



TELEQUIPMENT Oscilloscopes

from Tektronix

D67 25 MHz, Dual Channel, Delayed Sweep

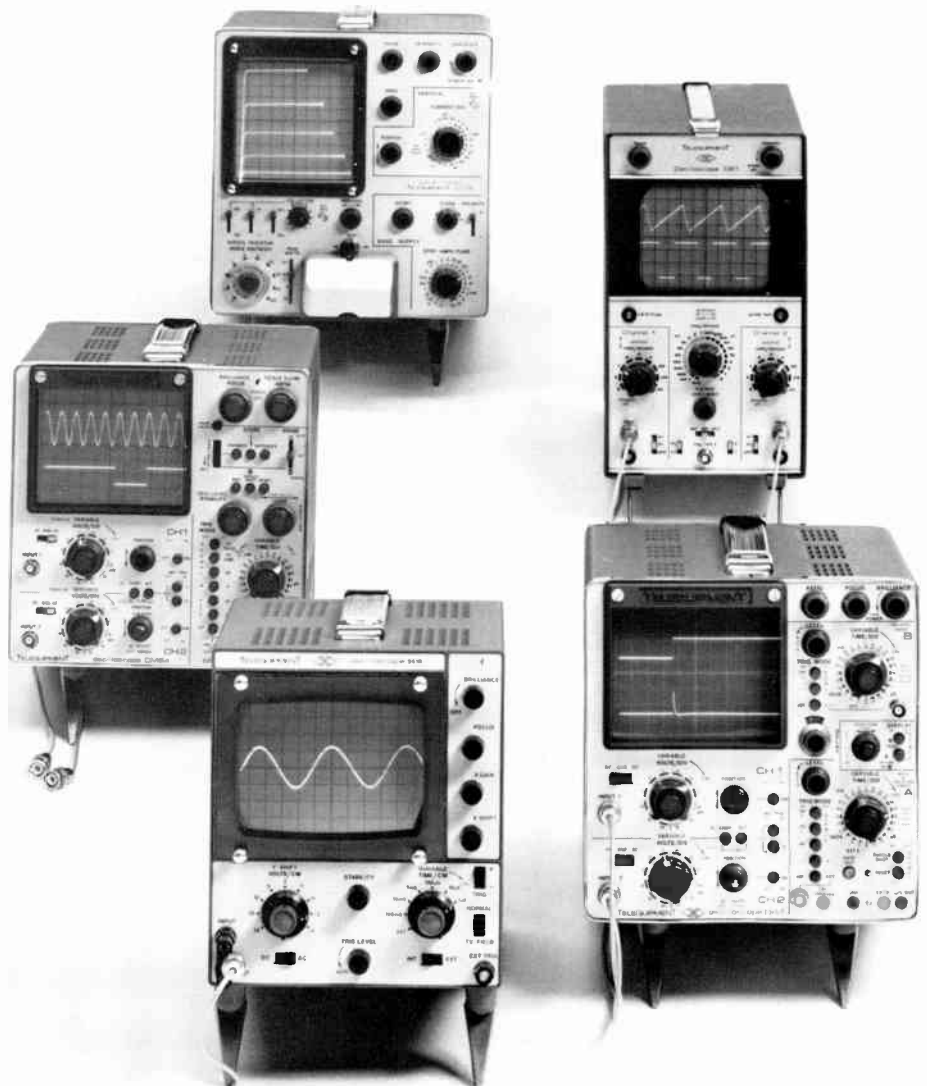
DM64 10 MHz, Dual Channel, Storage

S51B 3 MHz, Single Channel

D66 25 MHz, Dual Channel

D61 10 MHz, Dual Channel

CT71 Curve Tracer



Why you should buy TELEQUIPMENT

TELEQUIPMENT products are designed to meet the needs of the cost-conscious buyer without sacrifice of reliability or general utility. They have found wide acceptance as teaching aids in vocational-industrial and technical schools. Their simple controls and ease of operation facilitate learning by minimizing error caused by user inexperience. Excellent basic training in oscilloscope use is thus achieved at minimum expense.

Electronics service organizations, whether company associated or independently owned, constitute another major area where TELEQUIPMENT has become an established name. Models are available for applications ranging from the troubleshooting and repair of simple audio devices to the installation and maintenance of computer peripherals, medical instruments, and related digital equipment. Ruggedized portable models are available for field work although even the bench models, with their solid-state construction, are light enough for easy transportation.

The products described in this folder are manufactured and marketed in the United Kingdom by Telequipment, London, England. Outside the United Kingdom they are available from Tektronix, Inc., its marketing subsidiaries and distributors. Warranty, sales and service are the same as for other TEKTRONIX products.

For complete order information or demonstrations of TELEQUIPMENT products just contact the Tektronix Field Office in your area — you will find it listed on the back of this folder.



S51B

3-MHz Bandwidth TV Field Triggering

The low cost and easy to operate, S51B features a 3 MHz bandwidth and 100 mV/div to 50 v/div calibrated deflection factors. The calibrated horizontal time base provides 1 s/div to 100 ms/div sweep rates, and a x2 magnifier.

Triggering modes include automatic, normal and tv field. The crt has an 8 x 10-cm display area and a Z-axis input.



D61

10 MHz Bandwidth at 10 mV/cm Automatic TV Frame and Line Triggering Switched X-Y Operation 8 x 10-cm Viewing Area Weighs under 15 lb

No other oscilloscope in its price range offers as many benefits to the user. Among its more outstanding features are: fully transistorized design, easily operated controls, bright 8 x 10-cm display, automatic circuits select tv line or frame triggering and alternate or chopped sweep modes for optimum displays. Identical input channels can be used for dual-trace displays or connected to X-Y operation at the turn of a switch.





TELEQUIPMENT[®] Price List

PRICE AND ORDERING INFORMATION

Your Tektronix Field Engineer can help you select the TELEQUIPMENT instruments best suited for your present

and future needs. He can also give you the latest price, terms, shipping, and best method of transportation for all instruments and accessories.

INSTRUMENTS

TL CT71 Curve Tracer, DC collector supply to 1 kV. Slip generator range to 200 mA at 2 V	\$895.00
TL D54 Oscilloscope, 10 MHz, dual trace, 10 mV sensitivity, 200 ns/cm maximum sweep rate	\$750.00
Option 1	add \$5.00
TL RD54 Same as D54 except rackmounted	\$800.00
TL S54A Oscilloscope, 10 MHz, single trace, 10 mV sensitivity, 200 ns/cm maximum sweep rate	\$605.00
TL S54AR Same as S54A except rackmounted	\$650.00
TL S51B Oscilloscope, 3 MHz, TV field triggering 100 mV/div to 50 V/div	\$325.00
TL D61 Oscilloscope, 10 MHz to 10 mV/cm, automatic TV frame line triggering	\$545.00
TL DM64 Oscilloscope, 10 MHz at 1 mV/cm, bistable, dual trace	\$1195.00
Option 1	add \$5.00
TL D66 Oscilloscope, 25 MHz, 10 mV sensitivity dual trace, signal delay line	\$875.00
Option 1	add \$5.00
TL D67 Oscilloscope, 25 MHz, 10 mV sensitivity, dual trace, delayed sweep, signal delay line	\$1125.00
Option 1	add \$5.00
TL D75 Oscilloscope, 50 MHz at 5 mV/div, dual trace, delayed/mixed sweep to 10 ms/div	\$1475.00

ACCESSORIES

Option 1 , side hooks for protective covers for D67, D66, DM64 and D54	\$5.00
Probes (Hz 25) 10X passive probe package	
4.5 foot cable, 010-0263-01	\$30.00
6.0 foot cable, 010-0263-03	\$30.00
Protective covers fits front end of following oscilloscopes:	
S54A and S51B, 016-0138-00	\$27.50
D54, DM64, D66 and D67, 016-0143-00	\$16.20
Protective storage case	
D61, D67, D66, D54 and DM64, 016-0538-00	\$23.50
Protective Panel Cover	
D61, 016-0605-01	\$10.00
All others, 016-0513-01	\$10.00
Side Panels, conversion kit	
D67, D66, D54 and DM64, 390-0207-03	\$13.00
Viewing Hood, tubular light shield	
D54 and S54A, 016-0292-00	\$11.80
DM64, D66, D67, 016-0294-01	\$11.80
View Hood, Rubber eyepiece, fits all tubular light shield	
016-0293-01	\$11.80
016-0294-00 (for combination of 016-0294-01 and 016-0292-00)	\$21.50
Coaxial Adapters	
BNC female to dual banana, 103-0128-00	\$4.50
UHF female to dual banana, 103-0129-00	\$3.50
BNC female to UHF male, 103-0015-00	\$3.00

