

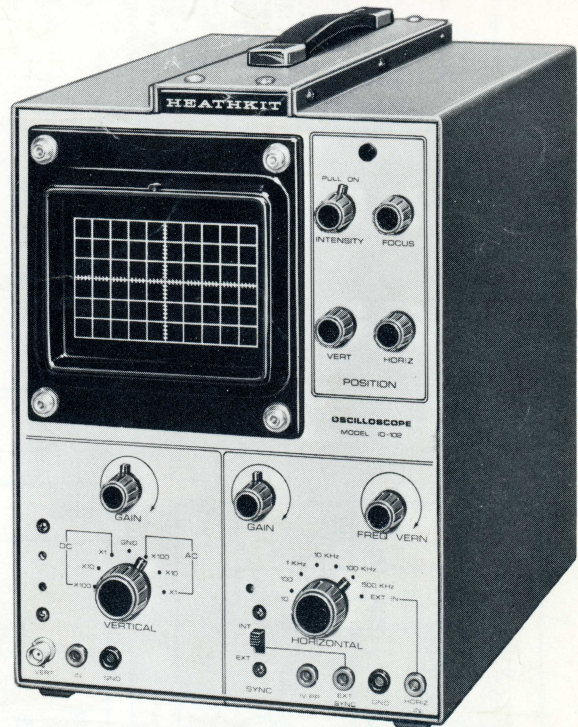


SPECIFICATIONS & SCHEMATIC

**Solid-State  
5" Oscilloscope**

## Heathkit® IO-102... a high quality, low cost general purpose solid-state scope

- all solid-state design for high reliability, better performance
- DC coupled vertical amplifier
- wide response
- 5" flat face CRT with standard camera mount bezel dimensions
- external sweep & sync inputs
- built-in 1 volt P-P reference source
- variable sweep 10 Hz — 500 kHz



**An Excellent General Purpose Scope** . . . ideally suited for lab and classroom use or demonstration . . . the perfect choice for general service and design work in audio, TV, and receiver circuitry.

**All Solid-State Design** for extended life, higher reliability and superior overall performance.

**Wide Bandwidth.** The wide band response, fast rise time and excellent sensitivity make the new IO-102 a truly high performance, low cost scope for a wide variety of applications. Vertical channel frequency response is a wide DC to 5 MHz, and switch-selected AC or DC coupling adds extra convenience and versatility. Frequency-compensated 3-position attenuator accommodates varying input levels. A separate switch position permits grounding the amplifier input to provide a zero reference line. An FET input circuit provides the high input impedance necessary to minimize circuit loading. Input sensitivity is a high 30 mV/cm; rise time is 80 nanoseconds.

**Five Position Time Base.** The recurrent, automatic sync type sweep generator provides five sweep ranges, from 10 Hz to 500 kHz. A separate frequency vernier control permits selection of the desired sweep rate to give a stationary trace. And an external hori-

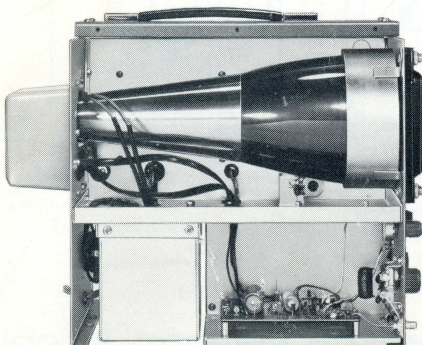
zontal input allows the sweep signal to be applied by an external generator. The front panel internal-external switch and external sync connector provide a means for applying an external sync signal. A one volt peak-to-peak output provides a signal that can be used as a comparison to determine the value of an unknown voltage.

**High Visibility CRT Trace.** The type 5DEP1 CRT used in the IO-102 provides a brilliant, easily-read trace, even in areas such as classrooms with high ambient light levels. The highly visible trace, coupled with the large 5" CRT make the IO-102 ideal for classroom demonstration purposes. A 6x10 cm ruled graticule makes trace amplitude easy to determine. And to provide additional convenience and versatility, the CRT bezel may be replaced by a standard scope camera mount.

