

Dumont

Cathode-ray
EQUIPMENT

DU MONT CATHODE-RAY TUBES

SCREEN CHARACTERISTICS OF CATHODE-RAY TUBES

The P1 screen is used for visual, general-purpose oscillographic applications. The trace on a P1 screen is a medium-persistence green of high visual efficiency.

The P2 screen is used to obtain long persistence at high writing rates. The trace on a P2 screen is a long-persistence blue-green fluorescence followed by yellow-green phosphorescence.

The P4 screen is used for television. The trace on a P4 screen is a medium-persistence white.

The P7 screen is used for slow and intermediate writing rates. The trace on a P7 screen has long persistence with blue fluorescence and yellow phosphorescence.

The P11 screen is used for recording high writing rates. The trace on a P11 screen is a short-persistence blue.

TYPE 3AP-A

The Type 3AP-A Cathode-ray Tube employs electrostatic deflection and focus, low accelerating-voltage, unbalanced deflection. The Type 3AP-A is used in oscillographs of simplified design.

Catalog No.	Tube Type
2201-A:	3AP1-A
2206-A:	3AP11-A

TYPE 3GP-A

The Type 3GP-A Cathode-ray Tube employs electrostatic deflection and focus, and low accelerating voltage. The Type 3GP-A has four free deflection-plates for balanced deflection to minimize defocusing.

Catalog No.	Tube Type
2211-A:	3GP1-A
2216-A:	3GP11-A

TYPE 3JP-

The Type 3JP- Cathode-ray Tube employs electrostatic deflection and focus, an intensifier for increased light output, and maintains high deflection sensitivity. The Type 3JP- is a relatively short tube.

Catalog No.	Tube Type
2025-A:	3JP1
2026-A:	3JP2
2029-A:	3JP7
2030-A:	3JP11

TYPE 5BP-A

The Type 5BP-A Cathode-ray Tube employs electrostatic deflection and focus, and low accelerating voltage. The Type 5BP-A has four free deflection plates for balanced deflection.

Catalog No.	Tube Type
2221-A:	5BP1-A
2226-A:	5BP11-A

TYPE 5CP-A

The Type 5CP-A Cathode-ray Tube employs electrostatic deflection and focus, an intensifier electrode for maximum brightness, and maintains high deflection-sensitivity. A diheptal base provides insulation for high altitude installations.

Catalog No.	Tube Type
2231-A:	5CP1-A
2232-A:	5CP2-A
2235-A:	5CP7-A
2236-A:	5CP11-A

TYPE 5JP-A

The Type 5JP-A Cathode-ray Tube employs electrostatic deflection and focus, and low deflection plate capacitances with short, direct leads.

Catalog No.	Tube Type
2251-A:	5JP1-A
2252-A:	5JP2-A
2255-A:	5JP7-A
2256-A:	5JP11-A

TYPE 5LP-A

The Type 5LP-A Cathode-ray Tube employs electrostatic deflection and focus, and an intensifier electrode for maximum deflection sensitivity at a given accelerating voltage. The Type 5LP-A has four free deflection plates for balanced deflection.

Catalog No.	Tube Type
2261-A:	5LP1-A
2262-A:	5LP2-A
2265-A:	5LP7-A
2266-A:	5LP11-A



FOR INDUSTRY AND TELEVISION

TYPE 5RP-A

The Type 5RP-A Cathode-ray Tube employs high accelerating voltages distributed over four intensifier bands. Accelerating potentials up to 30,000 volts have been applied to the anodes of the Type 5RP-A to achieve writing rates of 400 in./microsecond, while maintaining adequate deflection sensitivity.

Catalog No. 2282-E: 5RP2-A
2286-E: 5RP11-A

TYPE 5SP-

The Type 5SP- Cathode-ray Tube embodies two complete and independent electron guns and deflection plate assemblies for the production of two separate electron beams. The Type 5SP- presents two separate traces on the screen. Intensifier electrodes are used for high light output at maximum deflection sensitivity.

Catalog No. 2073-E: 5SP1
2074-E: 5SP2
2077-E: 5SP7
2078-E: 5SP11

DU MONT DIRECT VIEWING TELEVISION TUBES

TYPE 7EP4

The Du Mont Type 7EP4 Cathode-ray Tube employs electrostatic deflection and focus. The Type 7EP4 provides a useful picture area of approximately 4 1/4" x 5 3/4". The Type 7EP4 is intended to provide high brilliance and performance in low cost television receivers.

Catalog No. 2087-D

TYPE 12JP4

The Du Mont Type 12JP4 Cathode-ray Tube employs magnetic deflection and focus. The Type 12JP4 provides a picture area of approximately 7 3/4" x 10 1/4". The Type 12JP4 is designed for medium priced television receivers.

Catalog No. 2179-D

TYPE 15AP4

The Du Mont Type 15AP4 Cathode-ray Tube employs magnetic deflection and focus. The Type 15AP4 presents a picture area of approximately 9 1/2" x 12 3/4". The Type 15AP4 makes practical a large screen, direct view receiver in a cabinet of minimum depth.

Catalog No. 2185-D

TYPE 20BP4

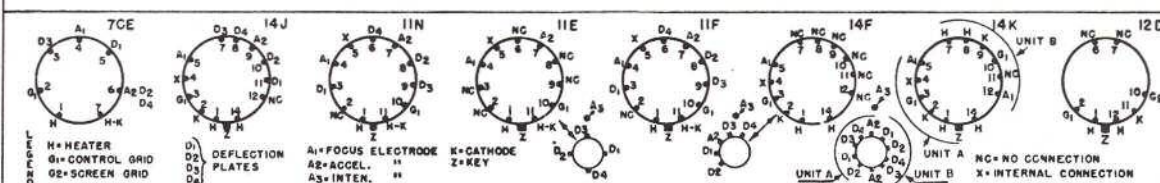
The Du Mont Type 20BP4 Cathode-ray Tube employs magnetic deflection and focus. The Type 20BP4 provides a picture area of approximately 12 7/8" x 17 1/4". The Type 20BP4 is designed for direct view, large screen television receivers of the deluxe class.

Catalog No. 2194-D

DU MONT CATHODE-RAY-TUBE CHARACTERISTICS

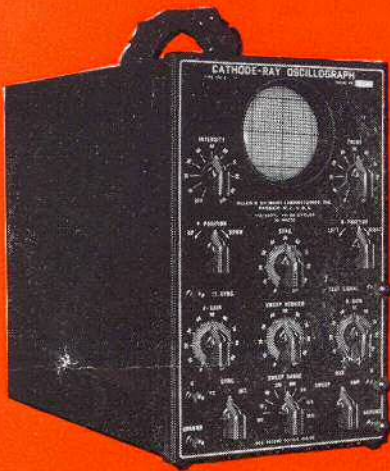
BASING DIAGRAMS SHOWN BELOW

Type	Nominal Diam. In.	Length In.	RMA Basing	Focus	Deflection	Maximum Ratings										Principal Applications
						Ef	If	E _{ca}	E _{b3} or E _b	E _{b2}	E _{b1} (E _{c1} -75% Cut Off)	E _{c1} Cutoff	D ₁ -D ₂ Deflection Factor d-c volts/inch	D ₃ -D ₄		
3AP-A	3	11 1/2	7CE	E	E	2.5	2.1			1500	430	-50	114	109	Oscillographic Small space, high altitude operation; radar, high intensity	
3JP-	3	10	14J	E	E	6.3	0.6		4000	2000	575	-60	200	148		
3GP-A	3	11 1/2	11N	E	E	6.3	0.6			1500	350	-50	120	105	Oscillographic Oscillographic, high altitude operation; radar, high intensity	
5BP-A	5 1/4	16 3/4	11N	E	E	6.3	0.6			2000	450	-40	84	76		
5CP-A	5 1/4	16 3/4	14J	E	E	6.3	0.6		4000	2000	575	-60	92	79	H.F. Oscillographic and radar; plate leads thru neck Oscillographic	
5JP-A	5 7/8	16 3/4	11E	E	E	6.3	0.6		4000	2000	520	-75	96	96		
5LP-A	5 7/8	16 3/4	11F	E	E	6.3	0.6			4000	2000	500	-60	103	90	High writing-rate, photography and observation; projection oscillograph Two-gun oscillographic. Typical operation characteristics are the same for both guns
5RP-A	5 1/4	16 3/4	14F	E	E	6.3	0.6		20,000	2000	575	-60	175	164		
5SP-	5 1/4	18 1/4	14K	E	E	6.3	0.6		4000	2000	575	-60	92	79	Television, low cost Television	
7EP4	7	15 1/2	11N	E	E	6.3	0.6			2500	650	-60	110	95		
12JP4	12	17 1/2	12D	M	M	6.3	0.6	250	10,000			-27 to -63			Television, large screen Television, large screen	
15AP4	15 1/2	20 1/2	12D	M	M	6.3	0.6	250	12,000			-27 to -63				
20BP4	20	28 3/4	12D	M	M	6.3	0.6	250	15,000			-27 to -63				



DU MONT INSTRUMENTS FOR

DU MONT TYPE 164-E CATHODE-RAY OSCILLOGRAPH



A compact, portable instrument especially suitable for laboratory, shop, or field work. The 3" cathode-ray tube operates at an accelerating potential of 1,100 volts, thus providing brilliant, well-defined traces. Both amplifiers have uniform frequency response over their operating range; the single-stage vertical amplifier has a voltage gain of approximately 43; the horizontal amplifier, which serves to amplify either sweep or externally applied signals, has a voltage gain of approximately 55. For added convenience, deflection signals may be applied directly to the cathode-ray tube without removing the cabinet.

SPECIFICATIONS

Cathode-ray tube: 3AP-A; 1100 volts accelerating potential
 Frequency response: Vertical and horizontal amplifiers uniform within 7.5% from 5 to 100,000 cps.
 Deflection factor: Through vertical amplifier—0.70 rms v/in max.; through horizontal amplifier

—0.55 rms v/in. max.; direct—30 rms v/in.
 Sweep frequency: Continuous from 15 to 30,000 cps.
 Primary power: 115/230 volts, 40-60 cps., 50 watts
 Size: 11 $\frac{1}{2}$ " h., 7 $\frac{3}{8}$ " w., 14" d.; 20 lbs.

Catalog No.	Description	Code
1064-A:	115 volts, 40-60 cps. 3AP1-A	YATOP
1065-A:	230 volts, 40-60 cps. 3AP1-A	YATPO
1066-A:	115 volts, 40-60 cps. 3AP11-A	YATRY
1067-A:	230 volts, 40-60 cps. 3AP11-A	YATYR

DU MONT TYPE 185-A ELECTRONIC SWITCH

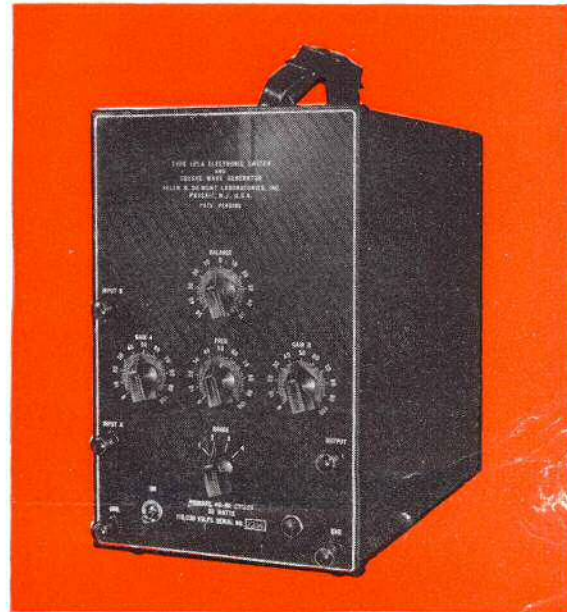
The Du Mont Type 185-A Electronic Switch affords simultaneous observation of separate patterns on a single cathode-ray tube by means of a time-sharing system of presentation. By chopping, the Type 185-A adapts a d-c signal for transmission through an a-c circuit. A square-wave voltage of variable frequency and amplitude is available at the output terminals of the Type 185-A Electronic Switch.

SPECIFICATIONS

Switching rate: Continuously variable, 10 to 2000 times a second
 Frequency response: d-c to 5 kc
 Voltage gain: 10
 Input resistance: 0.1 megohm

Output resistance: 50,000 ohms
 Maximum signal output: 75 volts peak-to-peak
 Primary power: 115/230 volts, 40-60 cps., 30 watts
 Size: 11 $\frac{1}{2}$ " h., 7 $\frac{3}{8}$ " w., 13" d.; 17 lbs.

Catalog No.	Description	Code
1072-A:	115 volts, 40-60 cps.	YAU1F
1073-A:	230 volts, 40-60 cps.	YAU1N



DU MONT TYPE 208-B CATHODE-RAY OSCILLOGRAPH

The Du Mont Type 208-B Cathode-ray Oscilloscope is designed for general-purpose and laboratory use. It has an extremely sensitive vertical-deflection system and excellent response to low-frequency signals. Deflection-plate connections may also be made directly.

