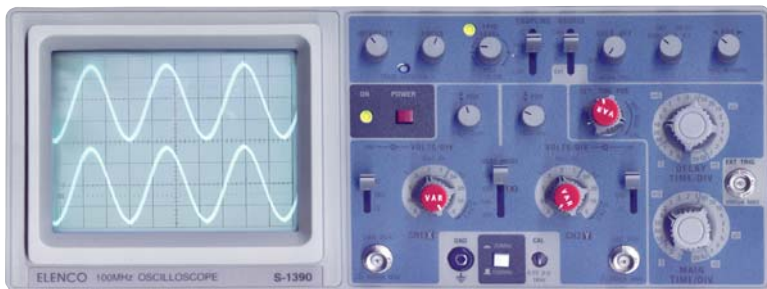


ANALOG OSCILLOSCOPES

100MHz Model S-1390

Delayed Sweep & Dual Trace



S-1390 Shown

60MHz Model S-1360

Delayed Sweep & Dual Trace

Features

- 1mV/DIV sensitivity
- Sweep to 2ns/DIV (S-1390), 10ns/DIV (S-1360)
- Component tester (S-1360 only)
- Z-axis input.
- Single sweep
- Beam finder (S-1360)
- Dust cover included
- 2 free x1, x10 probes

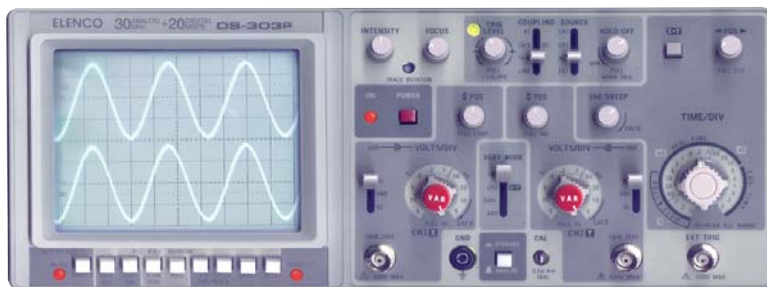
FREE DUST COVER & PROBES

All Scopes
UL, CSA,
TUV, GS
Approved

Specifications

Vertical Amplifiers (CH 1 and CH 2)	Horizontal Amplifier (continued)	Delayed Sweep	Component Tester (S-1360 only)																				
Sensitivity: 5mV/div - 5V/div (x1 mode) 1mV/div - 1V/div (x5 mode) Attenuator: 1-2-5 sequence, 10 step attenuator, plus vernier control. Rise time: 5.8ns (S-1360), 3.5ns (S-1390) Over shoot: Less than 5% Input impedance: 1MΩ ±2%, 25pF ±10pF Max. input voltage: 400V (DC + AC peak) Operating modes: CH 1, CH 2, DUAL (ALT or CHOP) and ADD Chop frequency: Approximately 500kHz Algebraic addition: CH 1 + CH 2, CH 1 - CH 2 Polarity reversal: CH 2 only	Bandwidth: DC - 1MHz (-3dB) X-Y phase difference: Approximately 3° at 50kHz Sweep System Sweep display mode: Main, Mix, Delay Hold off time: 5:1 continuously variable Main Sweep Sweep speed: S-1360: 0.1μs/div - 2s/div in 1-2-5 sequence, 23 steps. S-1390: 20ns/div - 0.5s/div in 1-2-5 sequence, 23 steps. Accuracy: ±3% Variable time control: 5:1, uncalibrated, continuously variable between steps. Sweep magnification: 10X, ±10%, extend sweep speed up to 10ns/div (S-1360). 10X, ±10%, extend sweep speed up to 2ns/div (S-1390).	Sweep speed: S-1360: 0.1μs/div - 2s/div in 1-2-5 sequence, 23 steps. S-1390: 20ns/div - 0.5s/div in 1-2-5 sequence, 23 steps. Accuracy: ±3% Delay time position: Variable control to locate desirable waveform for extending. Trigger Trigger coupling: AUTO, NORM, TV-V, TV-H (S-1360). AC, TV-V, TV-H, LINE (S-1390). Trigger source: CH 1, CH 2, ALT (V MODE), LINE, EXT. Slope: ± Trigger Sensitivity (S-1360 / S-1390) <table border="1"> <thead> <tr> <th>Coupling</th> <th>Bandwidth</th> <th>Internal</th> <th>External</th> </tr> </thead> <tbody> <tr> <td>TV-V</td> <td>DC - 1kHz</td> <td>1.0 