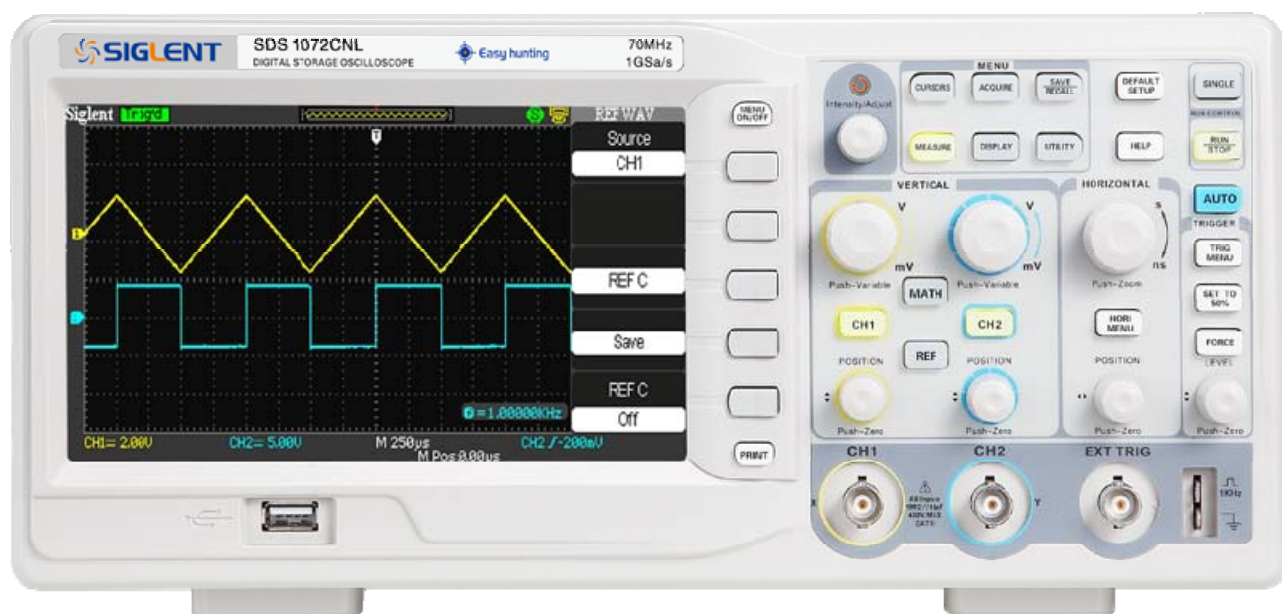


## DataSheet

# SDS1000CNL Series Digital Oscilloscope



**4TECT**

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## CHARACTERISTIC:

- The highest Single real-time sampling rate can be up to 2GSa/s; Equivalent sampling rate is up to 50GSa/s.
- Memory Depth: 40Kpts(70M/100MHz), 18Kpts (200MHz)
- Trigger types: Edge, Pulse Width, Video, Slope, Alternative
- Unique Digital Filter function and Waveform recorder function
- Support Pass/Fail function.
- Thirty two parameters Auto measure function.
- Save/recall types: Setups, Waveforms, CSV file, Picture.
- Support Multilingual On-line help system
- Waveform Intensity and Grid Brightness can be adjusted.
- Support twelve types Language
- Standard Configuration Port:
  - USB Host: Support USB flash driver save/recall function and update firmware;
  - USB Device: Support PictBridge compatible printer and support PC remote control;
  - RS232;
  - Pass/Fail Output.

## Specifications

All specification applies to 10X probe and All the SDS1000CNL Series Digital Storage Oscilloscopes.

To verify that the oscilloscope meets specifications, the oscilloscope must first meet the following conditions:

- The oscilloscope must have been operating continuously for thirty minutes within the specified operating temperature.
- You must perform the Do Self Cal operation, accessible through the Utility menu, if the operating temperature changes by more than 5° C.
- The oscilloscope must be within the factory calibration interval

All specifications are guaranteed unless noted “typical.”

