



DHO5000 系列

数字示波器

数据手册

DSA43000-1110

2024.08

Product Features

Features







- Equipped with RIGOL's new self-developed Centaur technology platform
- Ultra-low noise floor, as low as 18 μVrms
- The entire series provides 12 bit hardware high resolution^[1]
- Up to 1 GHz analog bandwidth, 8 analog channels, 1 external trigger channel
- Up to 4 GSa/s real-time sampling rate
- Maximum 500 Mpts storage depth
- Up to 100 $\mu\text{V/div}$ vertical sensitivity
- Provides Ultra Acquire Mode, up to 1,500,000 wfms/s
- Supports 256-level grayscale digital real-time fluorescence function
- Power analysis, histogram, protocol decoding and other functions in one
- Supports waveform search and navigation functions to quickly locate signal anomalies.
- 10.1-inch 1280*800 HD touch screen
- New Flex knob brings a more user-friendly interactive experience
- All series are equipped with photoelectric encoders as standard, effectively extending the service life of the product
- All series are equipped with USB Device&Host, LAN, HDMI interface
- Support online version upgrade function








The DHO5000 series digital oscilloscope is designed for the design, debugging, and testing needs of the most extensive mainstream digital oscilloscope market. Equipped with RIGOL's new self-developed Centaur technology platform, it achieves a waveform capture rate of 1,500,000 times/second (Ultra Acquire Mode), 500 Mpts storage depth, 12 bit resolution, excellent background noise performance, and vertical measurement accuracy, which can meet the needs of higher-precision measurements. The DHO5000 series digital oscilloscope has two models, supports different function combinations, and is suitable for a variety of measurement scenarios.







illustrate:

[1]: Up to 16 bit in high resolution mode.





Supported RIGOL Oscilloscope Probes and Accessories

model	type	describe
Passive high impedance probe		
 <p>PVP2150</p>	Passive high impedance probe	<ul style="list-style-type: none"> Attenuation ratio: 10:1 / 1:1 1X bandwidth: DC~35 MHz 10X bandwidth: DC~150 MHz Oscilloscope compatibility: All RIGOL series.
 <p>PVP2350</p>	Passive high impedance probe	<ul style="list-style-type: none"> Attenuation ratio: 10:1 / 1:1 1X bandwidth: DC~35 MHz 10X bandwidth: DC~350 MHz Oscilloscope compatibility: All RIGOL series.
 <p>PVP3150</p>	Passive high impedance probe	<ul style="list-style-type: none"> Attenuation ratio: 10:1 / 1:1 1X bandwidth: DC~20 MHz 10X bandwidth: DC~150 MHz Oscilloscope compatibility: All RIGOL series.
 <p>RP3500A</p>	Passive high impedance probe	<ul style="list-style-type: none"> Attenuation ratio: 10:1 Bandwidth: DC~500 MHz Oscilloscope compatibility: MSO/DS4000 Series, DS6000 Series, MSO/DS7000 Series, MSO8000/A Series, DHO4000/1000 Series, DS70000/80000 Series.
High Voltage Single-Ended Probes		
 <p>RP1010H</p>	High voltage probe	<ul style="list-style-type: none"> Attenuation ratio: 1000:1 Bandwidth: DC~40 MHz DC: 0~10 kV DC AC: Pulse ≤ 20 kVp-p AC: Sinusoidal ≤ 7 kV_{rms} Oscilloscope compatibility: All RIGOL series.
 <p>RP1018H</p>	High voltage probe	<ul style="list-style-type: none"> Attenuation ratio: 1000:1 Bandwidth: DC~150 MHz DC+AC_{Peak}: 18 kV CAT II AC_{rms}: 12 kV CAT II Oscilloscope compatibility: All RIGOL series.

model	type	describe
 <p>RP1300H</p>	High voltage probe	<ul style="list-style-type: none"> Attenuation ratio: 100:1 Bandwidth: DC~300 MHz CAT I 2000 V (DC+AC) CAT II 1500 V (DC+AC) Oscilloscope compatibility: All RIGOL series.
High Voltage Differential Probes		
 <p>PHA0150</p>	High Voltage Differential Probes	<ul style="list-style-type: none"> Bandwidth: DC~ 70 MHz Maximum voltage ≤ 1500 Vpp Oscilloscope compatibility: All RIGOL series.
 <p>PHA1150</p>	High Voltage Differential Probes	<ul style="list-style-type: none"> Bandwidth: DC~ 100 MHz Maximum voltage ≤ 1500 Vpp Oscilloscope compatibility: All RIGOL series.
 <p>PHA2150</p>	High Voltage Differential Probes	<ul style="list-style-type: none"> 50X bandwidth: DC~160 MHz 500X bandwidth: DC~200 MHz Maximum voltage ≤ 1500 Vpp Oscilloscope compatibility: All RIGOL series.
 <p>RP1025D</p>	High Voltage Differential Probes	<ul style="list-style-type: none"> Bandwidth: DC~25 MHz Maximum voltage ≤ 1400 Vpp (DC+AC peak-to-peak) Oscilloscope compatibility: All RIGOL series.
 <p>RP1050D</p>	High Voltage Differential Probes	<ul style="list-style-type: none"> Bandwidth: DC~50 MHz Maximum voltage ≤ 7000 Vpp (DC+AC peak-to-peak) Oscilloscope compatibility: All RIGOL series.
 <p>RP1100D</p>	High Voltage Differential Probes	<ul style="list-style-type: none"> Bandwidth: DC~100 MHz Maximum voltage ≤ 7000 Vpp (DC+AC peak-to-peak) Oscilloscope compatibility: All RIGOL series.
Low Voltage Differential Probes		