**TEKTRONIX®**committed to
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P. O. Box 500, Beaverton, Oregon 97077

Telephone: (503) 644-0161 TWX: 910-467-8708 TEKTRONIX BEAV. Cable: TEKTRONIX

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77 Ridgeland Rd.
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*Dayton 45449
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OKLAHOMA

Oklahoma City 73105
Suite 201
800 N.E. 63rd
Phone (405)848-3361

OREGON

Portland
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Tigard 97223
Phone (503)639-7691

†Factory Service Center
Tektronix Industrial Park
Beaverton 97005

Phone (503)644-0161, Telex 36-0485

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Monroeville 15146
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65 West 2950 South
Phone (801)484-8501

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1929 Coliseum Dr.
Phone (804)826-4020

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†Service Center

A-3137

Telequipment CT71 Curve Tracer



Collector Supply

Voltage Range—Peak voltage continuously variable from 0 to 1 kV, selected by horizontal VOLTS/DIV switch. Polarity is selectable, either positive or negative. The collector voltage repetition rate is twice the frequency or DC, selectable.

Peak Current—2 A; the peak power settings are 0.1, 0.5, 2, and 10 watts. Maximum power available is 15 watts.

Collector Series Resistances—Selectable: 0 Ω , 2.5 Ω , 10 Ω , 65 Ω , 250 Ω , 1 k Ω , 6.5 k Ω , 25 k Ω , 85 k Ω , 500 k Ω , and 1.7 M Ω , all within 5%.

Base Step Generator

Current Range—0.2 μ A/step to 20 mA/step in 16 steps (1-2-5 sequence).

Voltage Range—0.1 V/step to 2 V/step in 5 steps (1-2-5 sequence). Two positions are also available on the STEP AMPLITUDE switch to either open-circuit the base, allowing it to float, or short circuit the base to the emitter.

Steps/Offset—The steps are adjustable from 0 to 10 steps, selectable either positive or negative depending upon polarity switch setting. A continuously variable offset with a ± 1 step range is provided. Steps and offset are available on collector current ranges greater than 10 μ A/div.

Vertical Amplifier

Collector Current Range—Provides collector current from 5 nA/div to 0.2 A/div in 24 steps (1-2-5 sequence).

Horizontal Amplifier

Collector Voltage Range—Selectable collector or base voltage from 0.1 V/div to 100 V/div in 10 steps (1-2-5 sequence).

Other Characteristics

Two test fixtures are provided, which plug into the front of the CT71, providing a means of connecting collector supply output, step generator output and display amplifiers to the device under test.

One fixture provides the following sockets: 1 pair of TO-18's in a source-drain-gate configuration, 1 pair of TO-18's in an emitter-base-collector configuration, 1 pair of TO-5's in an emitter-base-collector configuration. Two sets of 3 terminals in the emitter-base-collector configuration are also provided.

The other fixture provides two pairs of power transistor sockets (a pair of TO-66's and a pair of TO-3's) in an emitter-base-collector configuration.

Safety Interlock—The protective cover cannot be opened until the supplies to the test fixtures are interrupted.

Cathode-Ray Tube—5½-inch CRT with a 10 x 10-cm viewing area. 2.5-kV accelerating potential with P31 phosphor. A front-panel control varies the graticule illumination intensity.

Power Requirements—Voltage settings are 100 V to 125 V in 5-V steps; 200 V in 10-V steps; 48 Hz to 63 Hz line frequency, 37 VA.

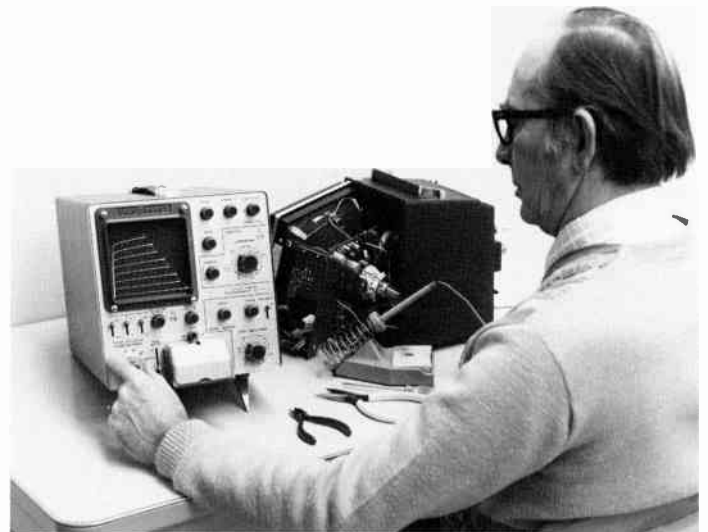
Dimensions and Weights

Height	9.6 in	24.5 cm
Width	9.3 in	23.5 cm
Depth	19.0 in	48.3 cm
Net Weight	25.0 lb	11.7 kg

Included Accessories—Two test fixtures.

Ordering Information

CT71 Curve Tracer, order CT71 \$845



Learning by seeing

As an aid in teaching the theory and operation of solid-state devices, a curve tracer is almost indispensable. The trainee can observe the dynamic behavior of transistors as he varies base current, collector voltage and other hypothetical circuit conditions. Comparisons can be made between predicted and actual behavior or between good and faulty devices. Small and light-weight, the CT71 fits naturally into the classroom or laboratory, just as its low price fits into the training equipment budget.

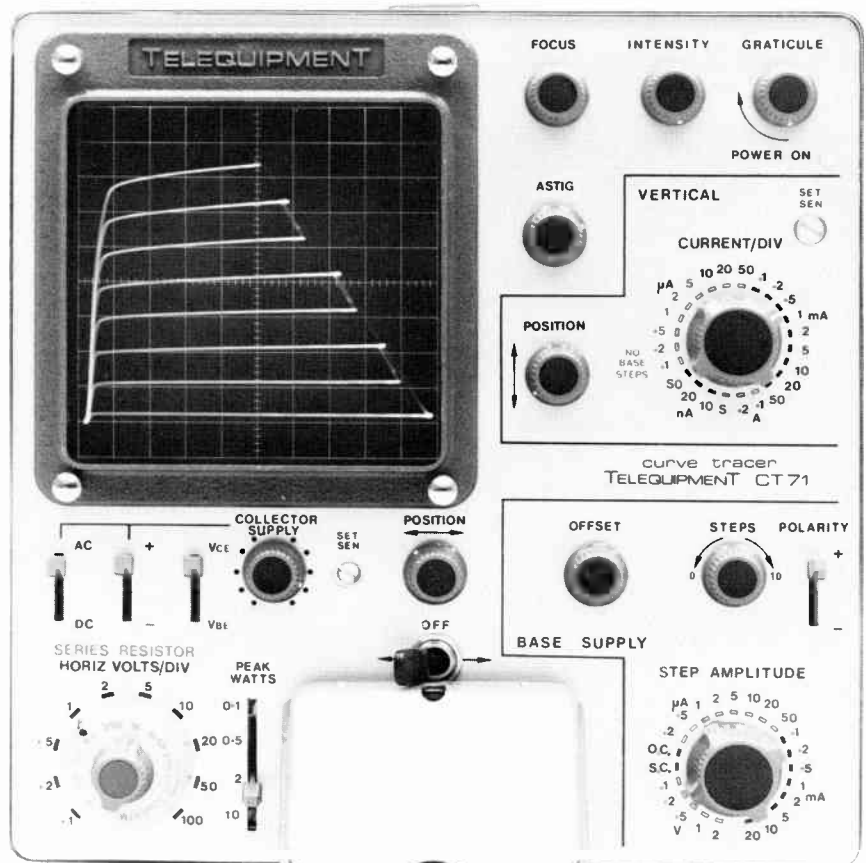


Telequipment CT71 Curve Tracer

Large bright display
Easy to operate
Small and lightweight
DC collector supply to 1 KV
Leakage measurements
to 5 nA
Step generator range to
200 mA or 20 V
Low cost

The TELEQUIPMENT CT71 is a low-priced curve tracer with simple controls. And a wide range of base and collector voltage, current and resistance settings. It displays dynamic characteristic curves of transistors, diodes and FETS. It is easily transported, easy to operate and versatile. Two plug-on fixtures with sockets and binding posts, can accommodate many different device package configurations. Curves are easily interpreted and/or compared on the large 10 x 10 cm graticule. It is solid-state, rugged and dependable. These features make it ideal for student labs, consumer product manufacturers, repairmen, and calibration centers.

