

## Section 6

# Option & Accessory Information

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## 6-1. INTRODUCTION

6-2. This section of the manual contains information concerning the options and accessories available for use with your 8050A Digital Multimeter. This information is divided into subsections. Each option is a subsection and all of the accessories are in one subsection. The location

of an option or accessory is facilitated by the use of unique paragraph and page numbering which corresponds with the option number. For example, all the accessory pages and paragraphs will be numbered 600-1 but the pages and paragraphs of the -01 Option will be numbered 601-1. A list of replaceable parts and a component location diagram are provided with each option.

## Accessories

### 600-1. INTRODUCTION

600-2. This material describes the accessories available for your instrument and describes their basic use. For more detailed information, refer to the instruction sheet included with each accessory. When ordering an accessory, include the model number and name.

### 600-3. CARRYING CASE Y8205

600-4. The Model Y8205 Carrying Case, Figure 600-1, is a soft, vinyl plastic container, designed for the storage and transport of your instrument. The case provides your instrument with adequate protection against normal handling and storage conditions. In addition to a shoulder

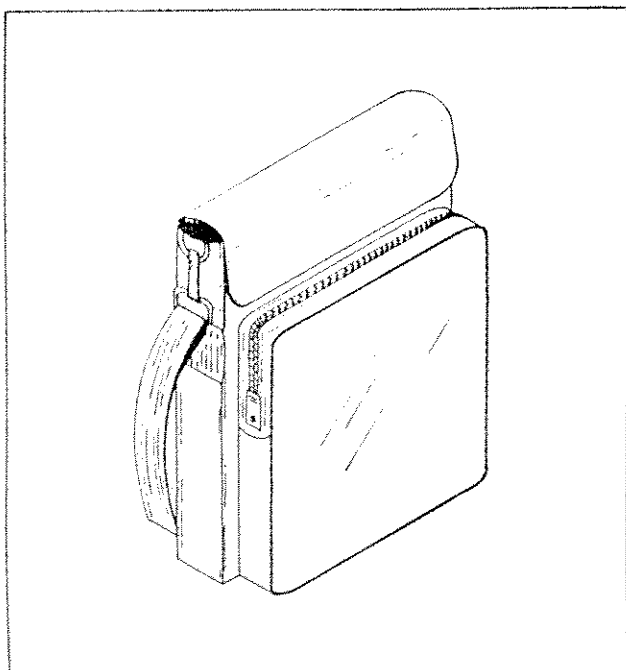


Figure 600-1. Model Y8205 Carrying Case

strap, the Y8205 is equipped with a storage compartment for test leads, power cord, and other compact accessories.

### 600-5. CARRYING CASE C86

600-6. The Model C86 Carrying Case, Figure 600-2, is a molded, polyethylene container with handle, designed for use in transporting your instrument. This rugged case provides your instrument with maximum protection against rough handling and adverse weather conditions. A separate storage compartment is provided for test leads, power cord, and other compact accessories.

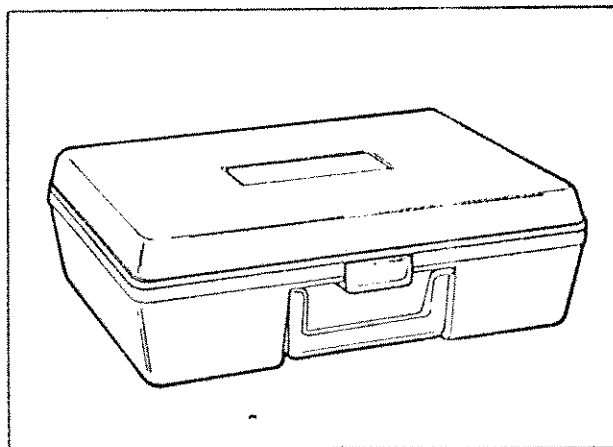


Figure 600-2. Model C86 Carrying Case

### 600-7. RACK MOUNTING KITS

#### 600-8. Introduction

600-9. Three rack mounting kits are available for mounting your instrument in a standard 19-inch equipment rack. The kits, listed in Table 600-1, provide the option of either offset mounting or side-by-side mounting.

Table 600-1. Rack Mounting Kits

MOUNTING STYLE	MODEL NUMBER
OFFSET	M00-200-611
CENTER	M00-200-612
SIDE-BY-SIDE	M00-200-613

### 600-10. Installation Procedure

600-11. Installation instructions for each of the rack mounting kits are given in the following paragraphs. Use the procedure which corresponds to the model number of the kit being installed.

### 600-12. Offset and Center Mounting Kits M00-200-611 and M00-200-612

600-13. Use the following procedure when installing your instrument in the standard center or offset rack mounts:

1. Remove the carrying handle by removing the handle disc decals and the handle mounting screws.
2. Remove the screw from rear of case and remove the case.
3. Install the side mounting brackets, as shown in Figure 600-3, and secure them to the mounting panel using the nuts provided.

