LIN, FlexRay, I2S, MIL-STD-1553
--------------	--



### Trigger Type

Edge	<p>Triggers on the threshold of the specified edge of the input signal. The edge types can be Rising, Falling, or Either.</p> <p>Source channel: CH1~CH4, EXT, or AC Line</p>
Pulse Width	<p>Triggers on the positive or negative pulse, whose time duration is less than a value, greater than a value, or inside a time range.</p> <p>Source channel: CH1~CH4</p>
Slope	<p>Triggers on the positive or negative slope of the specified time, whose time is less than a value, greater than a value, or inside a time range.</p> <p>Source channel: CH1~CH4</p>
Video	<p>Trigger on all lines, specified line, odd/even fields that conform to the video standards. The supported video standards include NTSC, PAL/SECAM, 480p/60Hz, 576p/50Hz, 720p/60Hz, 720p/50Hz, 720p/30Hz, 720p/25Hz, 720p/24Hz, 1080p/60Hz, 1080p/50Hz, 1080p/25Hz, 1080p/24Hz, 1080i/60Hz, and 1080i/50Hz.</p> <p>Source channel: CH1~CH4</p>
Pattern	<p>Identifies a trigger condition by searching for a specified pattern. The pattern is a combination of multiple selected channel sources. The logic pattern of each channel is H, L, X, Rising, or Falling.</p> <p>Source channel: CH1~CH4</p>
Duration	<p>Triggers when the specified pattern meets the specified duration condition. The pattern is a combination of multiple selected channel sources. The logic pattern of each channel is H, L, and X. The duration is less than a value, greater than a value, inside a time range, or outside a time range.</p> <p>Source channel: CH1~CH4</p>
Timeout	<p>Triggers when duration of a certain event exceeds the specified time. The event can be specified as Rising, Falling, or Either.</p> <p>Source channel: CH1~CH4</p>
Runt	<p>Triggers when the pulses pass through one threshold but fail to pass through another threshold.</p> <p>Source channel: CH1~CH4</p>
Window	<p>Triggers in a specified window state when the rising edge of the signal crosses the upper threshold or the falling edge crosses the lower threshold. The window state can be Enter, Exit, or Time.</p> <p>Source channel: CH1~CH4</p>
Delay	<p>Triggers when the time difference between the specified edges of Source A and Source B meets the preset time. The delay time is less than a value, greater than a value, inside a time range, or outside a time range.</p> <p>Source channel: CH1~CH4</p>

Trigger Type	
Setup/Hold	<p>When the setup time or hold time between the input clock signal and the data signal is smaller than the specified time.</p> <p>Source channel: CH1~CH4</p>
Nth Edge	<p>Triggers on the Nth edge after the specified idle time. The edge can be specified as Rising or Falling.</p> <p>Source channel: CH1~CH4</p>
RS232/UART	<p>Triggers on the Start, Error, Check Error, or Data frame of the RS232/UART bus (up to 20 Mb/s).</p> <p>Source channel: CH1~CH4</p>
I2C	<p>Triggers on the Start, Stop, Restart, MissedACK, Address (7 bits, 8 bits, or 10 bits), Data, or Address Data of the I2C bus.</p> <p>Source channel: CH1~CH4</p>
SPI	<p>Triggers on the specified pattern of the specified data width (4 to 32) of SPI bus. CS and Timeout are supported.</p> <p>Source channel: CH1~CH4</p>
CAN	<p>Triggers on the start of a frame, end of a frame, Remote ID, Overload, Frame ID, Frame Data, Data&amp;ID, Frame Error, Bit Fill, Answer Error, Check Error, Format Error, and Random of the CAN signal (up to 5 Mb/s). The supported CAN bus signal types include CAN_H, CAN_L, TX/RX, and DIFF.</p> <p>Source channel: CH1~CH4</p>
CAN-FD (Optional)	<p>DHO4000-AUTOA option</p> <p>Triggers on the start of a frame, end of a frame, Remote ID, Overload, Frame ID, Frame Data, Data&amp;ID, Frame Error, Bit Fill, Answer Error, Check Error, Format Error, and Random of the CAN-FD signal (up to 10 Mb/s). The supported CAN bus signal types include CAN_H, CAN_L, TX/RX, and DIFF.</p> <p>Source channel: CH1~CH4</p>
FlexRay (Optional)	<p>DHO4000-FLEXA option</p> <p>Triggers on the specified position (TSS End, FSS_BSS End, FES End, DTS End), frame (null, Syn, Start, All), symbol (CAS/MTS and WUS), error (Head CRC Err, Tail CRC Err, Decode Err, and Random Err) of the FlexRay signal (up to 10 Mb/s).</p> <p>Source channel: CH1~CH4</p>
LIN (Optional)	<p>DHO4000-AUTOA option</p> <p>Triggers on the Sync, ID, Data (length settable), Data&amp;ID, Wakeup, Sleep, and Error of the LIN bus signal (up to 20 Mb/s).</p> <p>Source channel: CH1~CH4</p>

