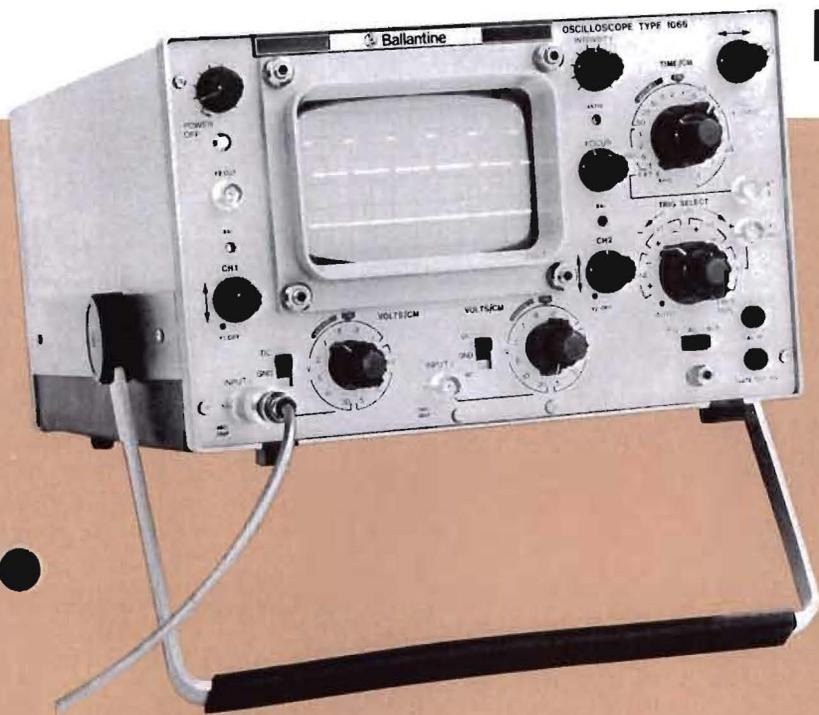


# WIDEBAND PORTABLE DUAL-CHANNEL OSCILLOSCOPE MODEL 1066A



- DC to 15MHz Bandwidth.
- 5mV/cm Dual Trace.
- Comprehensive Trigger facilities, including TV Sync.
- Built-in Signal Delay.
- Bright Line Auto Free-run.
- Wide Time-Base Ranges.
- Truly Portable — Small, Light, Rugged, Designed for Dependable Operation in Adverse Environments.
- Easy to Use — Greatly Simplified Panel Layout.
- Maximum Convenience — Extremely Stable Trigger & Amplifier Circuits, Wide Range of Sensitivities; Fast Warmup, Low Drift.
- Lowest Cost in This Class of Instruments.

#### APPLICATIONS:

- Field Service of Computer peripherals and information display terminals.
- Communications Maintenance — Modems, Multichannel Telemetry.
- Television Checks and Field Maintenance of Servo equipment.



**BALLANTINE LABORATORIES, INC.**

*FOUR DECADES OF INNOVATION IN ELECTRONIC INSTRUMENTATION*

## MODEL 1066A DUAL-CHANNEL OSCILLOSCOPE

The Model 1066A dual-channel portable CRO has all the features normally found only in instruments costing twice as much. This solid-state professional oscilloscope incorporates a 4kV CRT supply for bright display on even the fastest sweeps — to 50 nanoseconds/cm, for precise fast-rise pulse work.

Other characteristics include: dual trace, and X-Y display modes; built-in signal delay; DC to 15MHz bandwidth and  $\pm 3\%$  accuracy; 5mV/cm sensitivity; amplifiers may be cascaded for 1mV/cm max. sensitivity (5Hz-5MHz); wide time-base ranges with

10X magnifier and vernier from 50ns/cm to 25 seconds full scale; internal calibrator; comprehensive trigger controls, including TV Sync.; will trigger positively on as little as 2mm peak-to-peak.

The Model 1066A may be ordered with a full range of accessories, including probes, viewing hoods, and compatible CRO cameras. Its compact design (only 7" x 11½" x 17"), its light weight (only 20 lbs.), and its high-strength construction recommend it for every field and bench application compatible with its high sensitivity and bandwidth.