All TELEQUIPMENT products are backed with the same one-year warranty as other Tektronix products. They are marketed and supported through the same international network of Tektronix Field Offices, Service Centers, Distributors and Representatives.



TELEQUIPMENT® D61 Oscilloscope

Vertical Deflection

Bandwidth and Risetime—DC to at least 10 MHz (−3-dB down), 35 ns risetime.
Deflection Factor—10 mV/cm to 5 V/cm in 9 calibrated steps (1-2-5 sequence), accurate within ±5%.
Maximum Deflection—8 cm to 5 MHz, decreasing to 5 cm at 10 MHz.
Input R and C—1 MΩ paralleled by approx 35 pF.
Maximum Input Voltage—400 V (DC plus peak AC).

Horizontal Deflection

Time Base—500 ns/cm to 500 ms/cm in 19 calibrated steps (1-2-5 sequence), accurate within ±5%.
X5 Magnifier—Operates over full time-base range, increases fastest sweep rate to 100 ns/cm.
Horizontal Amplifier (External X)—2 Hz to 1 MHz (at 3-dB down); deflection factor approximately 250 mV/cm; input impedance 1 MΩ paralleled by approximately 10 pF.

Trigger

Modes—Automatic or Normal (Trigger Level).
TV—Triggers on TV field or line; automatically selected by time/div switch.
Sensitivity—Internal, 2 mm deflection 40 Hz to 2 MHz, increasing to 1 cm at 2 MHz. External, 100 mV 40 Hz to 1 MHz increasing to 1 V at 1 MHz.

X-Y Operation

Full Sensitivity (Ch 1-Vert, Ch 2-Vert)—10 mV/cm to 5 V/cm in 9 calibrated steps, accurate within 5%. Bandwidth is DC to at least 1 MHz (−3 dB). Phase difference between amplifiers is less than 1° at 50 kHz.

CRT

CRT—5-inch tube; 8 x 10-div 1.0 cm/div; 3.5-kV accelerating potential.
Z-Axis Modulation—Z axis input is AC coupled. A 10 V negative-going signal blanks the display with good contrast.

Other Characteristics

Voltage Calibrator—Line-frequency squarewave, 500 mV P-P accurate within 1%.
Power Requirements—Voltage settings are 100-120 Volts, 48-440 Hz line frequency, approx. 25 VA.

Probe Test—Provides a negative going rectangular pulse at time-base frequency to facilitate probe compensation.

Cooling—Convection.

Temperature Limits Ambient—−15° C to +40° C operating;
−25° C to +70° C non-operating.

Dimensions and Weights

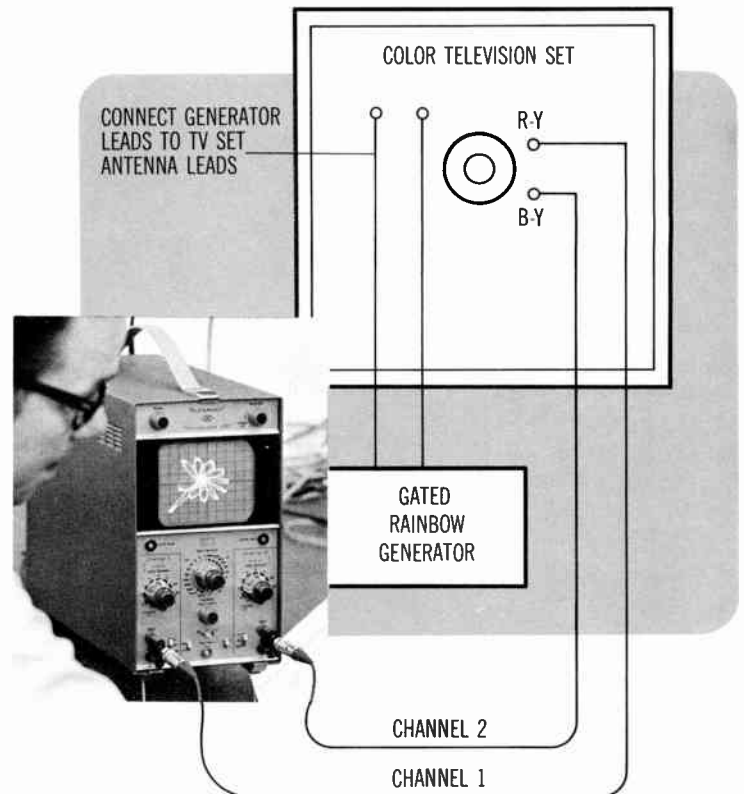
Height	11.0 inches	28 cm
Width	6.3 inches	16 cm
Depth	16.5 inches	42 cm
Net Weight	14.3 lbs.	6.5 kg

Ordering Information

D61 Oscilloscope, Order TL D61 \$545.00

VECTOR DISPLAYS

The TELEQUIPMENT D61 Dual Trace Oscilloscope is excellent for displaying vector patterns for aligning and trouble-shooting of color TV sets. In a vector display mode it can check phase relationships of color signals.



Use the D61 in the "CH 2" mode. Select equal sensitivity settings for both X and Y. Connect channel 1 input to R-Y signal at picture tube. Connect channel 2 input to B-Y signal at picture tube. Generally, X10 probes would be used with vacuum tube sets. X1 with solid state sets.

Two simple connections to the picture tube allow the serviceman to produce meaningful displays when used in conjunction of a gated rainbow generator. Specific uses include:

1. Checking chroma-demodulator and color amplifier circuits for alignment and proper operation.
2. Checking and adjusting tint control for proper range.
3. Checking and adjusting 3.58 MHz color oscillator alignment.

GENERAL USE IN THE SHOP AND LAB

In addition to TV and audio equipment servicing, many shops are finding new business opportunities in a wide number of electronic consumer items: (calculators, hearing aids, microwave ovens, digital clocks, recorders, etc.). The TELEQUIPMENT D61 Oscilloscope offers high performance, versatility and low cost for this new service business.

