

TEK 500 MHz GENERAL PURPOSE OSCILLOSCOPES

7904 R7903

500 MHz at 10 mV/div

0.8 ns Risetime

500 ps/div Fastest
Calibrated Sweep Rate

Greater Than 15 cm/ns Enhanced
Writing Speed

CRT Readout

Over 30 Compatible Plug-ins

900 MHz FET Probe Available

APPLICATIONS

Digital Design

Radar

Laser Research



The 7904 and 5.25 in rackmount R7903 are high bandwidth, general-purpose oscilloscopes. The 7A19 Amplifier/7904 Mainframe attains 500 MHz at 10 mV/div. A 7A19 variable delay option allows for the matching of signal transit times of two plug-ins and their probes to better than 50 ps.

The PB201 1X FET probe gives you high impedance and wide bandwidth. It has a 900 MHz bandwidth by itself, and in combination with the 7A19/7904, it provides a system bandwidth of 450 MHz at 10 mV.

The CRT, the major contributor to the performance of the 7904 and R7903, has good visual brightness and an 8 x 10 cm display area.

7904 and R7903 — VERTICAL SYSTEM

Channels — Two left-hand plug-in compartments: compatible with all 7000 Series Plug-ins. Bandwidth determined by mainframe and plug-in unit.

Modes of Operation — LEFT, ALT, ADD, CHOP, RIGHT.

Chopped Mode — Repetition rate is ~1 MHz.

Trace Separation Range (Dual-sweep Modes) — The B trace can be positioned 4 divisions above or below the A trace (7904 only).

Delay Line — Permits viewing leading edge of displayed waveform when using 7B80 and 7B90 Series Time Bases. 7B50 Series not recommended.

7904 — HORIZONTAL SYSTEM

Channels — Two right-hand plug-in compartments: compatible with time bases of the 7B80 and 7B90 Series. 7000 Series Vertical Amplifiers and specialized plug-ins may also be used.

Fastest Calibrated Sweep Rate — 500 ps/div with the 7B92A.

Chopped Mode — Repetition rate is ~200 kHz.

X-Y Mode — Phase shift is within 2° from dc to 35 kHz without phase correction (dc to 1 MHz with phase correction, Option 02) between vertical and horizontal channels. Bandwidth is dc to at least 1 MHz.

R7903 — HORIZONTAL SYSTEM

Single Channel — Right-hand plug-in compartment compatible with time bases of 7B80 and 7B90 Series. 7000 Series Vertical Amplifiers and specialized plug-ins may also be used.

Fastest Calibrated Sweep Rate — 500 ps/div with the 7B92A.

7904 and R7903

CRT AND DISPLAY FEATURES

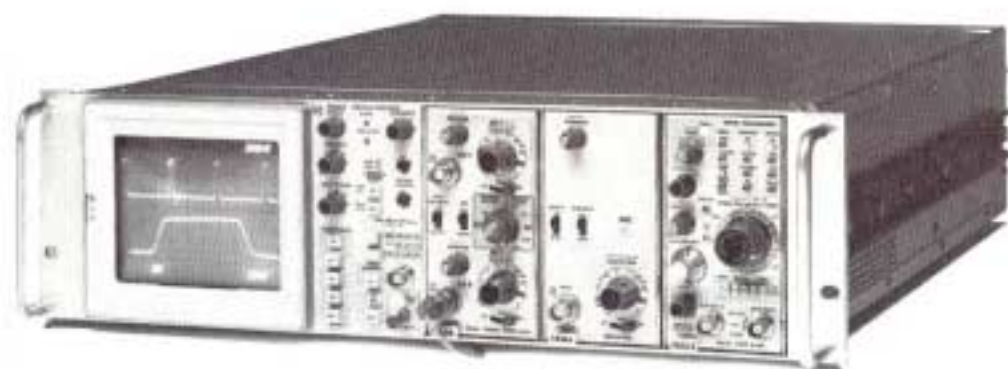
Standard — Internal 8 x 10-cm graticule with variable illumination. Accelerating potential is 24 kV with P31 Phosphor standard.