### SPECIFICATIONS

#### CATHODE RAY TUBE

5-inch rectangular CRT. Illuminated graticule with 6 x 10 cm display area. 4 kV accelerating potential. P31 phosphor standard, P7 optional. Removable bezel permits attachment of oscilloscope cameras and viewing hoods as well as interchange of graticules.

#### VERTICAL DEFLECTION

**Dual Channels (identical):** Y1 and Y2.

**Bandwidth (at 3dB down):** DC to 15 MHz; 5Hz to 5MHz in cascaded mode. 2Hz to 5MHz with AC coupling (less than 0.2Hz with attenuator probe).

**Rise Time:** 24nsec; 70nsec in cascade.

**Deflection Factor:** 5mV/cm to 20V/cm in 12 calibrated steps, 1-2-5 sequence. Extended to 1mV/cm in cascaded mode, and to <50V/cm with 2.5:1 vernier range.

**Accuracy:** within 3% (within 6% in cascade).

#### DC Drift:

*Drift with time:*

Short term: (Constant ambient temperature and line voltage) 1 mm or less during any minute within first hour after 30 minute warmup.

Long term: (With constant ambient temperature in range of 20°C to 30°C and constant line voltage) 2 mm or less during first hour after 30 minute warmup.

*Drift with temperature:* 4 mm or less per 10°C.

**Input RC:** 1M $\Omega$   $\pm 2\%$ /28pF (AC/DC/Ground coupling).

**Maximum Input:** 400V (DC and AC peak).

**Delay Line:** Permits viewing leading edge of triggering waveform. PC type; introduces non-distorting, balanced signal delay of approx. 150nsec.

#### Display Modes:

*Single Trace:* Y1 or Y2.

*Cascaded:* Y2 and Y1.

*Dual Trace:* Chopped mode, selected automatically on 1 msec/cm to 1 sec/cm time base ranges; 250kHz rate; Alternate mode from 0.5 msec/cm to 0.5 $\mu$ sec/cm. Z-axis blanking provided.

*X-Y:* via Y1 and Y2 identical channels.

*External X:* against Y1 or Y2, Y1 and Y2 dual trace, or cascaded Y2 and Y1.

#### HORIZONTAL DEFLECTION

**Time Base:** 0.5 $\mu$ sec/cm to 1/sec/cm in 20 calibrated steps, 1-2-5 sequence. Accuracy, within 3% over center 8cm of CRT scale. 2.5:1 vernier extends range to 2.5sec/cm and 25 sec. full scale.

**x10 Magnifier:** Extends range to 50nsec/cm. Accuracy, within 5% over center 8cm of CRT scale. Permits full screen 10cm display of any 1cm segment of normal time base. Expands normal time base around center ( $\pm 1.5$ cm) scale.

**External X Input:** variable in 2 steps, 80mV/cm to 0.8V/cm (with x10 magnifier). Input RC, 100k $\Omega$   $\pm 10\%$ / $< 38$ pF. DC to 2MHz.

**X-Y Operating Mode:** via Y1 and Y2 channels. Deflection factor, 5mV/cm to 20V/cm, extended to 50V/cm with vernier. Accuracy, within 3%. Bandwidth (3dB down): DC to 1MHz (2Hz-1MHz, AC coupled). Phase shift  $< 1^\circ$ , DC-50kHz;  $< 3^\circ$ , DC-500kHz (5mV/cm deflection factor).

#### TRIGGER

**Modes:** Normal, free run, automatic (40Hz to 2MHz, useful to 20MHz). Bright baseline reference trace with no input (or  $< 40$ Hz).

