

8. Technical Specifications

Unless otherwise stated, all technical specifications are applicable to the probe with the attenuation switch set to 10X and this series of oscilloscopes. The oscilloscope must first meet the following two conditions to meet these specifications and standards:

- The instrument must be operated continuously for more than 30 minutes at the specified operating temperature.
- If the operating temperature variation range reaches or exceeds 5°C, the system function menu must be opened to execute the "automatic correction" program (see automatic correction in "**System Settings**" on P18).

All specifications are guaranteed except those marked "typical".

Oscilloscope

Characteristics		Description	
Bandwidth		HDS307S	70 MHz
		HDS310S	100 MHz
		HDS320S	200 MHz
Channel		2	
Sampling	Sampling method	Sampling, peak detection	
	Real-time sampling rate	HDS307S	125 MSa/s (Dual channel) 250 MSa/s (Single channel)
		HDS310S	250 MSa/s (Dual channel) 500 MSa/s (Single channel)
		HDS320S	1 GSa/s
	Waveform refresh rate	10,000 wfms/s	
Input	Input coupling	DC, AC, ground	
	Input impedance (DC coupling)	1 MΩ±2%, in parallel with 16 pF±10 pF	
	Probe attenuation	1X 、 10X、 100X、 1000X 、 10000X	
	Maximum input voltage	400 V (DC + AC ,PK - PK)	
	Bandwidth limit	20 MHz ,Full bandwidth	

Characteristics		Description		
Horizontal	Sampling rate range	0.25 Sa/s~250 MSa/s		
	Waveform interpolation	(Sinx)/x		
	Sweep speed range (S/div)	HDS307S	5ns/div - 1000s/div,Stepping in the 1-2-5 way	
		HDS310S HDS320S	2ns/div - 1000s/div,Stepping in the 1-2-5 way	
	Time base accuracy	±100 ppm		
	Record length	8K or 4K optional		
Vertical	Sensitivity (Volt/div) range	10 mV/div~10 V/div		
	Displacement range	HDS307S HDS310S	±6 div	
		HDS320S	±2 V (10 mV/div – 200 mV/div); ±100 V (500 mV/div – 10V/div);	
	Analog bandwidth	HDS307S	70 MHz	
		HDS310S	100 MHz	
		HDS320S	200 MHz	
	Single bandwidth	Full bandwidth		
	Low frequency response (AC coupling, -3dB)	≥10 Hz		
	Rise time (typical on BNC)	HDS307S	≤ 5 ns	
HDS310S		≤ 3.5 ns		
HDS320S		≤ 1.75 ns		
DC gain accuracy	3%			
Measurement	Cursor	ΔV, ΔT		
	Automatic	Period, Frequency, Mean, PK-PK, Max, Min, Amplitude,RMS,Rise Time,Fall Time,+Pulsewidth, -Pulsewidth		
Triggering	Source	CH1, CH2		
	Type	Edge		
	Coupling	DC, AC		
	Trigger type	Auto, normal, single		

Characteristics		Description
Trigger electrical level range		± 4 divs from the center of the screen
Trigger electrical level accuracy		± 0.3 div
Trigger displacement		According to Record length and time base
Edge triggering	Slope	Rising edge, falling edge

The output of the probe compensator:

Characteristics	Description
Output voltage (typical)	3.3Vpp, High-Z
Frequency (typical)	Square wave 1 kHz ($\pm 1\%$)

Multimeter

Characteristics	Description
Digital display	20,000 readings
Measurement type	Voltage, current, resistance, capacitance, on/off, diode
Maximum Input voltage	AC : 750V DC : 1000V
Maximum Input current	AC : 10A DC : 10A

Basic function	Range	Minimum resolution	Accuracy
DC voltage	200.00mV	0.01mV	$\pm(0.3\%+10\text{dig})$
	2.0000V	0.1mV	$\pm(0.3\%+5\text{dig})$
	20.000V	1mV	
	200.00V	0.01V	
	1000.0V	0.1V	
AC voltage ^[1]	200.00mV	0.01mV	$\pm(0.8\%+10\text{dig})$
	2.0000V	0.1mV	
	20.000V	1mV	
	200.00V	0.01V	
	750.0V	0.1V	$\pm(1\%+10\text{dig})$
	frequency range: 40Hz-1000Hz		