div</td> <td>0.1Vpp</td> </tr> <tr> <td>TV-H</td> <td>1kHz - 100kHz</td> <td>1.0 div</td> <td>0.1Vpp</td> </tr> <tr> <td>AUTO</td> <td>100Hz-60/100MHz</td> <td>1.5 / 2.0 div</td> <td>0.1 / 0.2Vpp</td> </tr> <tr> <td>NORM</td> <td>100Hz-60/100MHz</td> <td>1.5 / 2.0 div</td> <td>0.1 / 0.2Vpp</td> </tr> </tbody> </table>	Coupling	Bandwidth	Internal	External	TV-V	DC - 1kHz	1.0 div	0.1Vpp	TV-H	1kHz - 100kHz	1.0 div	0.1Vpp	AUTO	100Hz-60/100MHz	1.5 / 2.0 div	0.1 / 0.2Vpp	NORM	100Hz-60/100MHz	1.5 / 2.0 div	0.1 / 0.2Vpp	Test voltage: Max. 6Vrms (open circuit) Test current: Max. 1mA (shorted) Test frequency: Line frequency Components: Capacitor, inductor, diode, transistor, zener, etc. CH 2 Output Output Level: 100mV/DIV (no load), 50mV/div (50Ω load). Bandwidth: 20Hz - 20MHz (-3dB). Other Specifications CRT: Type: Rectangular with internal graticule. Display area: 8 x 10 div (1 div = 1 cm) Accelerating voltage: 12kV (S-1360), 14kV (S-1390) Phosphor: P31 Z modulation: Positive TTL signal, low level blank intensity at any intensity, high level unblank any intensity. Trace rotation: Adjustable front panel Calibrator: Square wave 1kHz, 2.0Vpp ±3% (S-1360) Square wave 1kHz, 0.5Vpp ±3% (S-1390) Power requirements: 115, 230VAC ±10%, 50/60Hz Power consumption: Approximately 55 watts Dimensions: 5 1/4" (H) x 12 3/4" (W) x 15 5/8" (D) Net weight: S-1360: 17.2 lbs. (7.8kgs.) S-1390: 18.7 lbs. (8.5kgs.) Accessories supplied: Two x1, x10 probes, schematic diagram & parts list, AC power cord, spare fuse, and dust cover.
Coupling	Bandwidth	Internal	External																				
TV-V	DC - 1kHz	1.0 div	0.1Vpp																				
TV-H	1kHz - 100kHz	1.0 div	0.1Vpp																				
AUTO	100Hz-60/100MHz	1.5 / 2.0 div	0.1 / 0.2Vpp																				
NORM	100Hz-60/100MHz	1.5 / 2.0 div	0.1 / 0.2Vpp																				

DIGITAL STORAGE OSCILLOSCOPES



DS-303 Shown

All Scopes
UL, CSA,
TUV, GS
Approved

20MHz, 10Ms/s Model DS-203

30MHz, 20Ms/s Model DS-303

60MHz, 20Ms/s Model DS-603

Digital Storage / Analog Oscilloscopes

Features

- 2-channel.
- 2k Memory per channel.
- 1mV sensitivity.
- Internally backed-up memory (DS-603 & DS-303).
- RS-232 output (DS-603 & DS-303).
- Dust cover included.
- 2 free x1, x10 probes.

