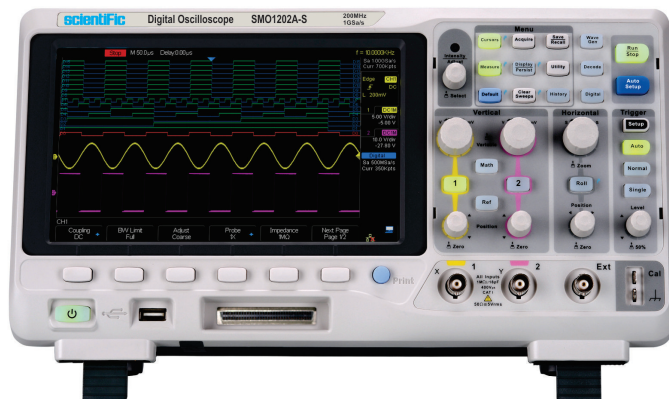


Digital Oscilloscopes SMO1000A Series



Advance Features

- Signal bandwidth: 100/200MHz
- Sampling rate: Max. 1GSa/s
- Record length 14 Mpts
- Waveform capture rate up to 60,000 wfs/s
- 8.0" TFT LCD (800 x 480)
- Serial decode / trigger functions (I2C, SPI, UART, RS232, CAN, LIN) optional
- Independent vertical scale & position control knobs for each channel
- Smart Trigger functions: Window, Runt, Interval, DropOut, Pattern
- Advanced math operations (FFT,d/dt, integrate, square root)
- High Speed P/F function.
- Channel waveforms & its FFT display on split screen.
- 36 parameters of automatic measurements
- Built-in full band width hardware frequency counter
- Built-in waveform (10 kinds) generator with the max. frequency 25 MHz
- Standard Interface
- USB Host USB Device: Support (USB TMC, PictBridge) LAN(VXI-11), GPIB, Pass/Fail, Trigger Out.

Technical Specifications	SMO1102A	SMO1102A-S	SMO1202A	SMO1202A-S
Vertical System				
BW		100MHz		200MHz
Rise Time		<3.5ns		<1.8ns
Channels			2	
Coupling			DC, AC and GND	
Bandwidth Limit (-3dB)			20MHz	
Vertical Resolution			8Bits	
Vertical Scale			500μV/div — 10V/div (1-2-5)	
Vertical Gain Accuracy			=±3.0%: 5mV/div —10V/div, =±4.0%: =2mV/div	
Vertical Offset Range			500μV — 150mV: ± 1V, 152mV — 1.5V: ± 10V, 1.52V — 10V: ± 100V	
Overshoot			<10%	
Probe Attenuation Factors			0.1X, 0.2X, 0.5X, 1X, 2X, 5X, 10X, 20X, 50X, 100X, 200X, 500X , 1000X	
Input Impedance			AC : (1.2 MΩ ± 2%) (18 pF ± 2 pF), 50 Ω± 2%	
Max. Input Voltage			1MΩ ≤400 VPK (DC+ Peak AC <= 10 kHz,),50 Ω± 5Vrms	
Sampling System				
Sampling Rate			1GSa/s	
Memory Depth			14Mpoints	
Sampling Mode			Sample, Peak detect, Averaging, High Res, Roll Mode	
Peak Detect			1ns	
Average			4, 16, 32, 64, 128, 256, 512, 1024	

