



OSCILLOSCOPES

and

ASSOCIATED INSTRUMENTATION

for **PRECISE**

Measurements in Research and Industry



CUSTOMER ASSISTANCE

United States & Canada—Tektronix maintains and offers to you the services of Field Engineering Offices staffed by thoroughly-trained Tektronix personnel in 35 cities.

Overseas—Tektronix is represented by qualified Engineering Organizations in 35 cities located in 24 overseas countries.

Tektronix, Inc.
Abridged Catalog

January 1961

In addition to a fast-rise vertical-deflection system and high-speed sweeps, these two Tektronix Oscilloscopes have dc-coupling, high sensitivity, slow sweeps, and versatile triggering needed for most general-purpose laboratory work.

The vertical amplifier used in the Type 581 and Type 585 requires a new kind of plug-in unit, the Type 80. Tektronix Type A to Z Units can be used in these instruments when used with the Type 81 Plug-In Adapter.

Passband—DC to approximately 100 MC.

Sensitivity—Basic deflection factor 0.1 v/cm with Type 80 Plug-In Preamplifier and P80 Probe.

Versatility—Designed for plug-in preamplifiers.

Triggered (jitter free)—delayed sweep is started after the delay period by the signal under observation.

Conventional—delayed sweep is started at the end of the delay period by the delayed trigger.

Range—1 μ sec to 10 sec, continuously adjustable (2 μ sec/cm to 1 sec/cm).

TIME BASE A—50 nsec/cm to 2 sec/cm in 24 calibrated steps, continuously variable from 50 nsec/cm to 5 sec/cm. 5-x magnifier increases calibrated range to 10 nsec/cm. Single-sweep provision for one-shot applications.

TIME BASE B—Also functions as delay generator. 18 calibrated steps from 2 μ sec/cm to 1 sec/cm.

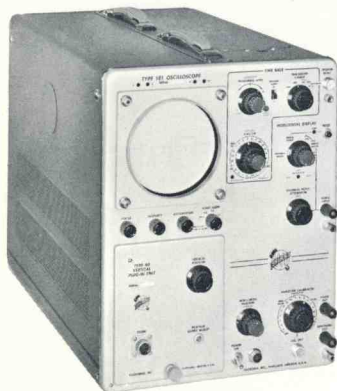
Amplitude-level selection with either preset or manual stability control.



Lumped-constant traveling-wave crt provides 4-cm by 10-cm display area.

Square wave, 18 steps from 0.2 mv to 100 v, frequency about 1 kc.

Price, without plug-in units \$1675.



Same as Type 585, except that it does not have TIME BASE B or provision for sweep delay.

Price, without plug-in units \$1375.

Designed especially for the Type 585 and 581 Oscilloscopes, the Type 80 Plug-In Unit and Type P80 Probe couple the signal to the oscilloscope.

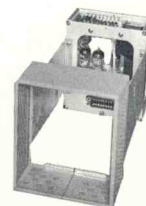


Type 80 Plug-In Preamplifier \$50.

Type P80 Probe with 2-x, 5-x, 10-x, 20-x, and 50-x attenuator heads \$100

Fits the Type 580, 581 preamplifier compartment and accepts any Tektronix A to Z Plug-In Unit and retains the passband and sensitivity of the plug-in unit.

Price \$125.



OSCILLOSCOPES WITH PLUG-IN PREAMPLIFIERS

Inherent characteristics of these Tektronix Oscilloscopes permit their conversion to many specialized applications through the use of interchangeable plug-in units. Initial selection can include the Plug-In Units best suited to current requirements. When greater versatility becomes desirable, other available Type A to Z Plug-In Units can be added at moderate cost to expand the application area.

The rack-mount types are attached to the cabinet on slide-out racks for servicing convenience. Dimensions—14" high, 19" wide, 22½" rack depth.

TYPE 545A FAST-RISE OSCILLOSCOPE with Sweep Delay

VERTICAL SPECIFICATIONS

DC-to-30 mc passband, 12-nsec risetime, 50-mv/cm deflection factor with Type K Plug-In Preamplifier.

Type A to Z Plug-In Units available for specialized applications.

Signal delay permits observation of leading edge of waveform that triggers the sweep.

HORIZONTAL SPECIFICATIONS

Two Time-Base Generators—

Time Base A—0.1 μ sec/cm to 5 sec/cm in 24 calibrated steps.

Continuously adjustable from 0.1 μ sec/cm to 12 sec/cm.

5-x magnifier increases calibrated range to 20 nsec/cm.

Single sweep provision for one-shot applications.

Time Base B—Also functions as delay generator. 2 μ sec/cm to 1 sec/cm in 18 calibrated steps.

Sweep Delay—Two modes of operation

Triggered—Delayed sweep started after the delay period by the signal under observation. Steady display, even of signals with inherent jitter.

Conventional—Delayed sweep started at the end of the delay period by the delayed trigger. Time jitter less than one part in 20,000.

Delay range—1 μ sec to 10 sec in 18 calibrated ranges, each range divisible into 1000 parts by 10-turn control with incremental accuracy within 0.2%.

OTHER CHARACTERISTICS

10-KV Accelerating Potential—4-cm by 10-cm display.

Dual-Trace Blanking—Eliminates switching transients from display when dual-trace unit is operated in its chopped mode.

Amplitude Calibrator—0.2 mv to 100 v.



TYPE 541A FAST-RISE OSCILLOSCOPE

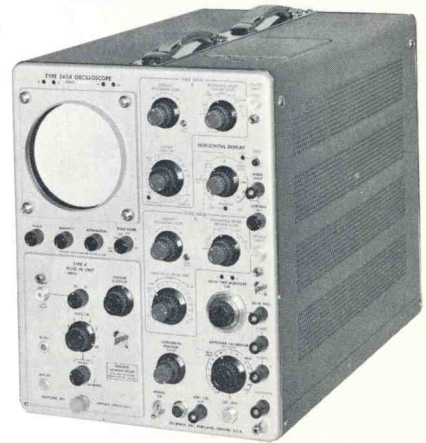
Same as Type 545A, except that it does not have Time Base B or provisions for sweep delay or single sweeps.

Price—Type 541A, without plug-in units \$1200.

TYPE RM41A OSCILLOSCOPE

Electrically identical to the Tektronix Type 541A.

Price, without plug-in units \$1300.



Electronically-Regulated Power Supplies.

Price—Type 545A, without plug-in units \$1550.



TYPE RM45A OSCILLOSCOPE

Electrically identical to the Tektronix Type 545A.

Price, without plug-in units \$1650.

TYPE 535A WIDE-BAND OSCILLOSCOPE with Sweep Delay

Same specifications as Type 545A, except for main vertical amplifier.

DC-to-15 MC passband, 23-nsec risetime, 50-mv/cm deflection factor with Type K Plug-In Preamplifier, 6-cm by 10-cm display.

Price—Type 535A, without plug-in units \$1400.

TYPE RM35A OSCILLOSCOPE

Electrically identical to the Tektronix Type 535A.

Price, without plug-in units \$1200.

TYPE 531A WIDE-BAND OSCILLOSCOPE

Same as Type 535A except that it does not have Time Base B or provisions for sweep delay or single sweeps.

Price—Type 531A, without plug-in units \$995.

TYPE RM31A OSCILLOSCOPE

Electrically identical to the Tektronix Type 531A.

