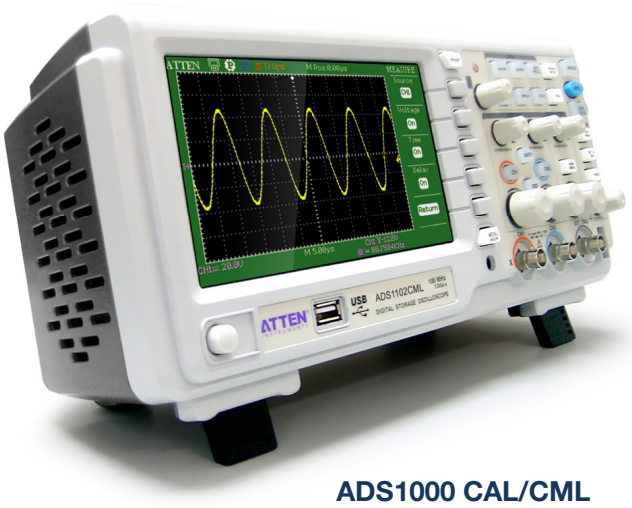
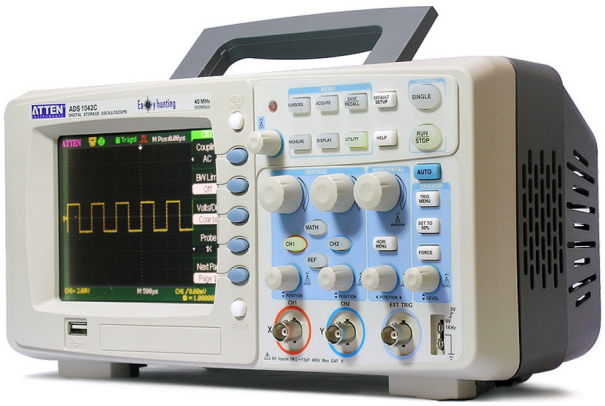
ADS1000C, CAL / CML Series

DIGITAL STORAGE OSCILLOSCOPE

25MHz, 40MHz , 60MHz , 100MHz, 150MHz, 200MHz



ADS1000 CAL/CML



ADS1000 C Series

FEATURES

- 500MSa/s & 1GSa/s Sampling Rate
- 2 Channels
- 7” Widescreen LCD Color Display (ADS1022C: 5.7 in)
- USB Host/Device: Support USB Printer and USB Flash Drive
- PictBridge Function
- Easyscope Software
- 12 Languages

APPLICATIONS

- Industrial Power Design, Troubleshooting, Installation, and Maintenance.
- Electronics Design, Troubleshooting, Installation, and Maintenance
- Circuit Design & Debug
- Educational Lab & Training Institutions
- Repair & Service
- Production Test & Quality Inspection

CHARACTERISTICS

- The highest Single real-time sampling rate can up to 1Gsa/s; Equivalent sampling rate is up to 50GSa/s.
  Memory Depth: C Series: 4Kpts
  CAL Series: 40Kpts
  CML Series: 2Mpts
- Max recording length:6Mpts
- The longest single recording time: 33.3h
- 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.
- User Interface in 12 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

ADS1022C
25MHz, 500MSa/s, 2 Channel

ADS1042CML
40MHz, 1GSa/s, 2 Channel

ADS1062CAL/CML
60MHz, 1GSa/s, 2 Channel

ADS1102CAL/CML
100MHz, 1GSa/s, 2 Channel

ADS1152CAL/CML
150MHz, 1GSa/s, 2 Channel

ADS1202CML
200MHz, 1GSa/s, 2 Channel

MODEL INDEX	ADS1202CML	ADS1152CAL/CML	ADS1102CAL/CML	ADS1062CAL/CML	ADS1042CML	ADS1022C
Bandwidth	200MHz	150MHz	100MHz	60MHz	40MHz	25MHz
Sampling Rate	1GSa/s					500MSa/s
Equivalent Sampling Rate	50GSa/s					10GSa/s
Memory Depth	5Kpts/CH	Single Channel: 2Mpts; Double Channels: 1Mpts CAL Series: Single Channel: 40Kpts; Double Channels:20Kpts				4Kpts
Rise Time	< 1.8ns	<2.3ns	<3.5ns	<5.8ns	<8.8ns	<14ns
Input Impedance	1MΩ||14Pf / 50 ohm	1MΩ||17pF				
Sec/div Range	2.5ns/div-50s/div			5ns/div-50s/div	10ns/div-50s/div	25ns/div-50s/div
	Scan: 100ms-50s/div					
Display	7” LCD Color (480*234)					5.7” LCD Color (320*234)