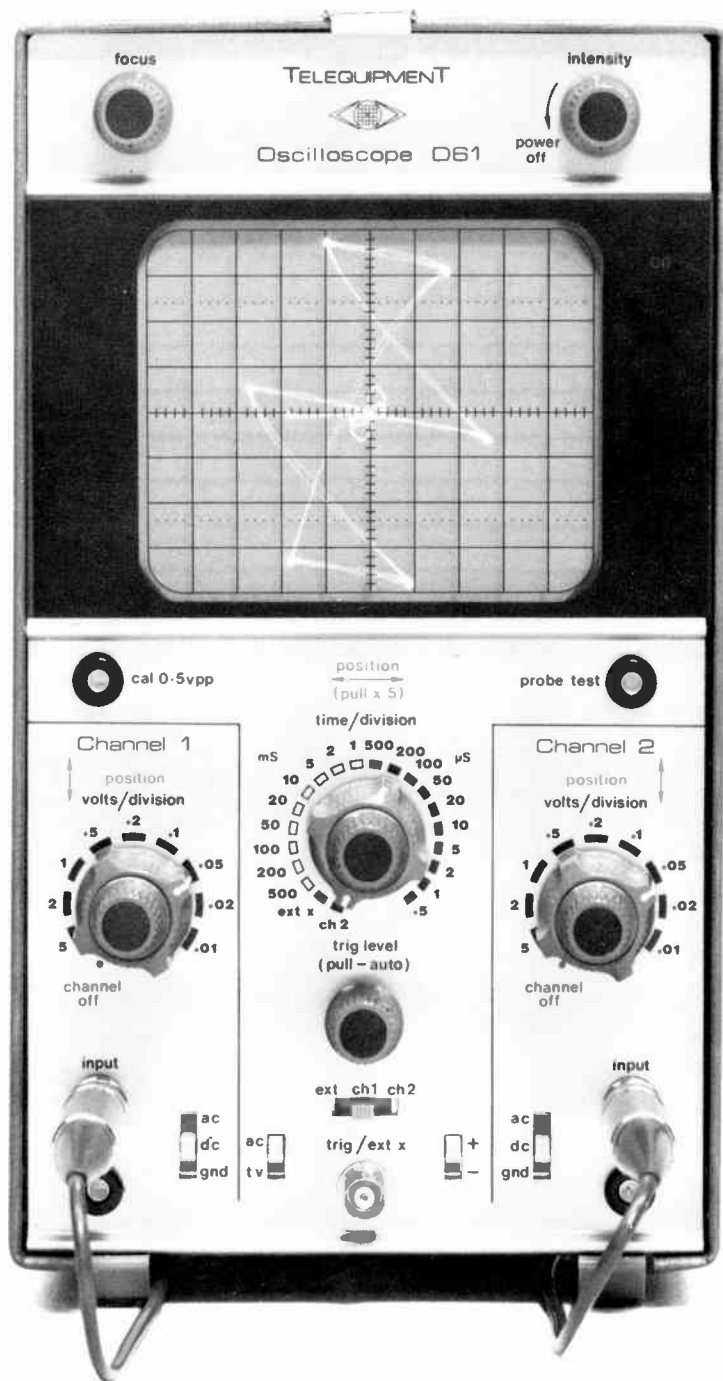
TELEQUIPMENT® D61 Oscilloscope

Low cost
Easy to use
Automatic triggering
TV frame and line triggering
10 mV sensitivity at 10 MHz
Can be used in single beam,
dual-trace, X-Y and vector modes
High brightness 8 x 10 cm display
Weighs under 15 lbs.

The D61 oscilloscope is a very low priced, 10MHz, dual trace oscilloscope. It is fully transistorized, lightweight (15 lbs.), and easy to use. Operation of the D61 is simplified by automatic selection of either chopped or alternate modes. Also, automatic selection of line or frame displays occurs in the TV trigger position. Two identical input channels provide excellent X-Y capability. This is useful for displaying vector patterns when aligning and trouble-shooting color TV sets. The D61 offers high performance for servicing audio equipment as well as a variety of electronic consumer products including pocket calculators, digital clocks, microwave ovens, hearing aids and alarm systems.

New users of oscilloscopes will find the front panel controls very easy to understand. Ease of operation, equal X and Y sensitivity, and bright stable signals on an 8 x 10 cm CRT make the D61 particularly useful for electronic school classrooms and labs.

ALL TELEQUIPMENT scopes are backed with the same one-year warranty as other TEKTRONIX products and are marketed and supported through the same International network of Tektronix Field Offices, Service Centers, Distributors and Representatives.





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TELEQUIPMENT® S51B Oscilloscope

Vertical Deflection

Bandwidth—DC to at least 3 MHz at 3-dB down. Low frequency 3-dB down point with AC coupling is 2 Hz.

Deflection Factor—100 mV/cm to 50 V/cm in 9 calibrated steps (1-2-5 sequence), accurate within 5%.

Input R and C—1 M Ω , approx 47 pF.

Horizontal Deflection

Time Base—1 μ s/cm to 100 ms/cm in 6 calibrated steps (1-10 sequence). Uncalibrated, continuously variable between steps and to at least 1 s/cm. Accuracy within 5% over center 8 cm (10% over first and last 2 cm in 1 μ s/cm range).

X2 Magnifier (Approx)—Operates over full time base.

Time Base Sweep Modes—Auto Trigger (sweep free runs in absence of triggering signal). Normal Trigger.

Horizontal Amplifier—DC to at least 500 kHz at 3-dB down. Uncalibrated, continuously variable to approx 100 mV/cm deflection factor at mid-position, range approx 2:1. Input R and C, 1 M Ω , approx 100 pF.

Trigger

Modes—Automatic or Normal (Trigger Level). Automatic operation useful on signals from 50 Hz to 1 MHz. Trigger Level selection allows triggering at any level on the input waveform.

TV—Triggers on TV field.

Sensitivities—Internal, 5 mm. External, 3 V P-P.

Ext Trig Input Impedance—1 M Ω , approx 30 pF.

CRT

CRT—5-inch tube; 8x10-cm display area, each div is 1 cm. P31 phosphor normally supplied. 3-kV accelerating potential. Z-axis input coupled to the CRT grid; noticeable modulation at normal intensity with approx 15 V.

Graticule—External, detachable green filter improves contrast under high ambient light conditions.

Other Characteristics

Signal Outputs (Rear Panel)—A negative-going sawtooth (20 V P-P, DC coupled, minimum load 100 k Ω).

Power Requirements—Quick-change line voltage selector provides these ranges: 91-130 VAC and 200-240 VAC in 5-V steps. 50 to 400 Hz, 58 VA.

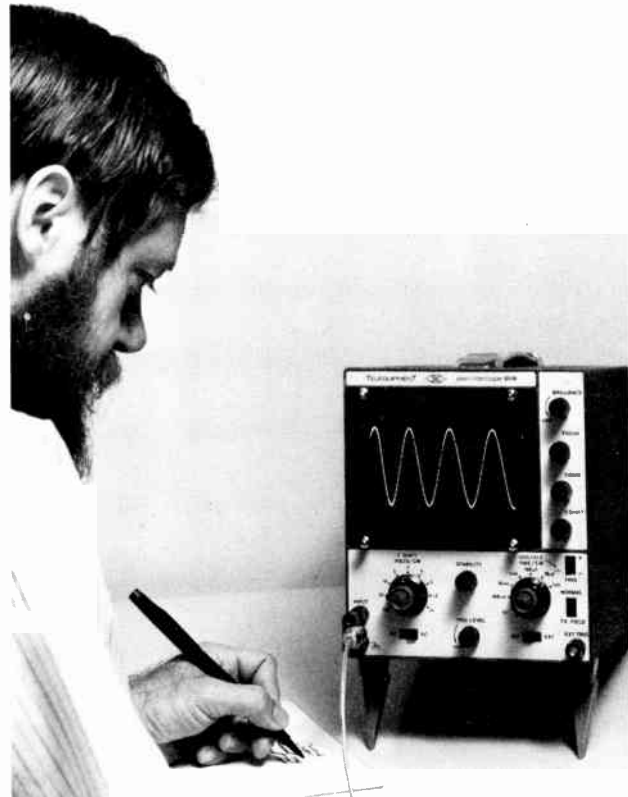
Cooling—Convection

Dimensions and Weights

Height	8 in	20.3 cm
Width	7 in	17.8 cm
Depth	15 in	38.1 cm
Net Weight	16 lb	7.3 kg

Included Accessories—Test leads.

Optional Accessories—Additional accessories are described at the conclusion of this oscilloscope section.



Audio and RF Circuit Analysis

The TELEQUIPMENT S51B Oscilloscope offers all the sophistication that's needed for most fundamental circuit analysis. Audio waveforms can be analyzed for clipping and other sources of distortion. Multivibrator, gating, differentiating, and other pulse handling circuits can be analyzed for their effects on pulse shape, duration, and other characteristics. The S51B offers the versatility most often needed for educational and basic service requirements at a favorable price.

Ordering Information

S51B Oscilloscope, order TL S51B.....\$325.