SPECIFICATIONS

Type 5LP-A Cathode-ray Tube: Deflection-plate pairs average at ground potential for safe, direct connection; tube-shield provided; 1400 volts overall accelerating potential.

Y-axis: Deflection factor 0.01 rms volt/in. maximum with amplifier at full gain; 21 rms volts/in. $\pm 20\%$ direct. Sinusoidal frequency-response uniform within 10% from 2 to 100,000 cps., within 50% to 325,000 cps.; identical response for all attenuation positions; input impedance to amplifier, 2 megohms, 30 μ f.

X-axis: Deflection factor 0.5 rms volt/in. maximum at full gain; 22 rms volts/in. $\pm 20\%$ direct

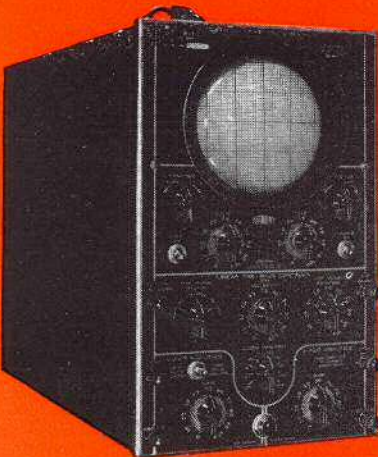
Sinusoidal frequency response of amplifier uniform within 10% from 2 to 100,000 cps., within 50% to 250,000 cps.; identical response for all attenuation positions; input impedance to amplifier, 5 megohms 25 μ f.

Linear time-base: Recurrent sweeps variable from 2 to 50,000 cps.

Primary power: 115/230 volts, 40-60 cps., 90 watts

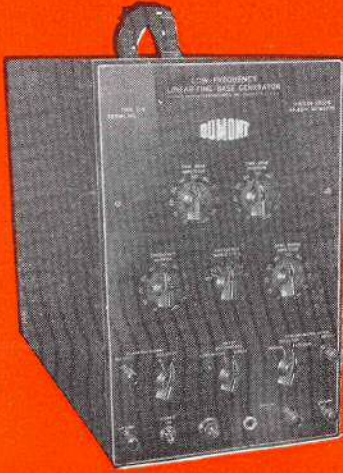
Size: 14 $\frac{1}{2}$ " h., 8 $\frac{7}{8}$ " w., 20 $\frac{1}{4}$ " d.; 54 lbs.

Catalog No.	Description	Code
1146-A:	115 volts, 40-60 cps. 5LP1-A	YEEDG
1147-A:	230 volts, 40-60 cps. 5LP1-A	YEELJ
1148-A:	115 volts, 40-60 cps. 5LP11-A	YEEMK
1149-A:	230 volts, 40-60 cps. 5LP11-A	YEERP
1150-A:	115 volts, 40-60 cps. 5LP7-A	YAKCE
1151-A:	230 volts, 40-60 cps. 5LP7-A	YAKFO



CATHODE-RAY OSCILLOGRAPHY

DU MONT TYPE 215 LINEAR TIME-BASE GENERATOR



The Du Mont Type 215 Linear Time-base Generator is used to extend the low-frequency time base of most five-inch, balanced-deflection, Du Mont oscillographs for the study of continuous low-frequency phenomena or transients. Its balanced-output signal voltage is adjustable to a maximum undistorted output of approximately 400 volts peak-to-peak, and it supplies sweep frequencies from 0.2 to 125 cycles per second with a return-trace blanking signal of either positive or negative polarity. The single sweep may be initiated either manually or by the observed signal. The excellent linearity of the sweep is assured by a compensating circuit.

SPECIFICATIONS

Frequency: 0.2 to 125 cps., recurrent or single	Synchronization: External
Output: Balanced, adjustable to 400 ppv.	Primary power: 115/230 volts, 40-60 cps., 50 watts
Positioning voltage: 300 volts d-c	Dimensions: 14 $\frac{1}{4}$ " h., 8 $\frac{1}{8}$ " w., 19 $\frac{1}{2}$ " d.; 35 lbs.
Blanking output: Positive or negative	

Catalog No.	Description	Code
1189-A:	115/230 volts, 40-60 cps.	YAGOK

DU MONT TYPE 224-A CATHODE-RAY OSCILLOGRAPH

The Du Mont Type 224-A Cathode-ray Oscillograph has a wide-range response for faithful reproduction of all waveforms with steep fronts and large-harmonic content and permits study of pulses and square-waves with frequency components as high as 5 mc. Flexibility and convenience of operation is assured by numerous combinations of signal-input connections available at the front panel. Intensity modulation of the grid of the cathode-ray tube is provided. Included is a test probe with shielded cable for input to the vertical amplifier.

SPECIFICATIONS

Cathode-ray Tube: Type 3GP-A; 1000 volts accelerating potential.

Vertical axis: Deflection factor is 0.1 rms v/in. through amplifier, 0.4 rms v/in. through probe and amplifier, 25 rms v/in. $\pm 20\%$ direct. Sinusoidal frequency response is uniform within 30% from 20 cps. to 2 mc per second, and is independent of gain control setting.

Input impedance, to amplifier, 2 megohms, 30 μ f; to probe, 1 megohm, 20 μ f; direct (balanced connection), 10 megohms, 20 μ f; direct (unbalanced connection), 5 megohms, 25 μ f.

Horizontal axis: Deflection factor is 0.7 max. rms v/in. through amplifier, 28 rms v/in. $\pm 20\%$ direct. Sinusoidal frequency response is uniform within 30% from 10 cps. to 100,000 cps. Input

impedance, to amplifier, 2 megohms, 30 μ f; direct (balanced connection), 10 megohms, 20 μ f; direct (unbalanced connection), 5 megohms, 25 μ f.

Linear time-base: Recurrent sweep variable from 15 cps. to 30,000 cps.; linearity, $\pm 5\%$ at 15 cps.; direction, left to right; synchronization, 0.2 in. deflection from vertical signal, 0.5 v peak amplitude; or from power-line-frequency voltage internally obtained.

Intensity modulation: 15 volts-peak provides modulation; polarity, positive signal increases in intensity; frequency response of circuit, uniform within 30% from 30 cps. to 3 mc a second.

Size: 14 $\frac{1}{4}$ " h., 8 $\frac{3}{8}$ " w., 15 $\frac{1}{8}$ " d.; 49 lbs.

Catalog No.	Description	Code
1191-A:	115 volts, 50-60 cps. 3GP1-A	YAIRL
1203-A:	115 volts, 50-60 cps. 3GP11-A	YALCA



DU MONT TYPE 241 CATHODE-RAY OSCILLOGRAPH

The Du Mont Type 241 Cathode-ray Oscillograph is designed for investigating pulses of high-frequency content. The Type 241 has a wide-band vertical amplifier, an intensity-modulation amplifier, a variety of signal-inputs, and is provided with a shielded, low-capacity input probe for the vertical amplifier.

SPECIFICATIONS

Type 5JP-A Cathode-ray Tube: 1500 volts over-all accelerating potential.

Y-axis: Deflection factor is 0.07 rms volt/in. maximum, amplifier at full gain; 0.7 rms volt/in. through probe, amplifier at full gain; 22 rms volts/in. $\pm 20\%$ direct. Sinusoidal frequency-response of amplifier uniform within 30% from 20 cps. to 2 mc per second; uniform within 50% to 4 mc per second; independent of gain control setting. Input impedance to amplifier 2 megohms, 40 μ f; to probe, 1 megohm, 10 μ f; to deflection plates 5 megohms, 20 μ f (balanced), 5 megohms, 25 μ f (unbalanced).

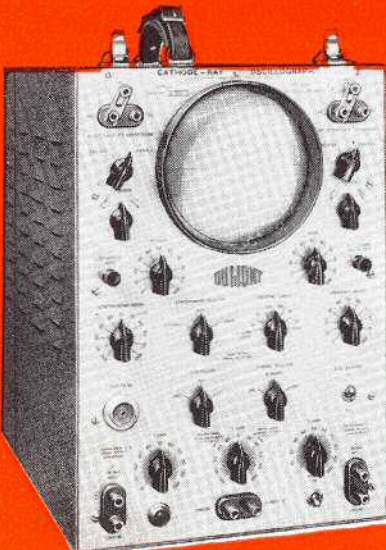
X-axis: Deflection factor is 0.7 rms volt/in. maximum with amplifier at full gain, 21 rms volts/in. $\pm 20\%$ direct. Sinusoidal frequency-100,000 cps.; uniform within 50% to 300,000 cps. Input impedance to amplifier 2 megohm, 40 μ f; to deflection plates 5 megohms, 20 μ f (balanced), 5 megohms, 25 μ f (unbalanced).

Linear time-base: Recurrent sweep variable from 15 cps. to 30,000 cps.

Primary power: 115 volts, 50-60 cps., 160 watts.

Size: 17 $\frac{1}{2}$ " h., 10 $\frac{3}{4}$ " w., 21" d.; 65 lbs.

Catalog No.	Description	Code
1192-A:	115 volts, 50-60 cps. 5JP1-A	YAJAZ
1204-A:	115 volts, 50-60 cps. 5JP7-A	YALDE
1205-A:	115 volts, 50-60 cps. 5JP11-A	YALD



DU MONT TYPE 248 CATHODE-RAY OSCILLOGRAPH

The Du Mont Type 248 Cathode-ray Oscillograph is designed for the investigation of pulses or other signals containing high-frequency components. These phenomena may be recurrent or transient. The Type 248 provides high-frequency recurrent sweeps, short-duration driven sweeps, a timing oscillator, and a delay network to initiate the driven sweep before the signal appears on the screen.

Type 5JP-A Cathode-ray Tube: 2000 or 4000 volts overall accelerating potential.

Y-axis (with 4000 volts accelerating potential): Deflection factor, 0.1 rms volt/in. at full gain; 2 rms volts/in. through probe at full gain; 32 rms volts/in. $\pm 20\%$ direct. Undistorted deflection through amplifier, 3 inches. Sinusoidal frequency-response of amplifier uniform within 30% from 20 cps. to 5 megacycles per second, at any setting of gain or attenuator controls. Input impedance to amplifier, 1 megohm, 40 μ f; through probe (balanced), 5 megohms, 15 μ f and (unbalanced), 4.7 megohms, 25 μ f.

X-axis (with 4000 volts accelerating potential): Deflection factor, 2.75 rms volts/in. maximum at full gain; 37 rms. volts/in. $\pm 20\%$ direct. Undistorted deflection through amplifier, 3 inches. Sinusoidal frequency-response uniform within 30% from 20 cps. to 2 megacycles per second.

Input impedance, to amplifier 1 megohm, 60 μ f; direct (balanced), 9.4 megohms, 15 μ f; direct (unbalanced), 4.7 megohms, 25 μ f.

Linear time-base: Recurrent sweep variable from 15 cps. to 150,000 cps. Driven sweeps of 5, 25, 100, 1000 microseconds.

Timing oscillator: Blanked time-marks at each 1, 10, or 100 microseconds, accuracy $\pm 5\%$; only with driven sweeps.

Pulse generator: Pulse output of 100 volts peak, 0.5 microsecond duration, 200 to 3000 pulses per second, either polarity, output impedance 500 ohms.

Primary power: 115 volts, 50 to 400 cps., 550 watts.

Size: Indicator unit, 15 $\frac{3}{4}$ " h., 12 $\frac{3}{4}$ " w., 21 $\frac{1}{4}$ " d.; 71 lbs.

Power supply: 15 $\frac{3}{4}$ " h., 12 $\frac{3}{4}$ " w., 19 $\frac{3}{4}$ " d.; 126 lbs.

Catalog No.	Description	Code
1199-E:	115 volts, 50-400 cps. 5JP1-A	YAJZA
1200-E:	115 volts, 50-400 cps. 5JP11-A	YAKAB
1201-E:	115 volts, 50-400 cps. 5JP7-A	YAKBA

DU MONT TYPE 248-A CATHODE-RAY OSCILLOGRAPH

The Du Mont Type 248-A Cathode-ray Oscillograph utilizes the Type 5RP-A Cathode-ray Tube and an external high-voltage supply, such as the Du Mont Type 263-A High-voltage Power Supply, for intensifier-potentials. The Type 248-A permits observation and photography of high-speed transients and pulses of extremely low repetition rates. The Type 248-A may also be used as a projection oscillograph. Characteristics of the Type 248-A are the same as for the Type 248, except for deflection factors and undistorted deflection available from the amplifiers. The Type 263-A Power Supply, required for high-voltage operation of the Type 248-A, must be ordered separately.

Type 5RP-A Cathode-ray Tube: 12,000 volts maximum overall accelerating potential using Type 263-A Supply.

Y-axis: Deflection factor is 0.14 rms volt/in. at

full gain; 130 rms volts/in. direct.

X-axis: Deflection factor is 3.7 rms volts/in. at full gain; 140 rms volts/in. approx. direct; minimum of 3 inches undistorted deflection.