Technical Specifications	SMO1102A	SMO1102A-S	SMO1202A	SMO1202A-S
Horizontal System				
Time Base Range	2ns–50 s/div (1-2-5 sequence)			
Waveform Capture	60,000 wfm/s			
Display Format	Y-T, X-Y, Roll			
Roll Mode	50 ms– 50 s/div			
Horizontal Mode	Main, Window, Window Zoom, Roll, X-Y			
Time Base Accuracy	± 25ppm			
XY Mode				
Input	X: Channel 1, Y: Channel 2			
Bandwidth	100MHz		200MHz	
Trigger System				
Trigger Mode	Auto, Normal, Single			
Trigger Sensitivity	Internal : 0.6 div EXT: DC–10 MHz: 200 mVpp, 10 MHz – Max. BW: 300 mVpp EXT/5: DC–10 MHz: 1Vpp, 10 MHz – Max. BW: 1.5 Vpp			
Trigger Source	CH 1, CH 2, EXT, EXT/5, AC Line			
Trigger Coupling	DC, AC, LF-reject, HF- reject, Noise reject (CH1-CH2)			
Trigger Type	Edge, Slope, Pulse, Video, Window, Interval, Dropout, Runt, Pattern, Serial Trigger			
Trigger Level Range	Internal : ± 4.5 div from screen center; EXT : ± 1.2 V; EXT/5 : ± 6 V			
Edge Trigger				
Slope	Rising, Falling, Rising & Falling			
Source	CH1/CH2/EXT/(EXT/5)/AC Line			
Slope Trigger				
Slope	Rising, Falling			
Limit Range	<, >, <>, ><			
Source	CH1/CH2			
Time Range	2ns – 4.2s			
Resolution	1ns			
Pulse Trigger				
Polarity	+wid , -wid			
Limit Range	<, >, <>, ><			
Source	CH1/CH2			
Pulse Range	2ns – 4.2s			
Resolution	1ns			
Video Trigger				
Signal Standard	NTSC, PAL, 720p/50, 720p/60,1080p/50, 1080p/60,1080i/50,1080i/60,Custom			
Source	CH1/CH2			
Sync	ANY, Select			
Trigger Condition	Line, Field			
Window Trigger				
Window Type	Absolute,Relative			
Source	CH1/CH2			
Inrerval Trigger				
Slope	Rising, Falling			
Limit Range	<, >, <>, ><			
Source	CH1/CH2			
Time Range	2ns – 4.2s			
Resolution	1ns			
Dropout Trigger				
TimeoutType	Edge, State			
Source	CH1/CH2			
Slope	Rising, Falling			
Time Range	2ns – 4.2s			
Resolution	1ns			
Runt Trigger				
Slope	+wid , -wid			
Limit Range	<, >, <>, ><			
Source	CH1/CH2			
Time Range	2ns – 4.2s			
Resolution	1ns			
Pattern Trigger				
Pattern Setting	Invalid, Low, High			
Logic	AND, OR, NAND, NOR			
Source	CH1/CH2			
Limit Range	<, >, <>, ><			
Time Range	2ns – 4.2s			
Resolution	1ns			
Window Trigger				
Window Type	Absolute, Relative			
Source	CH1/ CH2			
Serial Trigger				
I2C Trigger				
Condition	Start, Stop, Restart, No Ack, EEPROM, 7bits Address & Data, 10bits Address & Data, Data Length			

Technical Specifications	SMO1102A	SMO1102A-S	SMO1202A	SMO1202A-S
Source (SDA/SCL)	CH1, CH2			
Data format	Hex			
Limit Range	EEPROM: =, >, <			
Data Length	EEPROM: 1byte			
Addr & Data:	1 – 2byte			
Data Length:	1 – 12byte			
R/W bit	Addr & Data: Read, Write, Do not care			
SPI Trigger				
Condition	Data			
Source	(CS/CL/Data) CH1, CH2			
Data format	Binary			
Data Length	4 – 96 bit			
Bit Value	0, 1, X			
Bit Order	LSB, MSB			
UART/ RS232 Trigger				
Condition	Start, Stop, Data, Parity Error			
Source	(RX/TX) CH1, CH2			
Data format	Hex			
Limit Range	=, >, <			
Data Length	1byte			
Data Width	5 bit, 6 bit, 7 bit, 8 bit			
Parity Check	None, Odd, Even			
Stop Bit	1 bit, 1.5 bit, 2 bit			
Idle Level	High, Low			
Baud(Selectable) (Custom)	600/1200/2400/4800/9600/19200/38400/57600/115200bit/s 300bit/s–334000 bit/s			
Serial Decode (Optional)				
I2C				
Signal	CL, SDA			
Address	7bits, 10bits			
List	1–7 lines			
Theshold Level	- 4.5–4.5div			
SPI				
Signal	SCL, MISO, MOSI			
Edge Select	Rising, Falling			
Idle Level	Low, High			
Bit Order	MSB, LSB			
Threshold Level	-4.5–4.5div			
List	1–7 lines			
UART/RS232				
Signal	RX, TX			
Data Width	5 bit, 6 bit, 7 bit, 8 bit			
Parity Check	None, Odd, Even			
Stop Bit	1 bit, 1.5 bit, 2 bit			
Idle Level	Low, High			
Threshold Level	-4.5–4.5 div			
List	1–7 lines			
Signal Measurement				
Source	CH1, CH2, Math, Ref, History			
Number of Measurements	Display 5 measurements at the same time			
Measurement Range	Screen region, Gate region			
Auto Measurement	36(Types)			
Vertical (Voltage)	Vmax, Vmin, Vpp,Vamp, Vtop, Vbase, Mean, Vmean, stdev, Vstd, Vrms, Crms, FOV, FPRE, ROV, RPRES			
Horizontal (Time)	Period, Freq, +Wid, -Wid, Rise Time, Fall Time, Bwid, +Dut, -Dut, Delay, Time@Level			
Delay	Phase, FRR, FRF, FFR, FFF, LRR, LRF, LFF			
Cursors	Manual : Time X1, X2, (X1-X2), (1/?T), Voltage Y1, Y2, (Y1-Y2) Track: Time X1, X2, (X1-X2)			
Statistics	Current, Mean, Min, Max, Std-Dev, Count			
Counter	Hardware 6 bits counter (channels are selectable)			
Math Functions	Add, subtract, multiply, divide, FFT(1024 point), d/dt, integration, square root			
FFT Window	Hanning, Hamming, Blackman, Rectangular			
FFT Display	Full Screen, Split			
Cursor Measurement	Manual, Auto, Track			
Built-in Function Generator (SMO1000A-S)				
Channels	1			
Max Frequency	25MHz			
Sample Rates	125MSa/s			
Arb Waveform length	16kpts			
Frequency Resolution	1 μ Hz			
Frequency Accuracy	\pm 50 ppm			
Vertical Resolution	14bits			