model	type	describe
 <p>RP7080</p>	Low Voltage Differential Probes	<ul style="list-style-type: none"> Input dynamic range: ± 6.25 V Bandwidth: DC~800 MHz 30 V peak, CAT I Oscilloscope compatibility: MSO/DS4000 Series, DS6000 Series, MSO/DS7000 Series, MSO8000/A Series, DHO4000 Series, DS70000/80000 Series.
 <p>RP7150</p>	Low Voltage Differential Probes	<ul style="list-style-type: none"> Input dynamic range: ± 6.25 V Bandwidth: DC~1.5 GHz 30 V peak, CAT I Oscilloscope compatibility: MSO/DS4000 Series, DS6000 Series, MSO/DS7000 Series, MSO8000/A Series, DHO4000 Series, DS70000/80000 Series.
 <p>PVA7250</p>	Low Voltage Differential Probes	<ul style="list-style-type: none"> Input dynamic range: ± 2 V Bandwidth: DC~2.5GHz 30 V peak, CAT I Oscilloscope compatibility: MSO/DS7000 Series, MSO8000/A Series, DHO4000 Series, DS70000/80000 Series.
Low Voltage Single-Ended Probes		
 <p>RP7080S</p>	Single-ended active probe	<ul style="list-style-type: none"> Input dynamic range: ± 6.25 V Bandwidth: DC~800 MHz 30 V peak, CAT I Oscilloscope compatibility: MSO/DS4000 Series, DS6000 Series, MSO/DS7000 Series, MSO8000/A Series, DHO4000 Series, DS70000/80000 Series.
 <p>RP7150S</p>	Single-ended active probe	<ul style="list-style-type: none"> Input dynamic range: ± 6.25 V Bandwidth: DC~1.5 GHz 30 V peak, CAT I Oscilloscope compatibility: MSO/DS4000 Series, DS6000 Series, MSO/DS7000 Series, MSO8000/A Series, DHO4000 Series, DS70000/80000 Series.
Current probes		
 <p>PCA1030</p>	Current probes	<ul style="list-style-type: none"> Bandwidth: DC~50 MHz (-3dB) Maximum continuous input range: 30 Arms Maximum peak current: 50 A peak, non-continuous Oscilloscope compatibility: MSO/DS4000 Series, DS6000 Series, MSO/DS7000 Series, MSO8000/A Series, DHO4000 Series, DS70000/80000 Series.

model	type	describe
 PCA1150	Current probes	<ul style="list-style-type: none"> Bandwidth: DC~10 MHz (-3dB) Maximum continuous input range: 150 A Maximum peak current: 300 A (non-continuous), 500 A (pulse width $\leq 30 \mu s$) Oscilloscope compatibility: MSO/DS4000 Series, DS6000 Series, MSO/DS7000 Series, MSO8000/A Series, DHO4000 Series, DS70000/80000 Series.
 PCA2030	Current probes	<ul style="list-style-type: none"> Bandwidth: DC~100 MHz (-3dB) Maximum continuous input range: 30 Arms Maximum peak current: 50 A peak, non-continuous Oscilloscope compatibility: MSO/DS4000 Series, DS6000 Series, MSO/DS7000 Series, MSO8000/A Series, DHO4000 Series, DS70000/80000 Series.
 PCA1500	Current probes	<ul style="list-style-type: none"> Bandwidth: DC~2 MHz (-3dB) Maximum continuous input range: 500 Arms Maximum peak current: 700 A peak, non-continuous Oscilloscope compatibility: MSO/DS4000 Series, DS6000 Series, MSO/DS7000 Series, MSO8000/A Series, DHO4000 Series, DS70000/80000 Series.
 RP1001C	Current probes	<ul style="list-style-type: none"> Bandwidth: DC~300 kHz Maximum input DC: $\pm 100 A$ AC peak-to-peak: 200 A AC RMS: 70 A Oscilloscope compatibility: All RIGOL series.
 RP1002C	Current probes	<ul style="list-style-type: none"> Bandwidth: DC~1 MHz Maximum input DC: $\pm 70 A$ AC peak-to-peak: 140 A AC RMS: 50 A Oscilloscope compatibility: All RIGOL series.
 RP1003C	Current probes	<ul style="list-style-type: none"> Bandwidth: DC~50 MHz Maximum input AC peak-to-peak: 50 A (non-continuous) AC RMS: 30 A Oscilloscope compatibility: All RIGOL series. Must be ordered with RP1000P probe power supply.