Catalog No.	Description	Code
1244-E:	115 volts, 50-400 cps. 5RP2-A	YALBT
1247-E:	115 volts, 50-400 cps. 5RP11-A	YALBW

DU MONT TYPE 250 CATHODE-RAY OSCILLOGRAPH

The Du Mont Type 250 Cathode-ray Oscillograph is designed for both investigating and photographing recurrent and transient phenomena by automatic beam control and driven sweep. The Type 250 amplifies d-c and a-c signals. It contains a sensitive vertical amplifier, a built-in calibrator, an unusually flexible time-base, an input probe, and a variety of input channels.

Type 5CP-A Cathode-ray Tube: 3000 volts accelerating potential.

Y-axis: Deflection factor is .015 rms volt/in. maximum through a-c amplifier at full gain; 0.150 rms volt/in. through probe and amplifier; 2 d-c volts/in. maximum through d-c amplifier at full gain; 21 rms volts/in. $\pm 20\%$ direct. Sinusoidal frequency-response of a-c amplifier uniform within 10% from 5 cps. to 200,000 cps., within 60% to 500,000 cps. Response of d-c amplifier uniform within 10% from 0 to 200,000 cps. Frequency response is independent of gain or attenuator setting.

Calibrator: Square-wave amplitudes of 0.01, 0.1, 1, 10, or 100 volts; accuracy $\pm 5\%$.

X-axis: Deflection factor is 0.7 rms volt/in. max-

imum through a-c amplifier at full gain; 2 d-c volts/in. maximum through d-c amplifier at full gain; 23 rms volts/in. $\pm 20\%$ direct. Sinusoidal frequency-response of a-c amplifier uniform within 10% from 5 cps. to 200,000 cps., within 60% to 500,000 cps. Response of d-c amplifier uniform within 10% from 0 to 200,000 cps.

Linear time-base: Recurrent sweep variable from 1 cps. to 150,000 cps. Driven-sweep duration variable from 1 second to 20 microseconds.

Intensity modulation: 5 volts peak for adequate modulation.

Primary power: 115/230 volts, 50-60 cps., 200 watts.

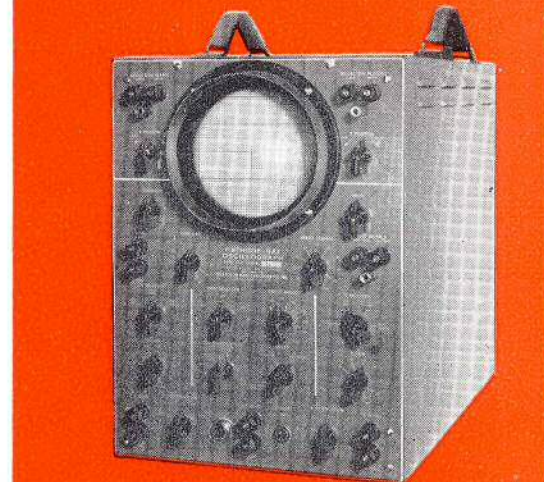
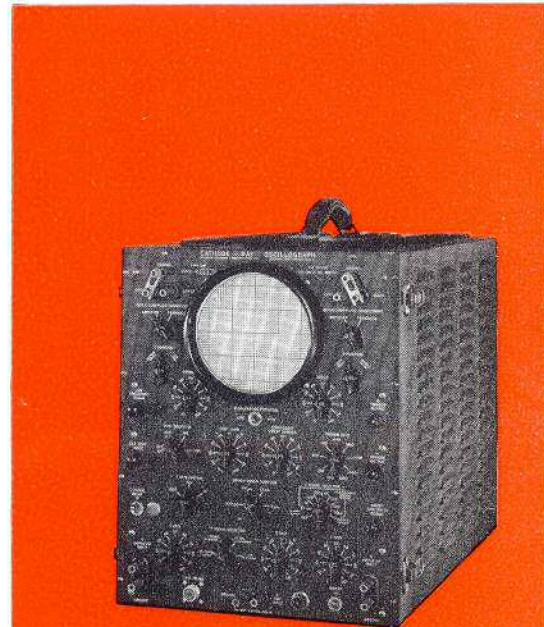
Size: 15" h., 11" w., 19" d.; 68 lbs.

Catalog No.	Description	Code
1303-E:	115 volts, 50-60 cps. 5CP1-A	YALEE
1304-E:	115 volts, 50-60 cps. 5CP2-A	YALEE
1307-E:	115 volts, 50-60 cps. 5CP11-A	YALEH
1308-E:	230 volts, 50-60 cps. 5CP1-A	YALEJ
1309-E:	230 volts, 50-60 cps. 5CP2-A	YALEK
1312-E:	230 volts, 50-60 cps. 5CP11-A	YALEN

DU MONT TYPE 250-H CATHODE-RAY OSCILLOGRAPH

The Du Mont Type 250-H Cathode-ray Oscillograph is the high-voltage version of the Type 250 and employs the Type 5RP-A Cathode-ray Tube for increased light output and faster writing rates. An external high-voltage supply, such as the Du Mont Type 263-A, is used for intensifier voltage. The Type 250-H is also a projection oscillograph when the Type 2088 Projection Lens is utilized. The overall accelerating potential of 12,000 volts increases the deflection factors of the Type 250-H by approximately 30% over the Type 250. The Type 263-A High-voltage Power Supply and the Type 2088 Projection Lens must be ordered separately.

Catalog No.	Description	Code
1314-E:	115 volts, 50-60 cps. 5RP2-A	YALEP
1317-E:	115 volts, 50-60 cps. 5RP11-A	YALEP
1319-E:	230 volts, 50-60 cps. 5RP2-A	YALEU
1322-E:	230 volts, 50-60 cps. 5RP11-A	YALEX



CATHODE-RAY OSCILLOGRAPHY

DU MONT TYPE 256-D CATHODE-RAY OSCILLOGRAPH

The Du Mont Type 256-D Cathode-ray Oscillograph is a precision instrument designed for the study of short-duration pulses and the measurement of time intervals as small as a fraction of one microsecond. The Type 256-D provides a variety of sweep lengths, delay circuits, crystal-controlled markers, variable trigger generator, and a wide-band amplifier. The frequency response of the vertical amplifier is uniform within 30% up to 8 mc per second and is down 50% at 11 mc per second. The sweep-delay is read directly with an accuracy of $\pm 0.1\%$ of full scale.

SPECIFICATIONS

Cathode-ray Tube: Type 5CP-A; 4,000 volts accelerating potential.
Undelayed Sweeps: 4500, 1000, 100, 25, 10, 4 μ sec.

Delayed sweeps: 25, 10, 4 μ sec sweeps are delayable to cover any portion of the 100 μ sec sweep from 4 to 100 μ sec; 25 and 10 μ sec sweeps are delayable to cover any portion of the 1000 μ sec sweep from 5 to 1000 μ sec. Delay accuracy is $\pm 0.1\%$ of full scale. First few microseconds may be observed on the 4 or 10 μ sec undelayed sweeps. Approximately 0.3 μ sec required to start sweep.

Triggered operation—internal: Provides output pulse of 100 volts peak, positive or negative, rise time 0.3 μ sec, duration 1.0 μ sec, repetition rate 80 to 400 a second on 1000 μ sec and 4500 μ sec range; 80 to 2000 a second on 100 μ sec range. Crystal controlled timing marks: Each 10 and 50 μ sec (first 50 μ s mark appears at 40 μ s and each subsequent 50 μ sec later). Timing mark: Rise 0.25 μ sec, duration 1.0 μ sec, accuracy $\pm 0.02\%$.

Triggered operation — external: Trigger input ± 15 volts minimum at 100 volts/ μ sec rise for accurate timing. Trigger amplifier: Makes trigger operation independent of waveform; input trigger rise of 10 volts/ μ sec triggers the sweep.

Repetition rate: 2000 maximum on 100 μ sec scale; 400 on 1000 μ sec scale. No time marks available on external trigger.

Intensity modulation: Input available at Z IN position of markers switch.

Vertical deflection—direct: Deflection factor—79 $\pm 20\%$ d-c volts/in; polarity—positive signal deflects upward; maximum input voltage—600 v d-c plus peak a-c.

Vertical deflection—video amplifier: Attenuator—1:1, 3:1, 10:1, 30:1 and 100:1, stepped, R-C compensated; input impedance—1 megohm, 20 μ f; gain—125 approx.; sine wave response—down 3 db at 8 mc, down 6 db at 11 mc; low-frequency response—flat down to 100 cps., and within ± 1 db to 20 cps.; pulse response—sum of rise and fall time of 1.0 μ sec pulse with rise and fall of 0.01 μ sec does not exceed 0.08 μ sec when passed through video amplifier; input to overload—1 volt approx. with no attenuation; deflection—0.25 volt rms and full video gain for $\frac{3}{4}$ " min.; maximum input voltage—600 volts d-c + peak a-c; polarity—positive signal deflects upward.

Primary power: 115 v, single phase, 60 cps., 220 watts, usable to 1200 cps.

Size: 11 $\frac{3}{8}$ " w., 16 $\frac{1}{4}$ " h., 26" d.; 104 lbs.

Catalog No.	Description	Code
1296-E:	115 volts, 60-1200 cps. 5CP1-A	YALDW
1297-E:	115 volts, 60-1200 cps. 5CP2-A	YALDX
1299-E:	115 volts, 60-1200 cps. 5CP7-A	YALDZ
1300-E:	115 volts, 60-1200 cps. 5CP11-A	YALEA

DU MONT TYPE 263-A HIGH-VOLTAGE POWER SUPPLY

The Du Mont Type 263-A High-voltage Power Supply provides a positive d-c potential output for application to the intensifier electrodes for oscillographs employing the Type 5RP-A Cathode-ray Tube. Output of the Type 263-A is variable from 5,000 to 10,000 volts; output is indicated by a direct-reading meter on the front panel. A shielded cable with connector is provided. The Type 263-A is free from danger and from damage due to accidental short-circuiting.

SPECIFICATIONS

Output: 5000 to 10,000 volts, up to 200 microamperes; output voltage variation 20% maximum from zero to 200 microamperes external load; ripple voltage on output 0.5% maximum of d-c

output.

Primary power: 115 volts, 50-60 cps., 100 watts.

Size: 10 $\frac{7}{8}$ " h., 8 $\frac{1}{8}$ " w., 14 $\frac{3}{4}$ " d.; 24 lbs.

Catalog No.	Description	Code
1206-E:	115 volts, 50-60 cps.	YALAA

Note: A unit for 230 volt operation will be available later in 1948.

DU MONT TYPE 264-A VOLTAGE CALIBRATOR

The Du Mont Type 264-A Voltage Calibrator is a simplified, inexpensive instrument which can be used in conjunction with any cathode-ray oscillograph to measure the amplitude of a signal applied to the oscillograph or to determine the deflection sensitivity of the oscillograph at any setting of the amplifier-gain controls. To use the Type 264-A Voltage Calibrator, no leads need be disconnected or switched at any time.

SPECIFICATIONS

Square-wave output: Variable over ranges of 0 to 0.1 volt, 0 to 1 volt, 0 to 10 volts, 0 to 100 volts; accuracy $\pm 5\%$ of full scale for each range.

Signal-input impedance: 20 uuf.

Primary power: 115 v, 50-60 cps., 20 watts.

Size: 4 $\frac{1}{2}$ " h., 8" w., 5 $\frac{3}{4}$ " d.; 5 lbs.

Catalog No.	Code
1240-A	YALBP

Note: A unit for 230 volt operation will be available later in 1948.



CATHODE-RAY OSCILLOGRAPHY

DU MONT TYPE 256-D CATHODE-RAY OSCILLOGRAPH

The Du Mont Type 256-D Cathode-ray Oscillograph is a precision instrument designed for the study of short-duration pulses and the measurement of time intervals as small as a fraction of one microsecond. The Type 256-D provides a variety of sweep lengths, delay circuits, crystal-controlled markers, variable trigger generator, and a wide-band amplifier. The frequency response of the vertical amplifier is uniform within 30% up to 8 mc per second and is down 50% at 11 mc per second. The sweep-delay is read directly with an accuracy of $\pm 0.1\%$ of full scale.

SPECIFICATIONS

Cathode-ray Tube: Type SCP-A; 4,000 volts accelerating potential.

Undelayed Sweeps: 4500, 1000, 100, 25, 10, 4 μ sec.

Delayed sweeps: 25, 10, 4 μ sec sweeps are delayable to cover any portion of the 100 μ sec sweep from 4 to 100 μ sec; 25 and 10 μ sec sweeps are delayable to cover any portion of the 1000 μ sec sweep from 5 to 1000 μ sec. Delay accuracy is $\pm 0.1\%$ of full scale. First few microseconds may be observed on the 4 or 10 μ sec undelayed sweeps. Approximately 0.3 μ sec required to start sweep.