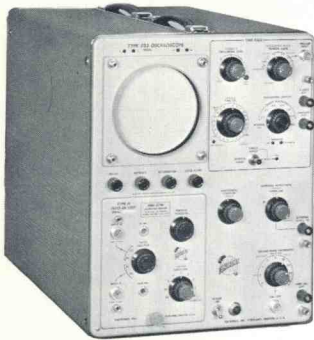
Price, without plug-in units \$1095.



OSCILLOSCOPES WITH PLUG-IN PREAMPLIFIERS

Inherent characteristics of these Tektronix Oscilloscopes permit their conversion to many specialized applications through the use of interchangeable plug-in units. Initial selection can include the Plug-In Units best suited to current requirements. When greater versatility becomes desirable, other available Type A to Z Plug-In Units can be added at moderate cost to expand the application area.

The rack-mount types are attached to the cabinet on slide-out racks for servicing convenience. Dimensions—14" high, 19" wide, 22 1/2" rack depth.



TYPE 533 OSCILLOSCOPE

High Performance

DC to 15 MC, 23-nsec Risettime with Fast-Rise Plug-In Preamplifier Units.
0.2 μ sec Signal Delay.
20 nsec/cm to 15 sec/cm Sweep Range.

Easy Operation

24 Calibrated direct-reading sweep rates, 0.1 μ sec/cm to 5 sec/cm.

Sweep Magnification—2, 5, 10, 20, 50, and 100 times.
Preset Triggering—Eliminates triggering adjustments in most applications.
Single-Sweep Operation—Lockout-reset circuitry for one-shot recording.

High Writing Rate

250 cm/ μ sec—10-kv accelerating potential assures bright trace for single sweeps and low repetition rates. 6-cm by 10-cm viewing area.

Electronically-Regulated Power Supplies.

Price, without plug-in units \$1100.

TYPE RM33 OSCILLOSCOPE

Electrically identical to the Tektronix Type 533.

Price, without plug-in units \$1200.



TYPE 543 OSCILLOSCOPE

DC to 30 MC, 12-nsec Risettime with Fast-Rise Plug-In Preamplifier Units.
4-cm by 10-cm Viewing Area.
All other characteristics same as Type 533.

Price, without plug-in units \$1275.

TYPE RM43 OSCILLOSCOPE

Electrically identical to the Tektronix Type 543.

Price, without plug-in units \$1375.



TYPE 532 OSCILLOSCOPE

DC to 5 MC Main Vertical Amplifier
70-nsec Risettime with Wide-Band Plug-In Preamplifier Units.

Sweep Range

21 calibrated sweep rates from 1 μ sec/cm to 5 sec/cm. 5-x magnifier extends calibrated range to 0.2 μ sec/cm. Continuously variable from 0.2 μ sec/cm to 12 sec/cm.

Triggering

Amplitude-level selection with preset or manual stability control, and fully-automatic triggering.

TYPE 536 "X-Y" OSCILLOSCOPE

Identical Horizontal and Vertical Main Amplifiers

DC to 10 MC, both amplifiers, with Type G Differential Plug-In Preamplifiers.

Less than 1° relative phase difference from dc to 15 mc. Phase balance can be obtained at any one frequency to over 25 mc.

Converts to general-purpose oscillo-

scope with Type T Time-Base Unit plugged into horizontal amplifier.

4-KV Accelerating Potential

10 by 10 division viewing area.

Amplitude Calibrator

0.2 mv to 100 v in 18 steps. Square wave, frequency about 1 kc.

Electronically-Regulated Power Supplies.

Price, without plug-in units \$1050.

4-KV Accelerating Potential

8 by 10 cm linear display.

Amplitude Calibrator

0.2 mv to 100 v in 18 steps. Square wave, frequency about 1 kc.

Electronically-Regulated Power Supplies.

Price, without plug-in units \$875.

TYPE RM32 OSCILLOSCOPE

Electrically identical to the Tektronix Type 532.

Price, without plug-in units \$975.



DUAL-BEAM OSCILLOSCOPES

TYPE 551 DUAL-BEAM OSCILLOSCOPE with Common X and Independent Y Deflection

Wide-Band Main Vertical Amplifiers

Passbands—dc to 25 mc with Type K Units.
Risetimes—14 nsec with Type K Units.
0.2- μ sec Signal Delay.
All Tektronix Type A to Z Plug-In Units can be used in both channels for signal-handling versatility.

Wide Sweep Range

24 calibrated steps from 0.1 μ sec/cm to 5 sec/cm. 5-x magnifier increases calibrated range to 20 nsec/cm.
Lockout-reset circuitry for one-shot sweep applications.

Complete Triggering

Fully automatic, or amplitude-level selection with preset or manual stability control.

10-KV Accelerating Potential

Bright display for fast sweeps and low repetition rates.
4-cm by 10-cm display for each beam, with 2-cm overlap.



Separate Power Supply

Electronically regulated.

Price, without plug-in units \$1800.

Includes Indicator Unit, Power Supply Unit, 4 Probes.



TYPE 555 DUAL-BEAM OSCILLOSCOPE with Independent X and Y Deflection

Independent Electron Beams

Separate vertical and horizontal deflection of both beams.

Fast-Rise Main Vertical Amplifiers

Passbands—dc to 30 mc with Type K Units.
Risetimes—12 nsec with Type K Units.
0.2- μ sec Signal Delay.

All Tektronix Type A to Z Plug-In Units can be used in

both vertical channels for signal-handling versatility.

Wide-Range Time-Base Generators

Either time-base generator can be used to deflect either or both beams.

Sweep ranges—0.1 μ sec/cm to 12 sec/cm. 5-x magnifiers increase calibrated sweep rates to 20 nsec/cm.

Sweep Delay—Two modes of operation

Triggered—Delayed sweep started after the delay period by the signal under observation.

Conventional—Delayed sweep started at the end of the delay period by the delayed trigger.

Delay range—0.5 μ sec to 50 sec in 24 calibrated steps, with continuous calibrated adjustment between steps.

High Writing Rate

10-KV Accelerating potential provides bright traces at low repetition rates and in one-shot application. 4-cm by 10-cm display for each beam, with 2-cm overlap.

Separate Power Supply

Electronically regulated dc and heater supplies.

Price, without plug-in units \$2600.

Includes Indicator Unit, Power Supply Unit, 2 Time-Base Units, 4 Probes, Time-Base Extension.

TYPE 502 DUAL-BEAM OSCILLOSCOPE

High Sensitivity

200 μ v/cm, dc coupled, both beams.

Differential Input

Both amplifiers, at all sensitivities.

Curve Tracing With Two Beams

(Horizontal sensitivity to 0.1 v/cm.)

Single-Beam Curve Tracing—200 μ v/cm, both axes.

Frequency Response

Both amplifiers—dc to 100 kc at 200 μ v/cm, increasing to 200 kc at 1 mv/cm, to 400 kc at 50 mv/cm, and to 1 mc at 0.2 v/cm.

Wide Sweep Range

21 direct-reading calibrated sweep rates from 1 μ sec/cm to 5 sec/cm.

Accurate Sweep Magnifier—2, 5, 10, and 20 times.

Automatic Triggering

Amplitude Calibrator—6 steps, 1 mv to 100 v.



