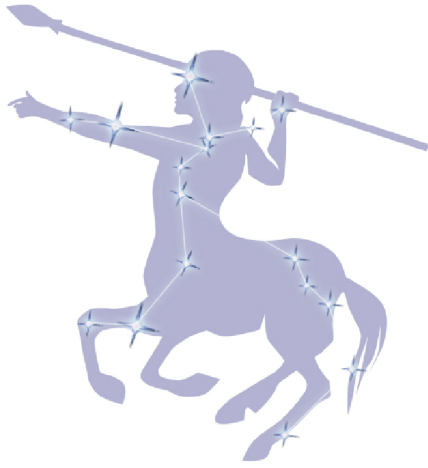# DHO1000U Series

Digital Oscilloscope

Data Sheet
DSA42100-1110
Oct. 2023

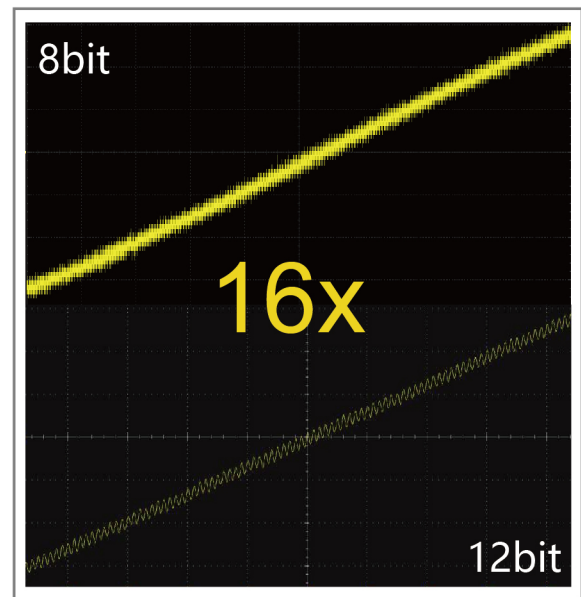# DHO1000U Series
Digital Oscilloscope

Built on RIGOL's

Brand New
Self-developed

"Centaurus" Technical Platform

Highlights

- Ultra-low noise floor for cleaner signals, measuring small signals more accurately

- 12-bit resolution (2^{12}=4096) to see the most signal detail

- Up to 2 GSa/s real-time sample rate

- A maximum of 50 Mpts memory depth, capturing more detailed signals over longer time spans

- Standard serial decodings: SPI, I2C, RS232/UART, CAN, and LIN

- 10.1-inch large HD touch display (1280x800) designed for better touch interactions

- Front-panel Flex Knobs, bringing smoother interaction and easier measurements

8bit

16x

12bit

Entry Level
High Resolution
Digital Oscilloscope,
Best Budget Oscilloscope
for Beginners

Applications

Power Supply Testing

An oscilloscope is an important tool for making power supply measurements. With up to 12-bit vertical resolution, the DHO1000U series makes it easy for you to perform ripple measurement and quality test.

Education

This series redefines what you can expect in an entry-level oscilloscope by providing excellent noise performance and 12-bit high resolution, providing basic functionality for higher education.

Embedded Design

The 10.1-inch large HD touch display enables better view of signals. Large memory depth and the Autoscale function make it ready for testing of embedded system designs.

Automotive Electronics

With standard CAN and LIN serial decoding functions, it provides a more affordable solution for automotive electronics testing.

Product Features

- Built on RIGOL's "Centaurus" technical platform
- Ultra-low noise floor for pure signals, measuring low level signals accurately
- 12-bit vertical resolution[1]
- 200 MHz analog bandwidth, 2/4 analog channels, and 1 EXT channel
- Up to 2 GSa/s real-time sample rate
- Max. memory depth: 50 Mpts (optional)
- Vertical sensitivity range: 500 µV/div to 10 V/div
- Up to 500,000 wfms/s waveform capture rate in UltraAcquire mode
- 10.1'' 1280 x 800 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

DHO1000U series digital oscilloscope is designed to meet the requirements for the design, debug, and test of the mainstream oscilloscope market. Built on RIGOL's "Centaurus" technical platform, this series delivers a fast waveform capture rate of 500,000 wfms/s in UltraAcquire mode, 50 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.