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TELEQUIPMENT® S51B Oscilloscope

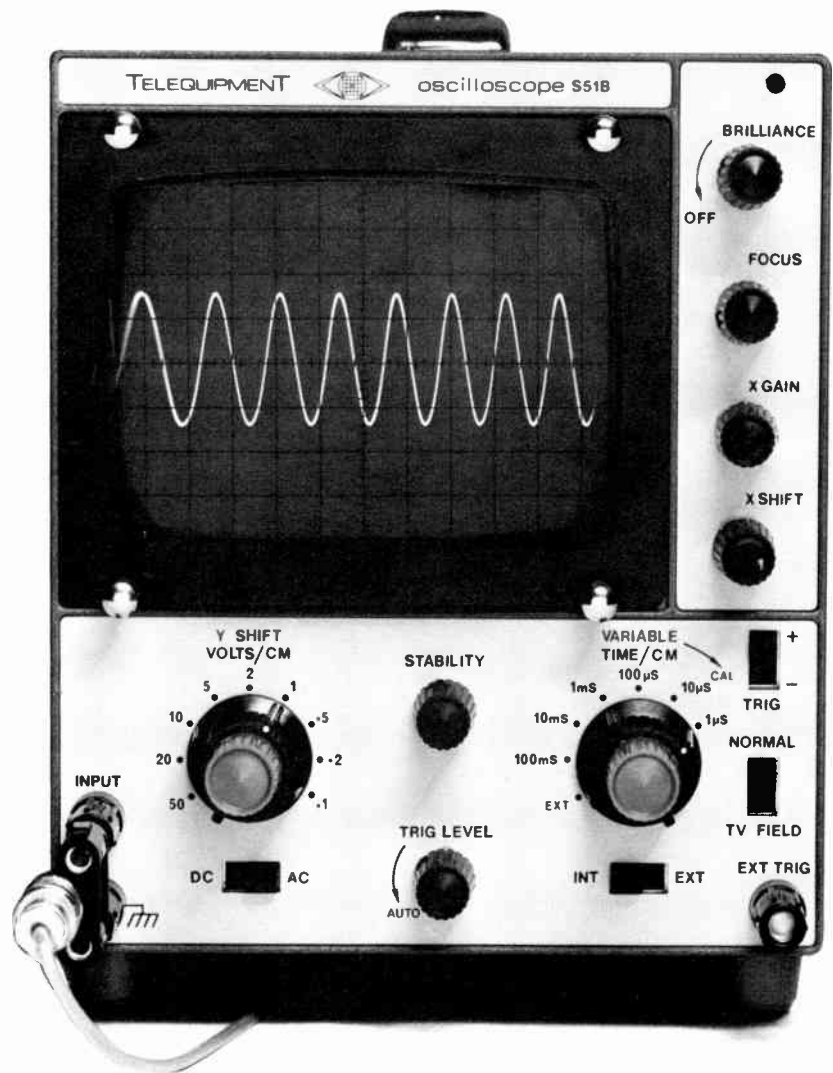
Low cost
3-MHz bandwidth
Versatile triggering
8 x 10-cm viewing area
DC coupled horizontal amplifier

The TELEQUIPMENT S51B is an exceptionally low priced, easy to use, single channel 3-MHz oscilloscope. Its horizontal sweep may be set to reoccur continuously (Auto Trigger) or to begin at any level of the waveform applied to the vertical input (Normal Trigger).

The S51B is an ideal low-cost instrument for audio, RF, and IF troubleshooting, and for educational purposes. The instrument's 5%-accurate vertical deflection calibration provides more than ample precision for most service applications, allowing the S51B to fill double duty as a "multimeter" as well as a budget priced oscilloscope.

The front panel is effectively human engineered for simplicity, overcoming many of the typical novice's fears of using an oscilloscope. What is more, the simplified front panel scheme helps the experienced technician make quick, accurate measurements.

Tektronix backs all its Telequipment oscilloscopes with its one-year warranty.





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TELEQUIPMENT® D67/D66 Oscilloscopes

D67 OSCILLOSCOPE

Vertical Deflection

Bandwidth and Rise Time—DC to 25 MHz at 3-dB down. Low frequency 3-dB-down point with AC coupling is approx 2 Hz. 14-ns risetime. Bandwidth is 10 MHz at 10, 20, or 50 V.

Deflection Factor—10 mV/cm to 50 V/cm in 12 calibrated steps (1-2-5 sequence) accurate within 3%. Uncalibrated, continuously variable between steps and to at least 125 V/cm.

Display Modes—Channel 1 only; Channel 2 only (normal or inverted); Alternate; Chopped (approx 80 kHz rate); Added.

Input R and C—1 M Ω , approx 47 pF.

Maximum Input Voltage—400 V (DC + peak AC).

Delay Line—200-ns signal delay permits viewing leading edge of displayed waveform.

Horizontal Deflection

Time Base A and B—0.2 μ s/cm to 2 s/cm in 22 calibrated steps (1-2-5 sequence) accurate within 3%. Uncalibrated, continuously variable between steps and to at least 5 s/cm.

X5 Magnifier—Operates over full time-base range increases fastest rate to 40 ns/cm. Magnified display accurate within 2% in addition to specified time-base sweep accuracy.

Horizontal Display Modes—A only, A intensified during B, B delayed by A. Delay is uncalibrated.

Time Base A Sweep Modes—Auto Trigger (sweep free runs in absence of triggering signal); Normal Trigger; Single Sweep. Light indicates when sweep is triggered.

Time Base B Sweep Modes—B triggerable after delay time; B starts after delay time (non-gated delay).

Horizontal Amplifier—DC to 1 MHz at 3 dB down; 0.6 V/cm to 3 V/cm deflection. Input impedance 1 M Ω , approx 30 pF; max input voltage 400 V (DC + peak AC).

Trigger

Modes—Automatic or Normal (Trigger Level) on Time Base A and B. Automatic and Trigger Level operation useful between 15 Hz to 5 MHz. High frequency synchronizes the sweep over a frequency range of approx 1 MHz to >25 MHz (A sweep only). TV—Triggers at TV field or line rate (A sweep); triggers at TV line rate (B sweep).

Sensitivity—Internal, 2-cm deflection to 5 MHz, except HF is 1-cm deflection to 25 MHz. External, 250 mV P-P up to 15 V P-P, input impedance 100 k Ω , approx 30 pF.

CRT

CRT—5-inch rectangular tube; 8 x 10-cm, display area, each div is 1 cm. P31 phosphor normally supplied, P7 and P11 optional without extra charge. 10 kV accelerating potential. Z-axis input AC coupled to CRT cathode; noticeable modulation at normal intensity with 5-V or more P-P signal.

Graticule—External; variable edge lighting.

Other Characteristics

Voltage Calibrator—Line-frequency squarewave, 500 mV P-P accurate within 1%.

Signal Outputs—Negative gates from both time bases (approx 5 V) and a sawtooth from Time Base A (1-36 V, DC coupled, 30 k Ω , minimum load).

Power Requirements—Quick-change line selector provides these ranges: 100-125 VAC in 5-V steps or 200-250 VAC in 10-V steps. 48-400 Hz, 50 VA power consumption.

Cooling—Convection.

Dimensions and Weights

Height	9.8 in	24.7 cm
Width	8.3 in	21.0 cm
Depth	17.5 in	44.5 cm
Net Weight	25.5 lb	11.5 kg

D66 OSCILLOSCOPE

Vertical Deflection

Bandwidth—DC to at least 25 MHz, at least 15 MHz 3 dB down using the X10 gain. Low frequency 3 dB down point with AC coupling is 2 Hz. Bandwidth is 10 MHz at 10, 20, or 50 V.

Risetime—14 ns; 23 ns with X10 gain.

Deflection Factor—10 mV/cm to 50 V/cm in 12 calibrated steps (1-2-5 sequence), 1 mV/cm to 5 V/cm using X10 gain, all steps accurate within 5%. Uncalibrated, continuously variable between steps and to approx 125 V/cm.

Display Modes—Channel 1 only; Channel 2 (normal and inverted); Alternate; Chopped (approx 150 kHz rate); Added; X-Y (Channel 1-Y and Channel 2-X).

Input R and C—1 M Ω , approx 47 pF.

Maximum Input Voltage—400 V (DC + peak AC).

Delay Line—200-ns signal delay permits viewing leading edge of displayed waveform.

Maximum Deflection—Reduces to 7 cm at 25 MHz.

Horizontal Deflection

Time Base A—100 ns/cm to 2 s/cm in 23 calibrated steps (1-2-5 sequence), accurate within 5%. Uncalibrated, continuously variable between steps and to at least 5 s/cm.