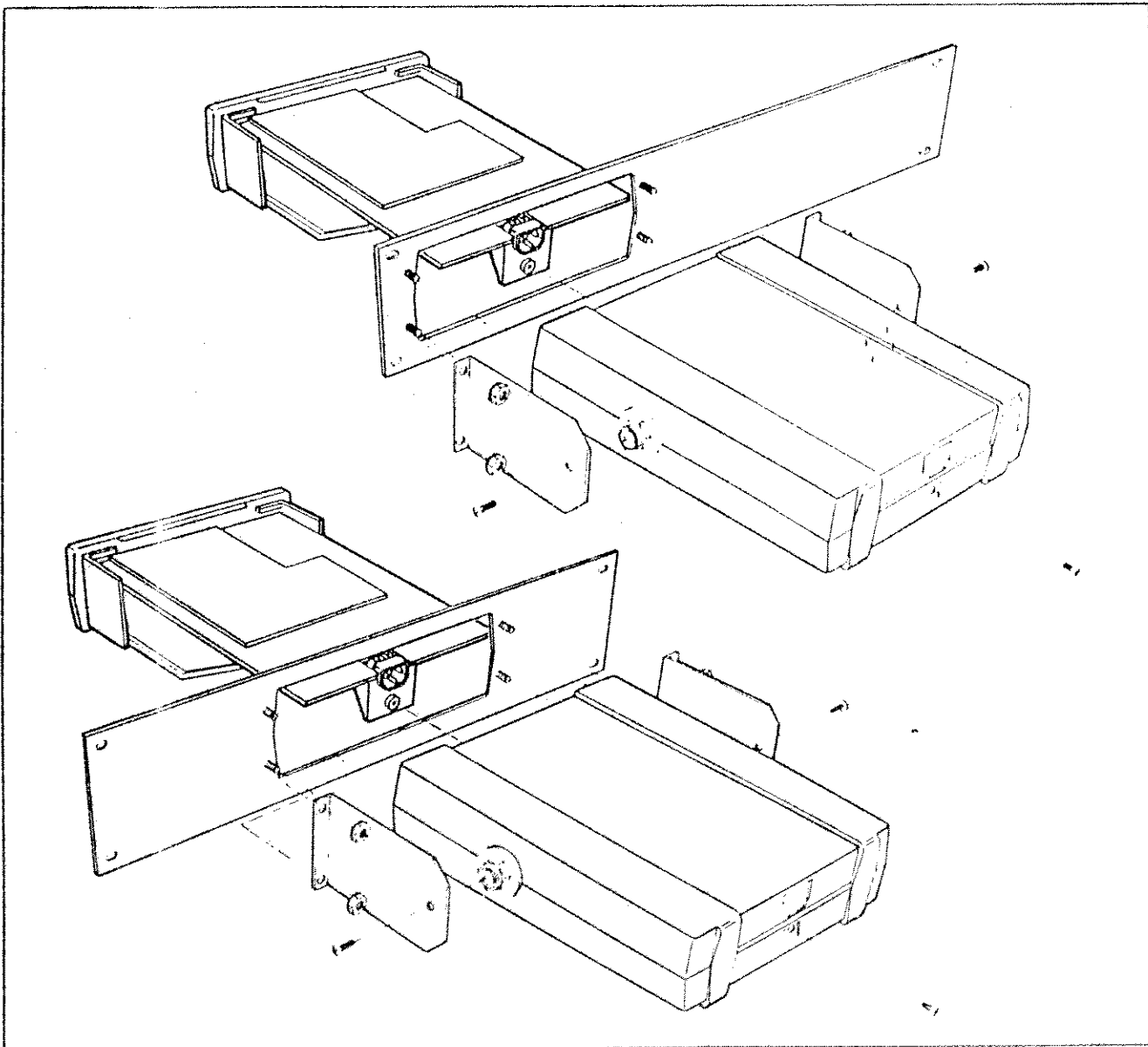


Figure 600-3. Rack Mounting Kits, Offset and Center Mounting

4. Insert the front of the case through the opening on the back side of the mounting panel.

5. Install the handle mounting screws through the side brackets into the handle mounting bosses. Don't overtighten these screws.

6. Slide the instrument through the mounting panel and into the case. Install and tighten the retaining screw at the rear of the case.

#### 600-14. Side-by-Side Mounting Kit M00-200-613

600-15. Use the following procedure for installation of your instrument into a side mounting rack:

1. Remove the carrying handles from both instruments by removing the handle disc decals and the handle mounting screws.

2. Remove the retaining screw from the rear of the cases and separate the instruments from their cases.

3. Install the center mounting bracket, as shown in Figure 600-4, and secure it to the mounting panel using the nuts provided.

