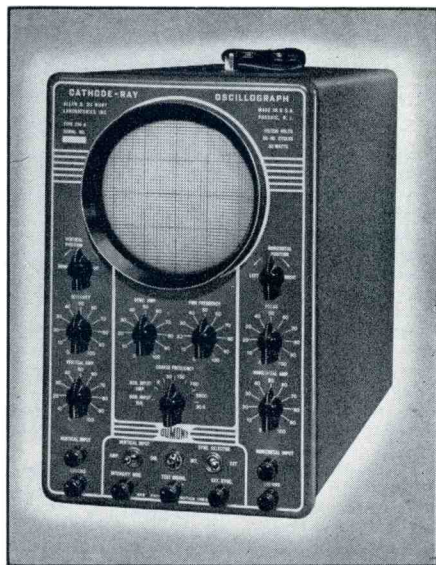


TYPE 274-A CATHODE-RAY OSCILLOGRAPH

- Light-weight, portable, general-purpose oscillograph
- Varied selection of deflection-plate connections
- Similar amplifiers for vertical and horizontal deflection
- Provision for intensity modulation
- Sinewave test signal output
- Recurrent sweeps from 8 cycles to 30,000 cycles per second



FUNCTION

The Type 274-A is a general-purpose oscillograph for general electronic servicing or laboratory duties. Its light weight, easy portability and 5" screen make it an ideal instrument for unspecialized applications where above average performance is required. A high deflection sensitivity and at least full screen deflection without distortion have created a demand for the Type 274-A in the television industry where it has found a wide acceptance in the production-line testing of such units as television i-f strips. In addition to the usual horizontal and vertical deflection inputs, the instrument contains a Z-axis modulation input enabling the operator to impress timing markers on the trace from an external source.

DESCRIPTION

Cathode-ray Tube

A Type 5BP-A Cathode-ray Tube is used in the Type 274-A. Accelerating potential of 1200 volts is applied prior to deflection. A Mu-metal magnetic shield for the cathode-ray tube prevents spurious deflection or intensity modulation from stray magnetic fields.

Vertical Deflection

Signals may be applied to vertical deflection plates (1) through the vertical amplifier, (2) through a panel terminal which may be capacitively connected to the deflection plate, or (3) through a terminal at the rear of the instrument which is directly connected to the deflection plate. Signals which do not require amplification or which contain frequency components beyond the response limits of the vertical amplifier may be either capacitively or directly connected to the deflection plates. Sinusoidal frequency-response characteristic of the vertical amplifier is uniform within 50% from 20 to 200,000 cycles per second.

Horizontal Deflection

External signals may be applied to horizontal deflection plates (1) through the horizontal amplifier, (2) through a panel terminal which may be capacitively connected to the deflection plate, or (3) through a terminal at the rear of the instrument which is directly connected to the deflection plate. Signals which do not require amplification or which contain

TYPE 274-A CATHODE-RAY OSCILLOGRAPH

frequency components beyond the response limits of the horizontal amplifier may be either capacitively or directly connected to the deflection plate.

Linear Time Base

The time-base generator furnishes a recurrent sawtooth voltage variable in frequency from 8 to 30,000 cycles per second. Direction of the sweep produced on the cathode-ray tube is from left to right.

Synchronization of the Time Base.

Frequency of the time-base generator may be synchronized from (1) the vertical deflection signal or (2) an external signal. The vertical deflection signal is obtained from the vertical amplifier; the external signal may be connected to a synchronizing terminal on the panel.

Positioning

A pattern may be moved to any portion of the cathode-ray tube screen by means of controls on the panel. At least 5 inches of positioning are available both vertically and horizontally.

SPECIFICATIONS

CATHODE-RAY TUBE—Type 5BP-A cathode-ray tube. Accelerating potential, 1200 volts. Deflection plates are at ground potential.