### Trigger Type

I2S (Optional)	DHO4000-AUDIOA option
	Triggers on 2' s complement data of audio left channel, right channel, or either channel (=, ≠, >, <, <>, ><). The available alignment modes include I2S, LJ, and RJ.
	Source channel: CH1~CH4
MIL-STD-1553 (Optional)	DHO4000-AEROA option
	Triggers on Sync (Data Sync, Cmd/Status Sync, and All Sync), Data, RTA, RTA +11Bit, and Error (Sync Error and Check Error) of the MIL-STD-1553 bus.
	Source channel: CH1~CH4

### Search & Navigate

#### Search & Navigate

Type	Edge, pulse width
Source	Analog channels
Copy	Copy to/from trigger; independent settings including threshold and trigger condition setup
Result Display	Event list or be exported to external/internal memory
Navigate	Time: view acquired waveforms in time order
	Event: use the navigation controls to go to found search events
	Segments: use the navigation controls to play through the acquired segments in UltraAcquire mode

### Waveform Measurement

#### Waveform Measurement

Cursor	Number of Cursors	2 pairs of XY cursors
	Manual Mode	Voltage deviation between cursors ( $\Delta Y$ )
		Time deviation between cursors ( $\Delta X$ )
		Reciprocal of $\Delta X$ (Hz) ( $1/\Delta X$ )
	Track Mode	Fix Y-axis to track X-axis waveform point's voltage and time values
		Fix X-axis to track Y-axis waveform point's voltage and time values
	Auto Measurement	Allow to display cursors during auto measurement
	XY Mode	Measures the voltage parameters of the corresponding channel waveforms in XY time base mode X = Channel 1, Y = Channel 2



### Waveform Measurement

Auto Measurement	Number of Measurements	41 auto measurements; and up to 14 measurements can be displayed at a time.
	Measurement Source	CH1 to CH4, Math1 to Math4
	Measurement Range	Main, Zoom
	All Measurements	Displays 33 measurement items (vertical and horizontal) for the current measurement channel; the measurement results are updated continuously.
	Vertical	Vmax, Vmin, Vpp, Vtop, Vbase, Vamp, Vupper, Vmid, Vlower, Vavg, VRMS, Per. VRMS, Overshoot, Preshoot, Area, Period Area, and AC RMS.
	Horizontal	Period, Frequency, Rise Time, Fall Time, +Width, -Width, +Duty, -Duty, Positive Pulse Count, Negative Pulse Count, Rising Edge Count, Falling Edge Count, Tvmax, Tvmin, +Slew Rate, and -Slew Rate
	Others	Delay (A↑-B↑), Delay (A↑-B↓), Delay (A↓-B↑), Delay (A↓-B↓), Phase (A↑-B↑), Phase (A↑-B↓), Phase (A↓-B↑), and Phase (A↓-B↓)
	Statistics	Items: Current, Average, Max, Min, Standard Deviation, Count Statistical times settable

### Waveform Math

#### Waveform Math

Number of Math Functions	4, displays 4 math functions simultaneously
Arithmetic	A+B, A-B, A×B, A/B, FFT, A&&B, A  B, A^B, !A, Intg, Diff, Lg, Ln, Exp, Sqrt, Abs, AX+B, LowPass, HighPass, BandPass, and BandStop
Color Grade	FFT supported

### Waveform Math

FFT	Record Size	Up to 1 Mpts
	Window Type	Rectangular, Blackman-Harris, Hanning (default), Hamming, Flattop, and Triangle
	Peak Search	A maximum of 15 peaks, confirmed by the settable threshold and offset threshold set by users

## Waveform Analysis

### Waveform Analysis

Waveform Recording		Store the signal under test in segments according to the trigger events, i.e. save all the sampled waveform data as a segment to the RAM for each trigger event. The maximum number of the sampled segments reaches 500,000.
	Source	All enabled analog channels
	Analysis	Support playing frame by frame or continuous playing; capable of calculating, measuring, and decoding the played waveforms
Pass/Fail Test		Compare the signal under test with the user-defined mask to provide the test results: the number of successful tests, failed tests, and the total number of tests. The pass/fail event can enable immediate stop, beeper, and the screenshot.
	Source	Any analog channel
Color Grade		A dimensional view for color grade waveforms, color grade > 16, 256-level color scale display
	Source	Any analog channel
	Color Theme	Temperature and intensity
	Mode	All modes available