RIGOL Probes and Accessories Supported

Model	Type	Description
Passive High-impedance Probe		
PVP2150	Passive High-impedance Probe	• Attenuation: 10:1/1:1 • 1X BW: DC to 35 MHz • 10X BW: DC to 150 MHz • Compatibility: All models of RIGOL's digital oscilloscopes
PVP2350	Passive High-impedance Probe	• Attenuation: 10:1/1:1 • 1X BW: DC to 35 MHz • 10X BW: DC to 350 MHz • Compatibility: All models of RIGOL's digital oscilloscopes
PVP3150	Passive High-impedance Probe	• Attenuation: 10:1/1:1 • 1X BW: DC to 20 MHz • 10X BW: DC to 150 MHz • Compatibility: All models of RIGOL's digital oscilloscopes
RP3500A	Passive High-impedance Probe	• Attenuation: 10:1 • BW: DC to 500 MHz • Compatibility: MSO/DS4000, DS6000, MSO/DS7000, MSO8000, MSO8000A, DHO4000/1000, DS70000, and DS80000 series
High-voltage Single-end Probe		
RP1010H	High-voltage Probe	• Attenuation: 1000:1 • BW: DC to 40 MHz • DC: 0 to 10 kV DC • AC: pulse ≤20 kVp-p • AC: sine ≤7 kV_{rms} • Compatibility: All models of RIGOL's digital oscilloscopes

Model	Type	Description
RP1018H	High-voltage Probe	• Attenuation: 1000:1 • BW: DC to 150 MHz • DC+AC$_{peak}$: 18 kV CAT II • AC$_{rms}$: 12 kV CAT II • Compatibility: All models of RIGOL's digital oscilloscopes
RP1300H	High-voltage Probe	• Attenuation: 100:1 • BW: DC to 300 MHz • CAT I 2000 V (DC+AC) • CAT II 1500 V (DC+AC) • Compatibility: All models of RIGOL's digital oscilloscopes

High-voltage Differential Probe

Model	Type	Description
PHA0150	High-voltage Differential Probe	• BW: DC to 70 MHz • Max. voltage ≤ 1500 Vpp • Compatibility: All models of RIGOL's digital oscilloscopes
PHA1150	High-voltage Differential Probe	• BW: DC to 100 MHz • Max. voltage ≤ 1500 Vpp • Compatibility: All models of RIGOL's digital oscilloscopes
PHA2150	High-voltage Differential Probe	• 50X BW: DC to 160 MHz • 500X BW: DC to 200 MHz • Max. voltage ≤ 1500 Vpp • Compatibility: All models of RIGOL's digital oscilloscopes
RP1025D	High-voltage Differential Probe	• BW: DC to 25 MHz • Max. voltage ≤ 1400 Vpp (DC + AC P-P) • Compatibility: All models of RIGOL's digital oscilloscopes
RP1050D	High-voltage Differential Probe	• BW: DC to 50 MHz • Max. voltage ≤ 7000 Vpp (DC + AC P-P) • Compatibility: All models of RIGOL's digital oscilloscopes

Model	Type	Description
RP1100D	High-voltage Differential Probe	• BW: DC to 100 MHz • Max. voltage ≤ 7000 Vpp (DC + AC P-P) • Compatibility: All models of RIGOL's digital oscilloscopes
Current Probe		
RP1001C	Current Probe	• BW: DC to 300 kHz • Maximum Input AC: ±100 A AC P-P: 200 A AC RMS: 70 A • Compatibility: All models of RIGOL's digital oscilloscopes
RP1002C	Current Probe	• BW: DC to 1 MHz • Maximum Input AC: ±70 A AC P-P: 140 A AC RMS: 50 A • Compatibility: All models of RIGOL's digital oscilloscopes
RP1003C	Current Probe	• BW: DC to 50 MHz • Maximum Input AC P-P: 50 A (non-continuous) AC RMS: 30 A • Compatibility: All models of RIGOL's digital oscilloscopes • Required to order RP1000P power supply.
RP1004C	Current Probe	• BW: DC to 100 MHz • Maximum Input AC P-P: 50 A (non-continuous) AC RMS: 30 A • Compatibility: All models of RIGOL's digital oscilloscopes • Required to order RP1000P power supply.