VERTICAL DEFLECTION—**Deflection Factor:** amplifier at full gain, not more than 0.70 peak-to-peak (0.25 rms) volt/inch; directly to deflection plates, 45 peak-to-peak (16 rms) volts/inch $\pm 20\%$. **Sinusoidal frequency response:** amplifier at full gain, uniform within 50% from 20 to 200,000 cycles per second. **Input impedance:** to amplifier, 1 megohm paralleled by 40 μmf ; through capacitor to deflection plate, 4.7 megohms paralleled by 50 μmf . **Maximum Allowable Input Potential:** 400 rms volts, 600 d-c volts or 600 volts peak.

HORIZONTAL DEFLECTION—**Deflection Factor:** amplifier at full gain, not more than 0.7 peak-to-peak (0.25 rms) volt/inch; directly to deflection plates, 51 peak-to-peak (18 rms) volts/inch $\pm 20\%$. **Sinusoidal frequency response:** amplifier at full gain, uniform within 50% from 20 to 200,000 cycles per second. **Input impedance:** to amplifier, 1 megohm paralleled by 40 μmf ; through capacitor to deflection plates, 4.7 megohms paralleled by 50 μmf . **Maximum Allowable Input Potential:** 400 rms volts, 600 d-c volts or 600 volts peak.

Catalog No. **Type No.**

Catalog No.	Type No.	Description
1420-A	274-A	Cathode-ray Oscilloscope with Type 5BP1-A Cathode-ray Tube; for operation with 115 volts, 50-60 cycles.
1422-A	274-A	Same as above, with Type 5BP11-A Cathode-ray Tube.
1423-A	274-A	Cathode-ray Oscilloscope with Type 5BP1-A Cathode-ray Tube for operation from 230 volts, 50-60 cycles.
1425-A	274-A	Same as above, with Type 5BP11-A Cathode-ray Tube.

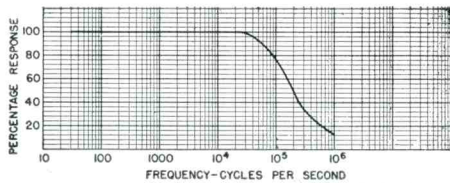


Figure 1. Frequency-response characteristic of the Type 274-A

Test-Signal Output

A sinusoidal voltage of power-line frequency and 17 peak-to-peak volts amplitude is available at a terminal on the panel. It is useful as a test signal for trouble-shooting applications, or it may be connected to the synchronizing terminal to synchronize the time-base at power-line frequency.

Intensity Modulation

An external signal may be connected to a terminal on the panel to provide modulation of beam intensity. An input signal of positive polarity will increase intensity; a negative polarity signal will decrease intensity.

LINEAR TIME BASE—Recurrent sweeps variable in frequency from 8 to 30,000 cycles per second. Sweep direction, left-to-right. Synchronization from vertical deflection signal, or external signal.

INTENSITY MODULATION—Input impedance, 470,000 ohms paralleled by 45 μmf . 28 peak-to-peak volts input signal provides satisfactory modulation. Positive polarity increases intensity; negative polarity decreases intensity.

POWER SOURCE—Type 274-A is designed to operate from a 115- or 230-volt power line at 50-60 cycles. Power consumption, 50 watts; fuse protection, 1 ampere (115 volts) or 0.5 ampere (230 volts).

MAXIMUM PHOTOGRAPHIC WRITING RATES—With Type 296, using f/2.8 lens, 0.05 inches/ μsec ; with Types 321 and 295, using f/1.9 lens, 0.14 inch/ μsec .

TUBE COMPLEMENT—2—6AC7; 884; 2—80.

PHYSICAL CHARACTERISTICS—Instrument housed in metal cabinet provided with carrying handle. **Overall Dimensions:** height, 14" (35.6 cm); width, 8-5/8" (21.8 cm); depth, 19-3/8" (50.2 cm). **Weight:** 35 lbs. (15.9 kg).

Description