**Solid-State Regulated Power Supplies.** Both horizontal and vertical amplifiers and sweep circuit are operated from zener-regulated power supplies, giving the IO-102 excellent display stability. The transformer-operated power supply can be wired for either 120 or 240 VAC operation, and is fused for protection.

**Handsome, Rugged Construction And Compact Size** make the IO-102 at home on any bench in lab, classroom or service shop. Styled in Heath beige and brown the IO-102 measures only 16 1/4" deep . . . fits on any bench with room to spare. Removable side panels allow easy access to the circuitry for adjustment or demonstration . . . IO-102 makes an excellent teaching tool for basic oscilloscope design.

Simple, rugged design. Both side panels remove easily for access to circuitry. Note completely shielded transformer and mu-metal shield around CRT to reduce magnetic interference with trace.

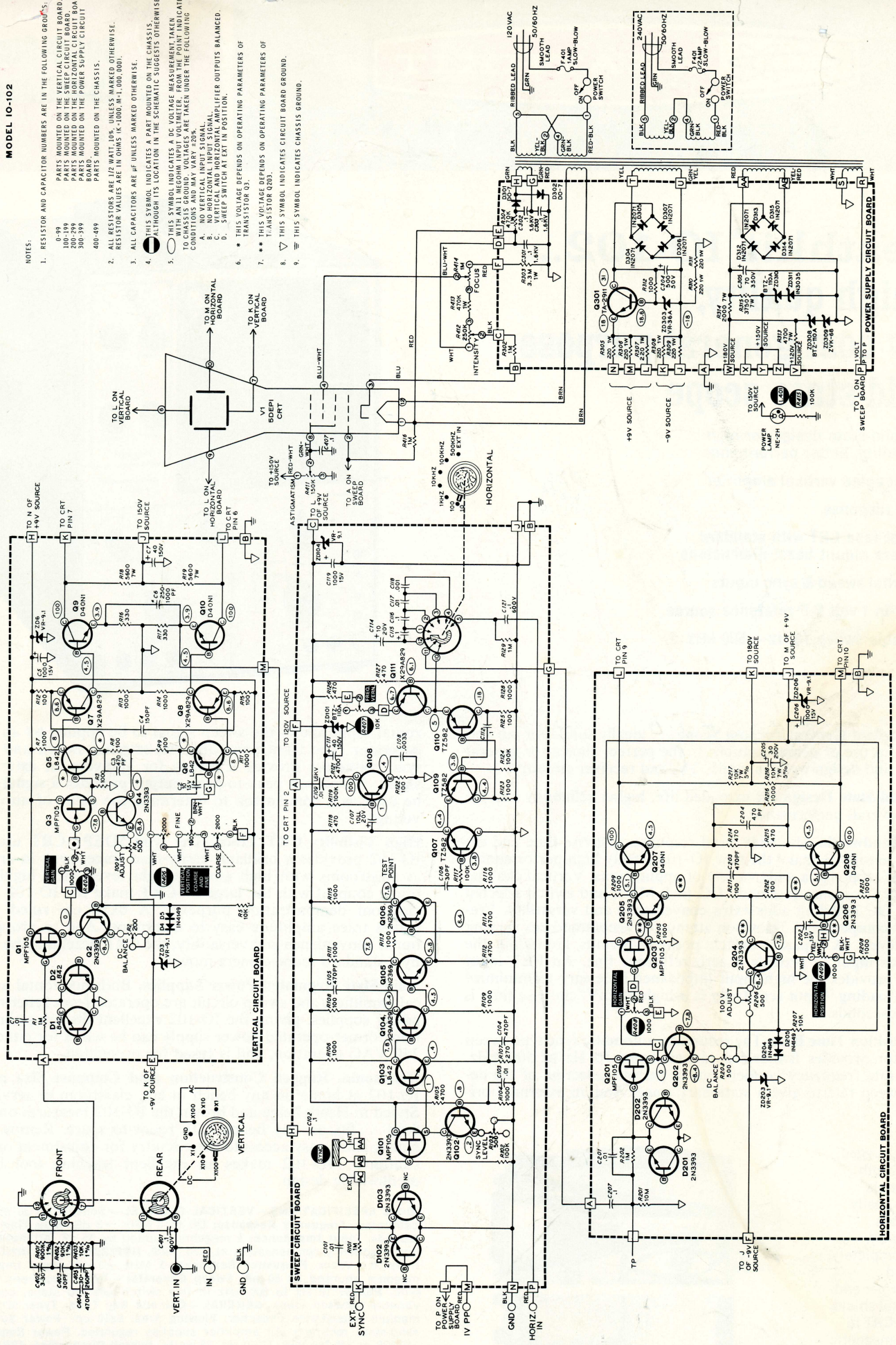


**IO-102 SPECIFICATIONS — VERTICAL CHANNEL —** Sensitivity: 30 mV/cm, uncalibrated. Frequency Response: DC to 5 MHz,  $\pm 3$  dB. Rise Time: 80 nanoseconds. Input Impedance: 1 megohm shunted by 35 pF. Attenuator: 3-position, frequency compensated; x1, x10, x100. **HORIZONTAL CHANNEL —** Sensitivity: 0.1 V/cm. Frequency Response: 1 MHz  $\pm 3$  dB. Input Impedance: 1 megohm shunted by 50 pF. **Sweep Generator —** Type: Recurrent, automatic sync. Range: 10 Hz to 500 kHz in five switch-selected steps, continuously variable between steps. **GENERAL —** Cathode Ray Tube: Type: 5DEP1, green