Electronically-Regulated Power Supplies

Input stages of both amplifiers have transistor-regulated parallel heater supplies.

Price \$825.

MAIN SPECIFICATIONS of TEKTRONIX TYPE 530 SERIES,

	Vertical Frequency Response (with Type K Unit)	Signal Delay	Calibrated Sweep Range	Sweep Magnifier	Sweep Delay	Accelerating Potential	Price (without plug-in units)
TYPE 531A General Purpose	dc to 15 mc	Yes	0.1 μ sec/cm to 5 sec/cm	5x	None	10 kv	\$995
TYPE 532 General Purpose	dc to 5 mc	No	1 μ sec/cm to 5 sec/cm	5x	None	4 kv	\$875
TYPE 533 General Purpose	dc to 15 mc	Yes	0.1 μ sec/cm to 5 sec/cm	2, 5, 10, 20, 50, 100x	None	10 kv	\$1100
TYPE 535A General Purpose	dc to 15 mc	Yes	0.1 μ sec/cm to 5 sec/cm	5x	1 μ sec to 10 sec	10 kv	\$1400
Type 536 X-Y Curve Tracer	dc to 11 mc	No	See Type T Time-Base Gen.		None	4 kv	\$1050

Type A to Z Plug-In Units



TYPE B



TYPE C-A



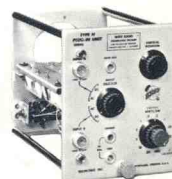
TYPE D



TYPE E



TYPE G



TYPE H

CHARACTERISTICS OF PLUG-IN PREAMPLIFIERS

	Risetime and Passband of Combination — Plugged into Type					Calibrated Deflection Factor	
	531A-533-535A	541A-543-545A-555	551	536	532		
TYPE A Wide-Band DC	25 nsec dc to 14 mc	18 nsec dc to 20 mc	20 nsec dc to 18 mc	35 nsec dc to 10 mc	70 nsec dc to 5 mc	0.05 v/cm to 20 v/cm	
TYPE B Wide-Band High-Gain	35 nsec 2 c to 10 mc 25 nsec dc to 14 mc	30 nsec 2 c to 12 mc 18 nsec dc to 20 mc	30 nsec 2 c to 12 mc 20 nsec dc to 18 mc	40 nsec 2 c to 9 mc 35 nsec dc to 10 mc	70 nsec 2 c to 5 mc 70 nsec dc to 5 mc	5 mv/cm to 0.05 v/cm 0.05 v/cm to 20 v/cm	
TYPE C-A Dual-Trace DC	23 nsec dc to 15 mc	15 nsec dc to 24 mc	16 nsec dc to 22 mc	35 nsec dc to 10 mc	70 nsec dc to 5 mc	0.05 v/cm to 20 v/cm	
TYPE D High-Gain DC Differential	0.18 μ sec dc to 2 mc	0.18 μ sec dc to 2 mc	0.18 μ sec dc to 2 mc	0.18 μ sec dc to 2 mc	0.18 μ sec dc to 2 mc	1 mv/cm to 50 v/cm	
TYPE E Low-Level AC Differential	6 μ sec 0.06 cycles to 60 kc	6 μ sec 0.06 cycles to 60 kc	6 μ sec 0.06 cycles to 60 kc	6 μ sec 0.06 cycles to 60 kc	6 μ sec 0.06 cycles to 60 kc	50 μ v/cm to 10 mv/cm	
TYPE G Wide-Band DC Differential	25 nsec dc to 14 mc	18 nsec dc to 20 mc	20 nsec dc to 18 mc	35 nsec dc to 10 mc	70 nsec dc to 5 mc	0.05 v/cm to 20 v/cm	
TYPE H DC Coupled High-Gain Wide-Band	31 nsec dc to 11 mc	23 nsec dc to 15 mc	25 nsec dc to 14 mc	37 nsec dc to 9.5 mc	70 nsec dc to 5 mc	5 mv/cm to 20 v/cm	
TYPE K Fast-Rise DC	23 nsec dc to 15 mc	12 nsec dc to 30 mc	14 nsec dc to 25 mc	31 nsec dc to 11 mc	70 nsec dc to 5 mc	0.05 v/cm to 20 v/cm	
TYPE L Fast-Rise High-Gain	23 nsec 3 c to 15 mc 23 nsec dc to 15 mc	15 nsec 3 c to 24 mc 12 nsec dc to 30 mc	17 nsec 3 c to 22 mc 14 nsec dc to 25 mc	35 nsec 3 c to 10 mc 31 nsec dc to 11 mc	70 nsec 3 c to 5 mc 70 nsec dc to 5 mc	5 mv/cm to 2 v/cm 0.05 v/cm to 20 v/cm	
TYPE N Sampling System	DC to 600 mc passband, provides own sweep signal—see Pulse Sampling System.					10 mv/cm	
TYPE R Transistor Testing	Supplies 5-nsec risetime pulse, 400-ma collector supply, 100-ma bias supply, risetime and passband same as with K Unit.					0.5 ma/cm	
TYPE S Diode Recovery	1 to 20 ma forward current, 0 to 2 ma reverse current, risetime and passband same as with K Unit.					0.05 v/cm 0.5 v/cm	

PLUG-IN PREAMPLIFIERS

TYPE 540 SERIES, and TYPE 550 SERIES OSCILLOSCOPES

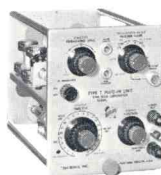
	Vertical Frequency Response (with Type K Unit)	Signal Delay	Calibrated Sweep Range	Sweep Magnifier	Sweep Delay	Accelerating Potential	Price (without plug-in units)
TYPE 541A Fast-Rise	dc to 30 mc	Yes	0.1 μ sec/cm to 5 sec/cm	5x	None	10 kv	\$1200
TYPE 543 Fast-Rise	dc to 30 mc	Yes	0.1 μ sec/cm to 5 sec/cm	2, 5, 10, 20, 50, 100x	None	10 kv	\$1275
TYPE 545A Fast-Rise	dc to 30 mc	Yes	0.1 μ sec/cm to 5 sec/cm	5x	1 μ sec to 10 sec	10 kv	\$1550
TYPE 551 Dual-Beam	dc to 25 mc	Yes	0.1 μ sec/cm to 5 sec/cm	5x	None	10 kv	\$1800
TYPE 555 Dual-Beam	dc to 30 mc	Yes	0.1 μ sec/cm to 5 sec/cm	5x	0.5 μ sec to 50 sec	10 kv	\$2600



TYPE K



TYPE L



Type T Time-Base Generator—Provides the sweep voltages necessary for operating the Type 536 in the usual oscilloscope applications. Generates 22 calibrated sweep rates from 0.2 μ sec/div to 2 sec/div. 5-x magnifier is accurate at all sweep rates. Triggering is fully automatic, or manual with amplitude-level selection and preset or manual stability control.
Price \$235.



Type Q Strain Gage Unit—Designed to measure any mechanical quantity that can be converted to a change in resistance, capacitance, or inductance through use of a suitable transducing device. Strain sensitivity range is 10 microstrain/div to 10,000 microstrain/div in 10 steps. Other features include: dc to 6-kc frequency response, 25-kc carrier frequency, essentially drift-free operation.
Price \$300.