Model	Type	Description
RP1005C	Current Probe	• BW: DC to 10 MHz • Maximum Input AC P-P: 300 A (non-continuous), 500 A (@pulse width ≤ 30 us) AC RMS: 150 A • Compatibility: All models of RIGOL's digital oscilloscopes • Required to order RP1000P power supply.
RP1006C	Current Probe	• BW: DC to 2 MHz • Maximum Input AC P-P: 700 A peaks, non-continuous AC RMS: 500 A • Compatibility: All models of RIGOL's digital oscilloscopes • Required to order RP1000P power supply.
RP1000P	4CH Power Supply	Power supply for RP1003C, RP1004C, RP1005C, and RP1006C; supporting 4 channels.

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 DHO1000U Series Technical Specifications

Overview of the DHO1000U Series Technical Specifications		
Model	DHO1202U	DHO1204U
Analog Bandwidth (-3 dB)	200 MHz	200 MHz
No. of Input Channels	2 + EXT	4 + EXT
Rise Time (10% to 90%, typical)	≤1.75 ns	≤1.75 ns
Sampling Mode	Real-time Sampling	
Max. Sample Rate of Analog Channel	Two-channel model: 2 GSa/s (single-channel[1]), 1 GSa/s (full-channel[3]) four-channel model: 2 GSa/s (single-channel[1]), 1 GSa/s (half-channel[2]), 500 MSa/s (full-channel[3])	
Standard Memory Depth	25 Mpts (single-channel[1]), 10Mpts (half-channel[2]), 1Mpts (full-channel[3])	
Optional Memory Depth	50 Mpts (single-channel[1]), 25Mpts (half-channel[2]), 10Mpts (full-channel[3])	
Max. Waveform Capture Rate	30,000 wfms/s (in Vector Mode) 500,000 wfms/s (in UltraAcquire Mode)	
Vertical Resolution	12 bits	
Hardware Real-time Waveform Recording and Playing	Max. 500,000 frames	
Peak Detection	Capture 2 ns glitches	
LCD Size and Type	10.1 capacitive multi-touch screen	
Display Resolution	1280×800	

Vertical System Analog Channel

Vertical System Analog Channel		
Input Coupling	DC, AC, or GND	
Input Impedance	1 MΩ ± 1%	
Input Capacitance	19 pF ± 3 pF	
Probe Attenuation Coefficient	0.0001X, 0.0002X, 0.0005X, 0.001X, 0.002X, 0.005X, 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, and 5000X	
Maximum Input Voltage	CAT I 300 V_{rms}, 400 V_{pk} (DC + V_{peak})	
	Remarks	No transient overvoltage allowed whether the probe is used or not.
		Please use the instrument dedicated for the specified measurement category (not applicable to CAT II, III, and IV).
Vertical Resolution	12 bits	
Effective Number Of Bits[4] (ENOB, Typical)	>8	
Vertical Sensitivity Range[5]	500 µV/div to 10 V/div	
Offset Range	±1 V (≤65 mV/div)	
	±10 V (>65 mV/div, ≤270 mV/div)	
	±20 V (>270 mV/div, ≤2.75 V/div)	
	±100 V (>2.75 V/div, ≤10 V/div)	
Dynamic Range	±4 div (12 bits)	
Bandwidth Limit (Typical)	20 MHz, FULL; selectable for each channel	
DC Gain Accuracy[5]	± 2% of full scale	
DC Offset Accuracy	≤200 mV/div (±0.1 div ± 2 mV ± 1.5% of offset value)	
	>200 mV/div (±0.1 div ± 2 mV ± 1.0% of offset value)	
Channel-to-Channel Isolation	≥100:1	
ESD Tolerance	±8 kV (on input BNCs)	