Triggered operation—internal: Provides output pulse of 100 volts peak, positive or negative, rise time 0.3 μ sec, duration 1.0 μ sec, repetition rate 80 to 400 a second on 1000 μ sec and 4500 μ sec range; 80 to 2000 a second on 100 μ sec range. Crystal controlled timing marks: Each 10 and 50 μ sec (first 50 μ mark appears at 40 μ and each subsequent 50 μ sec later). Timing mark: Rise 0.25 μ sec, duration 1.0 μ sec, accuracy $\pm 0.02\%$.

Triggered operation — external: Trigger input ± 15 volts minimum at 100 volts/ μ sec rise for accurate timing. Trigger amplifier: Makes trigger operation independent of waveform; input trigger rise of 10 volts/ μ sec triggers the sweep.

Repetition rate: 2000 maximum on 100 μ sec scale; 400 on 1000 μ sec scale. No time marks available on external trigger.

Intensity modulation: Input available at Z IN position of markers switch.

Vertical deflection—direct: Deflection factor—79 $\pm 20\%$ d-c volts/in; polarity—positive signal deflects upward; maximum input voltage—600 v d-c plus peak a-c.

Vertical deflection—video amplifier: Attenuator—1:1, 3:1, 10:1, 30:1 and 100:1, stepped, R-C compensated; input impedance—1 megohm, 20 μ f; gain—125 approx.; sine wave response—down 3 db at 8 mc, down 6 db at 11 mc; low-frequency response—flat down to 100 cps., and within ± 1 db to 20 cps.; pulse response—sum of rise and fall time of 1.0 μ sec pulse with rise and fall of 0.01 μ sec does not exceed 0.08 μ sec when passed through video amplifier; input to overload—1 volt approx. with no attenuation; deflection—0.25 volt rms and full video gain for $\frac{3}{4}$ " min.; maximum input voltage—600 volts d-c + peak a-c; polarity—positive signal deflects upward.

Primary power: 115 v, single phase, 60 cps., 220 watts, usable to 1200 cps.

Size: 11 $\frac{3}{8}$ " w., 16 $\frac{1}{4}$ " h., 26" d.; 104 lbs.

Catalog No.	Description	Code
1296-E	115 volts, 60-1200 cps. 5CP1-A	YALDW
1297-E	115 volts, 60-1200 cps. 5CP2-A	YALDX
1299-E	115 volts, 60-1200 cps. 5CP7-A	YALDZ
1300-E	115 volts, 60-1200 cps. 5CP11-A	YALEA

DU MONT TYPE 263-A HIGH-VOLTAGE POWER SUPPLY

The Du Mont Type 263-A High-voltage Power Supply provides a positive d-c potential output for application to the intensifier electrodes for oscillographs employing the Type 5RP-A Cathode-ray Tube. Output of the Type 263-A is variable from 5,000 to 10,000 volts; output is indicated by a direct-reading meter on the front panel. A shielded cable with connector is provided. The Type 263-A is free from danger and from damage due to accidental short-circuiting.

SPECIFICATIONS

Output: 5000 to 10,000 volts, up to 200 microamperes; output voltage variation 20% maximum from zero to 200 microamperes external load; ripple voltage on output 0.5% maximum of d-c

output.

Primary power: 115 volts, 50-60 cps., 100 watts.

Size: 10 $\frac{7}{8}$ " h., 8 $\frac{1}{8}$ " w., 14 $\frac{3}{4}$ " d.; 24 lbs.

Catalog No.	Description	Code
1206-E	115 volts, 50-60 cps.	YALAA

Note: A unit for 230 volt operation will be available later in 1948.

DU MONT TYPE 264-A VOLTAGE CALIBRATOR

The Du Mont Type 264-A Voltage Calibrator is a simplified, inexpensive instrument which can be used in conjunction with any cathode-ray oscillograph to measure the amplitude of a signal applied to the oscillograph or to determine the deflection sensitivity of the oscillograph at any setting of the amplifier-gain controls. To use the Type 264-A Voltage Calibrator, no leads need be disconnected or switched at any time.

SPECIFICATIONS

Square-wave output: Variable over ranges of 0 to 0.1 volt, 0 to 1 volt, 0 to 10 volts, 0 to 100 volts; accuracy $\pm 5\%$ of full scale for each range.

Signal-input impedance: 20 uuf.

Primary power: 115 v, 50-60 cps., 20 watts.

Size: 4 $\frac{1}{2}$ " h., 8" w., 5 $\frac{3}{4}$ " d.; 5 lbs.

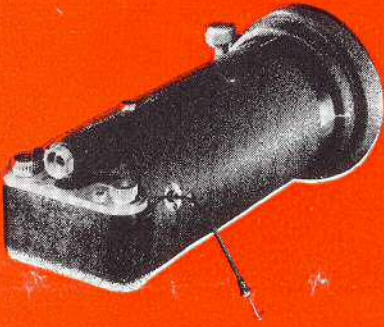
Catalog No.	Code
1240-A	YALBP

Note: A unit for 230 volt operation will be available later in 1948.



DU MONT INSTRUMENTS FOR

DU MONT TYPE 271-A OSCILLOGRAPH-RECORD CAMERA



The Du Mont Type 271-A Oscillograph-record Camera is specifically designed for oscillographic recording. The Type 271-A may be readily mounted to fit any standard five-inch cathode-ray equipment. Correct focus is assured at all times. Time, bulb, or 1/30 sec. exposures may be made. The pattern also may be observed while recording. The Type 271-A is invaluable in the study of transients and may be used also to photograph steady phenomena. The Type 2501 Bezel is supplied as an integral part of the Type 271-A Camera.

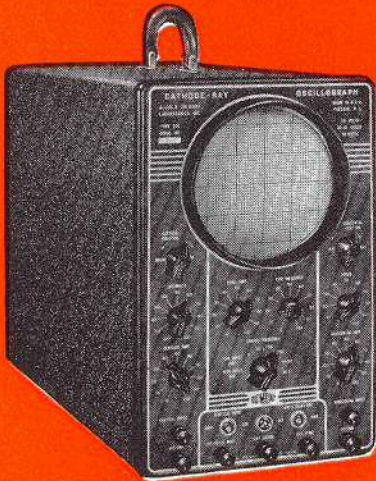
SPECIFICATIONS

Lens speed: $f/3.5$; iris diaphragm allows variations to $f/16$.
 Shutter: Calibrator for time, bulb, or 1/30 second exposures.
 Focus: Fixed.
 Object-to-image ratio: 4.5 to 1, approximately.

Film: 35 mm. roll in standard cartridge.
 Mounting: Clamp, 6-inch diameter outside, $5\frac{1}{2}$ -inch inside, maximum; minimum inside diameter, $5\frac{1}{8}$ inches.
 Light hood: $4\frac{3}{4}$ inches maximum diameter.
 Overall length: $13\frac{1}{2}$ inches; wt. $4\frac{1}{2}$ lbs.

Catalog No.	Description	Code
1216-E:	Type 271A Camera and mounting	YALAR
1215-E:	Type 2501 Mounting only	YALAP

DU MONT TYPE 274 CATHODE-RAY OSCILLOGRAPH



The Du Mont Type 274 Cathode-ray Oscillograph is an inexpensive, general-purpose instrument for laboratory, radio service, and educational applications. The Type 274 serves as an excellent null-indicator on inductance-capacitance bridges, as a means for viewing waveforms, as an output meter, as a means for measuring time and amplitude of pulses, as an indicator in studies of sound, light, electricity, and electronics, and many other general applications.

SPECIFICATIONS

Cathode-ray Tube 5BP1-A; 1200 volts accelerating potential.
 Frequency response: X and Y-axis—uniform within 20% from 20 cps. to 50,000 cps.; down not more than 50% at 100,000 cps.
 Deflection factor: Through vertical and horizontal amplifiers—0.65 rms volt/in. maximum; direct—18 rms volts/in.
 Sweep frequency: 8 cps. to 30,000 cps.
 Primary power: 115 v., 50-60 cps., 50 watts.
 Size: 14" h., $8\frac{5}{8}$ " w., $19\frac{3}{8}$ " d.; 35 lbs.

Catalog No.	Description	Code
1220-A:	115 volts, 50-60 cps. 5BP1-A	YALAV
1222-A:	115 volts, 50-60 cps. 5BP11-A	YALAX

DU MONT TYPE 275-A CATHODE-RAY POLAR-COORDINATE INDICATOR



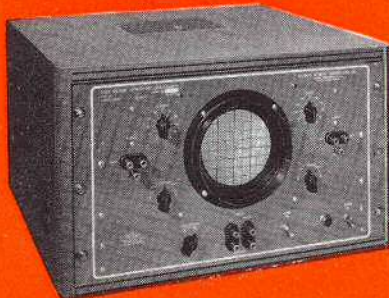
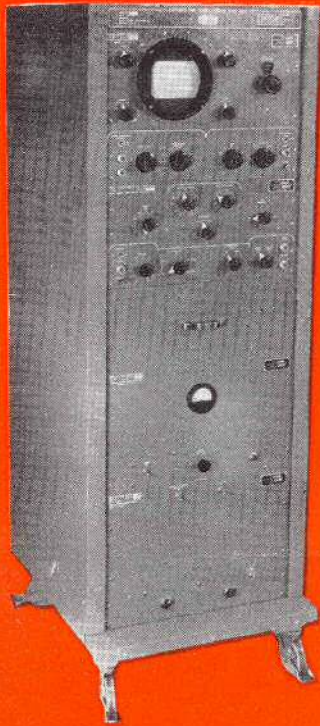
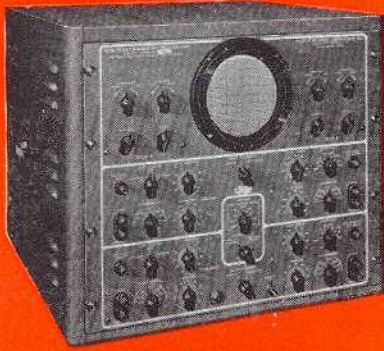
The Du Mont Type 275-A Cathode-ray Polar-coordinate Indicator is especially suitable for the investigation of mechanical devices. A circular time-base is automatically synchronized with the drive-shaft of the device under study. The frequency-response of the radial amplifier is uniform within 10% to the fundamental motion of a shaft rotating at speeds from 120 r.p.m. to the 500th harmonic of 3600 r.p.m. For obtaining the voltages from which the circular time-base is derived, a two phase generator is supplied.

SPECIFICATIONS

Type 5CP-A Cathode-ray Tube: 3000 volts overall accelerating potential.
 Circular time-base: Provides circle diameter up to $4\frac{1}{2}$ inches.
 Radial amplifier: Less than 0.4 rms volt for deflection to center of circle. Frequency-response uniform from 2 to 30,000 cps.
 Primary power: 115/230 volts, 50-60 cps., 100 watts.
 Size: 17" h., $10\frac{1}{2}$ " w., $19\frac{1}{2}$ " d.; 65 lbs.

Catalog No.	Description	Code
1250-E:	115 volts, 50-60 cps. 5CP1-A	YALBZ
1253-E:	115 volts, 50-60 cps. 5CP7-A	YALCC
1254-E:	115 volts, 50-60 cps. 5CP11-A	YALCD
1255-E:	230 volts, 50-60 cps. 5CP1-A	YALCE
1258-E:	230 volts, 50-60 cps. 5CP7-A	YALCH
1259-E:	230 volts, 50-60 cps. 5CP11-A	YALCJ

CATHODE-RAY OSCILLOGRAPHY



DU MONT TYPE 279 DUAL-BEAM CATHODE-RAY OSCILLOGRAPH

The Du Mont Type 279 Dual-beam Cathode-Ray Oscilloscope displays the output of two entirely separate oscillographs simultaneously on a single cathode-ray tube. The Type 279 provides either separate or common horizontal deflection, multiple input-combinations, intensity modulation, and a built-in calibrator.

SPECIFICATIONS

Type 5SP- Dual-beam Cathode-ray Tube: 4500 volts overall accelerating potential.

Y-axis: Deflection factor is 0.35 rms volt/in. or 1 d-c volt/in. maximum through vertical amplifiers at full gain; 29 rms volts/in. or 80 d-c volts/in. $\pm 20\%$ direct. Sinusoidal frequency-response is within 10% to 100,000 cps., flat to d-c; response within 30% to 200,000 cps.; capacitive or conductive input.

X-axes: Deflection factor is 0.35 rms volt/in. maximum or 1 d-c volt/in. through amplifiers at full gain 25 rms volts/in. or 69 d-c volts/in. $\pm 20\%$ direct. Sinusoidal frequency-response within 10% to 70,000 cps., flat to d-c; within 30% to 150,000 cps.; capacitive or conductive input; with common amplifier, response 10% to 40,000 cps., and 30% to 70,000 cps.

Linear time-bases: Recurrent sweep variable from 2 cps. to 30,000 cps.; single sweep with duration variable from $\frac{1}{2}$ second to 300 microseconds.