4. Install the clamp screw in the center mounting bracket using the nuts and washers provided.

5. Insert the front of the instrument cases through the openings on the back side of the mounting panel. Make sure the case's handle mounting bosses are inserted into the clamp hole of the center mounting bracket.

6. Tighten the clamp screws.

7. Install the side mounting brackets and secure them to the front panel using the nuts provided.

8. Install the handle mounting screws through the side brackets into the handle mounting bosses. Don't overtighten these screws.

9. Slide the instruments through the mounting panel and into their cases. Install and tighten the retaining screw at the rear of both cases.

#### 600-16. PROBE ACCESSORIES

600-17. The following paragraphs describe the probe accessories. They are shown in Figure 600-5.

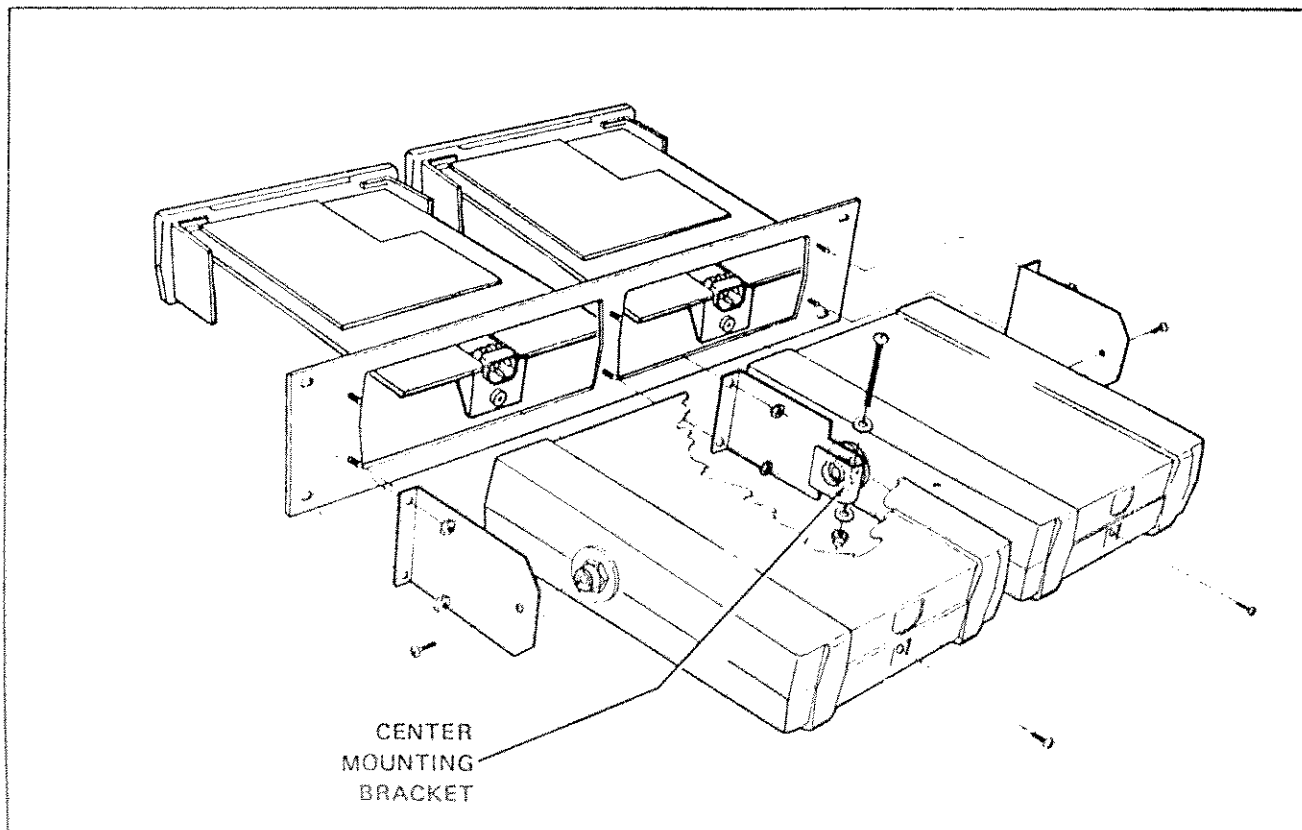


Figure 600-4. Rack Mounting Kit, Side-by-Side Mounting

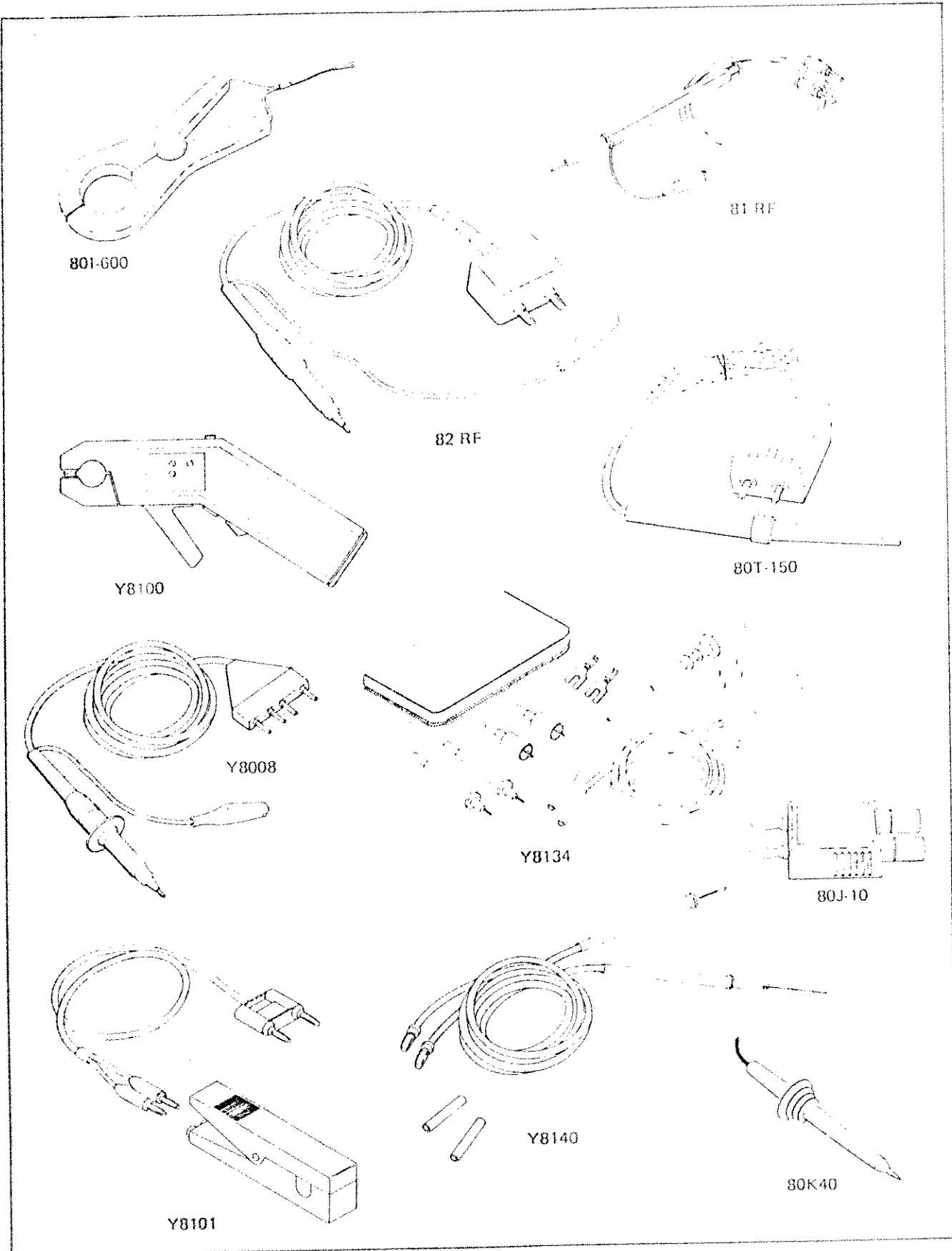


Figure 600-5. Probe Accessories