Noise Floor

Noise floor, typical (sample rate 2 Gsa/s, memory depth 1 Mpts, timebase 20 µs)	
500 µV/div	75 μV_{rms}
1 mV/div	77 μV_{rms}
2 mV/div	77 μV_{rms}
5 mV/div	95 μV_{rms}
10 mV/div	101 μV_{rms}
20 mV/div	144 μV_{rms}
50 mV/div	305 μV_{rms}
100 mV/div	1.4mV_{rms}
200 mV/div	1.8mV_{rms}
500 mV/div	6mV_{rms}
1 V/div	7.9mV_{rms}
2 V/div	13mV_{rms}
5 V/div	49mV_{rms}
10 V/div	74mV_{rms}

Horizontal System--Analog Channel

Horizontal System--Analog Channel		
Range of Time Base		2 ns/div~1 ks/div
		Fine
Time Base Resolution		400 ps
Time Base Accuracy		±5 ppm ± 1 ppm/year
Time Base Delay Range	Pre-trigger	-5 div
	Post-trigger	1 s or 100 div, whichever is greater
Delta Time Accuracy		±(Time Base Accuracy x Readout) ± (0.001 x Screen Width) ± 50 ps
Channel-to-Channel Skew Correction		Channel-to-Channel Skew Correction Range ±100 ns, Accuracy ± 1 ps
Analog Channel-to-Channel Delay (Typical)		≤2 ns[6]

Horizontal System--Analog Channel

Horizontal Mode	YT	Default
	XY	Channel 1/2/3/4
	SCAN	Time base ≥ 200 ms/div
	ROLL	Time base ≥50 ms/div or ≥ 100 ms/div (selectable), available to enter or exit the ROLL mode by rotating the Horizontal SCALE knob

Acquisition System

Acquisition System

Max. Sample Rate of Analog Channel	Two-channel model: 2 GSa/s (single-channel[1]), 1 GSa/s (full-channel[3])
	Four-channel model: 2 GSa/s (single-channel[1]), 1 GSa/s (half-channel[2]), 500 MSa/s (full-channel[3])
Max. Memory Depth of Analog Channel	Optional: 50 Mpts (single-channel[1]), 25Mpts (half-channel[2]), 10Mpts (full-channel[3])
	Standard: 25 Mpts (single-channel[1]), 10Mpts (half-channel[2]), 1Mpts (full-channel[3])
Acquisition Mode	Normal	Default
	Peak Detection	capture 2 ns glitches
	Average	2, 4, 8, 16...65536 are available for you to choose
	High Resolution	14 bits, 16 bits
	UltraAcquire	Waveform capture rate up to 500,000 wfms/s

Trigger System

Trigger System

Trigger Source	Analog channel (CH1 to CH4), EXT TRIG, AC Line
Trigger Mode	Auto, Normal, Single

Trigger Coupling	DC	DC coupling trigger
	AC	AC coupling trigger
	High Frequency Rejection	High frequency rejection, cut-off frequency to 75 kHz (internal trigger only)
	Low Frequency Rejection	Low frequency rejection, cut-off frequency to 75 kHz (internal trigger only)
Noise Rejection		Increases delay for the trigger circuit (internal trigger only), On/Off
Holdoff Range		8 ns to 10 s
Trigger Bandwidth	Internal Trigger	Analog Bandwidth
	External Trigger	200 MHz
Trigger Sensitivity	Internal Trigger	0.50 div, ≥50 mV/div; 0.7 div (with noise rejection enabled)
	External Trigger	200 mVpp, DC to100 MHz 500 mVpp, 100 MHz to 200 MHz
EXT TRIG	Input Impedance	1 MΩ±1%, BNC connector
	Jitter (Typical)	<1 ns$_{rms}$ Normal acquisition, Edge trigger, trigger level located near 50% of EXT input signal
Trigger Level Range	Internal Trigger	± 5 div from the center of the screen
	External Trigger	±5 V
	AC Line	fixed 40%-60%

