1-1. SPECIFICATIONS

SPEC. \ MODEL	OS-9020A	OS-902RB	OS-9040D	OS-904RD
*CRT				
1) Configuration	6-inch rectangular screen with internal graticule; 8x10 Div (1div=1Cm), marking for measurement of rise time. 2mm subdivisions along the central axis.			
2) Accelerating potential	+1.9KV approx.(ref.cathode)		+11.5KV approx.(ref.cathode)	
3) Phosphor	P31(standard)			
4) Focussing	possible	possible(with autofocus corre -ction circuit)	possible	possible(with autofocus corre -ction circuit)
5) Trace rotation	provided			
6) Scale illumination	none	variable		
7) Intensity control	provided			
*Z-Axis input (Intensity Modulation)				
1) Input signal	Positive going signal decreases intensity +5Vp-p or more signal cases noticeable modulation at normal intensity settings.			
2) Band-width	DC - 2MHz (−3dB)			
3) Coupling	DC			
4) Input impedance	20K - 30K ohms			
5) Maximum input voltage	30V(DC+pcak AC)			
*Vertical Deflection(1)				
1) Band-width(−3dB) DC coupled	DC to 20MHz normal DC to 7MHz magnified		DC to 40MHz normal DC to 7MHz magnified	
AC coupled	10Hz to 20MHz normal 10Hz to 7MHz magnified		10Hz to 40MHz normal 10Hz to 7MHz magnified	
2) Modes	CH1, CH2, ADD, DUAL (CHOP : Time/div switch 0.2s~5mS, ALT : Time/div switch 2mS ~ 0.2uS)			
3) Deflection Factor	5mV/div to 5V/div in 10 calibrated steps of a 1-2-5 sequence. Continuously variable between steps at least 1 : 2.5 ×5 MAG : 1mV/div to 1V/div in 10 calibrated steps.			
4) Accuracy	normal : ± 3%		magnified : ± 5%	
5) Input impedance	approx. 1M-ohm in parallel with 25pF			
6) Maximum input voltage	Direct : 300V(DC+peak AC), with probe : refer to probe specification			
7) Input coupling	DC - GND - AC			

<table>
<tr><td>SPEC. \ MODEL</td><td>OS-9020A</td><td>OS-902RB</td><td>OS-9040D</td><td>OS-904RD</td></tr>
<tr><td>8) Rise time</td><td colspan="2">17.5nS or less(50nS or less : x5 MAG)</td><td colspan="2">8.8nS or less(50nS or less : x5 MAG)</td></tr>
<tr><td>9) CH1 out</td><td colspan="4">20mV/div into 50 ohms : DC to 10MHz(−3dB)</td></tr>
<tr><td>* Vertical Deflection(2)
10) Polarity invertion</td><td colspan="4">CH2 only</td></tr>
<tr><td>11) Signal delay</td><td colspan="2">none</td><td colspan="2">delay cable supplied</td></tr>
<tr><td>* Horizontal Deflection
1) Display modes</td><td>A, X-Y</td><td colspan="3">A, A int B, B, B TRIG'D, X-Y</td></tr>
<tr><td>2) Time base A</td><td colspan="4">0.2us/div to 0.2S/div in 19 calibrated steps, 1-2-5 sequence, uncalibrated continuous control between steps at least 1 : 2.5</td></tr>
<tr><td>Hold-off time</td><td colspan="4">Variable with the holdoff control</td></tr>
<tr><td>3) Time base B</td><td>none</td><td colspan="3">0.2us/div to 0.2uS/div in 7 calibrated steps 1-2-5 sequence</td></tr>
<tr><td>Delayed sweep</td><td>none</td><td colspan="3">1 div or less 10 div or more</td></tr>
<tr><td>Delay time jitter</td><td>none</td><td colspan="3">better than 1 : 20000</td></tr>
<tr><td>4) Sweep magnification</td><td colspan="4">10 times(maximum sweep rate : 20nS/div)
Note : 50nS/div, 20nS/div of A TIME BASE are uncalibrated.</td></tr>
<tr><td>5) Accuracy</td><td colspan="4">± 3%, ± 5%(0℃ to 50℃), additional error for magnifier ± 2%</td></tr>
<tr><td>* Trigger System
1) Modes</td><td colspan="4">auto, norm, TV-V, TV-H</td></tr>
<tr><td>2) Source</td><td colspan="4">CH1, CH2, LINE, EXT</td></tr>
<tr><td>3) Coupling</td><td colspan="4">AC</td></tr>
<tr><td>4) Slope</td><td colspan="4">+ or −</td></tr>
<tr><td>5) Sensitivity and Frequency