model	type	describe
 <p>RP1004C</p>	Current probes	<ul style="list-style-type: none"> Bandwidth: DC~100 MHz Maximum input <p>AC peak-to-peak: 50 A (non-continuous)</p> <p>AC RMS: 30 A</p> <ul style="list-style-type: none"> Oscilloscope compatibility: All RIGOL series. Must be ordered with RP1000P probe power supply.
 <p>RP1005C</p>	Current probes	<ul style="list-style-type: none"> Bandwidth: DC~10 MHz Maximum input <p>AC peak-to-peak: 300 A (non-continuous), 500 A (@ pulse width $\leq 30 \mu s$)</p> <p>AC RMS: 150 A</p> <ul style="list-style-type: none"> Oscilloscope compatibility: All RIGOL series. Must be ordered with RP1000P probe power supply.
 <p>RP1006C</p>	Current probes	<ul style="list-style-type: none"> Bandwidth: DC~2 MHz Maximum input <p>AC peak-to-peak: 700 A peak, non-continuous</p> <p>AC RMS: 500 A</p> <ul style="list-style-type: none"> Oscilloscope compatibility: All RIGOL series. Must be ordered with RP1000P probe power supply.
 <p>RP1000P</p>	4CH Power Supply	<p>The probe power supply for RP1003C, RP1004C, RP1005C, and RP1006C can support 4 power supply channels.</p>

Technical Parameters

Except for the parameters marked with "Typical Values", all parameters are guaranteed and the oscilloscope must be operated continuously for more than 30 minutes at the specified operating temperature.

DHO5000 Series Technical Specifications Overview

DHO5000 Series Technical Specifications Overview		
model	DHO5058	DHO5108
Analog bandwidth (50 Ω , -3 dB)	500MHz	1GHz
Analog bandwidth (1 M Ω , -3 dB)	500MHz	
Calculated rise time at 50 Ω (10%~90%, typical value)	≤ 1 ns	
Number of input channels	8 analog channels + 1 EXT channel	
Maximum storage depth	500 Mpts (single channel ^[1]), 250 Mpts (half channel ^[2] & Omnichannel ^[3])	
Sampling method	Real-time sampling	
Maximum analog channel sampling rate	4 GSa/s (single channel ^[1]), 2 GSa/s (full channel ^[3])	
Maximum waveform capture rate	200,000 wfms/s (Vector Mode) 1,500,000 wfms/s (UltraAcquire Mode)	
Vertical resolution	12 bit	
Hardware real-time waveform recording and playback	Up to 500,000 frames	
Peak Detection	Capture glitches as narrow as 500 ps	
Display size and type	10.1-inch multi-touch capacitive screen	
Display resolution	1280×800	

Vertical system analog channels

Vertical system analog channels	
Input coupling	Direct current, alternating current, or ground (DC, AC, GND)
Input Impedance	1 M $\Omega \pm 1\%$, 50 $\Omega \pm 1\%$
Input Capacitance	19 pF ± 3 pF

Vertical system analog channels

Probe attenuation coefficient setting	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, 10000X, 15000X, 20000X, 50000X and custom
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Probe identification	Automatically identify RIGOL probes
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1 M Ω	CAT I 300 V _{rms} , 400 V _{pk} (DC + V _{peak})
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50 Ω	5 V _{rms}
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Maximum input voltage	Whether or not a probe is used, no transient overvoltage conditions are tolerated in either the 50 Ω or 1 M Ω path.
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Remark	Use this instrument only for measurements within the specified measurement category (not applicable to CAT II, III, IV).
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Vertical resolution	12 bit (up to 16 bit in high resolution mode)
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Number of effective digits ^[4] (ENOB, Typical value)	> 8
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1 M Ω	100 μ V/div~10 V/div
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50 Ω	100 μ V/div~1 V/div
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1 M Ω	± 1 V (≥ 1 mV/div, ≤ 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)
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Offset Range

50 Ω	± 1 V (≥ 1 mV/div, ≤ 135 mV/div) ± 4 V (> 135 mV/div)
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Dynamic Range	± 4 div (12 bit)
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Bandwidth limitation (typical)	20 MHz, 250 MHz, FULL; each channel independently selectable
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DC gain accuracy ^[5]	1% (< 5 mV) 2% (≥ 5 mV)
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DC offset accuracy	≤ 200 mV/div (± 0.1 div ± 2 mV $\pm 1.5\%$ offset) > 200 mV/div (± 0.1 div ± 2 mV $\pm 1.0\%$ offset)
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Vertical system analog channels

Channel Isolation	$\geq 100:1$ (DC to 500 MHz), $\geq 30:1$ (> 500 MHz to full bandwidth)
ESD Tolerance	± 8 kV (for input BNC)

Horizontal system - analog channel

Horizontal system - analog channel

Time base range	500 ps/div~500 s/div
	Support time base fine-tuning
Time base resolution	100 ps
Time base accuracy	± 1.5 ppm ± 1 ppm/year
Time base delay range	Before triggering - 5 div
	After triggering Maximum value in 1 s or 100 divs
Time base increment measurement accuracy	\pm (time base accuracy \times reading) \pm (0.001 \times screen width) ± 20 ps
Channel-to-channel deskew	Channel-to-channel deskew range ± 100 ns, accuracy ± 1 ps
Analog channel delay (typical value)	≤ 500 ps ^[6]
Horizontal Mode	YT default
	XY Channel 1/2/3/4/5/6/7/8
	SCAN Time base ≥ 200 ms/div
	ROLL Time base ≥ 50 ms/div or ≥ 100 ms/div (optional). The ROLL mode can be automatically entered or exited by adjusting the horizontal time base knob.