Trigger Type

Trigger Type	
Trigger Type	Edge trigger, Pulse trigger, Slope trigger, Video trigger, Pattern trigger, Duration trigger, Timeout trigger, Runt trigger, Window trigger, Delay trigger, Setup/Hold trigger, and Nth Edge trigger, RS232/UART, I2C, SPI, CAN, and LIN
Edge	Triggers on the threshold of the specified edge of the input signal. The edge types can be Rising, Falling, or Either. Source channel: CH1 to CH4, EXT, or AC Line
Pulse	Triggers on the positive or negative pulse with a specified width. The pulse width is greater or smaller than a certain value or within a certain time range. Source channel: CH1 to CH4.
Slope	Triggers on the positive or negative slope of the specified time. The slew time is greater or smaller than a certain value or within a certain time range. Source channel: CH1 to CH4.
Video	Triggers on all lines, specified line, add field, or even field that conforms 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/30Hz, 1080p/25Hz, 1080p/24Hz, 1080i/60Hz, and 1080i/50Hz. Source channel: CH1 to CH4.
Pattern	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. Source channel: CH1 to CH4.
Duration	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 greater or smaller than a certain value, or within a certain time range, or outside a certain time range. Source channel: CH1 to CH4.
Timeout	Triggers when duration of a certain event exceeds the specified time. The event can be specified as Rising, Falling, or Either. Source channel: CH1 to CH4.
Runt	Triggers when the pulses pass through one threshold but fail to pass through another threshold. Source channel: CH1 to CH4.
Window	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. Source channel: CH1 to CH4.

Trigger Type	
Delay	Triggers when the time difference between the specified edges of Source A and Source B meets the preset time. The duration is greater or smaller than a certain value, or within a certain time range, or outside a certain time range. Source channel: CH1~CH4
Setup/Hold	When the setup time or hold time between the input clock signal and the data signal is smaller than the specified time. Source channel: CH1 to CH4.
Nth Edge	Triggers on the Nth edge that appears after the specified idle time. The edge can be specified as Rising or Falling. Source channel: CH1 to CH4.
RS232/UART	Triggers on the Start, Error, Check Error, or Data frame of the RS232/UART bus (up to 20 Mb/s). Source channel: CH1 to CH4.
I2C	Triggers on the Start, Stop, Restart, MissedACK, Address (7 bits, 8 bits, or 10 bits), Data, or Address Data of the I2C bus. Source channel: CH1 to CH4.
SPI	Triggers on the specified pattern of the specified data width (4~32) of SPI bus. CS and Timeout are supported. Source channel: CH1 to CH4.
CAN	Triggers on the start of a frame, end of a frame, Remote ID, Overload, Frame ID, Frame Data, Data&ID, Frame Error, Answer Error, Check Error, Format Error, Bit Fill, and Random of the CAN signal (up to 5Mb/s). The supported CAN bus signal types include CAN_H, CAN_L, TX/RX, and DIFF. Source channel: CH1 to CH4.
LIN	Triggers on the Sync, ID, Data (length settable), Data&ID, Wakeup, Sleep, and Error of the LIN bus signal (up to 20 Mb/s). Source channel: CH1 to CH4.

Search&Navigation

Search&Navigation	
Type	Edge, Pulse
Source	Analog channel
Copy	Copies the search settings from or to the trigger settings mutually, including threshold setting and search condition settings
Result Display	Displays in event table form; can be exported to the external or internal memory

Navigation	Time navigation: navigates to the acquired waveforms in time order.
	Event navigation: uses the navigation keys to scroll through the event search results and navigates to the specified event.
	Frame navigation: navigates to the specified frame segment in UltraAcquire mode.