**600-18. Touch and Hold Probe Y8008**

600-19. The Touch and Hold Probe allows voltage resistance and conductance readings to be held in the display of your instrument. Normal readings may be made by using the probe with the control switch in the out position. When the control switch is pressed, the COMMON terminal is connected to the Touch and Hold signal at the mA terminal. This freezes the display for as long as the control switch is held depressed.

**600-20. Temperature Probe 80T-150****600-21. INTRODUCTION**

600-22. The 80T-150 Temperature Probe converts your instrument into a direct-reading (1 mV de/°C or °F) thermometer. It is ideally suited for surface, ambient, and liquid measurement, and lends itself easily to a wide range of design, troubleshooting, and evaluation applications. A rugged, fast-responding probe-tip with a 350V dc standoff capability makes the 80T-150 one of the most versatile and easy-to-use temperature probes available.

**600-23. SPECIFICATIONS**

**Range in °C/°F (field selectable by internal jumpers):** -50°C to +150°C or -58°F to +302°F.  
**Accuracy:** ±1°C (1.8°F) from 0°C to 100°C, decreasing linearly to ±3°C (5.4°F) at -50°C and +150°C.  
**Readout:** Direct readout on a DMM 200 mV dc range.  
**Voltage Standoff:** 350V dc or peak ac.  
**Power:** Internal disposable battery, 1,000 hours of continuous use.

