

Digital Storage Oscilloscope SMO1000E Series



Advance Features

- Signal Bandwidth: 100/200 MHz
- Sampling rate: Max. 1 GSa/s
- Record length 14 Mpts
- Newest generation of SPO (Super Phosphor Oscilloscope) technology
- Waveform capture rate up to 400,000 wfms/s
- Serial decode / trigger functions (I2C, SPI, UART, RS232, CAN, LIN)
- Smart Trigger functions: Window, Runt, Interval, DropOut, Pattern
- Advanced math operations (FFT, d/dt, integrate, square root)
- 1 Mpoints FFT
- High Speed P/F function.
- Channel waveforms & its FFT display on split screen.
- 38 parameters of automatic measurements
- 256 level intensity grading display
- 7.0" TFT LCD (800 x 480)
- Independent vertical scale & position control knobs for each channel
- Standard Interface
- Support USB Host, USB Device (USB TMC), LAN (VXI-11), GPIB (Optional), Pass/Fail, Trigger Out.

Technical Specification	SMO1102E	SMO1202E
Vertical System		
Bandwidth	100 MHz	200 MHz
Rise Time	< 3.5 ns	< 1.8 ns
Channels	2	
Coupling	DC, AC and GND	
Bandwidth Limit (-3 dB)	20 MHz	
Vertical Resolution	8 Bits	
Vertical Scale	500 μ V/div – 10 V/div (1-2-5)	
Vertical Gain Accuracy	5 mV/div – 10 V/div : $\leq \pm 3.0\%$, ≤ 2 mV/div : $\leq \pm 4.0\%$	
Vertical Offset Range	500 μ V – 150 mV: ± 2 V, 152mV – 1.5 V: ± 20 V, 1.52 V – 10 V ± 200 V	
Overshoot	< 10%	
Probe Attenuation Factors	0.1X, 0.2X, 0.5X, 1X, 2X, 5X, 10X,, 1000X, 2000X, 5000X, 10000X	
Input Impedance	DC : (1 M Ω \pm 2%) (18 pF \pm 2 pF)	
Max. Input Voltage	1 M Ω : ≤ 400 VPK (DC+ Peak AC ≤ 10 kHz)	
Sampling System		
Sampling Rate	1 GSa/s (Single Channel), 500 MSa/s (Dual Channel)	
Memory Depth	14 Mpoints (Single Channel), 7 Mpoints (Dual Channel)	
Peak Detect	1 ns	
Average	4, 16, 32, 64, 128, 256, 512, 1024	
Eres	Enhance bits : 0.5, 1.5, 2, 2.5, 3; Selectable	
Waveform Interpolation	Sinx/x, Linear	

Technical Specification	SMO1102E	SMO1202E
Horizontal System		
Time Base Range	1 ns – 100 s/div	
Waveform Capture	Up to 100,000 wfm/s (normal mode), 400,000 wfm/s (sequence mode)	
Display Format	Y–T, X–Y, Roll	
Roll Mode	50 ms/div – 100 s/div (1-2-5 step)	
Horizontal Mode	Main, Window, Window Zoom, Roll, X–Y	
Time Base Accuracy	± 25 ppm	
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	Ch1, CH2, 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 : ± 0.6 V; EXT/5 : ± 3 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	2 ns – 4.2 s	
Resolution	1 ns	
Pulse Trigger		
Polarity	+ wid , -wid	
Limit Range	<, >, <>, ><	
Source	CH1 / CH2	
Pulse Range	2 ns – 4.2 s	
Resolution	1 ns	
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	
Interval Trigger		
Slope	Rising, Falling	
Limit Range	<, >, <>, ><	
Source	CH1 / CH2	
Time Range	2 ns – 4.2 s	
Resolution	1 ns	
Dropout Trigger		
TimeoutType	Edge, State	
Source	CH1 / CH2	
Slope	Rising, Falling	
Time Range	2 ns – 4.2 s	
Resolution	1 ns	
Runt Trigger		
Slope	+wid , -wid	
Limit Range	<, >, <>, ><	
Source	CH1 / CH2	
Time Range	2 ns – 4.2 s	
Resolution	1 ns	
Pattern Trigger		
Pattern Setting	Invalid, Low, High	
Logic	AND, OR, NAND, NOR	
Source	CH1 / CH2	
Limit Range	<, >, <>, ><	
Time Range	2 ns – 4.2 s	
Resolution	1 ns	