Intensity modulation: Return-trace of recurrent sweep blanked. Beam blanked on single sweep except during sweep time. Provision for connection of external signals.

Calibrator: Square-wave at power-line frequency and 0.1, 1, 10, or 100 volts amplitude; accuracy $\pm 5\%$; may be switched to either vertical amplifier.

Primary power: 115/230 volts, 50-60 cps., 300 watts.

Size: 17 $\frac{1}{2}$ " h., 22 $\frac{5}{8}$ " w., 22 $\frac{1}{8}$ " d.; 125 lbs. with cabinet, 86 lbs. without cabinet; may be rack mounted.

Catalog No.	Description	Code
1386-E:	115 volts, 50-60 cps. 5SP1	YALHR
1387-E:	115 volts, 50-60 cps. 5SP2	YALHS
1390-E:	115 volts, 50-60 cps. 5SP11	YALHV
1391-E:	230 volts, 50-60 cps. 5SP1	YALHW
1392-E:	230 volts, 50-60 cps. 5SP2	YALHY
1395-E:	230 volts, 50-60 cps. 5SP11	YALJA

DU MONT TYPE 280 CATHODE-RAY OSCILLOGRAPH

The Du Mont Type 280 Cathode-ray Oscilloscope is designed primarily for determining the duration and shape of the wave-form contained in the composite television signal, with a selectivity accurate to the scanning line or fraction thereof. The Type 280 has a wide range of calibrated sweep-speeds, a video amplifier with uniform response to 10 megacycles per second and an accurate, calibrated, sweep-delay circuit. The Type 280 may be used with a standard picture-monitor to indicate the portion of the picture under observation.

SPECIFICATIONS

Type 5RP-A Cathode-ray Tube: Accelerating potential up to 12,000 volts.

Y-axis: Any degree of attenuation from 1:1 to 1000:1; great expansion of negative polarity signal; undistorted deflection of 2" on balanced signal, 1" on uni-polarity pulse; frequency response within 3 db. from 10 cps. to 10 mc.

X-axis: Time-base duration variable from 1 to 15,000 microseconds. Horizontal deflection of at least 4"; time-base may correspond with any

point on any horizontal line in either or both interlaced fields. Generator for calibrating sweep writing-speed by signals of 10, 1, and 0.2 micro-second/cycle. Wide range of sweep writing-speed continuously variable from 0.25 to 3000 micro-seconds/in. Delay ranges of 100 or 1000 microseconds selectable for linear time-base. Accuracy of delay $\pm 0.1\%$ of full scale read directly on dial.

Primary power: 115 volts, 50-60 cps., 690 watts. Size: 60" h., 20 $\frac{3}{4}$ " w., 22" d.; 287 lbs.

Catalog No.	Description	Code
1378-E:	115 volts, 50-60 cps. 5RP2-A	YALHJ
1381-E:	115 volts, 50-60 cps. 5RP11-A	YALHM

DU MONT TYPE 281 CATHODE-RAY INDICATOR

The Du Mont Type 281 Cathode-ray Indicator is a basic instrument designed to utilize the full capabilities of the high-voltage Type 5RP-A Cathode-ray Tube. The Type 281 contains the cathode-ray tube, power supplies, and controls for intensity, focus, and positioning. Provision is made for external deflection amplifiers, an external time-base generator, and external or internal high-voltage intensifier-power supplies. The Type 281 is invaluable for needs too specialized or advanced for standard, commercially available cathode-ray equipment. The Type 281 is an indicator capable of displaying photographic writing speeds as high as 85 in./usec; with an external power supply, such as the Du Mont Type 286, a photographic writing speed of over 300 in./usec. is attained.

SPECIFICATIONS

Type 5RP-A Cathode-ray Tube: 4000 or 8000 volts accelerating potential with internal power supplies; to 29,000 volts with external supply (Du Mont Type 286 High-voltage Power Supply is recommended).

X and Y axes: Deflection factor dependent upon accelerating potential:

Intensifier voltage 4 kv 8 kv 30 kv
 Second anode voltage 2 kv 4 kv 4 kv
 Y-axis d-c volts/in. $\pm 20\%$ 85 160 280
 X-axis d-c volts/in. $\pm 20\%$ 90 170 300

Input impedance to terminals on front panel, 2 megohms, 30 μ f (balanced); 1 megohm, 40 μ f (single-ended); to top terminals 5 μ f (bal-

anced); 10 μ f (single-ended). Intensity modulation: Terminals capacitively coupled to grid and cathode of cathode-ray tube. Input impedance to grid, 0.5 megohm, 50 μ f; to cathode, 4700 ohms, 60 μ f. Cut-off bias of 5RP-A with 2000 volts on second anode, -60 volts $\pm 50\%$; with 4000 volts on second anode, -120 volts $\pm 50\%$.

Power supplies: 2000 and 4000-volt negative supplies regulated within $\pm 2\%$.

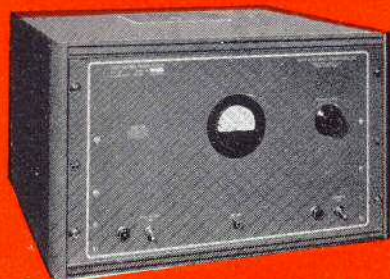
Primary power: 115/230 v, 50-60 cps., 100 watts.

Size: 12 $\frac{1}{4}$ " h., 20 $\frac{3}{4}$ " w., 20 $\frac{1}{2}$ " d.; with cabinet 120 lbs., without cabinet 90 lbs.

Catalog No.	Description	Code
1280-E:	115 volts, 50-60 cps. 5RP2-A	YALDF
1283-E:	115 volts, 50-60 cps. 5RP11-A	YALDJ
1324-E:	230 volts, 50-60 cps. 5RP2-A	YALEZ
1327-E:	230 volts, 50-60 cps. 5RP11-A	YALFC

DU MONT INSTRUMENTS

DU MONT TYPE 286 HIGH-VOLTAGE POWER SUPPLY



The Du Mont Type 286 High-voltage Power Supply is a rectified radio-frequency supply with regulated output. The Type 286 is used primarily as an intensifier-supply for high-voltage cathode-ray tubes. A constant output potential is maintained even with large changes in power-line voltage and extreme current requirements. High-voltage hazards are minimized in the Type 286 because very little power is stored in its filtering circuits. No damage is caused if the output is short-circuited. The Du Mont Type 286 is designed for use with Du Mont Type 281 Cathode-ray Indicator.

SPECIFICATIONS

Output: Regulated high-voltage variable from 18,000 to 25,000 volts; positive with respect to ground. Power-line voltage variation of $\pm 10\%$, or external current change from 0 to 500 μ amperes, produces less than 5% variation in output voltage. Output meter accurate to $\pm 2\%$ of full scale. Shielding permits use of this instru-

ment in proximity to sensitive amplifiers and cathode-ray tubes.

Primary power: 115/230 volts, 50-60 cps., 200 watts.

Size: $12\frac{1}{4}$ " h., $20\frac{3}{4}$ " w., $20\frac{1}{2}$ " d.; with cabinet, 90 lbs.; rack mounted, 60 lbs.

Catalog No.	Description	Code
1285-E:	115 volts, 50-60 cps.	YALDL
1286-E:	230 volts, 50-60 cps.	YALDM

DU MONT TYPE 288 CATHODE-RAY OSCILLOGRAPH

The Du Mont Type 288 Cathode-ray Oscillograph is similar to the Type 280, except that the Type 288 employs a higher intensifier-voltage supply than the Type 280. The Type 5RP-A Cathode-ray Tube is operated at an accelerating potential variable from 20 to 22 kilovolts as compared to 7 to 12 kilovolts for the Type 280. The Type 288 provides additional picture brightness with a slight decrease in deflection sensitivity. The higher accelerating potentials of the Type 288 are obtained from the Type 286 High-Voltage Power Supply.

Catalog No.	Description	Code
1347-E:	115 volts, 50-60 cps. 5RP2-A	YALFY
1350-E:	115 volts, 50-60 cps. 5RP11-A	YALGE

DU MONT TYPE 308 HIGH-VOLTAGE POWER SUPPLY

The Du Mont Type 308 High-voltage Power Supply is similar electrically to the Du Mont Type 263-A. However, the Type 308 is designed for mounting in a standard 19" relay-rack. The perforated dust cover prevents radiation and interference with adjacent units. High-voltage output is available at the rear of the chassis. A four-foot shielded output cable with connector is furnished with the Type 308.

Size: $10\frac{1}{2}$ " h., 19" w., 8" d.; 18 lbs.

Catalog No.	Description	Code
1270-E:	115 volts, 50-60 cps.	YALCT

DU MONT TYPE 314 OSCILLOGRAPH-RECORD CAMERA

The Du Mont Type 314 Oscillograph-record Camera is designed for continuous and single-frame recording of traces presented on the screen of any 5-inch cathode-ray oscillograph. Correct focus and alignment is assured automatically by the mounting. The Type 314 is a complete unit not requiring, but usable with tripod or other equipment. The Type 314 provides for simultaneous viewing and recording; its operation is not affected by normal ambient lighting. Calibrated, variable film-speed, electronically controlled, is provided by the Type 314. Each camera is supplied with one Type 2511 Mounting Kit.

SPECIFICATIONS

Complete assembly: Camera, electronic film-speed control-unit, periscope cone, mount, cables, data-card unit.

Film speed: Variable from 1 inch to 3600 inches a minute.

Capacity: Single exposures up to double-frame length; continuous exposures up to 100 feet with internal magazine, 400 to 1000 feet with external magazine.

Recording time: With 100-foot reel, 20 seconds to 20 hours; with 1000-foot reel, $3\frac{1}{8}$ minutes to $8\frac{1}{4}$ days; film speed recorded along edge of film.

Lens and shutter: 50 mm. f/2.8 coated lens in Rapax #2 shutter (f/1.5 coated lens optional); shutter provides time or bulb exposures and calibrated speeds of 1 to 1/400 second.

Recording methods: (1) The film motion is used

as a time base, and the signal is recorded along the length of the film. (2) The oscillograph sweep is used to provide time bases which are recorded across the width of the film. The signals appear on these time bases. (3) A combination of the film motion and the oscillograph driven sweep in the same direction provides both a low speed and a high speed time base. The driven sweep is used only to resolve high speed transients superimposed upon a slowly changing phenomenon.

Data record: Identifying information may be recorded at beginning or end of operation.

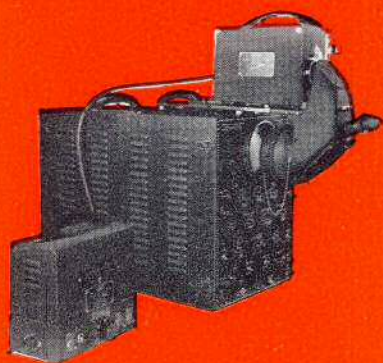
Size: Camera— $7\frac{1}{2}$ " x $9\frac{1}{8}$ " x $11\frac{1}{2}$ "; $16\frac{1}{4}$ lbs.

Electronic control— 5 " x 10 " x $9\frac{1}{4}$ "; $10\frac{1}{4}$ lbs.

Periscope and mount assembly— $5\frac{1}{2}$ " x $11\frac{5}{8}$ " x $21\frac{1}{2}$ "; 6 lbs.

Primary power: 115 volts, 50-60 cps., 135 watts.

Catalog No.	Description	Code
1217-E:	Oscillograph-record Camera, f/2.8 coated lens in Rapax #2 shutter.	YALAS
1366-E:	Oscillograph-record Camera, f/1.5 coated lens in Rapax #3 shutter.	YALGV



CATHODE-RAY ACCESSORIES

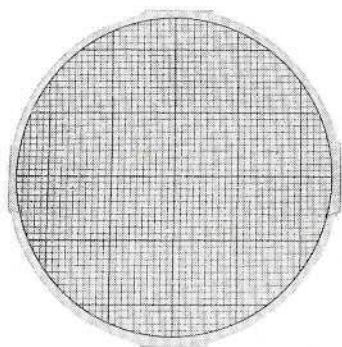
DU MONT TYPE 189 MOVABLE TABLE

The Du Mont Type 189 Movable Table is designed for moving cathode-ray oscillographs and similar laboratory equipment with a minimum of inconvenience and effort. The table top, at work-bench height, is 600 square inches in area; lower shelf and drawer are provided. The Type 189 moves on large, rubber-tired, swivel casters.

Size: 20 $\frac{1}{4}$ " w., 32 $\frac{1}{4}$ " d., 30 $\frac{3}{4}$ " h.; 78 lbs.

Catalog No. 1159-A

Code YEFE C



DU MONT TYPE 216 CALIBRATED SCALES AND FILTERS

The Du Mont Type 216 Scales are used for making relative and quantitative measurements with a cathode-ray tube. They are readily fastened to or removed from the face of the cathode-ray tube.

The Du Mont Type 216 Filters are 5-inch discs of colored plexiglass which fit between the screen and the calibrated scale. The filters separate the initial excitation from the persistence characteristics of the cathode-ray tube.