AUTO, NORM</td><td colspan="4"><table><tr><td></td><td>20Hz-2MHz</td><td>2MHz-20MHz</td></tr><tr><td>INT</td><td>0.5 div</td><td>1.5 div</td></tr><tr><td>EXT</td><td>0.2 Vp-p</td><td>0.8 Vp-p</td></tr></table></td><td colspan="2"><table><tr><td></td><td>20Hz-2MHz</td><td>2MHz-40MHz</td></tr><tr><td>INT</td><td>0.5 div</td><td>1.5 div</td></tr><tr><td>EXT</td><td>0.2 Vp-p</td><td>0.8 Vp-p</td></tr></table></td></tr>
<tr><td>TV-V, TV-H</td><td colspan="4">at least 1 div or 1.0Vp-p</td></tr>
<tr><td>6) External trigger
Input impedance</td><td colspan="4">1 M-ohm in pararall with approx. 30pF</td></tr>
<tr><td>Max. input voltage</td><td colspan="4">300V(DC+paek AC)</td></tr>
</table>

SPEC. / MODEL	OS-9020A	OS-902RB	OS-9040D	OS-904RD
* X-Y Operation 1) X-axis	(same as CH1 except for the following) Deflection factor : same as that of CH1 Accuracy : ± 5% Frequency response : DC to 500KHz(−3dB)			
2) Y-axis	same as CH2			
3) X-Y phase defference	3° or less (at DC to 50KHz)			
* Readout Function (OS-902RB, OS-904RD only) 1) Cursor readout	voltage reference △V : △ - REF Time reference △T : △ - REF Frequency reference 1/△T : △ - REF Note : △V, △T changed △X, △Y when the X-Y mode.			
2) Panel setting displays	Vertical axis(CH1, CH2) : V/DIV, UNCAL, MAG (converted value) Note : displayed when the vertical mode is. CH1, CH2, DUAL not display when the ADD, B mode Horizontal axis : S/DIV, UNCAL, MAG(converted value)			
3) Effective cursor range from center graticule	Vertical : within± 3 div Horizontal : within± 4 div			
4) Resolution	1/25 div			
* Calibrator(probe adj.)	approx. 1KHz frequency, 0.5V(± 3%)squar wave duty ratio : 50%			
* Power Supply 1) Voltage range	voltage range / fuse 100(90 - 110V)/AC / 1A250V 120(108 - 132V)/AC / 1A250V 220(198 - 242V)/AC / 0.5A250V 240(216 - 250V)/AC / 0.5A250V			
2) Frequency	50/60Hz			
3) Power consumption	approx. 35W	approx. 45W	approx. 45W	approx. 50W
* Physical Charac. 1) Weight	5.3Kg	5.5Kg	5.7Kg	6.0Kg
2) Dimension	320mm(W)×140mm(H)×430mm(L)			
* Environmental Charac. 1) Temperature range for rated operation	+10℃ to +35℃(+50°F to +95°F)			
2) Max.abmient operating temperature	0℃ to +40℃(+32°F to +104°F)			
3) Max.storage temerature	−20℃ to +70℃(−4°F to +158°F)			

SPEC. / MODEL	OS-9020A	OS-902RB	OS-9040D	OS-904RD
4) Humidity range for rated operation	45% to 85% RH			
5) Max.ambient operating humidity	35% to 90% RH			
* Accessories	1) Operation Manual : 1 2) Probes : 2 3) Fuse : 1 4) AC Power Cord : 1			

1-2. PRECAUTIONS

1-2-1. Line Voltage Selection

This instument must be operated with the correct Line Voltage Selector switch setting and the correct line fuse for the line voltage selected to prevent damage. The instrument operates from either a 90 to 130 volts or a 198 to 250 volt line voltage source. Before line voltage is applied to the instrument, make sure the Line Voltae Selector switch is set correctly.

To change the line voltage selection :

1. Make sure the instrument is disconnected from the power source.
2. Pull out the Line Voltage Selector switch on the rear panel. Select the arrow mark position of the switch from Table 1-1. Slide the arrow mark to the desired position and plug it in.
3. Pull out the Line Fuse Holder containing the fuse for overload protection. Replace the fuse in the holder with the correct fuse from Table 1-1 and plug it in.

Table 1-1. Line Voltage Selection and Fuse Ratings

Line Voltage	Arrow Mark Position	Fuse Ratings
90 to 107 volts	A	2A 125V
108 to 130 volts	B	2A 125V
198 to 230 volts	C	1A 250V
231 to 250 volts	D	1A 250V