FREE DUST COVER & PROBES

Specifications

Vertical Amplifiers (CH 1 and CH 2)	Horizontal Amplifier	Trigger Sensitivity (DS-203 / DS-303 / DS-603)	Digital Storage Facilities (continued)																												
Sensitivity: 5mV-5V/DIV ±3% (x1 mode) 1mV-1V/DIV ±5% (x5 mode) Attenuator: 1-2-5 sequence, 10-step attenuator, plus vernier control. Bandwidth: DS-203: DC to 20MHz within -3dB DS-303: DC to 30MHz within -3dB DS-603: DC to 60MHz within -3dB Rise time: DS-203: 17.5ns DS-303: 11.7ns DS-603: 5.8ns Over shoot: 3% or less Input impedance: 1MΩ shunted by 25pF ±10pF Max. input voltage: 400V (DC + AC peak) Operating modes: CH 1, CH 2, DUAL (ALT or CHOP) and ADD. Chop frequency: Approximately 500kHz Polarity selection: CH 2 only	X-Y mode: Switch selectable using X-Y switch CH 1: X-axis CH 2: Y-axis Accuracy: Y-axis ±3% X-axis ±6% Bandwidth: DC - 2MHz (-3dB) (DS-603) DC - 1MHz (-3dB) (DS-203 & 303) X-Y phase difference: Approximately 3° at 50kHz Main Sweep Sweep speed: 0.1μs/div - 0.5s/div in 1-2-5 sequence, 21 steps. Accuracy: ±3% Sweep magnification: 10X ±6% (DS-203 & 303) 10X ±10% (DS-603) Hold off time: Variable up to 5 times sweep Trigger Trigger coupling: AC, TV-V, TV-H, LINE Trigger source: CH 1, CH 2, ALT (V-MODE), EXT Slope: ±	<table border="1"> <thead> <tr> <th>Coupling</th> <th>Bandwidth</th> <th>Internal</th> <th>External</th> </tr> </thead> <tbody> <tr> <td>AC (203)</td> <td>30Hz - 30MHz</td> <td>1.0 div</td> <td>0.5Vpp</td> </tr> <tr> <td>AC (303)</td> <td>30Hz - 40MHz</td> <td>1.0 div</td> <td>0.5Vpp</td> </tr> <tr> <td>AC (603)</td> <td>30Hz - 60MHz</td> <td>2.0 div</td> <td>0.5Vpp</td> </tr> <tr> <td>TV-V</td> <td>20Hz - 30kHz</td> <td>0.5 div</td> <td>0.5Vpp</td> </tr> <tr> <td>TV-H</td> <td>3kHz - 100kHz</td> <td>0.5 div</td> <td>0.5Vpp</td> </tr> <tr> <td>LINE</td> <td>DC - 30MHz</td> <td>1.5 div</td> <td>1.0 Vpp</td> </tr> </tbody> </table> Digital Storage Facilities Memory: 2k words per channel (2 x 2048 x 8-bit). Internally backed-up memory (DS-303/603). Realtime sampling rate: DS-203: 10Msamples/s DS-303: 20Msamples/s DS-603: 20Msamples/s Vertical resolution: 8-bit (25 level/div) Horizontal resolution: 2,048 points for 10 div	Coupling	Bandwidth	Internal	External	AC (203)	30Hz - 30MHz	1.0 div	0.5Vpp	AC (303)	30Hz - 40MHz	1.0 div	0.5Vpp	AC (603)	30Hz - 60MHz	2.0 div	0.5Vpp	TV-V	20Hz - 30kHz	0.5 div	0.5Vpp	TV-H	3kHz - 100kHz	0.5 div	0.5Vpp	LINE	DC - 30MHz	1.5 div	1.0 Vpp	Operating mode: Roll, save ALL, save CH-2, X-Y, single, pre-trig (0%, 25%, 50%, 75%), plot out. Bandwidth: Same as analog Output: DS-203: CH1/CH2 0.2V/div. DS-303/DS-603: RS-232: 4800, no parity, 8-bit, 1 stop. Plot: Epson (24-pin) compatible printer (DS-203,303) Other Specifications CRT: Type: Rectangular with internal graticule Display area: 8 x 10 div (1 div = 1 cm) Accelerating voltage: 2.1kV (DS-203/303) 12kV (DS-603) Phosphor: P31 Trace rotation: Adjustable front panel Calibrator: Square wave 1kHz, 0.5Vpp ±3% Power requirements: 115, 230VAC ±10%, 50/60Hz Power consumption: Approximately 60 watts Dimensions: 5 1/4" (H) x 12 3/4" (W) x 15 5/8" (D) Net weight: 18 lbs. 11.2 oz. (8.5kgs.) Accessories supplied: User manual, Two x1, x10 probes, AC power cord, spare fuse, and dust cover.
Coupling	Bandwidth	Internal	External																												
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