Basic function	Range	Minimum resolution	Accuracy
DC current	200.00mA	0.01mA	±(0.8%+10dig)
	10.000A	1mA	±(2.5%+10dig)
	Overload protection: Ma function: self-healing fuse 400 mA/250 V; Ampere function: 10A/600 V, D5.2*20, fast-acting fuse		
AC current ^[1]	200.00mA	0.01mA	±(1%+10dig)
	10.000A	1mA	±(2.8%+10dig)
	frequency range: 40Hz-1000Hz Overload protection: Ma function: self-healing fuse 400 mA/250 V; Ampere function: 10A/600 V, D5.2*20, fast-acting fuse		
Resistance	200.00Ω	0.01Ω	±(0.8%+10dig)
	2.0000kΩ	0.1Ω	±(0.8%+5dig)
	20.000kΩ	1Ω	±(0.8%+3dig)
	200.00kΩ	10Ω	
	2.0000MΩ	0.1kΩ	
	20.000MΩ	1kΩ	±(1%+3dig)
	100.00MΩ	0.01MΩ	±(5%+10dig)
Capacitance ^[1]	20.000nF	1pF	±(3.0%+10dig)
	200.00nF	10pF	
	2.0000μF	0.1nF	
	20.000μF	1nF	
	200.00μF	10nF	
	2.0000mF	0.1uF	
	20.000mF	1uF	
Tips:When measuring capacitance, for the 20.00mF range, the measuring duration should be over 30 seconds.			
Others	On/Off test	√ (<50Ω)	
	Diode test	√(<0-2V)	
	Auto range	√	
	TRMS	√	

[1] When measuring AC voltage/current or capacitance, accuracy guarantee range is 5% to 100% of the range.

Arbitrary Waveform Generator (Optional)

Characteristics	Description	
Waveform Frequency	Sine	0.1Hz~30MHz
	Square	0.1Hz~6MHz
	Ramp	0.1Hz~1MHz
	Pulse	0.1Hz~5MHz
	EXP	0.1Hz~5MHz(16 kinds in total)
Sampling	125MSa/s	
Amplitude(50Ω)	0.01Vpp ~ 2.5Vpp	
DC offset(High Z)	±(2.5V – Amplitude Vpp/2)	
Frequency Resolution	0.01%	
Channel	1	
Waveform Depth	8k	
Vertical Resolution	14 bit	
Output Impedance	50 Ω	

General Technical Specifications

Display:

Characteristics	Description
Display type	3.5-inch color LCD display
Display resolution	320 horizontal × 240 vertical pixels
Display color	65536 colors
Display Contrast	Adjustable

Power supply:

Characteristics	Description	
Power supply	100 - 240 VACRMS, 50/60 Hz, CAT II DC INPUT: 5VDC, 2A	
Power consumption	HDS307S	<5 W
	HDS310S	
	HDS320S	≤ 6 W
Battery	HDS307S	2200mAh*2 (3.7V, 18650)
	HDS310S	2600mAh*2 (3.7V, 18650)
	HDS320S	

Surroundings:

Characteristics	Description
Temperature	Working temperature: 0°C - 40°C Storage temperature: -20°C - +60°C
Relative humidity	≤90%

Height	Operating: 3,000 meters Non-operating: 15,000 meters
Cooling method	Natural cooling

Mechanical specifications:

Characteristics	Description
Dimensions	198 mm (length) × 96mm (height) × 38 mm (width)
Weight	About 0.6 kg (main unit, without battery)

Calibration interval: The recommended calibration interval is one year.

9. Appendix

Appendix A: List of Accessories

- 1 power adapter
- 1 USB cable
- 2 passive probes
- 1 crocodile clip cable
- 1 set of multimeter probes (one red and one black)
- 1 user manual
- 1 probe correction adjustment knife

Appendix B: Maintenance and Cleaning

General maintenance

Do not store or place the instrument in a place where the LCD screen will be exposed to direct sunlight for a long time.

Caution: Do not let spray, liquid or solvent touch the instrument or probe to prevent damage to the instrument or probe.

Cleaning:

Check the instrument and probe frequently according to the operation. Clean the external surface of the instrument as follows:

1. Please wipe the floating dust outside the instrument and probe with a soft cloth.

When cleaning the LCD, be careful not to scratch the transparent LCD protection screen.

2. Wipe the instrument with a damp but non dripping soft cloth. Please disconnect the power supply. It can be scrubbed with soft detergent or water. Do not use any abrasive chemical cleaning agent to avoid damaging the instrument or probe.