## Serial Decoding

### Serial Decoding

No. of Decodings	4, decodes and enables/disables four protocol types simultaneously
Decoding Type	Standard: Parallel, RS232/UART, I2C, SPI, CAN
	Optional: LIN, CAN-FD, FlexRay, I2S, MIL-STD-1553

### Serial Decoding

Parallel	<p>Up to 4 bits of Parallel decoding, available for any analog channel. User-defined clock and auto clock settings are supported.</p> <p>Source channel: CH1~CH4</p>
RS232/UART	<p>Decodes the RS232/UART (up to 20 Mb/s) bus's TX/RX data (5 to 9 bits), parity (Odd, Even, or None), and stop bits (1 to 2 bits)</p> <p>Source channel: CH1~CH4</p>
I2C	<p>Decodes the address (with or without the R/W bit) of the I2C bus, data, and ACK.</p> <p>Source channel: CH1~CH4</p>
SPI	<p>Decodes the MISO/MOSI data (4 to 32 bits) of the SPI bus. Timeout and CS are supported.</p> <p>Source channel: CH1~CH4</p>
CAN	<p>Decodes the remote frame (ID, byte number, CRC), overload frame, and data frame (standard/extended ID, control domain, data domain, CRC, and ACK) of the CAN bus (up to 5 Mb/s). The supported CAN bus signal types include CAN_H, CAN_L, TX/RX, and DIFF.</p> <p>Source channel: CH1~CH4</p>
CAN-FD (Optional)	<p>DHO4000-AUTOA option</p> <p>Decodes the remote frame (ID, byte number, CRC), overload frame, and data frame (standard/extended ID, control domain, data domain, CRC, and ACK) of the CAN-FD bus (up to 10 Mb/s). The supported CAN-FD bus signal types include CAN_H, CAN_L, TX/RX, and DIFF.</p> <p>Source channel: CH1~CH4</p>
LIN (Optional)	<p>DHO4000-AUTOA option</p> <p>Decodes the protocol version (1.X or 2.X) of the LIN bus (up to 20 Mb/s). The decoding displays sync, ID, data, and check sum.</p> <p>Source channel: CH1~CH4</p>
FlexRay (Optional)	<p>DHO4000-FLEXA option</p> <p>Decodes the frame ID, PL (payload), Header CRC, Cycle Count, Data, Tail CRC, and DTS of the FlexRay bus (up to 10 Mb/s). The supported signal types include BP, BM, and RX/TX.</p> <p>Source channel: CH1~CH4</p>

### Serial Decoding

I2S (Optional)	DHO4000-AUDIOA option
	Decodes I2S audio bus left channel data and right channel data, supporting 4 to 32 bits. The available alignment modes include I2S, LJ, and RJ. Source channel: CH1~CH4
MIL-STD-1553 (Optional)	DHO4000-AEROA option
	Decodes the MIL-STD-1553 bus signal's data word, command word, and status word (address+last 11 bits). Source channel: CH1~CH4

### Auto

#### Auto

AutoScale	Minimum voltage greater than 10 mVpp, duty cycle greater than 1%, and frequency over 35 Hz
-----------	--

### Digital Voltmeter

#### Digital Voltmeter

Source	Any analog channel
Function	DC, AC+DC <sub>rms</sub> , AC <sub>rms</sub>
Resolution	ACV/DCV: 4 bits
Limits Beeper	Support upper/lower limit settings; sounds an alarm when the voltage value is inside or outside of the limit range

### Precision Counter

#### Precision Counter

Source	Any analog channel and EXT	
Measurement	Frequency, period, totalize	
Totalizer	Resolution	3 to 6 digits, user-defined
	Max. Frequency	Maximum analog bandwidth or 500 MHz (the smaller of the two)
Totalizer	48-bit totalizer	
	Counts the number of the rising edges	



**Precision Counter**

Time Reference

Internal Reference

**Command Set****Command Set**

Common Commands Support

Standard SCPI commands

Error Message Definition

Error Message

Support Status Report Mechanism

Status Reporting

Support Sync Mechanism

Synchronization

**Display****Display**

LCD

10.1-inch capacitive multi-touch gesture-enabled display

Resolution

1280 x 800 (Screen Region) 16:9

Graticule

10 horizontal divisions x 8 vertical divisions

Persistence

Off, Infinite, variable persistence (100 ms to 10 s)

Brightness

256 intensity levels (LCD, HDMI)