TYPE N



TYPE R



Type Z Differential Comparator Plug-In Unit—Vertical "magnification" up to 500 times. Sensitivity is 50 mv/cm, dynamic range is ± 100 volts providing an effective scale length of ± 2000 cm. Internal dc comparison voltages are 0 to ± 100 v, 0.1%; 0 to ± 10 v, 0.2%; 0 to ± 1 v, 0.25%. Besides differential comparator operation, the Type Z operates as a conventional amplifier and differential amplifier.
Price \$525.



TYPE S



Type 127 Preamplifier Power Supply—a rack-mounting unit that supplies proper operating power to one or a combination of two Type A to Z Plug-In Units. Contains a differential dc-coupled amplifier stage with push-pull output. Risetime is 18 nsec. Square-wave amplitude calibration has 18 steps from 0.2 mv to 100 v. Dimensions—8 $\frac{3}{4}$ " high, 19" wide, 20" rack depth. **Price \$525.**

	Input Capacitance	Price
	47 pf	\$90
	47 pf	\$135
	20 pf	\$250
	47 pf	\$155
	50 pf	\$175
	47 pf	\$185
	47 pf	\$185
	20 pf	\$135
	20 pf	\$200
		\$600
	15 pf	\$300
		\$250

CATHODE-RAY OSCILLOSCOPES



TYPE 507 OSCILLOSCOPE

for High-Voltage Surge Testing

Vertical Deflection Factor

Approximately 50 v/cm to 500 v/cm in ten equal steps.

Risetime

Adjusted to 10 nsec for optimum transient response.

Calibrated Vertical Positioning

Seven 50-v steps—also continuously adjustable.

Calibrated Sweeps

Eleven fixed sweeps from 20 nsec/cm to 50 μ sec/cm.

High Accelerating Potential

24-KV provides bright trace for photographic recordings.

6-cm by 10-cm Linear Deflection

Electronically-Regulated Power Supply

Price \$3000.

Includes Indicator Unit, Power Supply Unit, Type 500A Scope-Mobile, Common-bus Ground Connector.



TYPE 519 DC TO 1000 MC OSCILLOSCOPE

Risetime—Less than 0.35 nsec.

Vertical Deflection Factor—Better than 10 v/cm.

Calibrated Sweep Range—2 nsec/cm to 1 μ sec/cm in 9 steps.

Cathode-Ray Tube—2 x 6 cm viewing area, distributed deflection plates, 24-kv accelerating potential.

Calibration-Step Generator— ± 10 v into 125 ohms. Useful to drive device under test or check sensitivity of Type 519.

Rate Generator—For internal triggering.

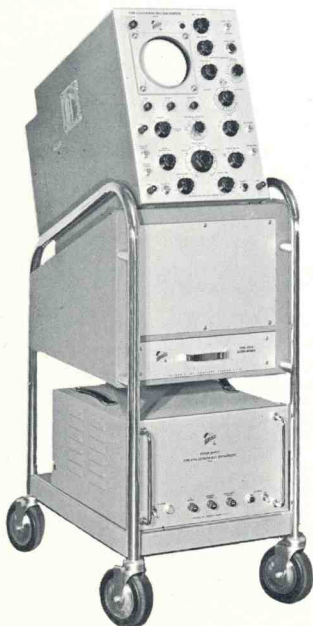
Wideband Trigger System—External triggering on pulses as small as 20 mv and 1 nsec duration, internal triggering on signals having 2 trace widths or more.

High-Frequency Synchronization to 2000 MC.

Electronically-Regulated Power Supply—Self contained.

Price \$3800.

Includes delay cables, adapters, terminations, viewing hood and bezel.



TYPE 517A OSCILLOSCOPE

Excellent Transient Response

Vertical-amplifier risetime—7 nsec.

Deflection factor—0.05 v/cm.

Signal-displacement error—less than 2% of 2 cm.

Fast Triggered Sweeps

Eleven calibrated rates from 10 nsec/cm to 20 μ sec/cm.

Sweep-displacement error—less than 2% of 8 cm.

High Writing Rate

1100 cm/ μ sec. 24-kv accelerating potential on Tektronix metallized crt.

Pulse-Type Amplitude Calibrator

Trigger-Rate Generator

Automatic Duty-cycle Limiter

Cathode-Follower Input Probe

Electronically-Regulated Power Supplies

Highly Mobile—Indicator unit and power supply mounted on Scope-Mobile.

Price \$3500.

Includes Indicator Unit, Power Supply Unit, Type 500A Scope-Mobile, CF Probe, Step Attenuator, Cable, Bezel, Viewing Hood.

Prices f.o.b. Factory

CATHODE-RAY OSCILLOSCOPES



TYPE 503 X-Y OSCILLOSCOPE

Identical Horizontal and Vertical Amplifier—DC to 450-kc passband, 1 mv/cm to 20 v/cm in 14 calibrated steps, differential input at all sensitivities.

Sweep Range—1 μ sec/cm to 5 sec/cm in 21 calibrated steps. Accurate 2, 5, 10, 20, and 50-times magnifier.

Triggering—Amplitude-level selection with preset stability control, and automatic-triggering.

Regulated Power Supply—Input stage heaters supplied with regulated dc voltages.

Price \$625.

TYPE RM503 RACK-MOUNTING OSCILLOSCOPE

Mechanical rearrangement of Type 503 Oscilloscope. Same electrical specifications. Bolts directly to rack. Dimensions—7" h, 19" w, 16½" d.

Price \$640.

TYPE 504 OSCILLOSCOPE

Vertical Response—DC to 450 kc, 5 mv/cm to 20 v/cm in 12 calibrated steps, continuously variable from 5 mv/cm to 50 v/cm, uncalibrated.

Sweep Range—1 μ sec/cm to 0.5 sec/cm in 18 calibrated steps.

Triggering—Amplitude-level selection with preset stability control, and automatic-triggering.

Regulated Power Supply

Price \$525.



TYPE RM504 RACK-MOUNTING OSCILLOSCOPE

Mechanical rearrangement of Type 504 Oscilloscope. Same electrical specifications. Bolts directly to rack. Dimensions—7" h, 19" w, 16½" d.

Price \$535.

OSCILLOSCOPES USE SIGNAL-AMPLIFIER and TIME-BASE PLUG-IN UNITS

Basically indicators, the Type 560 and Type 561 Oscilloscopes accept a wide range of plug-in units in both channels and permit almost any type and degree of performance demanded for a particular application. They feature plug-in units which drive the crt deflection plates directly—therefore, they are not limited by the additional circuitry that other oscilloscopes impose (between the plug-ins and deflection plates). Fewer components and controls simplify operation. And, with approximately two-thirds of the circuitry housed within the plug-ins, servicing is easier and indicator unit "down-time" is less.

TYPE 560 OSCILLOSCOPE

Regulated Power Supply—Provides 30 watts for powering all signal-amplifier and time-base plug-in units below Type 70.

Regulated Heater Supply

Amplitude Calibrator—500 mv and 50 mv, square wave at line frequency.

Price \$325.



TYPE 561 OSCILLOSCOPE

Regulated Power Supply—Provides 90 watts for powering all present and all future plug-in units in this series.

Regulated Heater Supply—Has separate regulator circuitry.

Amplitude Calibrator—18 square-wave voltages from 0.2 mv to 100 v, approximately 2 μ sec risetime, at line frequency.