**600-24. Current Transformer 80I-600****600-25. INTRODUCTION**

600-26. The Model 80I-600 extends the maximum 2A ac current measuring capability of your meter up to a maximum of 600 amps. A clamp-on transformer designed into a probe allows measurements to be made without breaking the circuit under test. In use, the current carrying conductor being measured serves as the transformer's primary while the 80I-600 serves as the secondary. Because of a high efficiency, quadrature-type of winding, wire size and location of the conductor within the transformer jaws do not affect accuracy of the current measurement.

**600-27. SPECIFICATIONS**

**Range:** 2 to 600A ac  
**Accuracy:** ±3%  
**Frequency Response:** 30 Hz to 1 kHz  
**Division Ratio:** 1000:1  
**Insulation:** 5 kV  
**Maximum Conductor Size:** 2-inch diameter

**600-28. Current Shunt 80J-10****600-29. INTRODUCTION**

600-30. The Model 80J-10 Current Shunt extends the current measuring capability of your meter to 10 amps continuous (20 amps for periods not exceeding 1 minute) DC to 10 kHz at an accuracy of +0.25% in excess of the voltmeter accuracy.

**600-31. SPECIFICATIONS**

**Shunt:** 10 amps at 100 mV.  
**Accuracy (18°C to 28°C):**  
 DC to 10 kHz: ±0.25%.  
 10 kHz - 100 kHz: Rising to 1 dB at 100 kHz typical.  
**Temperature Coefficient:** 0.005%/°C.  
**Inductance:** 8.3 nH in series w/0.01Ω shunt.  
**Overload:** Up to 1 minute at 20A with a 1/4 duty cycle for recovery after currents between 10A and 20A.  
**Connects to:** 3/4 inch center banana jacks.  
**Connectors:** 5-way binding posts (red and black).

**600-32. High Voltage Probe 80K-40****600-33. INTRODUCTION**

600-34. The Model 80K-40 extends the voltage measurement capability of your meter up to 40 kV. Internally, the probe contains a 1000:1 divider. Special metal film resistors with matched temperature coefficients make up the divider, and provide the probe with its excellent accuracy and stability characteristics. Also, the very high input impedance (1000 MΩ) minimizes circuit loading, contributing to measurement accuracy.

**600-35. SPECIFICATIONS**

**Voltage Range:** 1 kV to 40 kV dc or peak ac, 28 kV rms ac  
**Input Resistance:** 1000 MΩ  
**Division Ratio:** 1000:1  
**ACCURACY DC**  
**Overall Accuracy:** 20 kV to 30 kV ±2% (calibrated at 25 kV)  
**Upper Limit:** Changes linearly from 2% at 30 kV to 4% at 40 kV  
**Lower Limit:** Changes linearly from 2% at 20 kV to 4% at 1 kV  
**Accuracy AC (Overall):** ±5% at 60 Hz

**600-36. High Frequency Probe 81RF****600-37. INTRODUCTION**

600-38. The 81RF Probe extends the frequency range of your meter voltage measurements capability to include

100 kHz to 100 MHz inputs from 0.25 to 30V rms. It operates in conjunction with dc voltage ranges, and provides a dc output that is calibrated to be equivalent to the rms value of a sine wave input.

#### 600-39. SPECIFICATIONS

**Frequency Response:**  $\pm 1$  dB from 100 kHz to 100 MHz

**Extended Frequency Response:** Useful for relative reading from 20 kHz to 250 MHz

**Response:** Responds to peak value of input; calibrated to read rms value of a sine wave

**Voltage Range:** 0.25 to 30V rms

**Maximum DC Input:** 350V dc

**Input Impedance:** 12 M $\Omega$  shunted by 15 pF

#### 600-40. High Frequency Probe 82RF

##### 600-41. INTRODUCTION

600-42. The Model 82RF High Frequency Probe allows measurements over a frequency range of 100 kHz to 500 MHz from 0.25 to 30V rms. It is designed to be used with voltmeters having an input impedance of 10 megohms  $\pm 10\%$ . Circuitry within the 82RF consists of a capacitor-coupled rectifier circuit which responds to the peak value of the input waveform. The output is positive polarity dc which is calibrated to be equivalent to the rms value of a sine wave.