Acquisition system

Acquisition system

Maximum analog channel sampling rate	4 GSa/s (single channel ^[1]), 2 GSa/s (full channel ^[3])
Maximum analog channel memory depth	500 Mpts (single channel ^[1]), 250 Mpts (half channel ^[2] & Omnichannel ^[3])

Acquisition system		
How to get it	ordinary	default
	Peak Detection	Capture glitches as narrow as 500 ps
	Average Mode	Optional 2, 4, 8, 16...65536
	high resolution	14 bit、16 bit
	Freeze Time Acquisition	Waveform capture rate up to 1,500,000 wfms/s
	Vector Mode	Waveform capture rate \leq 200,000 wfms/s
Trigger system		
Trigger system		
Trigger source	Analog channels (1~8), EXT TRIG, AC Line	
Trigger Mode	Automatic, Normal, Single	
Trigger coupling	DC	DC coupled trigger
	communicate	AC coupled trigger
	High frequency suppression	High frequency rejection, cutoff frequency ~75 kHz (internal trigger only)
	Low frequency suppression	Low frequency rejection, cutoff frequency ~75 kHz (internal trigger only)
Noise Suppression	Adds hysteresis to the trigger circuit (internal trigger only), selectable on or off	
Holdoff range	8 ns~10 s	
Trigger bandwidth	Internal trigger	Oscilloscope analog bandwidth
	External trigger	200 MHz
Trigger sensitivity	Internal trigger	0.50 div, \geq 50 mV/div
		Noise suppression on, 0.7 div
	External trigger	200 mVpp, DC~100 MHz
		500 mVpp, 100 MHz~200 MHz
EXT Trigger	Input resistance	1 M Ω \pm 1%, BNC connector
	Trigger Jitter	< 1 ns _{rms}
	(Typical value)	Normal sampling mode, edge trigger, the trigger level is near 50% of the EXT input signal

Trigger system		
Trigger level range	Internal trigger	±5 grids from screen center
	External trigger	±5 V
	AC Line	The trigger level is fixed at 40%~60%

Trigger Type

Trigger Type		
Trigger Type	<p>Standard: edge, pulse width, slope, video, pattern, duration, timeout, runt pulse, overshoot, delay, setup and hold, Nth edge trigger, I2C, SPI, RS232/UART, CAN</p> <p>Optional: CAN-FD, LIN, FlexRay, I2S, MIL-STD-1553</p>	
edge	<p>Trigger on the threshold of the specified edge of the input signal. The edge type includes rising edge, falling edge, or either edge.</p> <p>Signal source: CH1~CH8, EXT or AC Line.</p>	
Pulse Width	<p>Trigger on a positive or negative pulse of a specified width, above or below a certain value, or within a certain time range.</p> <p>Source: CH1~CH8.</p>	
Slope	<p>Trigger on a positive or negative slope for a specified time, a slope time above or below a certain value, or within a certain time range.</p> <p>Source: CH1~CH8.</p>	
video	<p>Trigger on all lines, specified lines, odd fields, or even fields that match the video standard. 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, 1080i/50Hz.</p> <p>Source: CH1~CH8.</p>	
Code Type	<p>Identify trigger conditions by searching for specified patterns. The pattern is an AND combination of multiple selected sources, and the logic pattern of each source is H, L, X, rising edge, or falling edge.</p> <p>Source: CH1~CH8.</p>	
Duration	<p>Trigger when the specified pattern meets the specified duration condition. The pattern is the AND combination of multiple selected sources, and the logical pattern of each source is H, L, X. The duration is higher or lower than a certain value, or within a certain time range, or outside a certain time range.</p> <p>Source: CH1~CH8.</p>	
time out	<p>Trigger when the time from an event to the specified time exceeds the specified time. The event can be specified as rising edge, falling edge, or either edge.</p> <p>Source: CH1~CH8.</p>	
Runt pulse	<p>Trigger on a pulse signal where the pulse amplitude crosses one threshold but not the other.</p> <p>Source: CH1~CH8.</p>	