Price \$425.



SIGNAL-AMPLIFIER AND TIME-BASE PLUG-IN UNITS

General Description	Plug-In Type	Passband	Calibrated Deflection Factor	Calibrated Sweep Range	Sweep Magnifier	Price
Basic	59	dc to 400 kc	Approx. 1 v/cm			\$ 50
General Purpose	60	dc to 1 mc	50 mv/cm to 50 v/cm			100
High-Gain DC Differential	63	dc to 300 kc	1 mv/cm to 20 v/cm			125
Time-Base	67			1 μ sec/cm to 5 sec/cm	5X	150
Dual-Trace	72	dc to 650 kc	10 mv/cm to 20 v/cm			250
Wide-Band	75	dc to 4 mc	50 mv/cm to 20 v/cm			175
Special-Purpose	50	15 cps to 200 kc	1 mv/cm			115
Special-Purpose	51			5 ms/cm	1X to 20X	135



PORTABLE OSCILLOSCOPES



TYPE 310A PORTABLE OSCILLOSCOPE

Vertical Response—DC to 4 mc, 0.1 v/div to 50 v/div in 9 calibrated steps. 3 additional steps from 0.01 v/div to 0.1 v/div, at 2 cycles to 3.5 mc. Continuously variable from 0.01 v/div to 150 v/div.

Risetime—90 nsec.

Sweep Range—0.1 μ sec/div to 0.6 sec/div, with 5-x magnifier.

Versatile Triggering—Internal, external, line. . . . ac-coupled or dc-coupled and automatic triggering.

~~Price \$505.~~ Price \$625.

TYPE 317 PORTABLE OSCILLOSCOPE

9-KV Accelerating Potential—Bright trace at low sweep repetition rates.

Vertical Response—DC to 10 mc, 0.1 v/div to 50 v/div in 9 calibrated steps. 3 additional steps from 0.01 v/div to 0.1 v/div, at 2 cycles to 10 mc. Continuously variable from 0.01 v/div to 125 v/div.

Risetime—35 nsec.

Sweep Range—0.2 μ sec/div to 6 sec/div, with 22 calibrated steps. Accurate 5-x magnifier.

Triggering—Amplitude-level selection with preset or manual stability control, and automatic triggering. Price \$800.



Type 316 Portable Oscilloscope

1.85-KV Accelerating Potential. Identical to Type 317 in all other specifications.

Price \$750.

TYPE RM16 and TYPE RM17 OSCILLOSCOPES

Mechanical rearrangements of Type 316 and Type 317 Oscilloscopes. Same electrical characteristics. Slide-out mountings. Dimensions: 7" high, 19" wide, 17 $\frac{5}{8}$ " rack depth.

Prices: Type RM16—\$825. Type RM17—\$875.

Type RS16—a two-unit model of the Type RM16 for racks at limited depth. Dimensions, Indicator—7" h, 19" w, 11 3/8" d; Power supply—7" h, 19" w, 5 1/2" d. 60" power cable. Fixed mounting. Price \$875.

TYPE 515A PORTABLE



OSCILLOSCOPE

Passband—DC to 15 mc.

Sensitivity—0.05 v/cm to 20 v/cm in 9 calibrated steps—continuously variable from 0.05 v/cm to 50 v/cm.

Risetime—23 nsec.

Sweep Range—0.2 μ sec/cm to 6 sec/cm with 22 calibrated

steps. Accurate 5-x magnifier.

Balanced 0.25 μ sec Delay Network.

Triggering—Amplitude-level selection with preset or manual stability control, and automatic triggering. Price \$800.

TYPE RM15 RACK-MOUNTING OSCILLOSCOPE

A mechanical rearrangement of the Type 515A for rack-mounting. The electrical characteristics of the Type RM15 are the same as the Type 515A.

Slide-out Mounting.

Dimensions—8 $\frac{3}{4}$ " high, 19" wide, 22 $\frac{1}{2}$ " rack depth.

Price \$875.

TYPE 516 DUAL-TRACE OSCILLOSCOPE

Identical Vertical Input Channels—Passband, dc to 15 mc;

risetime, 23 nanoseconds; sensitivity, 0.05 v/div to 20 v/div in 9 calibrated steps (div equals 1 cm), continuously variable to 50 v/div.

Four Operating Modes—

Channel A, channel B, A and B chopped (electronic switching at 150-kc rate), or A and B alternate.

Sweep Range—0.2 μ sec/div to 2 sec/div in 22 calibrated steps with accurate 5-x magnification.

Versatile Triggering—Amplitude-level selection with preset or manual stability control, and automatic triggering.

Price \$1000.



TYPE 321 PORTABLE OSCILLOSCOPE

Transistorized for Battery, DC, or AC Operation.

Frequency Response—DC to 5 mc.

Risetime—70 nsec.

Vertical Deflection Factor—0.01 v/div to 20 v/div in 11 calibrated steps (div equals $\frac{1}{4}$ inch), continuously variable to 50 v/div, uncalibrated.

Sweep Range—0.5 μ sec/div to 0.5 sec/div with accurate 5-x magnifier.

Triggering—Amplitude-level selection and automatic triggering.

Versatile Power Requirements—10 size D flashlight cells, or 10 size D rechargeable cells; 11.5 to 35 volts dc; 105 to 125 volts or 210 to 250 volts, ac single phase.

Price (without batteries) \$785.

Set of 10 rechargeable 3.5 ampere-hour batteries \$55.

Set of 10 rechargeable 2.5 ampere-hour batteries \$36.

CHARACTERISTIC-CURVE TRACERS

TYPE 575 TRANSISTOR CHARACTERISTIC-CURVE TRACER

20 ampere collector displays. (10 ampere average supply current).

2.4 Ampere base supply.

Positive or negative collector sweep—

Collector supply—0 to 20 v, 10 amperes.
0 to 200 v, 1 ampere.

Positive or negative base stepping

4 to 12 steps/family, repetitive or single family display.

17 current/step positions, 0.001 ma/step to 200 ma/step.

5 voltage/step positions, with 24 different driving resistances.

Calibrated display

Vertical Axis—

Collector current
Base voltage
Base current
Base source voltage

Horizontal Axis—

Collector voltage
Base voltage
Base current
Base source voltage

Collector current range is in 16 steps from 0.01 to 1000 ma/div.

Base current range is from 0.01 v/div to 0.5 v/div in 6 steps.

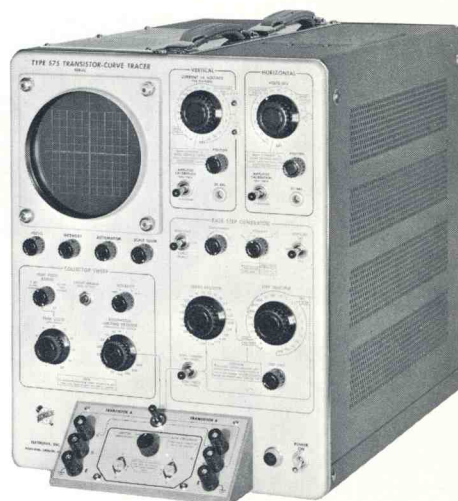
Collector voltage range is from 0.1 v/div to 20 v/div in 11 steps.