Waveform Measurement

Waveform Measurement

Cursor	Number of Cursors	2 pairs of XY cursors
	Manual Mode	Voltage deviation between cursors (ΔY) Time deviation between cursors (ΔX) Reciprocal of ΔX (Hz) (1/ΔX)
	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	Allows 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-CH4, Math1-Math4
	Measurement Range (Region)	Main, Zoom
	All Measurement	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, and Period Area.
	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 Calculation

Waveform Calculation		
No. of Math Functions		4; 4 math functions available to be displayed at a time
Operation		A+B, A-B, A×B, A/B, FFT, A&&B, A||B, A^B, !A, Intg, Diff, Sqrt, Lg, Ln, Exp, Abs, AX+B, LowPass, HighPass, BandPass, and BandStop
Color Grade		FFT supported
FFT	Record Length	Max. 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		Stores the signal under test in segments according to the trigger events, that is, saves 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
PassFail		Compares 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		Provide 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	Supports all modes

Serial Decoding

Serial Decoding	
Number of Decodings	4, four protocol types can be decoded and enabled at the same time
Decoding Type	Standard: Parallel, RS232/UART, I2C, SPI, LIN, and CAN
Parallel	Up to 4 bits of Parallel decoding, supporting any analog channel Support user-defined clock and auto clock settings. Source channel: CH1~CH4
RS232/UART	Decodes the RS232/UART (up to 20 Mb/s) bus's TX/RX data (5-9 bits), parity (Odd, Even, or None), and stop bits (1-2 bits) Source channel: CH1~CH4

Serial Decoding	
I2C	Decodes the address (with or without the R/W bit) of the I2C bus, data, and ACK. Source channel: CH1~CH4
SPI	Decodes the MISO/MOSI data (4-32 bits) of the SPI bus. The available mode includes "Timeout" and "CS". Source channel: CH1~CH4
CAN	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. Source channel: CH1~CH4
LIN	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. Source channel: CH1~CH4

Auto

Auto	
AutoScale	Min voltage > 10 mVpp, duty cycle > 1%, frequency > 35 Hz

Digital Voltmeter

Digital Voltmeter	
Source	Any analog channel
Function	DC, AC+DC$_{rms}$, AC$_{rms}$
Resolution	ACV/DCV: 4 bits
Limits Beeper	Sounds an alarm when the voltage value is within or outside of the limit range

High-precision Frequency Counter

High-precision Frequency Counter	
Source	Any analog channel and EXT
Measure	Frequency, period, totalizer

High-precision Frequency Counter		
Counter	Resolution	3-6 digits, user-defined
	Max. Frequency	Max. analog bandwidth
Totalizer		48-bit totalizer
		Counts the number of the rising edges
Time Reference		Internal reference

Command Set

Command Set	
Common Commands Support	IEEE488.2 Standard
Error Message Definition	Error messages
Support Status Report Mechanism	Status Reporting
Support Syn Mechanism	Synchronization

Display

Display	
LCD	10.1-inch capacitive multi-touch screen, gesture enabled operation
Resolution	1280×800 (Screen Region) 16:9
Graticule	(10 vertical divisions) x(8 horizontal divisions)
Persistence	Off, Infinite, variable persistence (100 ms to 10 s)
Brightness	256 intensity levels (LCD, HDMI)

Processor System

Processor System	
Processor	Cortex-A72 up to 1.8 GHz, 6-core processor
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		1 on the rear panel, 10/100/1000 Base-T, supporting LXI-C
Web Remote Control		Supports 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) ≥ 2.5 V open circuit, ≥1.0 V 50 Ω to GND Vo (L) ≤ 0.7 V to load ≤4 mA, ≤0.25 V 50 Ω to GND
	Trig Out	Outputs a pulse signal when the oscilloscope is triggered
	Pass/Fail	Outputs a pulse signal when a pass/fail event occurs. Supports user-defined pulse polarity and pulse time (100 ns to 10 ms)
	Rise Time	≤1.5 ns
10 MHz REF IN/OUT	Input Interface	1, BNC connector on the rear panel
	Output Interface	1, BNC connector on the rear panel
	Input Interface	50 Ω, with the amplitude 130 mVpp to 4.1 Vpp (-10 dBm, 20 dBm), frequency 10 MHz ± 10 ppm
	Output Interface	50 Ω, 1.5 Vpp sine waveform
HDMI Video Output		1 on the rear panel, HDMI 1.4, A plug. Used to connect to an external monitor or projector
Probe Compensation Output		1 kHz frequency, 0.3 V amplitude, Square