**Coupling:** AC, AC fast (low frequency reject), TV (optimizes frame-rate triggering of sweep).

**Sources:** Internal Y1 ( $\pm$ ) and Y2 ( $\pm$ ), External  $\pm$ , Line  $\pm$ .

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AC 1

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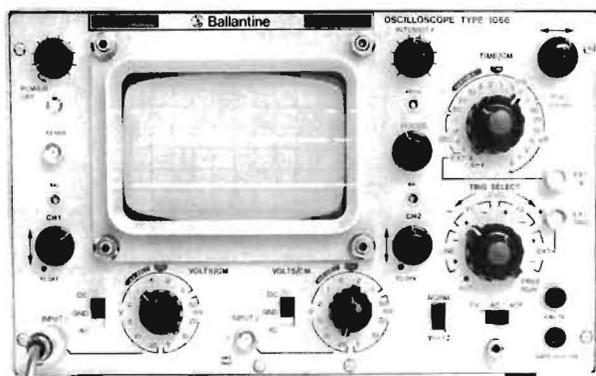
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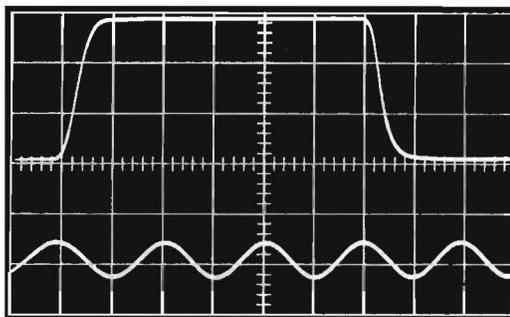
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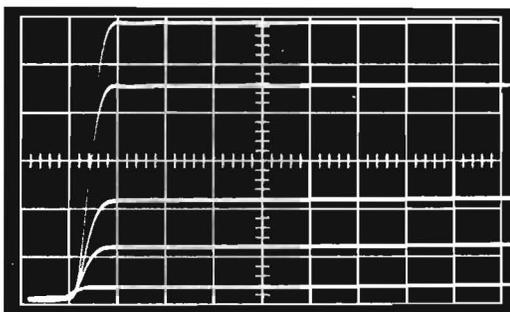


Human-engineered front-panel layout adds significantly to the convenience and utility of the Model 1066A.



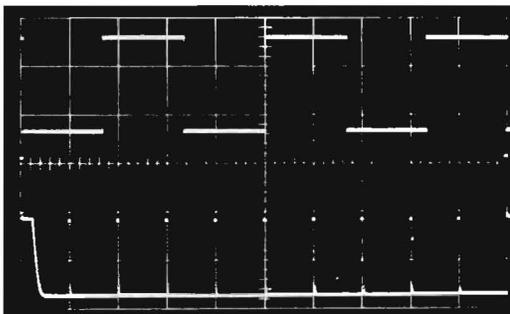
**PULSE RESPONSE**

Y sensitivity: 2V/cm. X speed: 50ns/cm.  
 50Ω termination at scope.  
 Input pulse:  $T_r \approx 5ns$ ;  $T_f \approx 5ns$ .  
 Internally triggered, AUTO mode.  
 Lower waveform: 1.0MHz sine wave.



**PULSE TRIGGERING**

(Showing negligible slewing of trigger point with amplitude).  
 Internally triggered, AC Fast mode.  
 Manual Trigger Level — optimized for each amplitude.  
 50Ω termination at scope.  
 Input Pulse: Width  $\approx 150ns$ ; Rep Rate  $\approx 50kHz$ .  
 $T_r \approx 5ns$ ;  $T_f \approx 5ns$ .  
 Amplitude range: 10 to 100mV.  
 X speed: 50ns/cm.



**HORIZONTAL LINEARITY**

X speed: 5ms/sec.  
 Upper Waveform: square wave from CAL. IV jack on panel.  
 Lower Waveform: 5ms and 50μs signals from time mark generator.  
 (Note excellent full-screen linearity.)

**Trigger Sensitivity (Manual):**

AC Internal: 2mm p-p, 10Hz to 2MHz; 1cm at 2Hz and 20MHz.

AC External: 300mV p-p, 10Hz to 2MHz; 1.5V at 2Hz 20MHz.

TV Internal: 1cm p-p video.

TV External: 1.5V p-p video.

ACF: same as AC coupled source above 50kHz.

**Trigger Sensitivity (Automatic):**

Internal: 2mm p-p, 40Hz to 2MHz.

External: 300mV p-p, 40Hz to 2MHz.

**Trigger Level Control Range:** Internal >6cm ( $\pm 3cm$ ), External >20V ( $\pm 10V$ ). Manual trigger level control deactivated when using automatic triggering.