TYPE 175 TRANSISTOR CURVE-TRACER ADAPTER

When used with the Type 575 Transistor-Curve Tracer, the Type 175 offers:

200-Ampere Collector Displays (100-ampere peak continuous supply current)



Price \$975.

Pushbuttons are provided for multiplying each current step by 2 and dividing by 10, increasing the current range to 0.001 to 2000 ma/div.

12-Ampere Base Supply

Positive or Negative Base Stepping

4 to 12 steps/family, repetitive or single family display.

1 ma/step to 1000 ma/step in 10 positions.

0.02 v/step to 0.5 v/step in 5 positions, with 11 different driving resistances.

Calibrated Displays

Vertical Axis—Collector current.

Horizontal Axis—Collector voltage or base voltage.

Positive or Negative Collector Sweep

Collector Voltage—0 to 20 v, 0 to 100 v, and 0 to 100 v with 300-ohm series load resistor.

Price \$1425.

For 234-volt operation, order Type 175 Mod 161C .. \$1425.

TYPE 570 ELECTRON-TUBE CHARACTERISTIC-CURVE TRACER

Displays 4 to 12 characteristic curves per family.

Plots all important characteristics—

Plate current against plate or grid voltage.

Screen current against plate or grid voltage.

Grid current against plate or grid voltage.

Plots up to 8 positive-bias curves per family.

Calibrated Controls—

Accurate current and voltage readings directly from the crt screen.

Wide Display Range—

11 current ranges from 0.02 ma/div to 50 ma/div.

9 voltage ranges from 0.1 v/div to 50 v/div.

11 series-load resistors from 300 ohms to 1 megohm.

7 grid-step values from 0.1 v/step to 10 v/step.

Heater voltages available in 17 steps, variable to 20%.

Price \$995.

TELEVISION OSCILLOSCOPES



TYPE 526 VECTORSCOPE
for the N.T.S.C. Color-Television Signal

Both Vector and Line-Sweep Displays

Phase Accuracy— $\pm 1.5^\circ$ by vector presentation, $\pm 1^\circ$ by null technique.

Phase Resolution—Better than 0.1° at 3.58 mc.

Saturation Measurements— $\pm 2\%$ on graticule, closer when comparing two signals.

Dual Displays—Electronically-switched dual input channels permit direct comparisons between two signals.

Interfield Signal Key—Permits easy display of test signals during vertical blanking time.

Linear Time Base—Operates at line rate, synchronized by horizontal sync pulse.

Burst Brightening—Positive identification of burst packet.

Push-Pull Synchronous Demodulators—DC-Coupled to crt to prevent changes in chroma signal composition from affecting the positioning of the display.

Self-Checking Circuitry

Subcarrier Regenerator

Price \$1800.



TYPE 524AD TELEVISION OSCILLOSCOPE

Passband

Normal—dc to 10 mc from 0.15 v/cm to 50 v/cm, 2 cycles to 10 mc from 15 mv/cm to 50 v/cm.

Flat—Within 1% from 60 cycles to 5 mc.

IRE—Meets IRE standards for level measurements.

Risetime—35 nsec.

Sweep Range—Continuously variable, 0.1 μ sec/cm to 0.01 sec/cm.

Time Markers—0.05 μ sec, 0.1 μ sec, 1.0 μ sec, 200, and 40 pips per television line.

Sweep Delay—0 to 25 milliseconds, continuously variable.

DC-Coupled Unblanking.

3-x and 10-x Magnifier.

Variable-Duty-Cycle Amplitude Calibrator.

Price \$1250.

TYPE 525 TELEVISION WAVEFORM MONITOR

Frequency Response

Flat—within 1% between 60 cycles and 5 mc.

Low Pass—passes stair steps, eliminates high frequencies.

High Pass—passes high frequencies, eliminates stair steps.

IRE—meets IRE standards for level measurements.

Sensitivity—Deflection factor of the vertical amplifier is 0.015 v/cm.

Vertical Attenuator—1-x, 2-x, and 5-x.

Keyed Clamp-Type DC Restorer.

Gain Stability within 1%.

Rack-Mounting— $8\frac{3}{4}$ " high, 19" wide, $20\frac{3}{4}$ " rack depth.

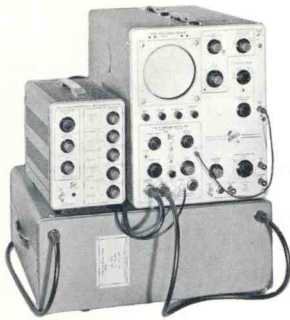
Price \$1100.



TYPE 525MOD111—Equipped with intensifier for observation of vertical-blanking-interval test signal.

Price \$1145.

PULSE SAMPLING SYSTEM



The Tektronix Pulse Sampling System has an inherent risetime of 0.6 nsec (corresponding to a band-width of about 600 mc), and will display recurrent signals with equivalent sweep times of 1, 2, 5, and 10 nsec/cm (100, 200, 500, and 1000 psec/cm, with the magnifier). The system (in addition to a Tektronix plug-in oscilloscope) includes (1) a Type N Sampling Plug-In Unit—used alone when suitable pretriggers are available, or (2) a Type N and a Type 111 Pretrigger Pulse Generator—used when 10 cps to 100 kc repetition rate is desirable, or (3) a Type N, a Type 110 Pulse Generator and Trigger Takeoff System, and a Type 113 Delay Cable—used when the ultimate risetime capability of a Type N is needed or when a trigger must be derived from a signal having an amplitude as low as 20 mv or a repetition rate as high as 100 mc.

TYPE N SAMPLING PLUG-IN UNIT

Risetime — Approximately 0.6 nsec (corresponding to about 600 mc).

Sensitivity—10 mv/cm.

Sweep Range—Equivalent sweep times of 1, 2, 5, and 10 nsec/cm (with magnifier: 100, 200, 500, and 1000 psec/cm).

Samples per Display—50, 100, 200, or 500 dots per display.

Trigger Requirements—Conventional trigger: 1 nsec minimum duration, 0.5 to 2 v, 45 nsec before signal, rep rate of 50 cps to 50 mc. Start-gate trigger: 200 nsec minimum duration, 50% risetime of 4 nsec, 10 v, 40 nsec before signal, rep rate of 50 cps to 100 kc.

Price \$600.



TYPE 110 PULSE GENERATOR and TRIGGER TAKE-OFF

Pulse Risetime—Less than 0.25 nsec.

Pulse Length—Minimum of 0.5 nsec to 300 nsec at half rep rate.

Pulse Output Impedance—50 ohms.

Pulse Repetition Rate—Nominally 720 pulses/sec

Trigger Systems—50-ohm impedance. Takeoff system where signal is patched into a "loop-through" arrangement and a portion of signal used as a trigger signal. Regenerated trigger system with trigger output ± 10 v amplitude, 225 nsec duration, 4 nsec 50% risetime, count down from approximately 100 mc.

Price \$650.



TYPE 111 PRETRIGGER PULSE GENERATOR

Risetime—0.5 nsec for positive pulse, slightly longer for negative pulse.

Pulse Duration—2 nsec minimum, 100 nsec maximum at low rep rates decreasing to 20 nsec at 100-kc rep rate (obtained with external charge line).

Pulse Repetition Rate—10 pps to 100 kc in 4 ranges with continuously variable control.

Pulse Amplitude—More than ± 5 volts.