Trigger Type	
Super-amplitude pulse	<p>Trigger on the specified over-limit state when the rising edge of the signal crosses the high threshold or the falling edge crosses the low threshold. The over-limit state can be over-limit entry, over-limit exit, or specified over-limit time.</p> <p>Source: CH1~CH8.</p>
Delay	<p>Trigger when the time difference between the specified edge of source A and the specified edge of source B meets the specified time condition.</p> <p>The delay time is higher or lower than a certain value, or is within a certain time range, or is outside a certain time range.</p> <p>Source channel: CH1~CH8.</p>
Establish and maintain	<p>Trigger when the setup time or hold time between the input clock signal and data signal is less than the specified time.</p> <p>Source: CH1~CH8.</p>
Nth edge	<p>Trigger on the Nth specified edge after a specified idle time. The edge can be specified as rising or falling.</p> <p>Source: CH1~CH8.</p>
RS232/UART	<p>Trigger on Start of Frame, Error Frame, Parity Error, or Data on RS232/UART buses up to 20 Mb/s.</p> <p>Source: CH1~CH8.</p>
I2C	<p>Trigger on Start, Stop, Restart, Missing Ack, Address (7-bit, 8-bit, or 10-bit), Data, or Address Data of an I2C bus.</p> <p>Source: CH1~CH8.</p>
SPI	<p>Trigger on a specified pattern of a specified data bit width (4 to 32) on the SPI bus. Supports chip select (CS) and timeout.</p> <p>Source: CH1~CH8.</p>
CAN	<p>Trigger on Frame Start, Frame End, Remote Frame ID, Overload Frame, Data Frame ID, Data Frame Data, Data and ID, Error Frame, Bit Stuff Error, Response Error, Check Error, Format Error, and Any Error of CAN bus signals up to 5 Mb/s. Supported CAN bus signal types are CAN_H, CAN_L, Send/Receive, and Differential.</p> <p>Source: CH1~CH8.</p>
CAN-FD (option)	<p>DHO5000-AUTOA Option</p> <p>Trigger on Frame Start, Frame End, Remote Frame ID, Overload Frame, Data Frame ID, Data Frame Data, Data and ID, Error Frame, Bit Stuff Error, Response Error, Check Error, Format Error, and Any Error for CAN-FD bus signals up to 10 Mb/s. Supported CAN bus signal types are CAN_H, CAN_L, Send/Receive, and Differential.</p> <p>Source: CH1~CH8.</p>
FlexRay (option)	<p>DHO5000-FLEXA Option</p> <p>Trigger on Position (TSS End, FSS_BSS End, FES End, DTS End), Frame (Null, Sync, Start, All), Symbol (CAS/MTS, WUS), Error (Header CRC Error, Trailer CRC Error, Decode Error, Any Error) on FlexRay bus signals up to 10 Mb/s.</p> <p>Source: CH1~CH8.</p>
LIN (option)	<p>DHO5000-AUTOA Option</p> <p>Trigger on Sync, Identifier, Data (selectable length), Data and ID, Wakeup Frame, Sleep Frame, Error Frame on LIN bus signals up to 20 Mb/s.</p> <p>Source: CH1~CH8.</p>

Trigger Type	
I2S (option)	DHO5000-AUDIOA Option
	Trigger the data of the audio left channel, right channel or any channel (=、≠、>、<、<>、><). The alignment standard supports I2C standard, left alignment and right alignment. Source: CH1~CH8.
MIL-STD-1553 (option)	DHO5000-AEROA Option
	Trigger on synchronization (data frame synchronization, command/status synchronization, all frame synchronization), data word, RTA, RTA+11Bit, and error (synchronization error, verification error) of MIL-STD-1553 bus signals. Source: CH1~CH8.
Search navigation	
Search navigation	
type	Edge, pulse width
Source	Analog Channels
copy	Can be copied to or from trigger settings, or can be set independently, including threshold settings and search condition settings
Results	Displayed as an event list, can be exported to external storage or internal storage
navigation	Time navigation: View acquired waveforms in chronological order
	Event Navigation: Automatically scroll through search results with the help of navigation buttons
	Frame segment navigation: View the frame segments captured in the slow-motion mode
Waveform Measurement	
Waveform Measurement	
cursor	Number of cursors
	2 pairs of XY cursors
	Voltage difference between cursors (ΔY)
	Manual Mode
	Time difference between cursors (ΔX)
	Reciprocal of ΔX (Hz) ($1/\Delta X$)
Tracking Mode	Fixed Y-axis tracking of voltage and time values of X waveform points
	Fixed X-axis tracking of voltage and time values of Y waveform points
	Automatic measurement cursors
XY Mode	Allows cursors to be displayed during automatic measurements
	Measure the voltage parameters of the corresponding channel waveform in XY time base mode
X = Channel 1, Y = Channel 2	

Waveform Measurement

Measurement quantity	41 automatic measurements, up to 14 measurements displayed simultaneously
Measurement source	CH1~CH8, Math1~Math4
Measurement area	Main time base, extended time base
All measurements	Displays 33 vertical and horizontal measurement items of the current measurement channel, and the measurement results are continuously updated
vertical	Maximum value, minimum value, peak-to-peak value, top value, bottom value, amplitude value, high value, middle value, low value, average value, effective value, cycle effective value, overshoot, preshoot, area, single cycle area, AC effective value
level	Period, frequency, rise time, fall time, positive pulse width, negative pulse width, positive duty cycle, negative duty cycle, number of positive pulses, number of negative pulses, number of rising edges, number of falling edges, maximum value moment, minimum value moment, positive slope, negative slope
other	Delay (A ↑ -B ↑), Delay (A ↑ -B ↓), Delay (A ↓ -B ↑), Delay (A ↓ -B ↓), Phase (A ↑ -B ↑), Phase (A ↑ -B ↓), Phase (A ↓ -B ↑), Phase (A ↓ -B ↓)
statistics	Statistics: current value, average value, maximum value, minimum value, standard deviation, count value Support setting the number of statistics

