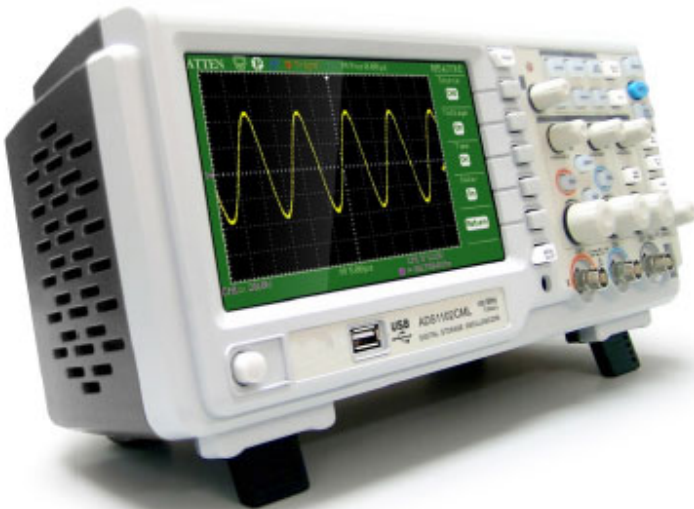# XYTRON

NEW PRODUCT ANNOUCEMENT

DSO1000CL+ / CML DSO Series
25MHz ~ 200MHz

We are glad to introduce to our global customers our new series of Digital Storage Oscilloscope under DSO1000CL+ and CML Series. Based on the same platform of our DSO1000C & CM series, the new oscilloscope is a general purpose portable, affordable and easy to use oscilloscope designed to meet the requirement in the educational, research labs and industry.

The series is available in 6 selective bandwidths ranging from 25MHz to upto 200MHz. With sampling rate of 500MSa/s and 1GSa/s and memory depth upto 2Mpts, customer will have a total measuring experience.

DSO-1000 series offers dual sampling mode, giving users two options for 500MS/s and 1GSa/s Real-Time sampling or 50GS/s high-speed Equivalent sampling rate. With high-speed wave handling capability, more advanced triggering functions, 7" Widescreen Display and Compact and light-weight design makes it the most powerful oscilloscope with the best price than ever.

The DSO-1000 is considered for the replacement of analog oscilloscope and further promoted as a personal DSO affordable to any situation such as each student in educational labs, service technicians, or industrial field needing big quantity. With the easy to use user interface available in 12 different languages, its truly a global player

Key Features

- 25MHz, 40MHz, 60 MHz, 100 MHz, 150MHz and 200MHz bandwidths
- Realtime Sample rates of 500MSa/s and 1GS/s
- Equivalent Sampling rate of 50Gsa/s
- Long Waveform Memory – upto 2Mpts
- Advanced Triggering-Edge, Pulse Width, Video, Slope (Rise Time)
- 7" widescreen color display on all models
- 32 automatic measurements
- Large internal waveform and setup storage
- 4 math functions plus FFT
- USB host and device connections for printers, memory sticks and PC remote control
- Multi-language User Interface and Context Sensitive Help

Product Series Description

DSO1022CL+, 25MHz, 500MSa/s, 2 Ch, 7" Widescreen Color LCD
DSO1042CL+, 40MHz, 500MSa/s, 2 Ch, 7" Widescreen Color LCD
DSO1042CML, 40MHz, 1GSa/s, 2 Ch, 7" Widescreen Color LCD
DSO1062CML, 60MHz, 1GSa/s, 2 Ch, 7" Widescreen Color LCD
DSO1102CML, 100MHz, 1GSa/s, 2 Ch, 7" Widescreen Color LCD
DSO1152CML, 150MHz, 1GSa/s, 2 Ch, 7" Widescreen Color LCD
DSO1202CML, 200MHz, 1GSa/s, 2 Ch, 7" Widescreen Color LCD

CL+, 32Kpts Memory Depth
CML : 2Mpts Memory Depth

MODEL INDEX	DSO1202CML	DSO1152CML	DSO1102CML	DSO1062CML	DSO1042CML	DSO1042CL+	DSO1022CL+
Bandwidth	200MHz	150MHz	100MHz	60MHz	40MHz	40MHz	25MHz
Sampling Rate	1GSa/s					500MSa/s	
Equivalent Sampling Rate	50GSa/s					25GSa/s	10GSa/s
Memory Depth	5Kpts/CH	Single Channel: 2Mpts; Double Channels: 1Mpts				32Kpts	
Rise Time	< 1.8ns	<2.3ns	<3.5ns	<5.8ns	<8.8ns		<14ns
Input Impedance	1MΩ||14pF						
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)						

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 (DSO1202CML), > 100: 1 at 70MHz (DSO1152CML) > 100: 1 at 50MHz (DSO1102CML), > 100: 1 at 30MHz (DSO1062CML) > 100: 1 at 20MHz (DSO1042CML/CL+)
	Probe attennuator	1X, 10X
	Probe attennuator	1X, 10X, 100X, 1000X

Horizontal System

	Real Time Sampling Rate	Single Channel 1GSa/s; Double Channels 1GSa/s (DSO1202CML) Single Channel 1GSa/s; Double Channels 500MSa/s (DSO1000CML Series) Single Channel 500MSa/s; Double Channels 250MSa/s (DSO1000CL+ Series)				
	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	DSO1202CML	DSO1152CML	DSO1102CML	DSO1062CML	DSO1042CL+/CML	DSO1022CL+
		2.5ns/div -50s/div	2.5ns/div -50s/div	5.0 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 (DSO1202CML / 1022CL+)				
	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)	DSO1202CML	DSO1152CML	DSO1102CML	DSO1062CML	DSO1042CL+/CML	DSO1022CL+
		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)	DSO1202CML	DSO1152CML	DSO1102CML	DSO1062CML	DSO1042CL+/CML	DSO1022CL+
		<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.

Acquisition System

Sample Types	Real time, Equivalent time

Memory Depth

DSO1202CML :5Kpts / CH
DSO1000CL+ Series: Single Channel 4Kpts ; DSO1000CML Series: Single Channel 2Mpts

DSO1000CML 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

GENERAL SPECIFICATIONS

Display	
Display Mode	Color TFT 7in diagonal Liquid Crystal Display
Resolution	480 horizontal by 234 vertical pixels
Display Color	64K color
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°C to + 40°C Not operating: -20°C to +60°C
Humidity	Operating: 85%RH, 40°C, 24 hours Not operating: 85%RH, 65°C, 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	Width	Height	
	110.5mm	148.5mm	
Weight			