Pretrigger Pulse Characteristics—10 volts, 250 nsec duration, half-amplitude risetime about 4 nsec.

Pulse Delay—Continuously variable from 30 to 250 nsec after pretrigger pulse.

Output Impedance—50 ohms.

Price \$365.



TYPE 113 DELAY CABLE

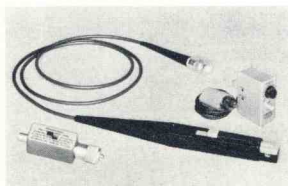
Time Delay—60 nsec.

Risetime—Approximately 0.1 nsec.

Price \$200.



AC CURRENT PROBE SYSTEMS



P6016 PROBE and TYPE 131 AMPLIFIER

Sensitivity (with 50 mv/div oscilloscope input)—1 ma/div to 1 amp/div in 10 steps. Variable sensitivity control on

oscilloscope provides continuous uncalibrated adjustment.

Frequency Passband (With Tektronix Type 540-Series Oscilloscope and Type L Plug-In Unit)—3 db down at 50 cps and approximately 17 mc (risetime—20 nsec).

Saturation Ratings—DC, 0.5 amp; AC, 15 amp peak-to-

peak decreasing to 8 amp at 400 cps, 400 ma at 50 cps.

Price \$235.

P6016 PROBE and PASSIVE TERMINATION SYSTEM

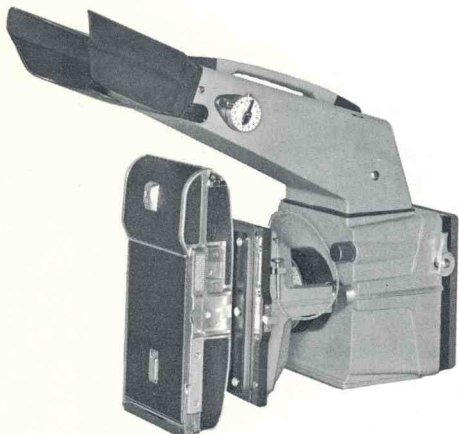
Sensitivity—2 ma/mv and 10 ma/mv.

Frequency Range (With Tektronix Type 540-Series Oscilloscope and Type L Plug-In Unit)—3 db down at 850 cps (2 ma/mv), 230 cps (10 ma/mv) and 20 mc (risetime—18 nsec).

Saturation Ratings—DC, 0.5 amp; AC—(2 ma/mv), 15 amp peak-to-peak decreasing to 8 amp at 1.5 kc, 4 amp at 850 cps; (10 ma/mv), 15 amp peak-to-peak decreasing to 5 amp at 400 cps, 2.5 amp at 230 cps.

Price \$90.

AUXILIARY INSTRUMENTS



TYPE C-12 CAMERA

Interchangeable Lens—Lens easily changed by loosening two adjustable locknuts. Lens available are f/1.5, f/1.9, or f/4.5. Object-to-image ratios include 1:0.9, 1:0.7, 1:0.5.

Interchangeable Back—Accepts most standard backs plus available accessories. Once original back is focused, all other backs accepted without refocusing.

Binocular Viewing—Orthogonal and undistorted over full 8 x 10 cm area.

Hinge Mounting—Camera swings away from crt screen for full visibility, lifts easily out of hinge fittings.

Rotating and Sliding Backs—Rotation thru 90° steps. Horizontal and vertical movements of back thru five positions.

Price of C-12 Camera (with f/1.9 lens having 1 to 0.9 object-to-image ratio, focusing back, Polaroid* back, and 1-minute timer) . . . \$500.

(For price of other camera accessories, call your Field Engineer).

*Registered trademark of Polaroid Corporation.

TYPE 1121 AMPLIFIER

Voltage Gain—100 with 9 calibrated attenuator steps to provide net gain from 100 to 0.2.

Frequency Response—5 cycles to 17 mc, decreasing slightly with increase in attenuator setting.

Risetime—21 nsec.

Maximum Output Voltage— ± 1 v in terminated 93-ohm cable.

Price . . . \$425.



TYPE 105 SQUARE-WAVE GENERATOR

Risetime—13 nsec, with 52-ohm termination.

Frequency Range—25 cycles to 1 mc, continuously variable.

Frequency Meter—Direct reading, accurate within 3% of full scale.

Output Amplitude—0 to 100 v maximum, 0 to 15 v across 93-ohm load.

Price \$395.



TYPE 130 L/C METER

Guard Voltage—Permits measuring an unknown capacitance while eliminating the effects of other capacitances from the measurements.

Five Ranges—

Microhenries—0 to 3, 10, 30, 100, 300.

Micromicrofarads—0 to 3, 10, 30, 100, 300.

Accuracy—Within 3% of full scale.

Price \$200.

TYPE 107 SQUARE-WAVE GENERATOR

Risetime—3 nsec, with 52-ohm termination.

Frequency Range—400 kc to 1 mc, uncalibrated.

Output Amplitude—0.1 v to 0.5 v, with 52-ohm termination.

Price \$175.



TYPE 123 PREAMPLIFIER

Frequency Response—

Within 2% from 15 cycles to 6 kc.

Within 3 db from 3 cycles to 25 kc.

Voltage Gain—100 times.

Hum-Free—Powered by miniature batteries.

Compact—3 $\frac{3}{8}$ " high, 1 $\frac{1}{2}$ " wide, 2 $\frac{1}{4}$ " deep.

Weight—10 ounces

Price \$50.



TYPE 122 LOW-LEVEL PREAMPLIFIER

Voltage Gain—1000.

Frequency Response—0.16 cycles to 40 kc maximum.

Rejection Ratio—80 to 100 db for in-phase signals.

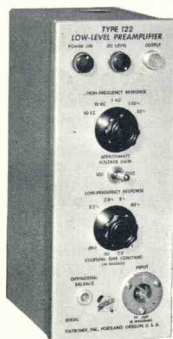
Noise Level—4 μ v rms maximum.

Output Voltage—20 v maximum (peak-to-peak).

Input Impedance—10 megohms paralleled by approximately 50 pf.

Battery powered, if desired.

Price, without batteries, \$125.



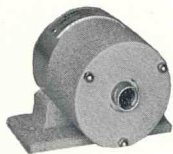
TYPE 125 POWER SUPPLY

Provides power for one to four Type 122 Amplifiers. Electronic voltage regulation improves drift stability.

Price . . . \$285.

AUXILIARY INSTRUMENTS

ROTAN SYSTEM



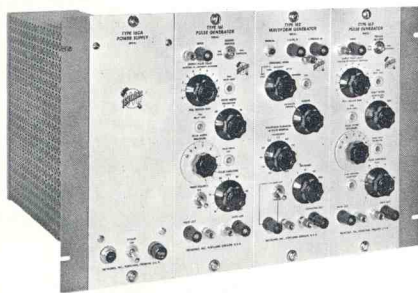
Designed to study rotation-associated phenomena in machinery, the Type 182A Angle-Encoding Transducer and Type 183A Rotation Analyzer adapt an oscilloscope to provide horizontal trace deflection proportional to angular displacement of a rotating shaft. Transduced data, such as velocity, pressure, acceleration or vibration provides vertical trace deflection.

Three Marker Tracks—1, 10, and 360-degree intensity-marker and trigger pulses.