Catalog No.	Description	Code
1129-A:	3-inch calibrated scale; Type 216-A	YECYA
1128-A:	5-inch calibrated scale; Type 216-C	YECUD
1130-A:	5-inch decrement scale; Type 216-D	YECYB
1131-A:	5-inch Q scale; Type 216-E	YECYC
1132-A:	5-inch polar-coordinate scale, calibrated 0-360°; Type 216-F	YECYD
1133-A:	5-inch green filter, Type 216-G	YECYE
1134-A:	5-inch blue filter, Type 216-H	YECYF
1135-A:	5-inch amber filter, Type 216-J	YECYG
1136-A:	5-inch green polar-coordinate scale calibrated 0-720°; Type 216-K	

DU MONT TYPE 276 VIEWING HOOD

The Du Mont Type 276 Viewing Hood is of black rubber, easily fitted to any equipment which uses a 5-inch cathode-ray tube, and designed to improve contrast by reducing the ambient-light level. The Type 276 produces darkened-room conditions and also permits observation of fast writing-speeds ordinarily invisible because of unfavorable contrast. The Type 276 has an overall length of 10 $\frac{1}{2}$ inches.

Catalog No. 1210-A

Code YALAM

DU MONT TYPE 283 CONSTANT-VOLTAGE TRANSFORMER

The Du Mont Type 283 Constant-voltage Transformer is recommended for use where power-line fluctuations greater than $\pm 10\%$ are encountered, in order to prevent degradation of the performance of cathode-ray equipment.

Primary power: 95-125 rms volts, 60 cycles, single phase.

Output: 115 rms volts $\pm 1\%$; 250 volt-amperes maximum.

Size: 11 $\frac{1}{2}$ " d., 6 $\frac{1}{8}$ " h.; 6 $\frac{5}{8}$ " w.; 30 lbs.

Catalog No. 1214-E

Code YALAQ



DU MONT TYPE 277 MICROPHONE

The Du Mont Type 277 is a crystal microphone of high output impedance. It may be connected directly to the input circuits of most cathode-ray oscillographs without using pre-amplifiers. With a cathode-ray oscillograph, the Type 277 is particularly useful for acoustical investigations, for the study of noise, for demonstrations, or wherever it is desirable to translate sound into electrical energy.

Output impedance: Greater than 500,000 ohms.

Output level: At 1000 cycles, 50 db below 1 volt/bar effective sound pressure; at 1000 cycles, 31.6 millivolts for 10-bar sound pressure.

Frequency response: Uniform in all directions up to 10,000 cps.

Mounting: Stand 15 $\frac{1}{2}$ " h.

Connection: 7-foot length of single-conductor, shielded output-cable plus connector.

Weight including stand: 1 $\frac{7}{8}$ lbs.

Catalog No. 1212-A

Code YALAO

DU MONT TYPE 2088 PROJECTION LENS

The Du Mont Type 2088 Projection Lens is used with oscillographs containing the Type 5RP-A Cathode-ray Tube to enlarge and project the pattern on a screen. By projecting the pattern, image sizes up to 12 feet square are obtained. Axial light transmission of the Type 2088 is approximately 85%.

Catalog No. 1249-E

Code YALBY

DU MONT TYPE VP-5 VIBRATION PICKUP

The Du Mont Type VP-5 Vibration Pickup transforms mechanical vibration into a proportional electrical potential suited for deflecting the electron beam of a cathode-ray tube.

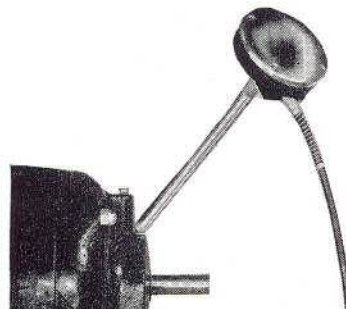
Response: Frequency response approximately square-law to 3000 cps. Sensitivity: 30 rms volts per 0.001 inch motion at frequency of 500 cps.

Vibration axis: Perpendicular to large face.

Size: 3" dia., 1 $\frac{1}{2}$ " d., 8 $\frac{5}{8}$ " l.; wt. 11 oz.

Catalog No. 1079-A

Code YAYMA



CATHODE-RAY ACCESSORIES

DU MONT TYPE 2501 BEZEL

The Du Mont Type 2501 Bezel may be mounted on the panel of any 5-inch cathode-ray oscillograph to accommodate the Du Mont Type 271-A Oscillograph-record Camera, where such bezel is not supplied with the cathode-ray oscillograph.

Catalog No. 1215-E

Code YALAP

DU MONT TYPE 2502 MAGNETIC SHIELD

The Type 2502 Magnetic Shield is for use with the Type 5RP-A. The Type 2502 is made of mu-metal and shields the tube from stray magnetic interference without obstructing access to the terminals on the sides of the Type 5RP-A.

Catalog No. 1382-E

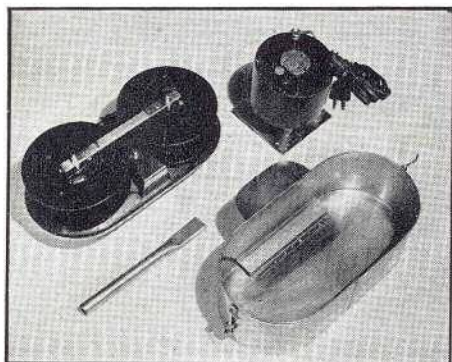
Code YALHN

DU MONT TYPE 2503 MAGNETIC SHIELD

The Type 2503 Magnetic Shield is similar to the Type 2502. The Type 2503 is designed for the Du Mont Type 5SP- and other multi-beam Cathode-ray Tubes.

Catalog No. 1383-E

Code YALHO



DU MONT TYPE 2512 MOTOR-DRIVEN PROCESSING UNIT

The Du Mont Type 2512 Motor-driven Processing Unit accommodates up to 100 feet of 35 mm. film. The Du Mont Type 2512 passes the film at a steady rate through a light-tight processing tank. A spout is provided in the unit for insertion and removal of processing solutions. Loading and unloading of the film is easily accomplished.

Catalog No.
1372-E:

Description
Motor-driven Processing Unit;
115 volts, 50-60 cps.

Code
YALHB

DU MONT TYPE 2511 SPARE MOUNTING KIT

The Du Mont Type 2511 Spare Mounting Kit is used to mount the Du Mont Type 314 Oscillograph-record Camera on any 5-inch cathode-ray oscillograph. The Type 2511 is a complete kit for fully mounting and adjusting this camera.

Catalog No. 1371-E

Code YALHA

DU MONT TYPE 2513 STAINLESS-STEEL TANK

The Du Mont Type 2513 Stainless-steel Tank is for use with the Du Mont Type 2512. The Type 2513 is similar to the tank supplied with the Type 2512, except that the Type 2513 has no solution spout.

Catalog No. 1374-E

Code YALHE



DU MONT TYPE 2514 PORTABLE DRYING RACK

The Du Mont Type 2514 Portable Drying Rack holds up to 200 feet of 35 mm film. Motor-driven, the Type 2514 moves the film past a heating unit; provision is made for rewinding. The Type 2514 may be folded up. A carrying case is furnished.

Catalog No.

Description

Code

1375-E: Portable Drying Rack, motor-driven;
115 volts, 50-60 cps.

YALHF

Note: Specifications are subject to change without notice.

ALLEN B. DU MONT LABORATORIES, Inc.

INSTRUMENT DIVISION

1000 MAIN AVENUE, CLIFTON, N. J.

EXPORT DEPARTMENT

630 FIFTH AVENUE

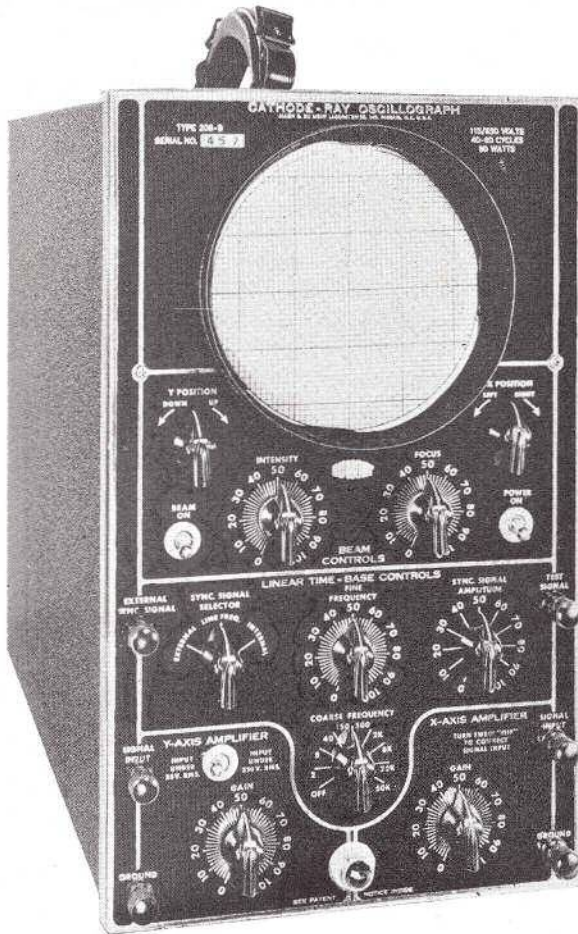
NEW YORK 20, N. Y.

CABLE ADDRESS ALBEEDU, NEW YORK

DU MONT

Type 208-B

CATHODE-RAY OSCILLOGRAPH



General

The Type 208-B Cathode-ray Oscilloscope is an instrument designed to operate the modern high-vacuum cathode-ray tube as an oscilloscope with sufficient flexibility and convenience of control to facilitate its application to the great majority of all laboratory and production requirements. Normally, the instrument is supplied with a Type 5LP1,

5" intensifier-type cathode-ray tube utilizing electrostatic focusing and orthogonal electrostatic deflection. The cathode-ray tube is operated at a total accelerating potential of 1,400 volts. Unusually high-gain amplifiers have been provided for deflection on the vertical axis, and a gas-discharge type relaxation oscillator is employed to provide a sweep circuit for the delineation of unknown signals as a linear function of time.

Cathode-ray Tube

The cathode-ray tube supplied with the Type 208-B Cathode-ray Oscilloscope is of the high-vacuum electron-lens-focus type. The high-vacuum tube is especially useful in high-frequency studies because of its ability to remain in sharp focus at all deflecting frequencies. This type of tube possesses a further advantage in its complete freedom from origin-distortion and its low deflection-plate current. In the Type 208-B Cathode-ray Oscilloscope, the Type 5LP1 cathode-ray tube may be deflected directly, without the use of any amplifiers, by connecting input signals directly to the four deflection-plate terminals which are conveniently located at the back of the instrument to permit short, direct leads. The use of the intensifier-type cathode-ray tube increases the deflection sensitivity of the instrument so that moderately low potentials may be viewed by direct deflection of the cathode-ray tube. A beam switch has been provided on the front panel of the instrument to provide "stand-by" operation and to prevent unnecessary fogging when photographs are taken. A removable, calibrated scale, which fits directly over the face of the cathode-ray tube, is supplied with the instrument.

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Passaic, N. J., U. S. A.

Amplifier Circuit

The deflection-amplifier circuit which has been developed for the Type 208-B Cathode-ray Oscillograph has been designed with direct coupling for the deflection-plate circuit of the Type 5LP1 cathode-ray tube. With this type circuit, it has been possible to eliminate the annoyance of "electrical backlash," as found in the positioning circuits of ordinary instruments, due to the usual necessity for charging the deflection-plate coupling capacitors from the position-voltage source. This "electrical-backlash", particularly annoying in existing instruments having good low-frequency response, has been completely eliminated from the Type 208-B instrument. The electron beam, therefore, is capable of following the position controls instantaneously, and the spot may be positioned immediately to any desired position on the screen.

A further advantage of the new deflection-amplifier circuits of the Type 208-B Cathode-ray Oscillograph is their ability to supply more than two and one-half times full-scale deflection of the cathode-ray tube. This means that a high-frequency signal may be expanded horizontally and studied on a time-base nearly fifteen inches long. Such operation will greatly facilitate the fine-detail study of high-frequency signals plotted against a relatively low-frequency time-base. In the application of this feature to the Y-axis amplifier this high deflecting potential will also prove advantageous; for it will permit the investigation of the peaks of high-amplitude signals by merely positioning the pattern vertically on the screen and increasing the gain.

Push-pull deflection-amplifier stages for both X- and Y-axes provide symmetric deflection and position potentials which eliminate all traces of defocusing at the screen edges of the cathode-ray tube. The effect of this symmetric deflection and position control is such that the spot remains in sharp focus even when the position control is extended to the end of its range to study one end of the long time-base provided by this control or to study one portion of a large deflecting signal on the Y-axis.