X5 Magnifier—Operates over full time-base range, increases fastest rate to 20 ns/cm. Magnified display accurate within 2% in addition to specified time-base sweep accuracy.

Time Base A Sweep Modes—Auto Trigger (sweep free runs in absence of triggering signal); Normal Trigger (Trigger Level); Single Sweep. Light indicates when sweep is triggered.

Horizontal Amplifier—DC to 1 MHz at 3 dB down; approx 1 V/cm deflection factor, approx 0.2 V/cm with X5 magnifier. Input R and C, 100 k Ω , approx 30 pF. Max input voltage, 400 V (DC + peak AC).

Trigger

Modes—Automatic or Normal (Trigger Level). Automatic operation useful between 20 Hz to 5 MHz. Trigger Level selection occurs at any level on the input waveform over a frequency range of DC to approx 5 MHz. High Frequency synchronizes the sweep over a frequency range of approx 1 MHz to at least 25 MHz.

TV—Triggers on TV field or line.

Sensitivity—Internal, 0.2 cm deflection to 5 MHz, except HF is 1-cm deflection to 25 MHz. External, 250 mV P-P up to 15 V P-P, input impedance 100 k Ω , approx 30 pF.

X-Y Operation

Full Sensitivity (Ch 1-Vert, Ch 2-Horiz)—10 mV/div to 50 V/cm in 12 calibrated steps (1-2-5 sequence), 1 mV/cm to 5 V/cm using X10 gain, all steps accurate within 5%; variable on both channels. Bandwidth is DC to at least 1 MHz (-3 dB). Phase difference between amplifiers is less than 1° at 25 kHz.

CRT

CRT—5-inch rectangular tube; 8 x 10-cm display area, each div is 1 cm. P31 phosphor normally supplied. 10 kV accelerating potential, Z-axis input AC-coupled to CRT grid; noticeable modulation at normal intensity requires approx 15 V.

Graticule—External, variable edge lighting.

Other Characteristics

Voltage Calibrator—Line-frequency squarewave, 500 mV P-P accuracy within 2%.

Signal Outputs—Positive gate (0.5 V) and a sawtooth (10 V, DC coupled, 47k Ω minimum load).

Power Requirements—Quick-change line voltage selector provides these ranges; 100-125 VAC in 5-V steps or 200-250 VAC in 10-V steps. 48-400 Hz, 50 VA power consumption.

Cooling—Convection.

Dimensions and Weights

Height	9.5 in	24.0 cm
Width	8.3 in	21.0 cm
Depth	14.5 in	37.0 cm
Net Weight	25.5 lb	11.5 kg

Ordering Information

D67 Oscilloscope, order TL D67 \$1,125
D66 Oscilloscope, order TL D66 875



TV Waveform analysis.

Aberrations in TV waveforms can easily be pinpointed by taking advantage of the D67's delayed sweep, wide bandwidth and fast sweep speed. This kind of waveform analysis yields valuable information to the knowledgeable trouble-shooter, and significantly shortens turn-around times.

TELEQUIPMENT® D67/D66 Oscilloscopes

Low cost
Delayed sweep (D67 only)
25 MHz bandwidth
10-mV sensitivity
Dual trace
Signal delay line

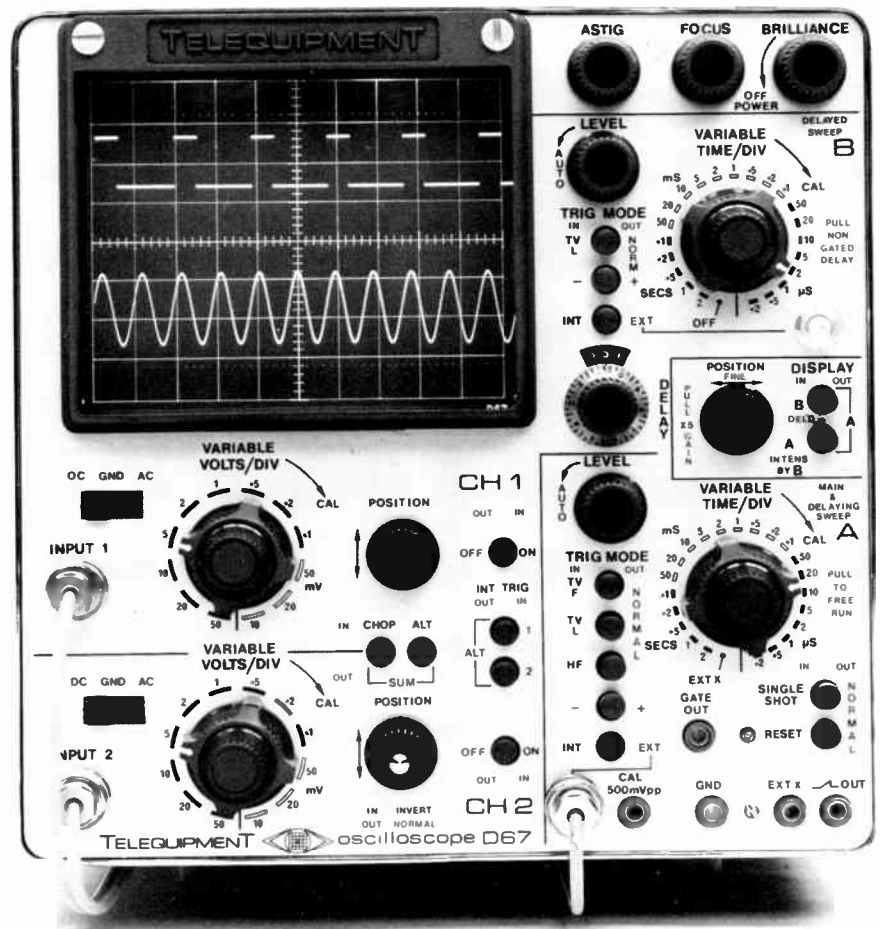
The TELEQUIPMENT D67 combines dual-trace, delayed sweep, and 25 MHz bandwidth at a very low price. It allows quick, accurate troubleshooting of radio and TV circuit problems. And you can examine selected portions of a complex waveform at fast sweep speeds and after relatively long time delays.

Dual-trace waveforms are displayed on a large bright 5" crt. This is essential for servicing TV and high-quality audio systems where time and phase relationships between signals are critical.

Other features not usually found in low-priced scopes include regulated power supplies, FET inputs to keep vertical trace drift to a minimum, fully solid-state design, and transistors in sockets for easier servicing.

If you don't require delayed sweep, but do need 25 MHz bandwidth and dual trace, select the TELEQUIPMENT D66. Trouble-shooting consumer digital products is easier with dual trace. The "SUM" mode with normal-invert capability makes it possible to look at small signals in the presence of common-mode noise.

All TELEQUIPMENT products are backed with the same one-year warranty as other Tektronix products. They are marketed and supported through the same international network of Tektronix Field Offices, Service Centers, Distributors and Representatives.





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TELEQUIPMENT® DM64 Oscilloscope

Storage Characteristics

Writing Speed—Normal writing speed is at least 25 cm/ms. Adjustment to at least 250 cm/ms in Enhanced Mode.

Storage View Time—Up to 1 hour.

Erase Time—Approx. 0.25 second.

Enhance Mode—Controls single sweep capabilities of the storage CRT. Through adjustment of the front panel Enhance control, spot velocities of up to 250 cm/ms can be stored with minimal loss of resolution and contrast.

Single-Shot Signals—At slow or medium speeds, single-shot signals are easily stored for extended viewing time.

Integrate Mode—Increases the effective writing speed for repetitive fast signals with repetition rates that are too low for effective storage, but which may be too fast for satisfactory single-shot storage with enhancement.

Auto Erase—Display is automatically erased at the end of each sweep.

Vertical Amplifier

Bandwidth and Risetime—DC-to-10 MHz (approx. 3 dB down) at all deflection factors. Approximately 2 Hz low frequency 3 dB point when AC coupled. Risetime is 35 ns.

Deflection Factor—10 mV/cm to 50 V/cm in 12 calibrated steps (1-2-5 sequence), 1 mV/cm to 5 V/cm-using X10 gain, all steps accurate within 5%. Uncalibrated, continuously variable between steps and to approx 125 V/cm.