Inputs	
Input Coupling	AC, DC, GND
Input Impedance	1M $\Omega$ $\pm$ 2%    16Pf $\pm$ 3Pf, 50 $\Omega$ +/- 2% (SDS1202CNL+ contain this function)
Maximum Input voltage	400V (DC+AC PK-PK, 1M $\Omega$ input impedance, X10), CAT I
Ch to Ch Isolation (Both channels in same V/div setting)	>100:1 at 100MHz: (SDS1202CNL+) >100:1 at 50MHz:(SDS1102CNL) >100:1 at 35MHz:(SDS1072CNL)
Probe Attenuator	1X, 10X
Probe Attenuator Factors Set	1X, 5X, 10X, 50X, 100X, 500X, 1000X

Vertical System	
Vertical Sensitivity	2mV/div -10V/div(1-2-5 order) [Except SDS1202CNL+ : 2mV/div -5V/div]
Channel Voltage Offset Range	2mV -200mV: $\pm$ 1.6V    206mV - 10V: $\pm$ 40V (SDS1202CNL+: 2mV-100mV: $\pm$ 800mV 102mV-10V: $\pm$ 40V)
Vertical Resolution	8 bit
Channels	2
Analog	200MHz(SDS1202CNL+)

Bandwidth	100MHz(SDS1102CNL) 70MHz(SDS1072CNL)
Single-shot Bandwidth	200MHz(SDS1202CNL+) 100MHz(SDS1102CNL) 70MHz(SDS1072CNL)
BW Flatness at BNC input	DC -10% of rated BW: +/- 1dB 10% - 50% of rated BW: +/- 2dB 50% - 100% of rated BW: + 2dB/-3dB
Lower frequency limit (AC -3dB)	≤10Hz(at input BNC)
Noise: Pk-Pk for 3K record	≤0.6 Div for average of 10 Pk-Pk readings, Fixed gain settings ≤0.7 Div for average of 10 Pk-Pk readings, Variable gain settings
SFDR including harmonics (measured with FFT)	≥35dB
DC Gain Accuracy	< ± 3.0%: 5mv/div to 10V/div in Fixed Gain Ranges < ± 4.0%: 2mv/div Variable Gain Ranges
DC Measurement Accuracy: All Gain settings ≤ 100mv/div	± [3%* (  reading + offset  ) +1% *of  offset  +0.2div+2mv]
DC Measurement Accuracy: All Gain settings > 100mv/div	± [3%* (  reading + offset  ) +1%* of  offset  +0.2div+100mv]
Rise time	<1.8ns (SDS1202CNL+) <3.5ns(SDS1102CNL) <5.0ns (SDS1072CNL)
Overshoot, Typical (using 500ps pulse)	<10% with probe or BNC input w/ 50 Ohm feed thru
Ch to Ch Skew (both channels in same V/div setting)	<1ns: SDS1202CNL+ SDS1102CNL <2ns: SDS1072CNL (Equivalent to 2 minor divisions in smallest t/div)
Math operation	+, -, *, /, FFT
FFT	Window mode: Hanning, Hamming, Blackman, Rectangular
	Sampling points: 1024
Bandwidth limited	20MHz ± 40% (Note: BW limited below

	20MHz when using probe in x1)
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Horizontal System	
Real Time Sampling Rate	SDS1000CNL(70/100MHz): Single Channel:1GSa/s, Double Channel: 500MSa/s SDS1202CNL+: Single Channel:2GSa/s Double Channel: 1GSa/s
Equivalent Sampling Rate	50GSa/s
Measure Display Modes	MAIN, WINDOW, WINDOW ZOOM, ROLL, X-Y
Timebase Accuracy	$\pm 100$ ppm measured over 1ms interval
Horizontal Scan Range	5ns/DIV – 50s/DIV (SDS1072CNL) ; 2.5ns/DIV – 50s/DIV (SDS1102CNL/1202CNL+)
	Scan: 100mS/DIV ~50S/DIV (1-2.5-5 sequence)

Trigger System	
Trigger Types	Edge, Pulse Width, Video, Slope, Alternative
Trigger Source	CH1,CH2,EXT,EXT/5,AC Line
Trigger Modes	Auto, Normal, Single
Trigger Coupling	AC, DC, LF rej, HF rej
Trigger Level Range	CH1,CH2: $\pm 6$ divisions from center of screen
	EXT: $\pm 1.2$ V
	EXT/5: $\pm 6$ V
Trigger Displacement	Pre-trigger: (Memory depth/ (2*sampling) ) , Delay Trigger: 271.04DIV
Trigger Level Accuracy (typical) applicable for the signal of rising and falling time $\geq 20$ ns	Internal: $\pm(0.2 \text{ div} \times \text{V/div})$ ( within $\pm 4$ divisions from center of screen) EXT: $\pm(6\% \text{ of setting} + 40 \text{ mV})$ EXT/5: $\pm(6\% \text{ of setting} + 200 \text{ mV})$
Trigger Sensitivity	For fixed gain ranges 1 Divisions: DC-10MHz 1.5 Divisions: 10MHz - Max BW
	EXT: 200mVpp DC-10MHz, 300mVpp 10MHz - Max BW
	EXT/5: 1Vpp DC-10MHz, 1.5Vpp 10MHz - Max BW
Pulse Width Trigger	Trigger Modes: (>, <, =)positive Pulse Width, (>, <, =)Negative Pulse Width
	Pulse Width Range: 20ns – 10s
Video Trigger	Support signal Formats: PAL/SECAM, NTSC

