

Assembly and Operation of the



PORTABLE DIGITAL MULTIMETER

MODEL IM-2202



**SCHEMATIC OF THE
HEATHKIT[®]
IM-2202
PORTABLE DIGITAL
MULTIMETER**

NOTES:

1. RESISTORS ARE 1/4 WATT, 5% UNLESS OTHERWISE INDICATED.
2. RESISTORS WITH AN ASTERISK (*) ARE 10%.
3. ALL 5% AND 10% RESISTORS ARE CARBON COMPOSITION EXCEPT R1.
4. ALL CAPACITORS SHOWN IN DECIMAL ARE μ F.
5. ** INDICATES PARTS FROM 9-60.
6. *** INDICATES PARTS FROM 100-1631.
7. **** INDICATES PARTS FROM 100-1643.
8. L.N. INDICATES LOW-NOISE RESISTORS.
9. ∇ INDICATES LOW-NOISE GROUND.
10. ∇ INDICATES WIRE CONNECTIONS TO THE LOOP END OF ONE OF THE SOLDER LUGS OF SW1 TO SW4.
11. \square INDICATES A LETTERED HOLE ON A CIRCUIT BOARD.
12. WW INDICATES WIREWOUND.

THE FOLLOWING DC VOLTAGES WERE MEASURED USING A HIGH IMPEDANCE (10M Ω OR GREATER) VOLTMETER FROM THE MEASUREMENT POINT TO THE (COMMON) INPUT JACK. VOLTAGES MAY VARY \pm 20%.

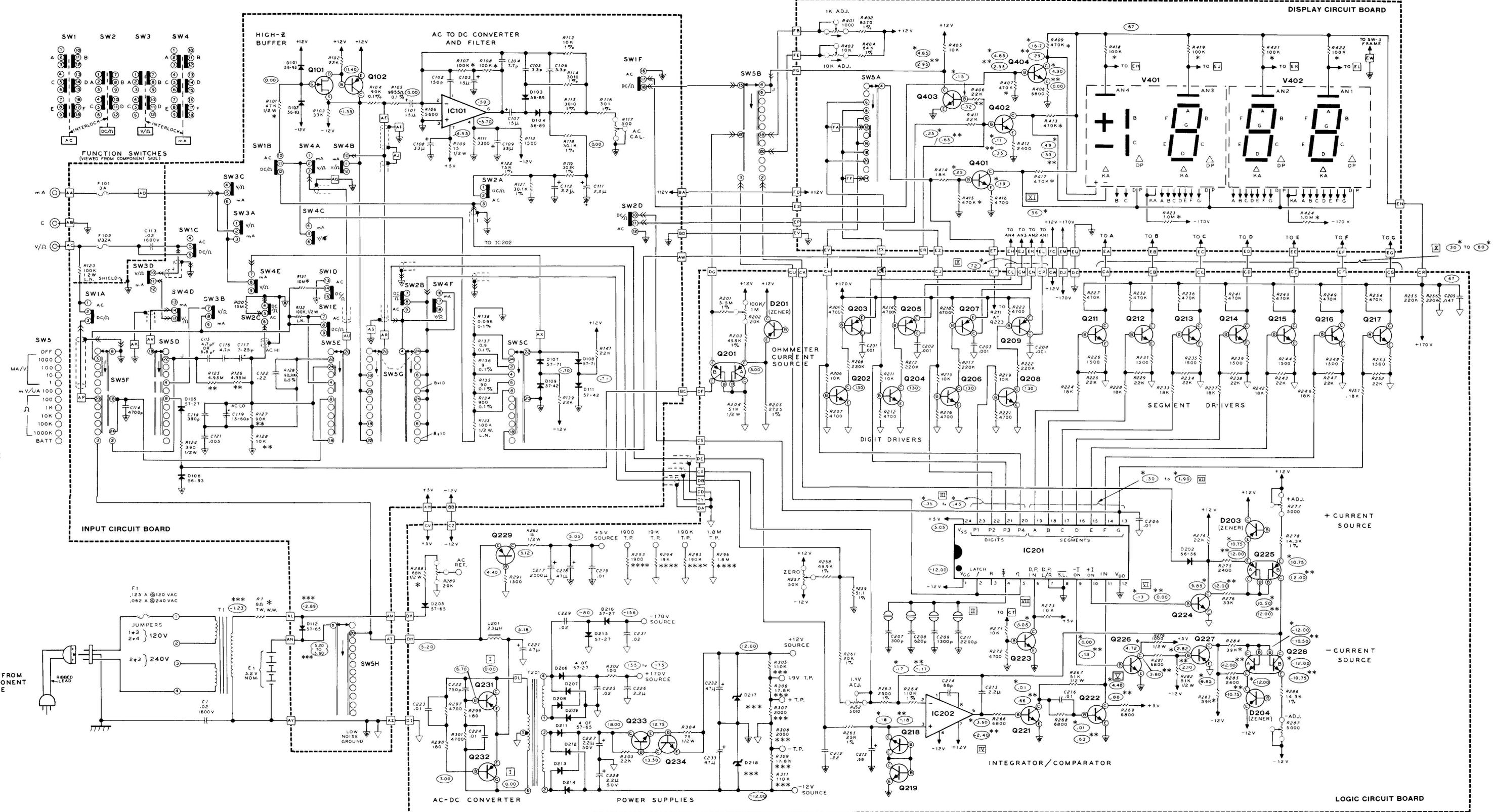
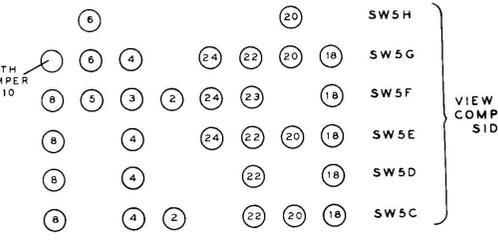
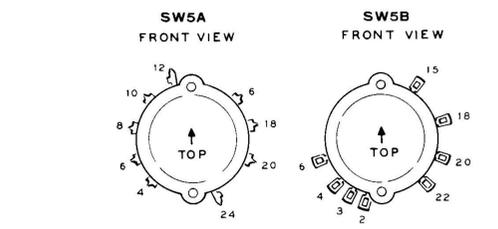
\square - WAVEFORMS USING BATT POSITION; SEE PAGE 107.