The voltage-gain of the vertical amplifier of the Type 208-B Cathode-ray Oscillograph is approximately 2,000 times. This high gain makes possible a deflection factor of approximately 10 r.m.s. millivolts per inch over a frequency-range extending from 2 to 100,000 sinusoidal cycles per second. The frequency-range of the horizontal amplifier

extends also from 2 to 100,000 sinusoidal cycles per second, although its voltage gain is less.

Input Attenuator

Although many circuit arrangements have been proposed for satisfactory input-signal attenuation for cathode-ray oscillographs, the Du Mont Type 208-B Cathode-ray Oscillograph incorporates an input circuit having a continuous attenuation-control without frequency-discrimination from zero-frequency to frequencies well beyond the high-frequency limit of the amplifier.

An additional resistance-capacitance compensated-signal-divider with a ten-to-one attenuation-ratio has been incorporated in the input circuit to handle signal amplitudes as high as 250 r.m.s. volts. This new input circuit further makes it possible to increase the input resistance of the instrument to 2 megohms on either input circuit.

All annoying position changes of the pattern on the screen of the cathode-ray tube, due to attenuator adjustment, have been eliminated by the use of high-quality paper capacitors for coupling to the attenuation control. In this manner, the d-c component of the signal which normally exists across the attenuator has been reduced to a sufficiently low value to eliminate this common trouble found in instruments having good low-frequency amplifiers.

The commercial development of this new input circuit as found in the Du Mont Type 208-B Cathode-ray Oscillograph has eliminated forever one of the chief limitations of cathode-ray oscillograph amplifiers for research purposes. The frequency-response rating of the instrument is entirely independent of attenuator settings, and low-frequency signals with high-frequency components may be studied at attenuated gain settings with no distortion of the amplitude and phase relationships of the signal components.

Sweep Circuit

A gas-discharge relaxation-type oscillator of the conventional type has been provided in this instrument to operate as a linear sweep circuit. In contrast to the usual design, however, the plate circuit of the gas-discharge tube is directly coupled to a cathode-loaded impedance transformer. This circuit has proved especially advantageous in eliminating loading effects on the plate of the discharge tube, and it has facilitated the increase over the normal frequency

range of these circuits. The elimination of load-circuit leakage from the plate circuit of the oscillator has increased the linear sweep range to two cycles per second. At the same time, by means of proper circuit arrangement and careful production control to maintain stray circuit-capacities at a minimum, the maximum sweep-frequency has been extended to beyond fifty kilocycles per second.

The grid circuit of the gas-discharge sweep-circuit oscillator has been designed to effect positive synchronization from relatively small values of synchronizing potential. A synchronizing-signal switch, on the front panel of the instrument, facilitates connection of this grid-circuit to any externally-provided synchronizing signal, to the positive phase of the Y-axis signal, or to the power-supply frequency.

An output post has been provided on the front panel of the instrument to supply a convenient source of signal voltage, at power-supply frequency, for routine testing of amplifiers and other equipment.

Regulated Power Supplies

The power supplies for the Type 208-B Cathode-ray Oscillograph have been designed to operate so that the instrument is extremely stable with respect to line-voltage fluctuations. Although the amplifiers operate with unusually high gain, the pattern on the screen of the cathode-ray tube shows no evidence of motion due to normal line-voltage fluctuations.

Mechanical Design

The Du Mont Type 208-B Cathode-ray Oscillograph is housed in a steel case with black wrinkle finish. The chassis is composed of cadmium plated steel. The front panel, made of brass, has a black background with raised chromium characters.

In order to provide an instrument suffi-

ciently rugged for general production and field applications, particular attention has been paid to mechanical design. Components have been mounted in such a manner that vibration and shock will have minimum affect. Mechanical reinforcements, such as mounting brackets and straps, tube clamps, weld nuts and braces, have been used liberally to obtain a secure construction. Round-head screws are used for tube sockets to permit the tubes to seat deeper, thus reducing the effect of vibration. A platform is provided in the cabinet to give added support to the power transformer in case of severe shock.

The power cord has been permanently attached to the instrument to prevent its being lost. A strain relief is provided to check any tension which might be applied to the cord. Brackets are mounted on the rear of the cabinet around which the cord may be wrapped when the instrument is not in use.

Arrangement of the mechanical layout is such that an even distribution of weight is assured. A carrying handle located symmetrically with respect to the center of gravity of the instrument provides a ready means of moving.

Tubes and Functions

All tubes, including the cathode-ray tube are supplied with the instruments as follows:

- 1-Type 5LP Cathode-ray Tube.
- 1-Type 6SN7 Amplifier.
- 2-Type 6SN7 Impedance transformer and positioning tubes.
- 4-Type 6V6 Deflection Amplifiers.
- 1-Type 991 Voltage Regulator Tube.
- 1-Type 6X5GT/G Rectifier.
- 1-Type 6SJ7 Regulator Amplifier.
- 2-Type 80 Rectifiers.
- 1-Type 6V6 Regulator Tube.
- 1-DuMont Type 6Q5G Sweep Oscillator.

Specifications

1. Cathode-ray Tube
 - a. Type 5LP
 - b. Accelerating Potential 1400 volts
2. Y-axis Amplifier
 - a. Input — Input terminals on panel for connection to amplifier circuit.
 - b. Deflection Factor — 21 r.m.s. volts/inch direct and 0.010 r.m.s. volts/inch through amplifier.
 - c. Sinusoidal Frequency Response — Flat (within $\pm 10\%$) from 2 to 100,000 cps, down approximately 50% at 325,000 cps.

Specifications (Continued)

- d. Voltage Gain 2000
- e. Input Impedance 2,000,000 ohms, 30 uufd
- f. Maximum Input Potential 250 r.m.s. volts
- g. Attenuator — 10:1 resistance-capacitance compensated attenuator.
- h. D-C Amplification
 - 1. Y-axis amplifier may be used to amplify d-c potentials.
 - 2. D-C deflection sensitivity — 0.5. r.m.s. volt/inch; 1.5 d-c volts/inch.
 - 3. Maximum Input Potential (d-c operation)
 - 7.5 volts r.m.s., \pm 11 volts d-c
- 3. X-axis Amplifier
 - a. Input — Input Terminals on panel for connection to amplifier circuit.
 - b. Deflection Factor — 22 r.m.s. volts/inch direct and 0.5 r.m.s. volts/inch through amplifier.
 - c. Sinusoidal Frequency Response — Flat (within \pm 10%) from 2 to 100,000 cps, down approximately 50% at 250,000 cps.
 - d. Voltage Gain 43
 - e. Input Impedance 5,000,000 ohms, 25 uufd
 - f. Maximum Input Potential 25 r.m.s. volts
 - g. D-C Amplification
 - 1. X-axis amplifier may be used to amplify d-c potentials.
- 4. Sweep Circuit
 - a. Type — Gas-triode, Du Mont 6Q5G
 - b. Rate (Recurrent only) 2 to 50,000 cps
 - c. Direction of Sweep Left to right
- 5. Test Signal — Test signal terminal provides a sinusoidal output of line frequency.
- 6. Power Supply
 - a. Input 115/230 r.m.s. volts
 - b. Frequency 40-60 cycles
 - c. Power Consumption 90 watts
 - d. Fuse protection 1.5 ampere
- 7. Physical Specifications
 - a. Size — Over-all dimensions, 14½" high x 8⅞" wide x 20¼" deep.
 - b. Weight 54 pounds net
 - c. Finish
 - 1. Cabinet — Black wrinkle on steel
 - 2. Panel — Black finish on brass with raised chromium characters.
 - d. Calibrated Scale — Provided, 10 divisions/inch, 10th divisions accentuated.

Catalog No.	Type No.	Description	Code
1146	208-B	115 V 40-60 cycles with 5LP1 Cathode-ray Tube	YEEGD
1147	208-B	230 V 40-60 cycles with 5LP1 Cathode-ray Tube	YEELJ
1148	208-B	115 V 40-60 cycles with 5LP11 Cathode-ray Tube	YEEMK
1149	208-B	230 V 40-60 cycles with 5LP11 Cathode-ray Tube	YEERP
1150	208-B	115 V 40-60 cycles with 5LP7 Cathode-ray Tube	YAKCE
1151	208-B	230 V 40-60 cycles with 5LP7 Cathode-ray Tube	YAKFO

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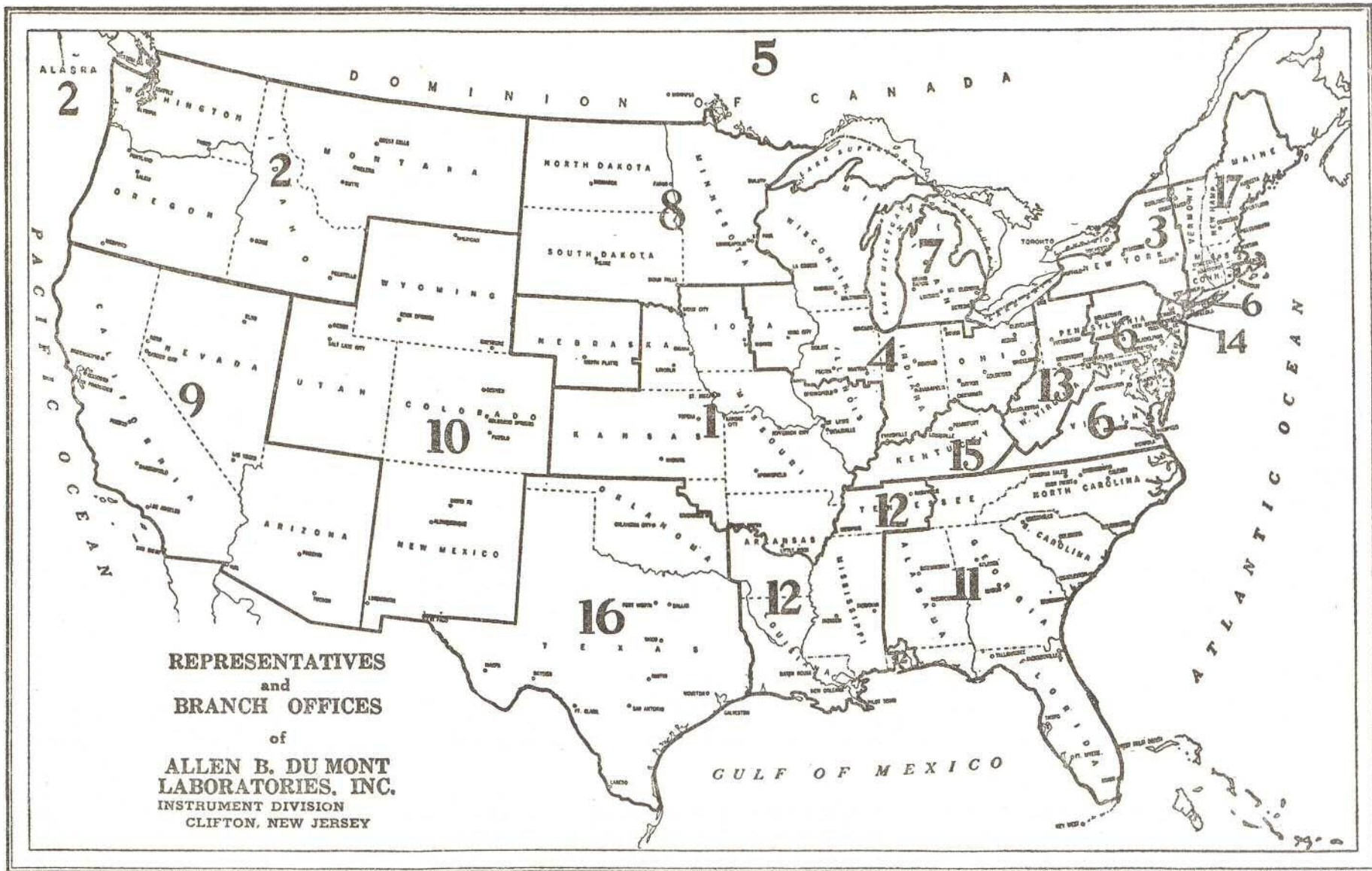
Effective 21 JUNE, 1948

(Supersedes Issue Dated 1 June, 1948)

All prices are subject to immediate change without notice.