**Processor System****Processor System**

Processor

Cortex-A72, 1.8 GHz, hexa-core

System Memory

4 GB RAM

Operating System

Android

Internal Non-volatile Memory

8 GB

**I/O****I/O**

USB3.0 Host

2 on the front panel

USB3.0 Device

1 on the rear panel

LAN Port

1 on the rear panel, 10/100/1000 Base-T, supporting LXI-C

### I/O

Web Control		Support Web Control interface (input the IP address of the oscilloscope into the Web browser to display the operation interface of the oscilloscope)
AUX Out		BNC output on the rear panel Vo (H) $\geq 2.5$ V open circuit, $\geq 1.0$ V 50 $\Omega$ to GND Vo (L) $\leq 0.7$ V to load $\leq 4$ mA; $\leq 0.25$ V 50 $\Omega$ to GND
	Trig Out	Output a pulse signal when the oscilloscope is triggered
	Pass/Fail	Output a pulse signal when a pass/fail event occurs. Support user-defined pulse polarity and pulse time (100 ns to 10 ms)
	Rise Time	$\leq 1.5$ ns
	Input Interface	1, BNC connector on the rear panel
10 MHz Reference Clock In/Out	Output Interface	1, BNC connector on the rear panel
	Input Mode	50 $\Omega$ , with the amplitude 130 mVpp to 4.1 Vpp (-10 dBm, 20 dBm), frequency 10 MHz $\pm$ 10 ppm
	Output Mode	50 $\Omega$ , 1.5 Vpp sine waveform
HDMI Video Output		1 on the rear panel, HDMI 1.4, A plug; used to connect an external monitor or projector
Probe Compensation Output		1 KHz frequency, 0 to 3 V amplitude, Square

### Power

#### Power

Power Voltage	AC 100 to 240 V, 50 to 60 Hz
Power	400 VA maximum (connect various interfaces, USB storage device, and active probes)
Fuse	3.15 A, T degree, 250 V

### Mechanical Characteristics

Mechanical Characteristics	
Dimensions	358.14 mm (W) x 214.72 mm (H) x 120.62 mm (D)
Rack Mount Kit	4U
Weight <sup>[6]</sup>	Net: 3.8 kg
	Shipping: 5.37 kg

### Non-volatile Memory

Non-volatile Memory	
	Setup/Image      setup (*.stp), image (*.png, *.bmp, *.jpg)
Data/File Storage	Waveform Data      CSV waveform data (*.csv), binary waveform data (*.bin), list data (*.csv), and reference waveform data (*.ref, *.csv, *.bin)
Internal Capacity	8 GB
Reference Waveform	Displays 10 internal waveforms
Setting	Limited by size of USB drive
USB Capacity	Industry standard flash drives

#### NOTE:

[1]: If any one of the channels is enabled, it is called single channel mode.

[2]: If two of the channels are enabled, it is called half channels mode.

[3]: If any three channels or all four channels are enabled, it is called all channels mode.

[4]: 100  $\mu$ V/div, 200  $\mu$ V/div, and 500  $\mu$ V/div are a magnification of 1 mV/div setting. For vertical accuracy calculations, use full scale of 8 mV for sensitivity setting.

[5]: For any channel, under the same input impedance with DC-coupled, the Volts/div setting is the same for 100 mV/div and 200 mV/div setting.

### Order Information

Order Information	Order No.
<b>Model</b>	
200 MHz, 4 GSa/s, 250 Mpts, 4CH DHO	DHO4204
400 MHz, 4 GSa/s, 250 Mpts, 4CH DHO	DHO4404
800 MHz, 4 GSa/s, 250 Mpts, 4CH DHO	DHO4804
<b>Standard Accessories</b>	
Power cord (based on destination country)	— —
USB Cable	— —
4 Passive HighZ Probes (350 MHz), Standard for DHO4204	PVP2350
4 Passive HighZ Probes (500 MHz), Standard for DHO4404/ DHO4804	RP3500A
<b>Bandwidth Upgrade Option</b>	
200 MHz to 400 MHz Upgrade Option	DHO4000-BWU2T4
200 MHz to 800 MHz Upgrade Option	DHO4000-BWU2T8
400 MHz to 800 MHz Upgrade Option	DHO4000-BWU4T8
<b>Memory Depth Upgrade Option</b>	
500 Mpts Memory Depth Upgrade Option	DHO4000-RLU-05
<b>Serial Protocol Analysis Option</b>	
Automotive Serial Triggering and Analysis (CAN-FD/LIN)	DHO4000-AUTOA
Aerospace Serial Triggering and Analysis (MIL-STD-1553)	DHO4000-AEROA
Automotive Serial Triggering and Analysis (FlexRay)	DHO4000-FLEXA
Audio Serial Triggering and Analysis (I2S)	DHO4000-AUDIOA
<b>Others</b>	
Power Analysis Option	DHO4000-PWRA
Battery Pack Option	DHO4000-BPACK
Option Package (comprising DHO4000-AUTOA, AEROA, FLEXA, AUDIOA, and PWRA options)	DHO4000-BND