FEATURES

Abundant Trigger Function

ADS1000 series products have rich trigger modes: Edge, Pulse, Video, Slope and Alternative mode, which satisfy with users more extensive needs. Alternative trigger mode is usually used to observing two non-correlated signals at the same time and users can select different trigger mode for two channels, which is a kind reproduction that analog oscilloscope function in the digital oscilloscope.

FFT Waveform Split Display Function

FFT waveform and its Channel waveform can display on split screen at the same time. In split display mode, the screen is divided into two parts and each part is divided eight divides in vertical direction. That is similar to under the entire screen pattern simultaneously to observe two waveforms. This way will make users observe waveforms to be clearer and convenient.

Pop-up Menu Display Mode

The menu may hide as necessary make waveforms display on 18 divides full screen. Comparing with other same level digital oscilloscopes, this kind of pattern is more flexible, the user operation is more convenient and users can observe waveforms clearly.

Display

ADS1000 series products use the 7” Wide Screen Color TFT LCD. The screen display parameter value and the waveform are clearer, stably and nature; That is also more advantageous to alleviate tiredness of users using the instrument extended periods at a time.

Digital Filter Function

ADS1000 series provide a digital filter function, and users can use it setting upper limit and lower limit of frequency to reduce signal noise and filter error signal. So they can observe their interested signals distinctly, which will advance users' work efficiency consumedly.

Waveform Recorder Function

Using this function, Users can continue record data of their need signals as the form of frame. Waveform recorder can record input waveform from CH1 and CH2, with maximum record length of 1500 frames. This record behavior can also be activated by the pass/fail test output, which makes this function especially useful to capture abnormal signals in long term without keeping an eye watching it.

Pass/Fail Function

Users may use the Pass/Fail function which the ADS1000 series provides to carry on the product test. Through a series of setups, the oscilloscope can output the test result automatically which enhanced the product production efficiency greatly.

Auto Measure Function

ADS1000 series can auto measure thirty two parameters, which is most in the same level digital oscilloscopes. Auto measure function can eliminate user error consumedly, and users will measure parameters what they need faster and more accurately using it. ADS1000 series also have all measurement function that displays all the waveform parameters on the screen according to measure kinds, and users can ready measure parameters value expediently making ADS1000 series the most perfect measure tools.

Multi-country Language User Interface Display function

ADS1000 series product has 12 languages user interface display function: Simplified Chinese, Traditional Chinese, English, Arabic, French, German, Russian, Spanish, Portuguese, Japanese and Korean, which has further developed the ADS1000 series product for the international market

Powerful EasyScope3.0 Software

EasyScope3.0 software is the powerful system software suitable for ADS1000 series products. This software can be compatible RS-232 and USB Device to realize communication between the computer and the oscilloscope, then realizes long-distance control. Simultaneously this software can automatic real-time refresh waveform data, provide waveforms measure data sampling data, screen images read storage and printing functions. In addition

EasyScope3.0 also has setups upload and download function. Most quickly basing on millisecond level interactive between PC and ADS1000 series make users to be easier to analyze, research waveforms and data.

Cursor Survey Function

ADS1000 series cursor survey function has three kinds of modes: Auto manual mode, Track mode, Auto mode. The user may according to own need to choose the survey pattern nimbly, thus with ease read measure results from the top right of the screen or experience completely automatic intelligent design pattern.