##### 600-43. SPECIFICATIONS

**Frequency Response (Relative to AC-to-DC Transfer Ratio):** 100 kHz to 200 MHz  $\pm 1$  dB.

200 MHz to 500 MHz  $\pm 3$  dB.

**AC-to-DC Transfer Ratio (23  $\pm 5^\circ$  C):**

RMS Input (10 MHz)	DC Output
0.25 to 0.5V	0.25 to 0.5V $+1.5$ dB
0.5 to 2.0V	0.5 to 2.0V $+0.5$ dB
2.0 to 5.0V	2.0 to 5.0V $+1.0$ dB
5.0 to 30V	5.0 to 30V $+1.5$ dB

**Extended Frequency Response:** Useful for relative readings from 20 kHz to 700 MHz.

**Response:** Responds to peak value of input, and is calibrated to an rms value of a sine wave.

**Voltage Range:** 0.25 to 30V rms.

**Maximum Input Voltage:** 30V rms, 200V dc.

**Input Impedance:** 2 M $\Omega$  shunted by  $< 10$  pF.

**Temperature Coefficient:**  $< 0.1$  of ac-to-dc transfer ratio specification per  $^\circ$ C.

**Output Connector:** Fits standard 0.75 inch spaced dual banana connectors.

**Accessory Connector:** Slip-on BNC adapter is provided with probe.

#### 600-44. DC/AC Current Probe Y8100

##### 600-45. INTRODUCTION

600-46. The Y8100 DC/AC Current Probe is a clamp-on probe that is used with a voltmeter, multimeter, or oscilloscope to read dc, ac, or composite (ac on dc) current measurements. The jaws on the Y8100 are designed to clamp around conductors up to 3/4 inch in diameter. The pistol shape allows safe, easy, one-hand operation when making current measurements. The Y8100 is used in conjunction with the voltage inputs of the 8050A.

##### 600-47. SPECIFICATIONS

**Ranges:**

20A ac or dc

200A ac or dc

**Rated Output:** 2V at full range

**Accuracy:**

DC to 200 Hz:  $\pm 2\%$  of range

200 Hz to 1 kHz:  $< 100$ A add  $\pm 3\%$  of reading

$> 100$ A add  $+6\%$  of reading

**Calibration Cycle:** 1 year

**Frequency Response:** dc to 1.0 kHz

**Recommended Load:**  $> 3.0$  k

**Temperature Range:**  $+15^\circ$ C to  $+35^\circ$ C; for specified accuracy  $-10^\circ$ C to  $+50^\circ$ C; storage and operation at reduced accuracy.

**Heating Limitation:** Prolonged operation above 200A ac or 1 kHz can cause damage to the Y8100.

**Working Voltage Rating:** Core to output; 600V dc or 480V ac. Max output to ground; 42V dc or 30V ac

**Aperture Size:** 3/4" (19mm) diameter

**Size-Overall:** 9" x 4-1/2" x 1-7/16" (230 mm x 115 mm x 37 mm)

**Weight:** 14 ounces (0.4 kg), with batteries

**Power:** 4; "AA" cells

**Battery Life:** Alkaline-20 hours continuous

#### 600-48. Current Transformer Y8101

##### 600-49. INTRODUCTION

600-50. The Model Y8101 (Figure 1) is a small clamp-on current transformer designed to extend the current measuring capability of an ac current meter up to 150 amperes. A clamp-on coil designed into the probe allows measurements to be made without breaking the circuit under test. This coil serves as the secondary of a 1:1000 transformer. The current-carrying conductor being measured serves as the primary.



## 600-51. SPECIFICATIONS

**Current Range:** 2A to 150A

**Accuracy (48 Hz to 10 kHz):**

±2%, 10A to 150A

±8%, 2A to 10A

**Division Ratio:** 1000:1

**Working Voltage:** 300V ac rms max.

**Insulation Dielectric Withstand Voltage:** 3 kV rms

**Maximum Conductor Size:** 7/16 in. (1.11 cm)

## 600-52. Safety Designed Test Lead Set Y8134

## 600-53. INTRODUCTION

600-54. Includes two probes with sharp tips, two alligator clips, two spade lug tips, and a spring-loaded hook tip. Banana plugs are recessed in an insulating shield.

## 600-55. Test Lead Set Y8140

## 600-56. INTRODUCTION

600-57. The Y8140 Test Lead Set (Figure 1) consists of one red and one black 60-inch (1.52 meter) test lead, each with a standard banana plug on one end and an extendable tip probe on the other end. This flexible metallic tip conductor may be extended up to 2-1/2 inches, and is insulated to within 1/10 of an inch of its tip. This insulation reduces the chance of creating an inadvertent short circuit while using the probes in their extended configuration. Intended primarily for measuring voltages, the Y8140 leads may also be used for measuring modest currents.

1

1

## -01 Option Rechargeable Battery Option

### 601-1. INTRODUCTION

601-2. This option replaces the standard 8050A power supply with a power supply that will operate off of either installed rechargeable batteries or line power. If the batteries are fully charged, your 8050A will operate for 10 hours (typically) before the batteries must be recharged.