Waveform Operation

Waveform Operation

Number of math functions	4, can display 4 mathematical functions simultaneously
Operation	Addition, subtraction, multiplication, division, FFT, AND, OR, NOT, XOR, Intg, Diff, Lg, Ln, Exp, Sqrt, Abs, AX+B, low-pass filter, high-pass filter, band-pass filter, band-stop filter
Color Temperature	Support FFT color temperature display
Record length	Max 1 Mpts
Window Type	Rectangular, Blackman, Hanning (default), Hamming, Flat-top, Triangular
Peak Search	Up to 15 peaks, based on user-adjustable threshold and excursion thresholds

FFT

Waveform analysis

Waveform analysis		
Waveform Recording	The measured signal is stored in segments according to the trigger events, that is, when each trigger event occurs, all the acquired waveform data is saved as a segment in the volatile storage space. The maximum number of segments collected is up to 500,000.	
	source	All enabled analog channels
Pass the test	analyze	It supports frame-by-frame or continuous playback, and can perform calculations, measurements, and decoding on the played waveforms.
	The signal under test is compared with user-defined rules (templates) to provide the number of passes, fails and total number of tests. Pass/fail events can trigger immediate stop, buzzer and screenshot.	
Color Temperature	source	Any analog channel
	Provides a three-dimensional view of waveform intensity, with color temperature levels > 16 levels and 256 levels of color gradation display	
	source	Any analog channel
	Color Theme	Temperature and brightness
model		Support all modes

Serial decoding

Serial decoding		
Decoding number	4, can support four protocol types simultaneous decoding and switching	
Decoding Type	Standard: Parallel, RS232/UART, I2C, SPI, CAN Options: LIN, CAN-FD, FlexRay, I2S, MIL-STD-1553	
parallel	Up to 4-bit parallel bus decoding, supports any analog channel. Supports custom clock and automatic clock configuration. Source channel: CH1~CH8	
RS232/UART	Decodes data (5~9 bits) of RS232/UART bus TX/RX signals up to 20 Mb/s, and supports parity bit (odd, even or none) and stop bit (1~2 bits) settings. Source channel: CH1~CH8.	
I2C	Decodes the address (with or without the read/write bit), data, and ACK of the I2C bus. Source channel: CH1~CH8.	
SPI	Decode the data (4~32 bits) of SPI bus MISO/MOSI. The mode supports timeout and chip select (CS). Source channel: CH1~CH8.	

Serial decoding

CAN

Decodes remote frames (ID, number of bytes, CRC), overload frames and data frames (standard/extended ID, control field, data field, CRC, ACK) of CAN buses up to 5 Mb/s. Supports CAN bus signal types CAN_H, CAN_L, transmit/receive, differential.

Source channel: CH1~CH8.

CAN-FD (option)

DHO5000-AUTOA Option

Decodes remote frames (ID, number of bytes, CRC), overload frames and data frames (standard/extended ID, control field, data field, CRC, ACK) of CAN-FD buses up to 10 Mb/s. Supported CAN-FD bus signal types are CAN_H, CAN_L, transmit/receive, differential.

Source channel: CH1~CH8.

LIN (option)

DHO5000-AUTOA Option

Decodes LIN bus versions 1.X or 2.X at speeds up to 20 Mb/s. Decode displays Sync, Identifier, Data, Checksum.

Source channel: CH1~CH8.

FlexRay (option)

DHO5000-FLEXA Option

Decodes frame ID, PL (payload length), Header CRC, Cycle count, data, Tail CRC and DTS (dynamic end sequence) of FlexRay buses up to 10 Mb/s. Signal types support BP, BM, RX/TX.

Source channel: CH1~CH8.

I2S (option)

DHO5000-AUDIOA Option

Decode the left and right channel data of the I2S audio bus, supporting 4~32 bits. Alignment standard supports standard I2S, left alignment and right alignment.

Source channel: CH1~CH8.

MIL-STD-1553 (optional Items)

DHO5000-AEROA Option

Decodes the data word, command word and status word (address + last 11 bits) of the MIL-STD-1553 bus signal.

Source channel: CH1~CH8.

automatic

automatic

AutoScale

Minimum voltage greater than 10 mVpp, duty cycle greater than 1%, frequency higher than 35 Hz

Digital voltmeter

Digital voltmeter

source

Any analog channel

Digital voltmeter		
Function	DC, AC+DCrms, ACrms	
Resolution	ACV/DCV: 4 digits	
Limit warning	Support upper and lower limit settings, over-limit condition settings and over-limit prompts	
High Precision Frequency Meter		
High Precision Frequency Meter		
source	Any analog channel and EXT	
Measurement	Frequency, period, accumulation	
counter	Resolution	3~6 digits, user-settable
	Maximum frequency	Maximum analog bandwidth or 500 MHz (whichever is smaller)
accumulator	48-bit up-counter	
	Count rising edges	
Time reference	Internal reference	
Command Set		
Command Set		
Common command support	Support standard SCPI command set	
Error message definition	Error Message	
Support status reporting mechanism	Status Reporting	
Support synchronization mechanism	Synchronization	
show		
show		
Display	10.1-inch multi-touch capacitive screen, supports gesture operation	
Display resolution	1280*800 (screen area) 16:9	
Grid	10 horizontal grids x 8 vertical grids	
afterglow	Afterglow off, infinite afterglow, adjustable afterglow time (100 ms~10 s)	
Brightness level	256 brightness levels (LCD, HDMI)	