\circ - DC VOLTAGES FOR ANY INPUT IN 100mV POSITION.

\circ - DC VOLTAGES IN 100mV POSITION USING +PT AS INPUT; VOLTAGES WILL BE DIFFERENT FOR DIFFERENT INPUTS.

\circ - DC VOLTAGES IN 100mV POSITION USING -PT AS INPUT; VOLTAGES WILL BE DIFFERENT FOR DIFFERENT INPUTS.

\circ - DC VOLTAGES DURING BATTERY CHARGING. EXPOSED LINE VOLTAGE IS PRESENT -- USE EXTREME CAUTION.



VIEW FROM COMPONENT SIDE

LOGIC CIRCUIT BOARD

SEMICONDUCTOR IDENTIFICATION CHARTS

LOGIC CIRCUIT BOARD

DIODES

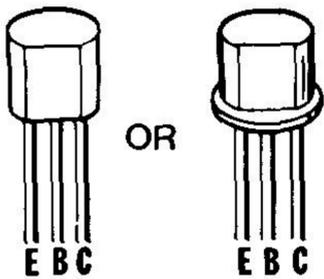
COMPONENT NUMBER	HEATH PART NUMBER	MAY BE REPLACED WITH	BASE DIAGRAM
D202	56-56	1N4149	<p>NOTE: HEATH PART NUMBERS ARE STAMPED ON MOST DIODES.</p>
D206, D207, D208, D209	57-27	1N2071	
D205, D211, D212, D213, D214, D215, D216	57-65	1N4002	
D201, D203, D204	417-242	SELECTED ZENER	OPTIONAL

TRANSISTORS

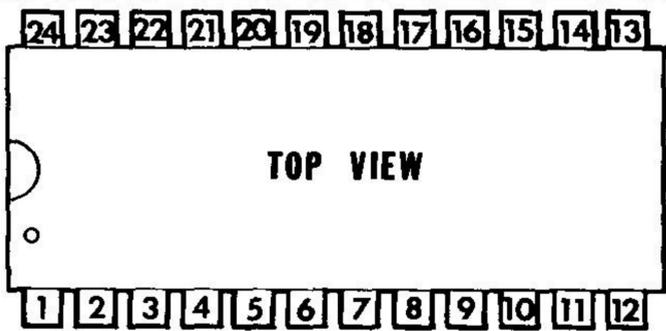
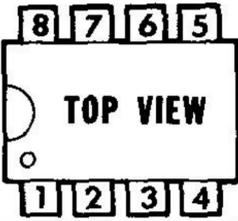
Q229	417-234	2N3638A	
Q202, Q204, Q206, Q208, Q211, Q212, Q213, Q214, Q215, Q216, Q217	417-294	MPSA42	
Q203, Q205, Q207, Q209	417-295	MPSL51	
Q221, Q222, Q223, Q224, Q226, Q233, Q234	417-801	MPSA20	
Q218, Q219,	417-67	2N2712	
Q227	417-201	X29A829	
Q231, Q232	417-849	TZ553	
Q201, Q225	417-261	TD401	
Q228	417-191	TD101	

DISPLAY CIRCUIT BOARD

TRANSISTORS

COMPONENT NUMBER	HEATH PART NUMBER	MAY BE REPLACED WITH	BASE DIAGRAM
Q401, Q402, Q404	417-294	MPSA42	
Q403	417-801	MPSA20	

INTEGRATED CIRCUITS

IC201	443-626	MK6013	
IC202	442-66	LM308AN	

INPUT CIRCUIT BOARD

DIODES

D103, D104	56-89	GD510	<p>NOTE: HEATH PART NUMBERS ARE STAMPED ON MOST DIODES.</p>
D101, D102, D106	56-93	FD333	
D105	57-27	1N2071	
D109, D111	57-42	3A1	
D112	57-65	1N4002	
D107, D108	57-71	Selected Silicon Rectifier	

TRANSISTORS

Q101	417-140	2N4304	<p>FLAT WIDE SPACE LOCATING TAB</p> <p>G D S OR G D S OR G D S</p>
Q102	417-201	X29A829	<p>FLAT</p> <p>OR E C B E C B</p>

INTEGRATED CIRCUITS

IC101	442-39	LM301AN	<p>TOP VIEW</p>
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