**External Trigger Input RC:** 100kΩ  $\pm 10\%$ /15pF.

**GENERAL**

**Amplitude Calibrator:** square wave, line frequency, 1V p-p ampl.  $\pm 2\%$ . Rise time approx. 20μsec.

**Channel Y2 Output:** 25mV/cm of Y2 display (0.25V max). AC coupled, 5Hz to 5MHz.

**Gate Output:** Positive-going nominal 10V rectangular pulse with same duration as time base. Flat top and fast rise time for probe adjustment.

**Ramp Output:** Time base frequency ramp, positive-going nominal 8V p-p.

**External Modulation:** via rear-panel jack, AC coupled. Visible modulation at normal intensity with 2V p-p input. Blanking voltage, 60V p-p.

**Power:** 95–130V, 190–260V, 45 to 440Hz, approx. 28W (35VA).

**Dimensions:** Case — 7"H x 11¼"W x 15½"D (17.8 x 28.5 x 39.4cm). Including knobs, feet, handles — 7.625" x 12.5" x 17.5" (19.6 x 31.8 x 43.7cm).

**Weight:** 19¼ lbs. (9 kg); shipping, 30 lbs. (13.5 kg).

**Price:** \$845.00

## ACCESSORIES

**Oscilloscope Camera Model 7000A.** For all standard oscilloscopes with 6 x 10cm screens. (Other sizes optional.) Controls reduced to minimum. Pre-focused; lens aperture preset. Polaroid Land Type 20C "Coat-erless" ASA3000 film provides prints in 30 seconds, requires no coating for permanence. Lowest cost for any quick-process CRO camera.

Hooded viewing port provides convenient view of CRT and graticule before exposure. High-quality Dallmeyer f4.5, 2.4-inch lens. Object image ratio 1:0.65 (nominal). Three shutter speeds: 1/25 sec (fixed), time, and bulb. Adapters available for a large range of oscilloscopes — or the Model 7000A may simply be held to the CRO during exposure. Price: \$165.

**Probe Kit, X10 Attenuation**

10600A, 4 feet, \$30.00

10601A, 6 feet, \$32.00

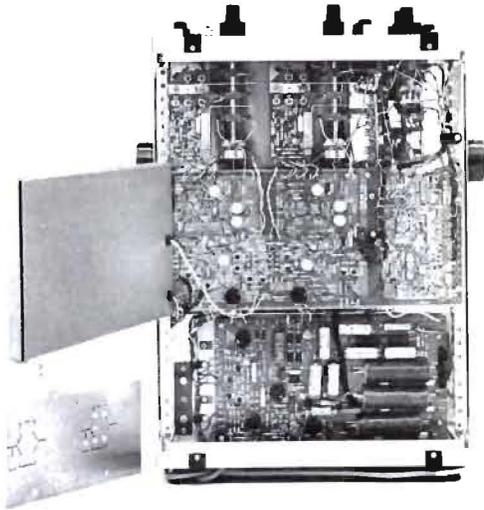
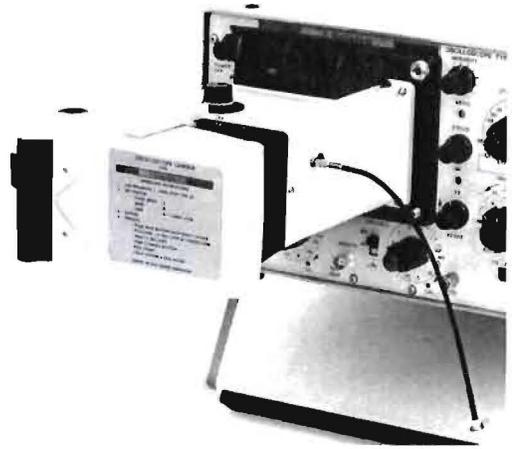
**Viewing Hood, 10701A, \$10.00**

**Protective Cover, 10725A, \$35.00**

**Rack Mounting Kit, 800-03, \$60.00**

**Feedthru Termination, 50Ω, BNC, 12630A, \$12.50**

**Electronic Signal Recorder, 7050A, \$985.00**



*The construction of the Model 1066A conforms to the highest standards of industrial instrumentation; accessibility and ease of maintenance are remarkable for this class of instruments.*



## BALLANTINE LABORATORIES, INC.

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