### 601-3. SPECIFICATIONS

601-4. The specifications for this option are listed in the specifications table in Section 1 of this manual.

### 601-5. OPERATION

#### WARNING

**DO NOT OPERATE YOUR 8050A-01 WITH  
THE BATTERIES REMOVED.**

601-6. Operation of an 8050A-01 differs in two respects from operation of a standard 8050A — battery charging and the BT annunciator in the display. When the BT annunciator appears in the display during operation, measurement quality may deteriorate beyond the limits specified in Section 1. If the BT indicator is on, and you still need to make additional measurements before recharging, set the POWER switch to the OFF position for a couple of minutes (let the battery recover as much as possible) then set the POWER switch back to the ON position. If the BT annunciator does not appear immediately, you have at least one or two minutes of in-specification operation. If the BT annunciator appeared immediately after the POWER switch was set to the ON position, none of the measurements should be accepted as being within the specified limits. Normally, when the BT annunciator appears, recharge the batteries as soon as practical.

601-7. To recharge the batteries, connect the 8050A-01 to the line power and set the POWER switch to the OFF position (if the POWER switch is at the ON position, the batteries receive a reduced charge that is sufficient to maintain their charge level but insufficient to charge the batteries to a higher level).

### 601-8. THEORY OF OPERATION

601-9. The theory of operation will be illustrated by the Main PCB schematic in Section 8. The battery power supply is shown below the standard power supply on sheet one of the schematic. The -01 Option power supply can be used with line voltage from 90V to 264V, 47 to 440 Hz. Refer to the Changing Input Power Configuration procedure in Section 4 of this manual to select the proper line voltage configuration. F3 provides fuse protection for the power supply. Line power input is rectified, filtered, and regulated. The output of the power supply acts as a current source for the battery. The battery determines the voltage level into the power converter. Don't operate your instrument with the battery removed. The power converter uses the fly-back transformer technique to develop several output voltages so that +10V, -10V, +6V, and -5V (with respect to power supply common) are available.

601-10. When the battery voltage drops below approximately four volts, the BT indicator will appear in the display. See paragraph 601-6 for procedure required when the BT indicator comes on during operation.

### 601-11. MAINTENANCE

#### 601-12. Battery Replacement

601-13. Use the following procedure for removing and replacing batteries:

1. Disconnect the line cord. Remove retaining screw at rear of instrument case, and remove instrument from case.
2. Turn the instrument upside-down (as viewed from the front panel).
3. Unplug the red and black battery wires from the pcb pins for both battery packs.
4. Apply pressure to the front and rear sides of the battery cases to disconnect the cases from the Main PCB.
5. Remove the blotting papers.
6. Replace the batteries with new Fluke battery assemblies.
7. Replace the blotting papers and connect the battery cases back to the Main PCB.
8. Connect the battery wires to their appropriate pins on the Main PCB, red to +, and black to -.
9. Replace the instrument in its case.

#### 601-14. Fuse Replacement

601-15. Use the following procedure to replace the main power fuse, F3:

1. Disconnect the line cord. Remove retaining screw at rear of instrument case, and remove instrument from case.

2. F3 is located immediately in front of the power receptacle.

- a) Replace F3 with a 1 16A, 250V, type MDL fuse for 100V and 120V instruments.

- b) For 240V instruments, replace F3 with a 1 32A, 250V, type MDL fuse.

#### 601-16. LIST OF REPLACEABLE PARTS

601-17. Table 601-1 and 601-2 list replaceable parts for the -01 Option. Figure 601-1 and 601-2 are component location diagrams for the -01 Option.

Table 601-1. Final Assembly, Battery Option

REF DES	DESCRIPTION	FLUKE STOCK NO.	MFG SPLY CODE	MFG PART NO. OR TYPE	TOT QTY	REC QTY	NOTE
FINAL ASSEMBLY (BATTERY OPTION) FIGURE 601-1		ORDER	BY	OPTION -01			
A1	⊗ MAIN PCB ASSEMBLY (8050A-01)	ORDER	ONLY	REPLACEABLE PARTS	1		
H1	SCREW, PHP, 6-32 X 1/2, S5	256156	89536	256156	1		
H2	SCREW, PHP, THD/FORM, 6-20 X 3/8	288266	89536	288266	2		
H3	WASHER, FLAT, #6	340505	89536	340505	2		
MP1	CASE, MOLDED	478008	89536	478008	1		
MP2	DECAL, HANDLE DISC	478248	89536	478248	2		
MP3	DECAL, SPEC	507665	89536	507665	1		
MP4	HANDLE, MOLDED	330092	89536	330092	1		
MP5	PAD, FOOT	338632	89536	338632	2		
MP6	TEST LEADS (NOT SHOWN)	516666	89536	516666	1		
W1	LINE CORD (NOT SHOWN)	343723	89536	343723	1		
WKIT	RECOMMENDED SPARE PARTS KIT (8050A)	533919	89536	533919	AR		
WIM1	INSTRUCTION MANUAL (8050A)	530907	89536	530907	1		