Option 01, Without CRT Readout — No CRT readout.

Option 04, Max Brightness CRT With Reduced Area — Internal 4 x 5 cm graticule with variable illumination. Accelerating potential is 24 kV. P11 Phosphor provides max writing rate. This provides extremely high photographic and intimation writing speed and increases the visibility of low-rep-rate, high-speed signals.

Option 7B, P11 Phosphor

Option 10, Pulsed Graticule (R7903 Only) — Provides a means of pulsing the graticule lights at a preset level coincident with a single-shot event in one exposure. The graticule lights may be pulsed by the event, an external ground closure, or a front panel pushbutton. If the mainframe is equipped with CRT readout, Option 10 provides additional controls and inputs for CRT readout pulsed operation.



The R7903 requires only 5.25 in of rack height in a standard 19 in rack. It is fan-cooled and comes complete with slide-out chassis tracks.

Typical Photographic Writing Speed Using The Optional P11 Phosphor and Polaroid Type 612 20,000 ASA Film without Film Fogging

CRT	Camera	Lens	Writing Speed cm/ns
Standard 8 x 10 cm	C-51P	1/1.2	2.5
Option 04 4 x 5 cm		1:0.5	4

In typical applications, P31 Phosphor has approximately one-half the writing speed of P11 Phosphor. The writing speed can be increased by using controlled film fogging with a writing speed enhancer (camera accessory).

Autofocus — Reduces the need for additional manual focusing with changes in intensity after focus control has been set.

Beam Finder — Limits display within graticule area.

Internal Z-Axis Input — 2 V p-p for full intensity range. A positive signal blanks the trace. Max input voltage is 15 V (dc + peak ac) and p-p ac. Input is dc coupled.

7904 — CALIBRATOR

Output Waveshape — Rectangular positive-going from ground, 1 kHz ($\pm 0.25\%$), dc or B Gate -2.

Voltage Ranges — 4 mV, 40 mV, 0.4 V, 4 V, 40 V into an open circuit; 2 mV, 20 mV, 0.2 V, 0.4 V into 50 Ω ($\pm 1\%$).

Current Output — 40 mA dc or 1 kHz.

R7903 — CALIBRATOR

(Not Available with Option 10)

Output Waveshape — Rectangular positive-going from ground, 1 kHz ($\pm 0.25\%$).

Voltage Ranges — 4 mV, 40 mV, 0.4 V, 4 V into an open circuit; 4 mV, 40 mV, 0.4 V into 50 Ω ($\pm 1\%$).

Current Output — 40 mA rectangular waveshape with optional current-loop accessory (012-0341-00) connected to calibrator output. Output R is 450 Ω .

7904 — OUTPUTS/INPUTS

+Sawtooth — Sawtooth starts 1 V or less from ground (into 1 M Ω). Internally selectable from A or B horizontal. Output voltage is 50 mV/div ($\pm 5\%$) into 50 Ω , 1 V/div ($\pm 10\%$) into 1 M Ω . Output R is $\sim 950 \Omega$.

+GATE — Positive-going rectangular waveform derived from A, B, or Delayed Gate, internally selectable. Output voltage is 0.5 V ($\pm 10\%$) into 50 Ω , 10 V ($\pm 10\%$) into 1 M Ω . Rise time is 5 ns or less into 50 Ω . Output R is $\sim 950 \Omega$.

Sig Out — Selected by B TRIGGER SOURCE switch. Output voltage is 25 mV/div into 50 Ω , 0.5 V/div into 1 M Ω . Bandwidth depends upon vertical plug-in. See the Vertical System Specifications Chart. Output R is $\sim 950 \Omega$.

Camera Power — Three-prong connector to the left of the CRT provides power, ground, and remote single-sweep reset access for C-50 Series Cameras.

Probe Power — Two rear-panel connectors provide correct operating voltages for two active probes.

R7903 — OUTPUTS/INPUTS

(Standard)

+Sawtooth — Sawtooth starts 1 V or less from ground (into 1 M Ω). Output voltage is 50 mV/div ($\pm 15\%$) into 50 Ω , 1 V/div ($\pm 10\%$) into 1 M Ω . Output R is $\sim 950 \Omega$.