Input	
Input Coupling	AC, DC, GND
Input Impedance	DC: 1MΩ+/-2% || 17pF +/-3pF AC: 1.2MΩ+/-2% || 17pF +/-3pF, <=100mV/div 1.0MΩ+/-2% || 17pF +/-3pF, >100mV/div
Maximum Input Voltage	±400V PK-PK CATI
Ch to Ch Isolation (Both channels in same V/div setting)	> 100: 1 at 100MHz (ADS1202CML), > 100: 1 at 70MHz (ADS1152CAL/CML) > 100: 1 at 50MHz (ADS1102CAL/CML), > 100: 1 at 30MHz (ADS1062CAL/CML) > 100: 1 at 20MHz (ADS1042CML)
Probe attenuator	1X, 10X
Probe attenuator	1X, 10X, 100X, 1000X

Horizontal System						
Real Time Sampling Rate	Single Channel 1GSa/s; Double Channels 1GSa/s (ADS1202CML) Single Channel 1GSa/s; Double Channels 500MSa/s (ADS1000CAL/CML Series) Single Channel 500MSa/S; Double Channels 250MSa/s (ADS1022C)					
Equivalent Sampling Rate	50GSa/s					
Measure Display Modes	MAIN, WINDOW, WINDOW ZOOM, Scan, X-Y					
Timebase Accuracy	±100ppm measured over 10ms interval					
Time Window	18 Divisions					
Horizontal Scan Range	ADS1202CML	ADS1152CAL/ CML	ADS1102CAL/ CML	ADS1062CAL/ CML	ADS1042CML	ADS1022C
	2.5ns/div -50s/div			5 ns/div - 50s/div	10 ns/div - 50s/div	25ns/div - 50s/div
	Scan: 100ms/div -50s/div (1-2.5-5 sequence)					

Vertical System						
Vertical Sensitivity	2mV-10V/div at input BNC (1-2-5 order) 2mV-5V/div (ADS1202CML / 1022C)					
Channel voltage offset range	2mV-200mV: ±1.6V 206mV-10V: ±40V in Fixed Gain Ranges & Variable Gain Ranges					
Vertical Resolution	8 bit					
Channels	2					
Analog Bandwidth (at input BNC)	ADS1202CML	ADS1152CAL/CML	ADS1102 CAL/CML	ADS1062CAL /CML	ADS1042CML	ADS1022C
	200MHz	150MHz	100MHz	60MHz	40MHz	25MHz
BW Flatness	DC-10% of rated BW: ±1DB 10%-50% of rated BW: ±2DB 50%-100% of rated BW: ±3DB					
Lower frequency limit (AC -3dB)	≤10Hz (at input BNC)					
Noise: Pk-Pk for 3K record	≤0.6Div for average of 10Pk-Pk readings in fixed gain settings. <=0.7 Div for average of 10 Pk-Pk readings, Variable gain settings					
SFDR including harmonics	≥40dB					
DC Gain Accuracy	< ±3.0%: 5mV/div to 5V/div in Fixed Gain Ranges < ±4.0%:typical for 2mV/div and Variable Gain Ranges					
DC Measurement Accuracy: All Gain settings ≤100mV/div	±[3%X (|reading|+|offset|) +1% of |offset| +0.2div+2mV] +0.2div+2mV]					
DC Measurement Accuracy: All Gain settings >100mV/div	±[3%X (|reading|+|offset|) +1% of |offset| +0.2div+100mV]					
Rise time, Typical (using 500ps pulse)	ADS1202CML	ADS1152CAL/ CML	ADS1102CAL/ CML	ADS1062CAL/ CML	ADS1042CML	ADS1022C
	<1.8ns	<2.3ns	<3.5ns	<5.8ns	<8.8ns	<14ns
Math operation	+,-, *,FFT					
FFT	Window mode: Hanning, Hamming, Blackman, Rectangular Sampling points: 1024					
Bandwidth limiter	20MHz ±40% Typical (Note: BW limited below 20MHZ±40% when using probe X1;25MHz BW don't have this function)					