Maximum Deflection—Reduces to 4 cm at 10 MHz.

Input R and C—1 M Ω , approx 47 pF.

Maximum Input Voltage—400 V DC plus peak AC.

Display Modes—Channel 1 only; Channel 2 (normal and inverted); Alternate; Chopped (approx 150-kHz rate); Added; X-Y (Channel 1-Y and Channel 2-X).

Horizontal Deflection System

Time Base—100 ns/cm to 2 s/cm in 23 calibrated steps (1-2-5 sequence) accurate within 5%. Uncalibrated, continuously variable between steps and to approx 5 s/cm.

Single-Sweep—Single-shot facility with lockout is provided. A light indicates when the time base is armed.

X5 Magnifier—Operates over time base speeds of 200 ns/cm to 2 s/cm and extends fastest speed to 40 ns/cm; magnifier accurate within 2% in addition to specified time base accuracy.

External Horizontal Input—Approx 1 V/cm deflection factor, approx 0.2 V/cm with X5 Magnifier. DC to 1 MHz (approx. 3 dB down). Input impedance 100 k Ω , approx 30 pF. Max input voltage 400 V DC plus peak AC.

X-Y Operation

Full Sensitivity X-Y—10 mV/cm to 50 V/cm in 12 calibrated steps (1-2-5 sequence), 1 mV/cm to 5 V/cm using X10 gain; variables work on both channels, all steps accurate within 5%. Bandwidth is DC to at least 1 MHz -3 dB. Phase difference between amplifiers is less than 1° at 10 kHz.

Triggering

Internal-External—Triggers over a frequency range of DC to approx 1 MHz. Automatic trigger operates from 40 Hz to 1 MHz.

Trigger Level Selection—Occurs at any selected level on the waveform over a frequency range of DC to approx. 1 MHz.

High Frequency Sync—Synchronizes the sweep over a frequency range of approx 1 MHz to at least 10 MHz.

TV—Triggers on TV field or line.

Sensitivity—Internal, 0.2 cm deflection to 1 MHz, except HF is 1 cm deflection to 10 MHz. External, 250 mV P-P to 15 V P-P; input impedance 100 k Ω , approx 30 pF.

CRT

TEKTRONIX CRT—Flat-faced bistable storage tube with beam deflection blanking and an accelerating potential of 3.5 kV. The viewing area is 8 x 10 cm.

Phosphor similar to P1 is used. Z-axis modulation to CRT grid requires approx 20 V for perceptible modulation. AC coupling, 50 V maximum.

Graticule—External; variable edge lighting.

Other Characteristics

Voltage Calibrator—Line frequency squarewave, 500 mV P-P, accurate within 2%.

Front Panel Outputs—Sawtooth out - 10 V, DC coupled, 47 k Ω minimum load.

Gate out—Positive-going rectangular pulses, 0.5 V peak, lasting for the duration of the sweep.

Power Requirements—100 to 125 VAC in 5-V steps or 200 to 250 VAC in 10-V steps, 48-400 Hz. The instrument specifications apply over a \pm 10% power line variation for the step chosen. Power consumption is approx 100 VA.

Cooling—Convection.

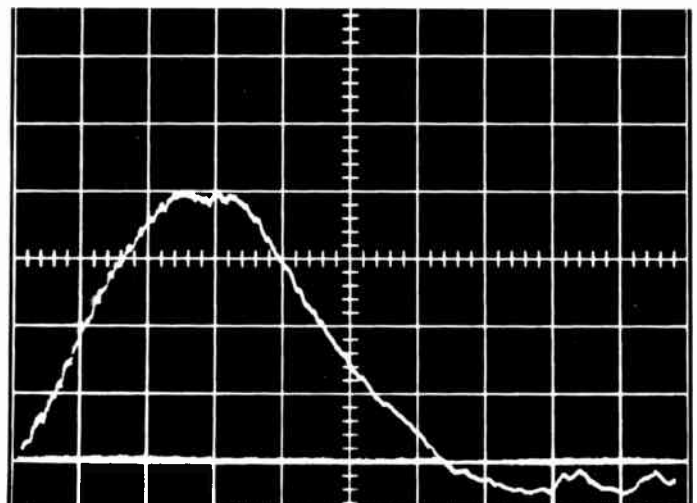
Temperature Limits, Ambient— -5 C to +40 C operating; -25 C to +70 C non-operating.

Dimensions and Weights

Height	9.5 in	24 cm
Width	8.3 in	21 cm
Depth	14.5 in	37 cm
Net Weight	27.5 lb	12.5 kg

Ordering Information

DM64 Oscilloscope, order TL DM64\$1,195



Capturing single shot events

Slowly changing or nonrepetitive phenomena are easily captured by using the DM64's "Store" mode. Here a typical shock pulse, generated by an accelerometer in a drop test, triggers the single-shot sweep and is stored for measurement of amplitude and duration.

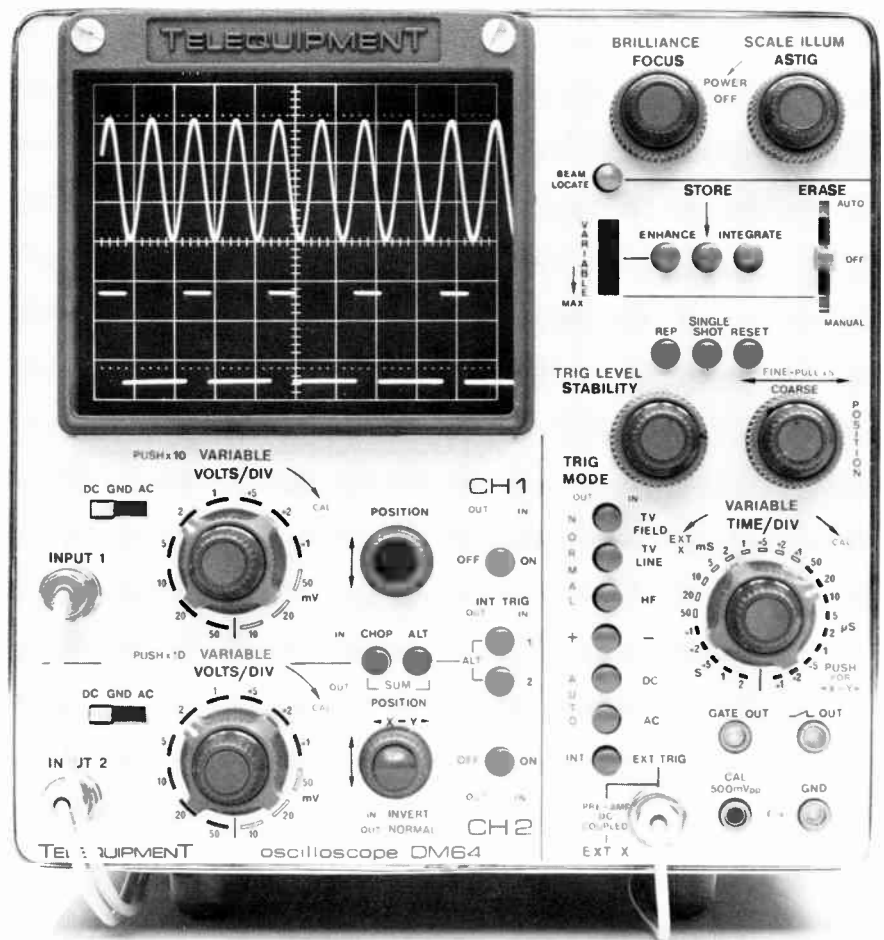
TELEQUIPMENT® DM64 Oscilloscope

DC-to-10 MHz bandwidth at
1 mV/cm
Bistable storage and
conventional displays
Dual trace
Convenient x-y operation
8 x 10 cm viewing area
Low cost

The TELEQUIPMENT DM64 is the lowest cost 10 MHz dual trace storage oscilloscope on the market today. It has a storage writing speed of up to 250 cm/ms. So you can easily view rapidly changing, single shot events. Or make meaningful evaluations of slowly changing phenomena that would appear not as a waveform, but as a slowly-moving dot on a conventional oscilloscope. Solid-state design, using FET input circuitry, provides minimum drift and fast stabilization time.