Technical Specifications	SMO1102A	SMO1102A-S	SMO1202A	SMO1202A-S
Amplitude Range	-1.5V – +1.5V (50Ω), -3V – +3V (High-z)			
Waveform Type	Sine, Square, Ramp, Pulse, DC, Noise, Cardiac, Gaus,Pulse, Exp Rise, Exp Fall, Arb			
Output impedance	500 ± 2%			
Protection	Short Circuit Proof			
Sine				
Frequency	1μHz–25MHz			
Offset Accuracy(100kHz)	± (0.3dB*Offset Setting Value +1mVpp)			
Amplitude flatness (100 kHz, 5Vpp)	±0.3dB			
SFDR	DC– 1MHz : -60dBc, 1MHz – 5 MHz : -55dBc, 5 MHz – 25MHz : -50dBc			
Harmonic Distortion	DC–5MHz : -50dBc, 5MHz–25MHz : -45dBc			
Square/Pulse Wave				
Frequency	1μHz–10MHz			
Duty Cycle	20%–80%			
Rise/Fall Time	< 24ns (10%–90%)			
Overshoot	< 3% (1kHz, 1Vpp, Typical)			
Pulse Width	> 50ns			
Jitter	< 500ps + 10ppm			
Ramp Wave				
Frequency	1μHz–300KHz			
Linearity	< 0.1% of Pk-Pk value			
Symmetry	0%–100%			
DC Offset				
Range	± 1.5V (50Ω), ± 3.0V (High-Z)			
Offset Accuracy	± (Isetting value *1%+3mv)			
Noise				
Bandwidth	>25MHz (-3dB)			
Arbitrary Wave				
Frequency	1μHz–5MHz			
Wave Length	16Kpts			
Sample Rate	125MSa/s			
Lead in	EasyWave			
Display (Waveform)				
Display Mode	Dot, Vector			
Persist	Off, 1sec, 5 sec, 10sec, 30sec, Infinite			
Color Display	Normal, Color			
Screen Saver	1min, 5min, 10min, 30min, 1h, Off			
I/O				
Standard Ports	USB Host, USB Device , LAN, Pass/ Fail, Trigger Out			
Pass/Fail	3.3V TTL Output			
General Information				
Display Type	8.0 inches TFT LCD			
Resolution	800(Horizontal)× 480(Vertical) pixel			
Range	8 x 14 divisions			
Electromagnetic Compatibility	2004/108/EC Execution standards EN 61326-1:2006, EN 61000-3-2:2006 + A2:2009, EN 61000-3-3:2008			
Safety	2006/95/EC, Executive Standard EN 61010-1:2010/EN 61010-2-030:2010			
Operating Condition	10°C to 40°C, ≤ 85% RH			
Storage Condition	-20°C – +60°C, 85%RH @ 65°C, 24 Hours			
Power	100–240 V AC, CAT II, 45 Hz to 440Hz			
Power Consumption	≤ 50VA			
Dimension	W: 340mm, D: 123mm, H : 184mm			
Weight	N.W: 3.26 Kg; G.W:4.25Kg			
Accessories	1:1/1:10 Probes, Power cord, USB cable, CD			
Option	Serial Deconde Key, MSO Function for SMO1000A-S, Logic Probe 16 Channel			

Subject to Change

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