Instrument Price List

Type	Catalog	Code Word	Price	Type	Catalog	Code Word	Price
DP-1	1076-A	YAVAM	\$ 47.50	263-A	1206-E	YALAA	\$ 142.50
VP-5	1079-A	YAYMA	35.00	263-B	1208-E	YALAC	142.50
164-E	1064-A	YATOP	127.20		1209-E	YALAD	142.50
	1065-A	YATPO	127.20	264-A	1240-A	YALBP	39.50
	1066-A	YATRY	128.85		1241-A	YALBQ	39.50
	1067-A	YATYR	128.85	271-A	1216-E	YALAR	162.50
				274-A	1420-A	YALKA	136.50
185-A	1072-A	YAUIF	105.00		1421-A	YALKB	144.00
	1073-A	YAURN	105.00		1422-A	YALKC	139.25
189	1159-A	YEFEC	74.50		1423-A	YALKD	136.50
208-B	1146-A	YEEGD	285.00		1424-A	YALKE	144.00
	1147-A	YEELJ	285.00		1425-A	YALKF	139.25
	1148-A	YEEMK	287.75	275-A	1250-E	YALBZ	690.00
	1149-A	YEERP	287.75		1251-E	YALCA	695.00
	1150-A	YAKCE	292.50		1253-E	YALCC	697.50
	1151-A	YAKFO	292.50		1254-E	YALCD	693.75
					1255-E	YALCE	690.00
213-A	1090-A	YAWRO	480.00		1256-E	YALCF	695.00
	1091-A	YAWTY	480.00		1258-E	YALCH	697.75
215	1189-A	YAGOK	215.00		1259-E	YALCJ	693.75
216-A	1129-A	YECYA	0.85	276	1210-A	YALAM	2.00
216-C	1128-A	YECUD	1.20	277	1212-A	YALAO	23.95
216-D	1130-A	YECYB	2.25	279	1386-E	YALHR	1,294.50
216-E	1131-A	YECYC	2.25		1387-E	YALHS	1,300.00
216-F	1132-A	YECYD	2.50		1390-E	YALHV	1,297.25
216-G	1133-A	YECYE	2.10		1391-E	YALHW	1,294.50
216-H	1134-A	YECYF	2.10		1392-E	YALHX	1,300.00
216-J	1135-A	YECYG	2.10		1395-E	YALJA	1,297.25
224-A	1191-A	YAIRL	290.00	280	1275-E	YALDA	5,550.00
	1203-A	YALCA	291.65		1278-E	YALDD	5,552.75
241	1192-E	YAJAZ	458.00		1378-E	YALHJ	5,550.00
	1204-E	YALDE	463.50		1381-E	YALHM	5,552.75
	1205-E	YALDE	460.75	281-A	1397-E	YALJC	1,125.00
Note 1.	1292-E	YALDS	190.00		1400-E	YALJF	1,127.75
248	1199-E	YAJZA	1870.00		1402-E	YALJH	1,125.00
	1200-E	YAKAB	1872.75		1405-E	YALJL	1,127.75
	1201-E	YAKBA	1877.50	283	1214-E	YALAQ	52.00
248-A	1244-E	YALBT	2180.00	286-A	1416-E	YALJW	650.00
	1247-E	YALBW	2182.75		1417-E	YALJX	650.00
Note 2.	1293-E	YALDT	190.00	288	1347-E	YALFY	6,071.00
Note 3.	1294-E	YALDU	67.75		1350-E	YALGE	6,073.75
250	1303-E	YALDE	635.00		1352-E	YALGG	6,071.00
	1304-E	YALEE	640.50		1355-E	YALGK	6,073.75
	1307-E	YALEH	637.75	308	1270-E	YALCT	264.00
	1308-E	YALEJ	635.00		1333-E	YALFK	264.00
	1309-E	YALEK	640.50	314	1217-E	YALAS	980.00
	1312-E	YALEN	637.75		1366-E	YALGV	1,155.00
				2088	1249-E	YALBY	103.50
250-H	1314-E	YALEP	850.00	2501	1215-E	YALAP	5.00
	1317-E	YALES	852.50	2502	1382-E	YALHN	27.65
	1319-E	YALEU	850.00	2503	1383-E	YALHO	29.95
	1322-E	YALEX	852.50	2504	1384-A	YALHP	15.00
Note 4.	1335-E	YALFM	90.00	2505	1385-A	YALHQ	34.50
				2511	1371-E	YALHA	19.00
256-D	1296-E	YALDW	1705.00	2512	1372-E	YALHB	231.00
	1297-E	YALDX	1710.50	2513	1374-E	YALHE	25.00
	1299-E	YALDZ	1712.50	2514	1375-E	YALHF	232.00
	1300-E	YALEA	1707.75	2515	1430-E	YALKL	196.25



- 1 Alfeo Distributing Co.
3106 Chouteau Ave.
St. Louis 3, Missouri
- 2 Backer, James J.
2321 Second Avenue
Seattle 1, Washington
- 3 Ossmann, Edward A.
39 Bennington Drive
Rochester 12, New York

- 4 Crossley, Alfred
549 W. Randolph St.
Chicago 6, Illinois
- 5 Cyclograph Services, Ltd.
494 King St., East
Toronto 2,
Ontario, Canada
- 6 Gawler-Knoop, Inc.
1060 Broad St.
Newark 2, New Jersey

- 7 Sterling, Seymour
13331 Linwood Ave.
Detroit 6, Michigan
- 8 Halinton, Harry
612 No. Michigan Ave.
Chicago 11, Illinois
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Los Angeles 15, California

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200 South Main Street
Salt Lake City 1, Utah
- 11 Murphy & Cota
5 Ivy Street Bldg.
Atlanta, Georgia
- 12 Peirce, Geo. H.
715 Camp Street
New Orleans 12, Louisiana

- 13 Ransford Co., H. E.
Standard Life Bldg.
Pittsburgh 22, Pa.
- 14 Allen B. Du Mont Laboratories, Inc. 17
Instrument Division
1000 Main Avenue
Clifton, New Jersey
- 15 Wright, James L., Jr.
Box 276 RR17
Indianapolis 44, Indiana

- 16 Lipscomb, Earl W.
4433 Stanford Street
Dallas 5, Texas
- Waters, Robert A.
4 Gordon Street
Waltham, Massachusetts
- Export Division
Allen B. Du Mont Laboratories, Inc.
630 Fifth Avenue
New York 20, N. Y.
Cable Address Albeedu, New York

HOW TO ORDER

Specification

To as great an extent as possible, all modifications of instruments such as power supply potential and frequency, and cathode-ray tube type have been classified under separate catalog numbers. In the great majority of cases, therefore, it is merely necessary to give the catalog number to completely specify an instrument. Code words are especially helpful in telegraphic and cable orders. It is always helpful, however, to include such additional information as may be deemed advisable to specify the proper type equipment.

Specification Changes

The right is reserved to change the specifications of any equipment at any time. This reservation will not incur any liability to change equipment previously sold, or to supply new equipment in accordance with earlier specifications excepting under special apparatus, contract classifications, and prices.

Export Orders

Orders and inquiries from all foreign countries, with the exception of Canada, and all U. S. possessions outside of the continent of North America, should be addressed directly to our export office at 630 Fifth Avenue, New York 20, New York, U. S. A. The cable address of this office is ALBEEDU, NEW YORK. Canadian inquiries should be directed to our Canadian representatives, Cyclograph Services, Ltd., 494 King St., East, Toronto 2, Ontario, Canada.

Method of Shipment

Industrial-type cathode-ray tubes and all cathode-ray instruments shown on this price list are shipped with transportation charges prepaid, F.O.B., Passaic or Clifton, New Jersey, to any destination within the continental limits of the United States of America, using the method of transportation which Du Mont's experience has shown to be best for the equipment and the destination involved in each individual case.

Export shipments are made F.O.B. our warehouse in New York, New York. There are no charges for packing or for shipping cases for either domestic or export shipments. Shipping cases are not returnable.

Television-type cathode-ray tubes are shipped express collect, F.O.B. Passaic, New Jersey, unless definite instructions to the contrary are received. There are no charges for packing or for shipping cases for either domestic or export shipments. Shipping cases are not returnable.

Terms

Our terms are 2% ten days, net 30 days, subject to approved credit rating. To avoid delays in shipment, it is advisable to establish credit, although C.O.D. shipments will be made. All quotations are subject to fifteen-day acceptance, and Du Mont reserves the right to invoice at prices in effect at the time of shipment, which prices shall vary no more than 15 percent.

Delivery

Promised shipping dates are acknowledged from date of acceptance of order, and they are conditional upon circumstances beyond our control.

Return Shipments

In many cases, equipment has been returned to us, without authorization, and without need for examination, resulting in unnecessary shipping costs. When it is planned to return equipment, our Service Department should be first consulted. Considerable saving in time and money will be effected by this procedure.

No repair work will be accomplished without written authorization from the owner either in the form of a letter or purchase order. If instruments are received in damaged condition, an inspection report should be filed with the carrier immediately.

Repair Parts

When ordering repair parts for equipment, the type number and serial number of the instrument must be given. These will be found on the front panel. Parts should be designated by Du Mont part number and symbol number shown on the schematic diagram of the instrument whenever possible.

Quantity Discounts

Du Mont wishes to grant quantity discounts whenever economies in production or processing of orders can be achieved as a result of the receipt of orders for equipment in quantity. Savings effected in this manner will be passed on to our customers. They will vary with the type of equipment ordered.

The catalog number of each Du Mont product carries a letter-suffix which indicates the quantity-discount plan applicable to each item within the continental limits of the United States of America, but not including Alaska. The letter-suffix of the catalog number of each item describes the applicable discount plan shown below, for sales in quantity of a single type:

Plan A—6 to 24 units, 5%; 25 or more units, 10%.

Plan E — 5 - 9 units, ½%; 10 - 19 units, 1%; 20 - 49 units, 1½%; 50 or more units, 2%.

Warranty

All instruments manufactured or sold by us are guaranteed against defective workmanship and materials for a period of one year from date of sale. Guarantee cards, which are shipped with the instrument or cathode-ray tube, must be returned to us upon receipt of the equipment in order to make this guarantee valid. We maintain a permanent file of all equipment sold, for the convenience of our customers. Industrial-type cathode-ray tubes manufactured by us are guaranteed for a life of 1,000 hours, or six months, whichever expires first. Guarantees, in addition to the statements given above, are to be defined by the specifications of equipment as given in our current advertising information and catalog, and they are subject only to specific modification.

Details of Du Mont's warranty on television-type cathode-ray tubes are available upon request.

ALLEN B. DU MONT LABORATORIES, INC.

INSTRUMENT DIVISION

CLIFTON, N. J., U. S. A.

ALLEN B. DU MONT LABORATORIES, INC.

Effective 21 JUNE, 1948

(Supersedes Issue Dated 1 June, 1948)

All prices are subject to immediate change without notice.

Cathode-Ray Tubes

Industrial Types			
Type	Persistence	Catalog	Price
3AP1-A	Medium	2201-A	\$14.85
3AP11-A	Short	2206-A	16.50
3GP1-A	Medium	2211-A	22.00
3GP11-A	Short	2216-A	23.65
3JP1	Medium	2025-A	24.00
3JP2	Long	2026-A	27.50
3JP7	Long	2029-A	28.75
3JP11	Short	2030-A	25.65
5BP1-A	Medium	2221-A	24.75
5BP11-A	Short	2226-A	27.50
5CP1-A	Medium	2231-A	34.90
5CP2-A	Long	2232-A	40.40
5CP7-A	Long	2235-A	42.40
5CP11-A	Short	2236-A	37.65

Industrial Types			
Type	Persistence	Catalog	Price
5JP1-A	Medium	2251-A	\$67.50
5JP2-A	Long	2252-A	73.00
5JP7-A	Long	2255-A	75.00
5JP11-A	Short	2256-A	70.25
5LP1 A	Medium	2261-A	39.50
5LP2-A	Long	2262-A	45.00
5LP7-A	Long	2265-A	47.00
5LP11-A	Short	2266-A	42.25
5RP2-A	Long	2282-E	125.00
5RP11-A	Short	2286-E	127.75
5SP1	Medium	2073-E	150.00
5SP2	Long	2074-E	155.50
5SP7	Long	2077-E	157.50
5SP11	Short	2078-E	152.75

DU MONT GAS TRIODES

Type	Catalog	Price
2B4	2157-A	\$3.30
6Q5G	2158-A	3.30
2522N1/128A	2159-A	3.30

TELEVISION TYPES

Type	Catalog	Price
7EP4	2087-D	\$23.25
12JP4	2179-D	69.75
15AP4	2185-D	129.50
20BP4	2194-D	270.00
*K1003P4	2111-D	99.50
*K1019P4	2135-D	430.00

*Sold only for replacement in Du Mont pre-war television receivers.

Orders for short runs (under 100) of tubes not in current production or stock will be accepted on a +15% to -20% quantity-variation basis.

Note 1. Catalog No. 1292-E is the High Voltage Modification of the Type 247 Cathode-ray Oscillograph into Type 247-A not including Type 5RP-Cathode-ray Tube or Type 263-A Power Supply.

Note 2. Catalog No. 1293-E is the High-Voltage Modification of the Type 248 Cathode-ray Oscillograph into Type 248-A not including Type 5RP-Cathode-ray Tube or Type 263-A Power Supply.

Note 3. Catalog No. 1294-E is the Sweep-Modification of the

Type 248 or Type 248-A Cathode-ray Oscillograph bearing serial numbers prior to 530.

Note 4. Catalog 1335-E is the High-Voltage Modification of the Type 250 Cathode-ray Oscillograph into Type 250-H, not including the Type 5RP-Cathode-ray Tube or the Type 263-B Power Supply, both of which are recommended accessories. This conversion may be accomplished at any time by returning Type 250 instruments to the factory.