Output Voltages—Marker pulses not less than 10 v, trigger not less than 7 v.

Angular Velocity—Essentially zero rpm to 20,000 rpm.

Price \$850.



TYPE 160A POWER SUPPLY

Large load capacity—Provides operating power for four to six 161, 162, 163 Units plus a 360 Indicator Unit.

Electronic voltage regulation.
Price \$175.

TYPE 163 FAST-RISE PULSE GENERATOR

Variable-amplitude positive pulse—0 to 25 v.

Fixed-amplitude positive gate—25 v.

Output characteristics—

Risetime—less than 0.2 μ sec.

Duration—Calibrated, continuously variable, 1 μ sec to 10,000 μ sec.

Delay—Continuously variable to 100% of triggering sawtooth duration.

Price \$125.



TYPE 161

PULSE GENERATOR

Variable-Amplitude—Positive or negative pulse from 0 to 50 v.

Positive Gate—50 v amplitude.

Output Characteristics—

Duration—calibrated, continuously variable, 10 μ sec to 0.1 sec.

Delay—continuously variable, 0 to 100% of triggering sawtooth waveform.

Risetime—less than 0.5 μ sec.

Price \$125.

TYPE 360 INDICATOR

Vertical Passband—DC to 500 kc.

Calibrated Vertical Attenuator

Deflection Factor—0.05 v/div.

Waveform Requirements—for Horizontal Deflection—50 v positive unblanking pulse, and a sawtooth of either polarity with amplitude from 110 to 150 v and extreme voltage limits at -90 v and +170 v.

Powered by a Type 160A, or Type 126 Power Supply.

Price \$250.



TYPE 126 POWER SUPPLY

Provides operating power for one Type 161, 162, 163, or 360.

Electronic voltage regulation.

Price \$100.

TYPE 181 TIME-MARK GENERATOR

Time-marks—1, 10, 100, 1000, and 10,000 microseconds, plus 10-mc sine wave.

1-mc crystal controlled oscillator is accurate within 0.03%.

Price \$240.



TYPE 180A TIME-MARK GENERATOR

Time-Marks—1, 5, 10, 50, 100, 500 μ sec; 1, 5, 10, 100, 500 msec; 1, 5 seconds.

Three Sine-Wave Frequencies—5 mc, 10 mc, and 50 mc.

Six Trigger-Rate Frequencies—1, 10, 100 cycles and 1, 10, 100 kc.

Temperature-Stabilized Crystal—provides stability of 2 ppm.

Price \$575.

TYPE 190B CONSTANT-AMPLITUDE SIGNAL GENERATOR

Output Frequency—350 kc to 50 mc, continuously variable, 50 kc reference signal.

Output Amplitude—40 mv to 10 v peak-to-peak, continuously adjustable.

Amplitude Variation—less than $\pm 2\%$ from 50 kc to 30 mc; less than $\pm 5\%$ from 30 mc to 50 mc.

Harmonic Content—typically less than 5%.

Price \$300.

Tektronix, Inc., P.O. Box 500, Beaverton, Oregon
 Telephone: Mitchell 4-0161 TWX—BEAV 311 Cable: TEKTRONIX
 AN OREGON CORPORATION
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***ALSO REPAIR CENTERS**

Tektronix, Inc., Victoria Avenue, St. Sampson's, Guernsey, Channel Isles

Telephone: CENTRAL 3767 CABLE: TEK GUERNSEY TELEX 41-93

Overseas Representatives

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	Electronic Industries Imports Pty. Ltd., 90 Grote St., Adelaide, S.A., Australia	LA-5295
	Electronic Industries Imports Pty. Ltd., 376 Ann St., Brisbane, Q'land, Australia	B-6462
	Electronic Industries Imports Pty. Ltd., 68 Railway Pde., West Perth, W.A., Perth, Australia	BA-8587/9686
	Electronic Industries Imports Pty. Ltd., 121 Crown Street, East Sydney, Australia	FL-5041
AUSTRIA	Inglomark Markowitsch & Company, Mariahilfer Strasse 133, Wien 15, Austria	54-75-85-SERIE
BELGIUM	Regulation-Mesure, S.P.R.L., 22 rue Saint-Hubert, Bruxelles 15, Belgium	70-79-89
BRAZIL	Consulting & Suppliers Company for South America Inc., 61 Broadway, New York 6, New York	BOWling Green 9-0610
	Importacao Industria E Comercio Ambriex S.A., Av. Graca Aranha 226-601/6 Rio De Janeiro, Brazil	42-7290, 42-7291
CUBA	Palmar Ltda., Rua 7 de Abril 252, Sao Paulo, Brazil	34-4497
	Laboratorios Meditron, 41 #1063 entre Kohly y 32, Alturas del Vedado, Habana, Cuba	F-5970
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FINLAND	Into O/Y, 11 Meritullinkatu, Helsinki, Finland	62 14 25, 35 125
FRANCE	Maurice I. Parisier & Co., 741-745 Washington St., New York 14, N. Y.	ALgonquin 5-8900
	Relations Techniques Intercontinentales, 134 Avenue de Malakoff, Paris 16, France	Passy 08-36, Kleber 54-82
GREECE	Marios Dalleggio, 2, Rue Alopekis, Athens (K), Greece	70-669
INDIA	Electronic Enterprises, 46, Karani Building, Opp. Cama Bauge, New Charni Road, Bombay 4, India	75376
ISRAEL	Landseas Products Corp., 48 West 48th Street, New York 36, New York	COLUMbus 5-8323
	Landseas Eastern Co., Ltd., P. O. Box 2554, 22 Maze St., Tel Aviv, Israel	66890
ITALY	Silverstar, Ltd., 21 Via Visconti di Modrone, Milano, Italy	790.555
	Silverstar, Ltd., 12, Via Paisiello, Roma, Italy	868.046
	Silverstar, Ltd., c/o SICAR S.p.A., 3 Corso Matteotti, Torino Italy	524.021 524.071
JAPAN	Midoriya Electric Co., Ltd., 3, 2-Chome, Kyobashi, Chuo-ku, Tokyo, Japan	561-9256
MEXICO	Cofesa, Apartado 2250, Mexico 1, D.F., Mexico	46-44-21
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NORWAY	Margentierne & Company, Collets Gate 10, Oslo, Norway	60 17 90
PORTUGAL	Equipamentos de Laboratorio Ltda., Rua Pedro Nunes, 47, Lisboa, Portugal	733436/733437
PUERTO RICO	International General Electric, P. O. Box 9387, Santurce, Puerto Rico	
SWEDEN	Erik Ferner AB, Snormakarvagen 35, Box 56, Bromma, Sweden	Stockholm 25 28 70
SWITZERLAND	Omni Ray AG, Dufourstrasse 56, Zurich 8, Switzerland	(051) 34-44-30
UNION OF SOUTH AFRICA	Protea Holdings, Ltd., Nucleonics Division, 9, Newton St. (P. O. Box 7793) Wemmer,	
	Johannesburg, Union of South Africa	33.2211
UNITED KINGDOM	Livingston Laboratories Ltd., Retcar Street, London N.19, England	Archway 6251
URUGUAY	Compania Uruguaya De Rayos X y Electromedicina S. A. Mercedes 1300, Yaguaron 1449, Montevideo, Uruguay	
		8 58 29
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