Technical Specification	SMO1102E	SMO1202E
Serial Trigger		
I2C Trigger		
Condition	Start, Stop, Restart, No Ack, EEPROM, 7 bits Address & Data, 10 bits Address & Data, Data Length	
Source (SDA/SCL)	CH1, CH2	
Data format	Hex	
Limit Range	EEPROM : =, >, <	
Data Length	EEPROM : 1 byte	
Addr & Data:	1 – 2 byte	
Data Length:	1 – 12 byte	
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	1 byte	
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)	600 / 1200 / 2400 / 4800 / 9600 / 19200 / 38400 / 57600 / 115200 bit/s	
(Custom)	300 bit/s – 334000 bit/s	
Can Trigger		
Condition	All, Remote, ID, ID + Data, Error	
Source	CH1, CH2	
ID	STD (11 bit), EXT (29 bit)	
Data Format	Hex	
Data Length	1 – 2 byte	
Baud Rate (Selectable)	5k / 10k / 20k / 50k / 100k / 125k / 250k / 500k / 800k / 1M bit/s	
Baud Rate (Custom)	5 kbit/s – 1 Mbit/s	
LIN Trigger		
Condition	Break, Frame ID, ID + Data, Error	
Source	CH1, CH2	
ID	1 byte	
Data Format	Hex	
Data Length	1 – 2 byte	
Baud Rate (Selectable)	600 / 1200 / 2400 / 4800 / 9600 / 19200 bit/s	
Baud Rate (Custom)	300 bit/s – 20 kbit/s	
Serial Decoder		
I2C		
Signal	SCL, SDA	
Address	7 bits, 10 bits	
List	1 – 7 lines	
Threshold Level	- 4.5 – 4.5 div	
SPI		
Signal	SCL, MISO, MOSI, CS	
Edge Select	Rising, Falling	
Idle Level	Low, High	
Bit Order	MSB, LSB	
Threshold Level	-4.5 – 4.5 div	
List	1 – 7 lines	

Technical Specification	SMO1102E	SMO1202E
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	
Can Decoder		
Signal	CAN_H, CAN_L	
Source	CAN_H, CAN_L, CAN_H-CAN_L	
Threshold	-4.5 – 4.5 div	
List	1 – 7 lines	
LIN Decoder		
Lin Specific Package Revision	Ver 1.3, Ver 2.0	
Threshold	-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		
	38 (Types)	
Vertical (Voltage)	Vmax, Vmin, Vpp, Vamp, Vtop, Vbase, Mean, Cmean, Stdev, Cstd, Vrms, Crms, FOV, FPPE, ROV, RPPE, Level@X	
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, Skew	
Cursors	Manual : Time X1, X2, (X1-X2), (1/ΔT), Voltage Y1, Y2, (Y1-Y2)	
Cursor Measurement	Manual, Auto, Track	
Statistics	Current, Mean, Min, Max, Std-Dev, Count	
Counter	Hardware 6 bits counter (channels are selectable)	
Math Functions		
FFT Window	Hanning, Hamming, Blackman, Rectangular	
FFT Display	Full Screen, Split	
Display (Waveform)		
Display Mode	Dot, Vector	
Persist	Off, 1 sec, 5 sec, 10 sec, 30 sec, 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	3.3 V TTL Output	
General Information		
Display Type	7.0 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, 50 / 60 / 400 Hz	
Power Consumption	25 W Max	
Dimension	W : 312 mm, D : 134 mm, H : 150 mm	
Weight	N.W : 2.5 Kg ; G.W : 3.5 Kg	
Accessories	1 : 1/1 : 10 Probes, Power cord, USB cable, CD	

Subject to Change

scientific

Scientific Mes-Technik Pvt. Ltd.

B-14, Pologround, Industrial Estate, Indore 452 015, India

☎ 0731-2422330 /31 /32 /33 📠 0731-2422334, 2561641 ✉ info@scientificindia.com 🏠 www.scientificindia.com



Bengaluru 080-23452635 ✉ bangalore@scientificindia.com
 Chennai 044-42054180 ✉ chennai@scientificindia.com
 Gujarat +919979308887 ✉ gujarat@scientificindia.com
 Hyderabad 040-27534995, 27534996 ✉ hyderabad@scientificindia.com

Kolkata 033-22282223-6 ✉ kolkata@scientificindia.com
 Mumbai +919820307693 ✉ mumbai@scientificindia.com
 New Delhi +919977994909 ✉ ndelhi@scientificindia.com
 Pune 020-25282882 ✉ pune@scientificindia.com