	Trigger condition : odd field, even field, all lines, line Num
Slope Trigger	(>, <, =) Positive slope, (>, <, =) Negative slope
	Time: 20ns-10s
Alternative Trigger	CH1 trigger type: Edge, Pulse, Video, Slope
	CH2 trigger type: Edge, Pulse, Video, Slope

<b>X-Y Mode</b>	
X-pole Input / Y-Pole Input	Channel 1 (CH1) / Channel 2 (CH2)
Sample Frequency	XY mode has a breakthrough that trad oscilloscopes restrict sampling rate at 1MSa/s. Support 25Ksa/s~250Msa/s adjusted.

<b>Hard Ware Frequency Counter</b>	
Reading resolution	1Hz
Accuracy	±0.01%
Range	DC Couple, 10Hz to MAX Bandwidth
Signal Types	Satisfying all Trigger signals(Except Pulse width trigger and Video Trigger)

<b>Control Panel Function</b>	
Auto Set	Auto adjusting the Vertical, Horizontal system and Trigger Position
Save/Recall	Support 2 Group referenced Waveforms, 20 Group setups, 10 Group(SDS1202CNL+ 20group) captured Waveforms internal Storage/Recall function and USB flash driver storage function.

<b>Measure System</b>	
Auto Measure (32 Types)	Vpp, Vmax, Vmin, Vamp, Vtop, Vbase, Vavg, Mean, Crms, Vrms, ROVShoot, FOVShoot, RPRESshoot, FPRESshoot, Rise time, Fall time, Freq, Period, +Wid, -Wid, +Dut, -Dut, BWid, Phase, FRR, FRF, FFR, FFF, LRR, LRF, LFR, LFF
Cursor Measure	Manual mode, Track mode and Auto mode

## Generic Specification

<b>Display System</b>	
Display Mode	Color TFT 7.0in.(177.8mm)diagonal Liquid Crystal Display
Resolution	480 horizontal by 234 vertical pixels
Display Color	24bit
Display Contrast (Typical state)	150:1
Backlight Intensity (Typical state)	300nit
Wave display range	8 x 18 div
Wave Display Mode	Dots, Vector
Persist	Off, 1 sec, 2 sec, 5 sec, Infinite
Menu Display	2 sec, 5 sec, 10 sec, 20 sec, Infinite
Screen-Saver	Off, 1min,2min,5min,10min,15min,30min,1hour,2hour,5hour
Skin	Classical, Modern, Tradition, Succinct
waveform interpolation	Sin(x)/x, Linear
Color model	Normal , Invert
Language	Simplified Chinese, Traditional Chinese, English, Arabic, French, German, Russian, Portuguese Spanish, Japanese, Korean, Italian

<b>Environments</b>	
Temperature	Operating:10℃ to +40℃ Not operating: -20℃ to +60℃
Cooling	The fan forces it cold.
Humidity	Operating: 85%RH, 40℃, 24 hours Not operating: 85%RH, 65℃, 24 hours
Height	Operating: 3000m Not operating: 15,266m

<b>Power Supply</b>	
Input Voltage	100-240 VAC, CAT II, Auto selection
Frequency Scope	45Hz to 440Hz
Power	50VA Max

<b>Mechanical</b>		
Dimension	length	323.1mm
	Width	135.6mm
	Height	157mm
weight	2.5kg	

## Type Selections:

NAME:

SDS1000CNL series Digital Oscilloscope

TYPE:

SDS1072CNL 70MHz

SDS1102CNL 100MHz

SDS1202CNL+ 200MHz

## Standard Accessories:

- 1:1/10:1 probe (2 PCS)
- Power Cable that fits the standard of destination country
- Qualified Certification.
- Guaranty Card
- CD (including EasyScope computer software system)
- User Manual
- USB Cable



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