Processor system

Processor system		
processor	Cortex-A72 1.8GHz + Cortex-A53 1.4GHz six-core	
System Memory	4 GB RAM	
operating system	Android	
Internal non-volatile memory	8 GB	
Interface specifications		
Interface specifications		
USB3.0 Host	1, front panel	
USB3.0 Device	1, rear panel	
LAN Port	1, rear panel, 10/100/1000 Base-T, LXI-C capable	
Web Remote Control	Support, Web Control interface (enter the IP address of the oscilloscope on the web browser to display the oscilloscope operation interface)	
AUX Output		Rear panel BNC output.
		$V_o\text{ (H)} \geq 2.5\text{ V}$ open circuit, $\geq 1.0\text{ V}$ 50 Ω to ground
		$V_o\text{ (L)} \leq 0.7\text{ V}$ to load $\leq 4\text{ mA}$, $\leq 0.25\text{ V}$ 50 Ω to ground
	Trigger output	Provides a pulse output signal when the oscilloscope is triggered
	Through failure	Used to provide a pulse output signal when a failure or pass event of the test function occurs. Supports user-defined pulse polarity and pulse width time (100 ns~10 ms)
10 MHz reference clock	Rise time	$\leq 1.5\text{ ns}$
	Input Interface	1, rear panel BNC connector
	Output Interface	1, rear panel BNC connector
Input/Output	Input Interface	50 Ω , amplitude 130 mVpp to 4.1 Vpp (-10 dBm, 20 dBm), frequency 10 MHz \pm 10 ppm
	Output Interface	50 Ω , 1.5 Vpp sine wave
HDMI High Definition	1, rear panel, HDMI 1.4, A plug. Connects to an external display or projector	
Video Output		
Probe compensation output	Frequency 1 kHz, amplitude 0~3 V, square wave	

power supply

power supply		
Supply voltage	AC 100~240V, 50~60Hz	
power	350 VA max (connected to various interfaces, USB flash drive, active probe)	
fuse	3.15 A, T-Class, 250 V	

environment

environment		
Temperature range	Work	0°C~+55°C
	Non-working	-30°C~+60°C
Humidity range	Work	+30°C or below, ≤90% relative humidity (no condensation)
		+30°C~+40°C, ≤75% relative humidity (no condensation)
		+40°C~+50°C, ≤45% relative humidity (no condensation)
	Non-working	Below 60°C, ≤90% relative humidity (no condensation)
Altitude	Work	Below 3,000 m
	Non-working	Below 15,000 m

Warranty and calibration intervals

Warranty and calibration intervals		
Warranty	3 years (excluding probes and accessories)	
Recommended calibration interval	18 months	

Regulatory standards

Regulatory standards		
Electromagnetic compatibility	Complies with the EMC Directive (2014/30/EU), meeting or exceeding the requirements of IEC61326-1:2013/EN61326-1:2013 Group 1 Class A standards	
	CISPR 11/EN 55011	
	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-neutral voltage); 1 kV (phase-ground voltage); 1 kV (neutral-ground voltage)
	IEC 61000-4-6:2003/EN 61000-4-6	3 V, 0.15 to 80 MHz
	IEC 61000-4-11:2004/EN 61000-4-11	Voltage drop: 0% UT during half cycle; 0% UT during 1 cycle; 70% UT during 25 cycles Short power failure: 0% UT during 250 cycles
	EN 61010-1:2019	
	EN 61010-031:2015	
Safety regulations	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	
vibration	CAN/CSA-22.2 No. 61010-031-07:201	
	Complies with GB/T 6587, Category 2 random vibration	
	Meets MIL-PRF-28800F and IEC60068-2-6, Class 3 Random Vibration	

Regulatory standards	
oscillation	Complies with GB/T 6587-2012, Class 2 random vibration
	Meets MIL-PRF-28800F and IEC 60068-2-27, Class 3 Random Oscillation
	Non-operating conditions: 30 g, half-sine wave, 11 ms duration, 3 oscillations along the major axis/axis, 18 oscillations in total

Mechanical specifications

Mechanical specifications	
size	335 mm (width) × 235 mm (height) × 154 mm (depth)
Rack mount configuration	5U
weight[7]	Without packaging 4.0 kg
	Including packaging 5.0 kg

Non-volatile memory

Non-volatile memory		
Data/File Storage	Settings/Image	Settings (*.stp), images (*.png, *.bmp, *.jpg)
	Waveform data	CSV waveform data (*.csv), binary waveform data (*.bin), list data (*.csv), reference waveform data (*.ref, *.csv, *.bin)
Internal capacity	8 GB user space	
Reference Waveform	Display 10 internal waveforms	
set up	Storage is limited by capacity	
USB drive capacity	Standard USB storage device	

illustrate:

- [1]: Open any one channel, in single channel mode.
- [2]: Enable channels 1, 3, 5, 7 or 2, 4, 6, 8 at the same time for half-channel mode.
- [3]: Enable all channels to enter full channel mode.
- [4]: 10.7421875 MHz, Full Scale input, 100 mV/div range, 50 Ω input impedance.
- [5]: 500 μV/div is a digital magnification of 1 mV/div. For vertical accuracy calculation, Fullscale is 8 mV.
- [6]: Any channel, same input impedance, DC coupling, same Volts/div at 100 mV/div and 200 mV/div.
- [7]: Standard configuration.