Power Supply

Power Supply	
Power Voltage	AC 100 V to 240 V, 50 Hz to 60 Hz
Power	400 VA max (connect to various interfaces, USB, active probes)

Power Supply	
Fuse	3.15 A, T degree, 250 V

Environment

Environment		
Temperature Range	Operating	0℃ to +50℃
	Non-operating	-30℃ to +60℃
Humidity Range	Operating	below +30℃: ≤90% RH (without condensation)
		+30℃ to +40℃, ≤75% RH (without condensation)
		+40℃ to +50℃, ≤45% RH (without condensation)
	Non-operating	below 60℃: ≤90% RH (without condensation)
Altitude	Operating	below 3,000 m
	Non-operating	Below 15,000 m

Warranty and Calibration Interval

Warranty and Calibration Interval	
Warranty	Three years for the mainframe, excluding the probes and accessories.
Recommended Calibration Interval	18 months

Regulations

	Compliant with EMC DIRECTIVE 2014/30/EU, compliant with or higher than the standards specified in IEC 61326-1:2013/EN 61326-1:2013 Group 1 Class A	
	CISPR 11/EN 55011	
Electromagnetic Compatibility	IEC 61000-4-2:2008/EN 61000-4-2	±4.0 kV (contact discharge), ±8.0 kV (air discharge)
	IEC 61000-4-3:2002/EN 61000-4-3	3 V/m (80 MHz to 1 GHz); 3 V/m (1.4 GHz to 2 GHz); 1 V/m (2.0 GHz to 2.7 GHz)
	IEC 61000-4-4:2004/EN 61000-4-4	1 kV power line
	IEC 61000-4-5:2001/EN 61000-4-5	0.5 kV (phase-to-neutral voltage); 1 kV (phase-to-earth voltage); 1 kV (neutral-to-earth voltage)
	IEC 61000-4-6:2003/EN 61000-4-6	3 V, 0.15-80 MHz
	IEC 61000-4-11:2004/EN 61000-4-11	Voltage dip: 0% UT during half cycle; 0% UT during 1 cycle ; 70% UT during 25 cycles short interruption: 0% UT during 250 cycles
Safety	EN 61010-1:2019 EN 61010-031:2015 IEC 61010-1:2016 IEC 61010-2-030:2017 UL 61010-1:2012 R7 UL 61010-2-31:2017 R2 CAN/CSA-22.2 No. 61010-1-12:2017 CAN/CSA-22.2 No. 61010-2-30:2018 CAN/CSA-22.2 No. 61010-031-07:201	
Vibration	Meets GB/T 6587; class 2 random Meets MIL-PRF-28800F and IEC60068-2-6; class 3 random	

Regulations	
Shock	Meets GB/T 6587-2012; class 2 random
	Meets MIL-PRF-28800F and IEC 60068-2-27; class 3 random
	In non-operating conditions: 30 g, half-sine wave, 11 ms duration, 3 shocks along the main axis, total of 18 shocks

Mechanical Characteristics

Mechanical Characteristics		
Dimensions	358.14 mm (W) x 214.72 mm (H) x 120.62 mm (D)	
Rack Mount Kit	5U	
Weight[7]	Package excluded: 3.8 kg	
	Package included: 5.37 kg	

Non-volatile Memory

Non-volatile Memory		
Data/File Storage	Setup/Image	setup (*.stp), image (*.png, *.bmp, *.jpg)
	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	Storage is limited by the capacity	
USB Capacity	Supports the USB storage device that conforms to the industry standard	

NOTE:

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

[2]: Half-channel mode: For four-channel models, if any two of the channels are enabled, it is called half-channel mode.

[3]: Full-channel mode: For two-channel models, if all of the two channels are enabled, it is called full-channel mode; for four-channel models, if any three channels or all of the four channels are enabled, it is called full-channel mode.