In addition to the storage feature, the DM64 also offers alternate or chopped dual-trace displays. And convenient single button x-y operation. The 5" crt is bright and easy to view.

All TELEQUIPMENT products are backed with the same one-year warranty as other Tektronix products. They are marketed and supported through the same international network of Tektronix Field Offices, Service Centers, Distributors and Representatives.





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TELEQUIPMENT® Accessories

Option 1

Factory option is available for the D67, D66, DM64 and D54 which adds hooks to the side panels to accommodate the optional protective panel cover.

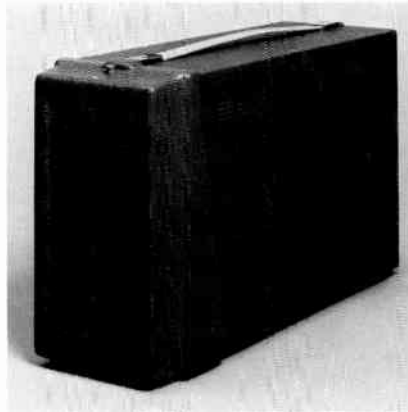
For D67, D66, DM64,
 Order Option 1 \$5.00

Protective Panel Cover



The panel cover protects the D67, D66, D54 or DM64 during transport and storage. The cover fits either the front or rear of the oscilloscope. A slot in the cover is provided for the power cord. This cover fits only instruments with Option 1 (side panels with hooks) or instruments converted with the new side panel accessory.

Order 016-0513-01 \$10.00



The panel cover protects the D61 during transportation and storage. The cover fits either the front or rear of the oscilloscope and has been designed to fit over the instrument's feet. The cover is held in place with a locking device and does not require the installation of option 1.

Order 016-0605-01 \$10.00

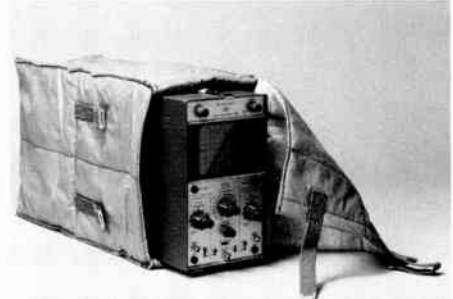
Protective Storage Case

The protective storage case is made of padded, heavy duty plastic material which has been sewed into an oblong case with protective flaps and two canvas straps for securing the case during storage. The case fully protects the instruments and will accept the D54, D61, D66, D67 or the DM64. The storage case has been made large enough so that the instruments can be stowed with or without its protective cover or covers installed.

Order 016-0538-00 \$22

Protective Covers

The protective canvas cover is heavily padded and provides protection during transport or storage. The cover slips easily over the top of the instrument and has a slot which allows access to the instrument handle.



For S54A and S51B
 Order 016-0138-00 \$27.50
 For D54, DM64, D66 and D67.
 Order 016-0143-00 \$16.20
 For D61 with Panel Protectors
 Order 016-0585-00 \$10.50

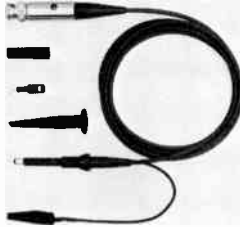


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TELEQUIPMENT® Accessories

Probes



The probe's function is to provide a medium for the transfer of signal energy from a source to the input of the oscilloscope without disturbing the source and without changing the structure of the transferred energy. The attenuator probe will change the sensitivity range of the oscilloscope to which it is connected. A passive probe contains only passive elements and is an extension of the oscilloscope's passive vertical input attenuator. The HZ25 is recommended for all TELEQUIPMENT oscilloscopes.

HZ25 10X Passive Probe Package, BNC

Order 010-0263-01 4.5 ft. \$30.00

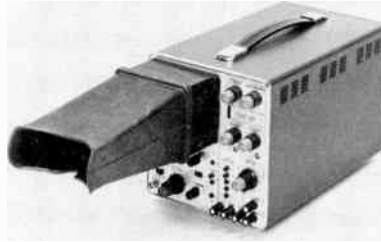
Order 010-0263-03 6.0 ft. \$30.00

Side Panels

D67, D66, D54, DM64 side panel conversion kit, to accommodate the optional protective panel cover. Conversion kit includes one side panel and hardware. For both sides order two conversion kits.

Order 390-0207-03 \$13.00

Viewing Hood



For D54 and S54A Tubular light shield.

Order 016-0292-00 \$11.80

For DM64, D66 and D67 Tubular light shield.

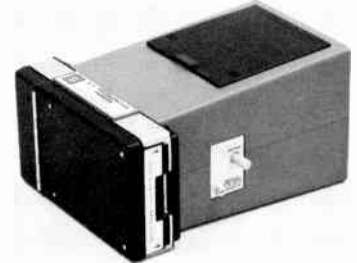
Order 016-0294-01 \$11.80

Separate rubber eyepiece for above.

Order 016-0293-01 \$11.80

Order 016-0294-00 for a combination of 016-0294-01 and 016-0292-00 \$21.50

Cameras



Modern oscilloscope cameras provide a convenient means of obtaining a permanent, accurate record of the crt display, and, for the study of high-speed transient phenomena, a means of obtaining data that cannot be gathered by visual observation alone.

TELEQUIPMENT oscilloscopes can use the TEKTRONIX C5 camera. This camera is for general-purpose use, utilizes the Polaroid Pack film and has a 10.2 x 12.7 cm/4 x 5-inch field of view. The lens maximum relative aperture is f/16.

Coaxial Adapters

BNC Female to Dual Banana

Order 103-0128-00 \$4.50

UHF Female to Dual Banana

Order 102-0129-00 \$3.50

BNC Female to UHF Male

Order 103-0015-00 \$3.00

CT71

- Displays Dynamic Characteristic Curves of Transistors, Diodes and FETs
- Direct Comparison of Similar Devices
- DC Collector Supply to 1 kV
- Leakage Measurements to 5 nA
- Step Generator Range to 200 mA or 2 V

The TELEQUIPMENT CT71 Curve Tracer is a dynamic semiconductor tester which displays characteristic curves of transistors, FETs and diodes. The CT71 is easy to operate and is well suited for student lab use and industrial applications.



D66/D67

- 25-MHz Bandwidth at 10 mV/cm
- Minimum Deflection Factor 1 mV/cm
- Switched X-Y Operation
- Large, Bright 8 x 10-cm Display
- Delayed Sweep Time Base (D67 Only)

The D66 provides 25 MHz bandwidth at 10 mV/cm. X10 gain expands the sensitivity to 1 mV/cm at 15 MHz bandwidth. Sweep rates extend from 2 sec/cm to 100 ns/cm (to 20 ns/cm with X5 Magnifier).

An X-Y function on the D66 projects the TELEQUIPMENT product line into areas recently held only by higher-priced oscilloscopes. Bandwidth is dc to 1 MHz and phase error is less than 1° at 25 kHz. A full complement of vertical display modes is included: channel 1, channel 2 (normal and inverted), chopped (approx 80-kHz rate), alternate and added. Signal delay allows viewing the leading edge of the display.



DM64

- DC-to-10 MHz Bandwidth at 1 mV/cm
- Bistable Storage and Conventional Displays
- Convenient X-Y Operation
- Dual Trace
- 8 x 10-cm Viewing Area

The heart of this oscilloscope is the proven crt from the TEKTRONIX 500-Series Oscilloscope storage line. The crt is the single screen version of the 564 and utilizes an 8 x 10 cm display area.

The normal stored writing speed is at least 25 cm/ms but the writing speed can be increased to at least 250 cm/ms by implementing the Enhanced Mode. The storage view time is one hour or less. Coupled with this storage crt is the ability to measure X-Y relationships with the same ease as measuring Y-T.

The bandwidth of the DM64 is 10 MHz with a deflection factor of 10 mV/cm, using the X10 gain will extend the sensitivity to 1 mV/cm. Sweep rates extend from 100 ns/div to 2 sec/div. A full complement of vertical-display modes is included: channel 1, channel 2 (normal and inverted), chopped (approx 150 kHz rate), alternate and added.



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