Trigger System		
	Trigger Types	Edge, Pulse Width, Video, Slope, Alternative
	Trigger Modes	Auto, Normal, Single
	Trigger Sources	Ch1-2, EXT, EXT/5, AC Line
	Trigger Coupling	AC, DC, LF rej, HF rej
	Trigger Level Range	CH1, CH2: ±6divisions from center of screen EXT: ±1.2V EXT/5: ±6V
	Trigger Level Accuracy (typical) applicable for the signal of rising and falling time ≥20ns	Internal: ±(0.2 div x V/div)(within±4 divisions from center of screen) EXT: ±(6% of setting + 40 mV) EXT/5: ±(6% of setting + 200 mV)
	Edge Trigger	Edge type: Rising, Falling, Rising and Falling
	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
Control Panel Function		
	Auto Set	Auto adjusting the Vertical, Horizontal system and Trigger Position
	Save/Recall	Support 2 Group referenced Waveforms, 20 Group setups, 20 Group captured Waveforms internal Storage/Recall function and USB flash driver storage function.
Hard Ware Frequency Counter		
	Reading resolution	6 Bytes
	Accuracy	±0.01%
	Range	DC Couple, 10Hz to MAX Bandwidth
	Signal Types	Satisfying all Trigger signal (Except Pulse width trigger and Video Trigger)
Acquisition System		
	Sample Types	Real time, Equivalent time
	Memory Depth	ADS1202CML :5Kpts / CH ADS1000CAL /CML Series: Single Channel Kpts, ADS1022C: Single Channel 4Kpts ;

ADS1000CML Series

Channel Mode	Sampling Rate	Short memory	Long Memory
Single Channel	1Gsa/s	40kpts	No Support
Single Channel	500MSa/s or lower	40kpts	2Mpts #
Double Channels	500MSa/s or lower	20kpts	1Mpts #

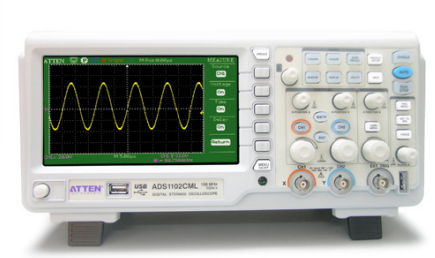
	Sample Mode	Sample, Peak Measure, Average
	Averages	4,16,32,64,128,256
Measure System		
	Auto Measure	Vpp, Vmax, Vmin, Vamp, Vtop, Vbase, Vavg, Mean, Crms, Vrms, ROVShoot, FOVShoot, RPREShoot, FPREShoot, Rise time, Fall time, Freq, Period, +Wid, -Wid, +Dut, -Dut, Bwid, Phase, FRR, FRF, FFR, FFF,LRR,LRF, LFR, LFF
	Cursor Measure	Manual mode, Track mode and Auto mode

(only in ADS1000CML Series with Long Memory)

GENERAL SPECIFICATIONS

Display				
	Display Mode	Color TFT 7in diagonal Liquid Crystal Display		
	Resolution	480 horizontal by 234 vertical pixels		
	Display Color	64K color		
	Display Contrast (Typical state)	150:1		
	Backlight Intensity (Typical state)	300nit		
	Wave display range	8 x 18 div		
	Wave Display Mode	Point, Vector		
	Point, Vector	Off, 1 sec, 2 sec, 5 sec, Infinite		
	Menu Display	2 sec, 5 sec, 10 sec, 20 sec, Infinite		
	Skin	Succinct		
	Screen saver	1min, 2min, 5min, 10min,15min, 30min, 1hour, 2hour, 5hour, off		
	Waveform Interpolation	Sin(x)/x, Linear		
	Color model	Normal , Invert		
	Language	English, French, German, Russian, Spanish, Simplified Chinese, Traditional Chinese, Portuguese, Japanese, Korean, Italian, Arabic		
	Interface	USB Host, USB Device, RS232, Pass/Fail output		
Environments				
	Temperature	Operating:10℃ to + 40℃ Not operating: -20℃ to +60℃		
	Humidity	Operating: 85%RH, 40℃, 24 hours Not operating: 85%RH, 65℃, 24 hours		
	Height	Operating: 3000m Not operating: 15,266m		
Power Supply				
	Input Voltage	100-240 VAC, CAT II, Auto selection		
	Frequency Scope	45Hz to 440Hz		
	Power	50VA Max		
Mechanical				
	Dimension	Length	Width	Height
		399mm	110.5mm	148.5mm
	Weight	2.4 kg		

We pursue a policy of continuous development and product improvement. Thus the specifications and picture in this Spec sheet and control location on the front Panel may be changed.



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