[4]: 11.23046875 MHz, Full Scale, 20 mV/div.

[5]: 500 μV/div is a magnification of 1 mV/div setting. For vertical accuracy calculations, use full scale of 8 mV.

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

[7]: Standard configuration.

Order Information and Warranty Period

Order Information

Order Information	Order No.
Model	
200 MHz, 2 GSa/s, 25 Mpts, 2CH DHO	DHO1202U
200 MHz, 2 GSa/s, 25 Mpts, 4CH DHO	DHO1204U
Standard Accessories	
Power Cord Conforming to the Standard of the Destination Country	——
USB Cable	——
4 Passive HighZ Probes (350 MHz) Standard for DHO1204U, 2 Passive HighZ Probes (350 MHz) Standard for DHO1202U	PVP2350
Memory Depth Upgrade Option	
50 Mpts Memory Depth Upgrade Option	DHO1000U-RLU

NOTE:

For all the mainframes, accessories, and options, please contact the local office of RIGOL.

Warranty Period

Three years for the mainframe, excluding the probes and accessories.

Option Ordering and Installation Process
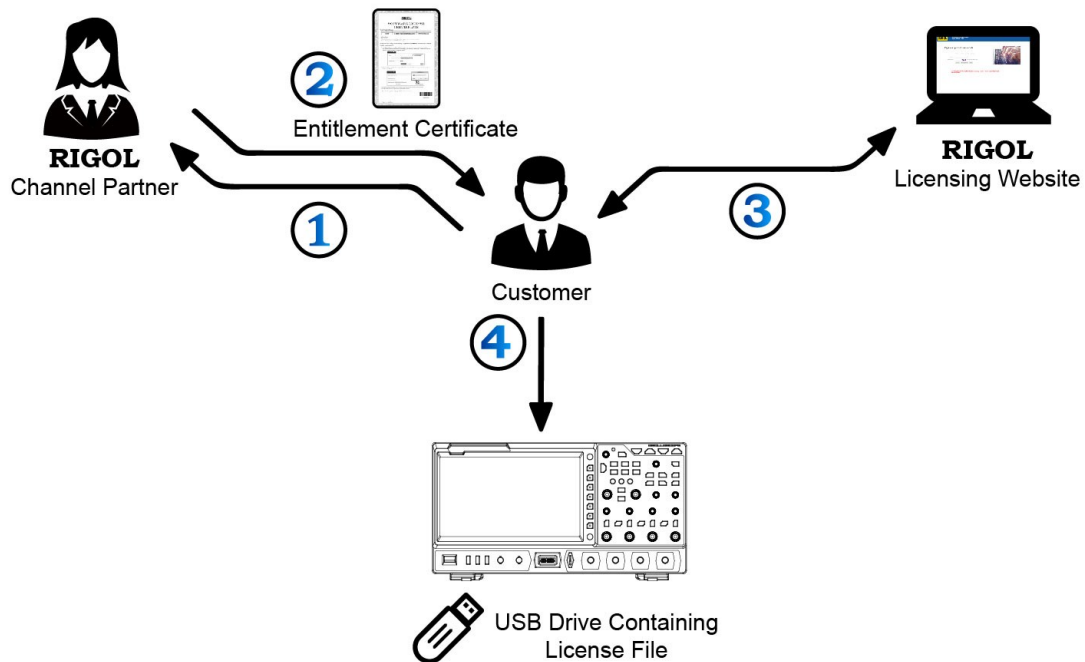
1. According to the usage requirements, please purchase the specified function options from **RIGOL Sales Personnel**, and provide the serial number of the instrument that needs to install the option.

2. After receiving the option order, the **RIGOL** factory will mail the paper software product entitlement certificate to the address provided in the order.

3. Log in to **RIGOL** official website for registration. Use the software key and instruments serial number provided in the entitlement certificate to obtain the option license code and the option license file.

4. Download the option license file to the root directory of the USB storage device, and connect the USB storage device to the instrument properly. After the USB storage device is successfully recognized, the **Option install** menu is activated. Press this menu key to start installing the option.