+Gate — Positive-going rectangular waveform derived from Main or Auxiliary Gate. Output voltage 0.5 V ($\pm 10\%$) into 50 Ω , 10 V ($\pm 10\%$) into 1 M Ω . Rise time is 7 ns or less into 50 Ω . Output R is $\sim 950 \Omega$.

Sig Out — Selected by TRIGGER SOURCE switches. Output voltage is 25 mV/div into 50 Ω , 0.5 V/div into 1 M Ω . Bandwidth depends on the vertical plug-in. See the Vertical System Specifications Chart. Output R is $\sim 950 \Omega$.

Single-sweep Ready Indicator — +5 V, rear panel BNC output, for single-sweep ready indication.

External Single-sweep Reset — Ground closure, rear panel BNC, provides input to reset sweep.

CRT Readout, Inhibit — Ground closure, rear panel BNC input locks out CRT readout. Not available with Option 10.

CRT Readout, Single-shot — Ground closure, rear panel BNC input initiates one frame of CRT readout. Not available with Option 10 separately, but in combination with the pulsed graticule input.

Camera Power — Three-prong connector to the left of the CRT provides power, ground, and remote single-sweep reset access for C-50 Series Cameras.

Probe Power — Two front-panel connectors provide correct operating voltages for two active probes. Not available for R7903 Option 10.

R7903 — OUTPUTS/INPUTS OPTIONS

Option 10, Pulsed Graticule — No CRT readout single-shot input, CRT readout inhibit input, calibrator, and probe power. Single-shot graticule and CRT readout (ground closure) rear-panel BNC input is added. Initiates one frame of CRT readout and pulses graticule. CRT readout inputs are not functional with Option 01.

POWER REQUIREMENTS

7904 Power Requirements — Line voltage ranges, 90 to 132 V ac and 180 to 254 V ac. Line frequency, 48 to 440 Hz. Max power consumption, 190 W, 2.5 A at 115 V line, 60 Hz.

R7903 Power Requirements — Line voltage ranges, 90 to 132 V ac and 180 to 254 V ac. Line frequency, 48 to 440 Hz. Max power consumption, 160 W, 2 A at 115 V line, 60 Hz.

7904 Included Accessories — Test adapter (012-0092-00), two 18 in test leads (012-0087-00), 9 pin cable-mount plug (134-0049-00).

R7903 Included Accessories — Test adapter (012-0092-00), two 18 in test leads (012-0087-00), rack-mounting hardware.

Dimensions and Weights — See page 153.

For Recommended Cameras — See page 154.

For Recommended Plug-ins — See page 152.

7904 ORDERING INFORMATION

(Plug-ins not included)

7904 Oscilloscope

7904 OPTIONS

Option 01 without CRT Readout

Option 02 X-Y Horiz Comp

Option 03 Emc Modification

Option 04 Max Brightness CRT with 4x5 cm Display (Specify Phosphor)

Option 78 P11 Phosphor

7904 CONVERSION KITS

040-0605-00 CRT Readout

040-0606-00 X-Y Horiz Comp

040-0670-00 Emc Modification

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 Universal Euro 220 V/16A

Option A2 UK 240 V/13A

Option A3 Australian 240 V/10A

Option A4 North American 240 V/15A

R7903 ORDERING INFORMATION

(Plug-ins not included)

R7903 Oscilloscope

R7903 OPTIONS

Option 01 without CRT Readout

Option 03 Emc Modification

Option 04 Max Brightness CRT with 4x5 cm Display (Specify Phosphor)

Option 10 Pulsed Graticule

Option 78 P11 Phosphor

R7903 CONVERSION KITS

040-0505-00 CRT Readout

040-0547-00 Emc Modification

INTERNATIONAL POWER CORD AND PLUG OPTIONS

Option A1 Universal Euro 220 V/16A

Option A2 UK 240 V/13A

Option A3 Australian 240 V/10A

Option A4 North American 240 V/15A