Ordering information and warranty period

Ordering Information

Ordering Information	Order Number
Host model	
500 MHz, 4 GSa/s, 12-bit, 500 Mpts, 8-channel oscilloscope	DHO5058
1 GHz, 4 GSa/s, 12-bit, 500 Mpts, 8-channel oscilloscope	DHO5108
Standard accessories	
A power cord that complies with the country's standards	— —
USB data cable	— —
Eight sets of passive high impedance probes (500 MHz)	RP3500A
Bandwidth upgrade options	
500 MHz to 1 GHz upgrade option	DHO5000-BWU5T10
Protocol decoding option	
CAN-FD/LIN bus triggering and analysis option	DHO5000-AUTOA
MIL-STD1553 Bus Triggering and Analysis Option	DHO5000-AEROA
FlexRay Serial Bus Triggering and Analysis Option	DHO5000-FLEXA
I2S Bus Triggering and Analysis Option	DHO5000-AUDIOA
Other options	
Power Analysis Option	DHO5000-PWRA
Feature Bundle Options	DHO5000-BND
Includes DHO5000-AUTOA/AEROA/FLEXA/AUDIOA/PWRA options	

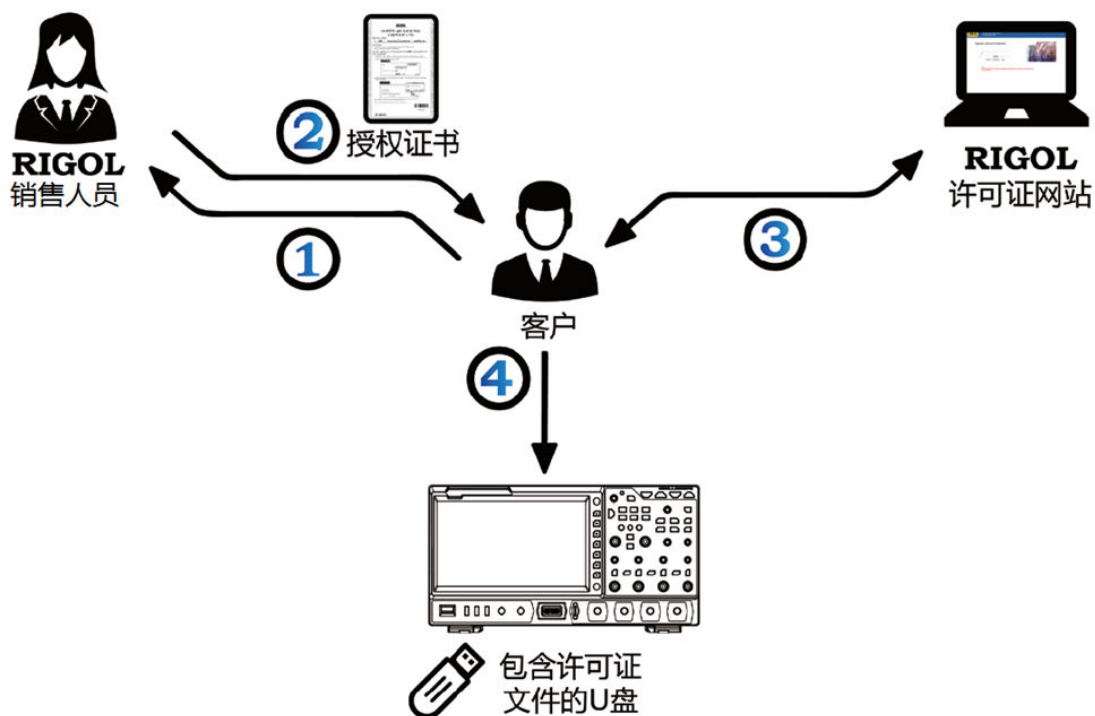
illustrate:

Please order all the mainframes, accessories and options from your local RIGOL office.

Warranty

The main unit is warranted for 3 years, excluding probes and accessories.

Option Ordering and Installation Process



1. According to the use requirements **RIGOL Sales Personnel** Place an order to purchase the corresponding functional options and provide the serial number of the instrument host on which the options need to be installed.

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

3. Use the software key and instrument host serial number provided in the authorization certificate to **RIGOL** Register on the official website to obtain the option authorization code and option authorization Rights file.

4. Download the option authorization file to the root directory of the USB flash drive and correctly connect the USB flash drive to the instrument. **Option Installation** The menu is activated, click

Click this menu to install the option.

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光伏/逆变器
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为行业客户提供测试测量产品和解决方案

RIGOL开放实验室

地址：北京、苏州、深圳、西安

开放时间：工作日 9:00 am~6:00 pm

预约方式：实验室工程师小源 18061921901

实验室微信号 18061921901

RIGOL客服热线：400-620-0002

官网预约网址：

<https://www.rigol.com/quote/Lab-appoint.html>

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