medium persistence phosphor. Viewing Area: 6x10 cm. Power Supplies: All solid-state rectifiers. All amplifier supplies regulated. Power Requirements: 110-130 or 220-260 VAC, 50-60 Hz, 35 watts. Overall Dimensions: 12 3/4" H x 9 1/4" W x 16 1/4" L, including knobs, handle, feet, etc. Net Weight: 27 lbs.

**SCHEMATIC OF THE  
HEATHKIT®  
OSCILLOSCOPE  
MODEL 10-102**

**NOTES:**

- RESISTOR AND CAPACITOR NUMBERS ARE IN THE FOLLOWING GROUPS:  
0-99 PARTS MOUNTED ON THE VERTICAL CIRCUIT BOARD.  
100-299 PARTS MOUNTED ON THE HORIZONTAL CIRCUIT BOARD.  
300-399 PARTS MOUNTED ON THE POWER SUPPLY CIRCUIT BOARD.  
400-499 PARTS MOUNTED ON THE CHASSIS.
- ALL RESISTORS ARE 1/2 WATT 10% UNLESS MARKED OTHERWISE.  
RESISTOR VALUES ARE IN OHMS (K-1000, M-1,000,000).
- ALL CAPACITORS ARE μF UNLESS MARKED OTHERWISE.
- THIS SYMBOL INDICATES A PART MOUNTED ON THE CHASSIS.
- THIS SYMBOL INDICATES A DC VOLTAGE MEASUREMENT, TAKEN AT ALTHOUGH ITS LOCATION IN THE SCHEMATIC SUGGESTS OTHERWISE.
- NO VERTICAL INPUT SIGNAL. VERTICAL AND HORIZONTAL VOLTAGES ARE TAKEN UNDER THE FOLLOWING CONDITIONS AND MAY VARY 20%:  
A. NO VERTICAL INPUT SIGNAL.  
B. VERTICAL AND HORIZONTAL AMPLIFIER OUTPUTS BALANCED.  
C. SWEEP SWITCH AT EXT IN POSITION.  
D. SWEEP SWITCH AT INT IN POSITION.
- THIS VOLTAGE DEPENDS ON OPERATING PARAMETERS OF TRANSISTOR Q1.
- THIS VOLTAGE DEPENDS ON OPERATING PARAMETERS OF TRANSISTOR Q201.
- THIS SYMBOL INDICATES CIRCUIT BOARD GROUND.
- THIS SYMBOL INDICATES CHASSIS GROUND.



**HEATH COMPANY, Benton Harbor, Michigan 49022**