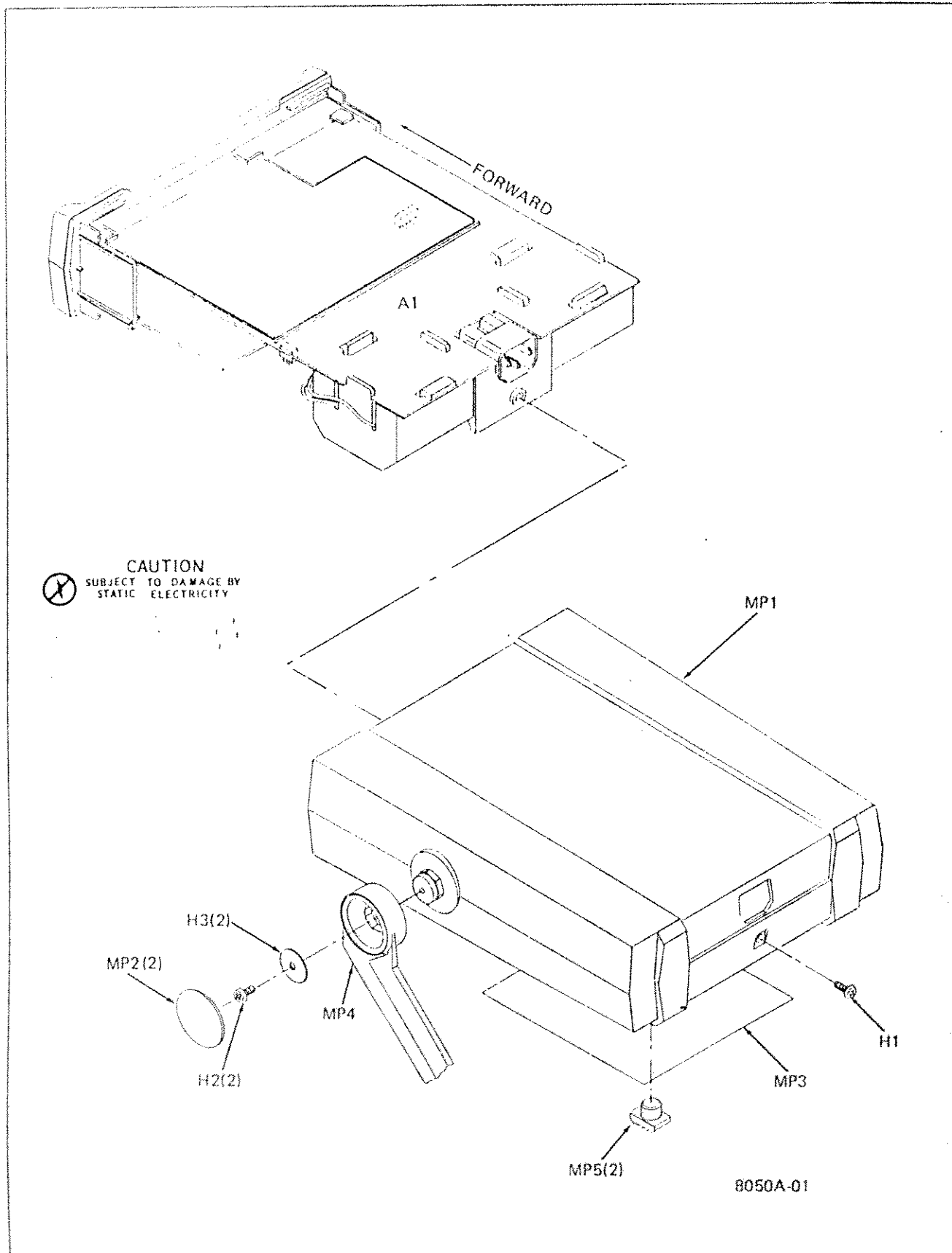


Figure 601-1. Final Assembly, Battery Option

Table 601-2. A1 Main PCB Assembly, Battery Option

REF DES	DESCRIPTION	FLUKE STOCK NO.	MFG SPLY CODE	MFG PART NO. OR TYPE	TOT QTY	REC QTY	N O T E
A1	⊙ MAIN PCB ASSEMBLY BATTERY OPTION (FIGURE 601-2)	ORDER	ONLY	REPLACEABLE PARTS	REF		
B11	BATTERY ASSEMBLY	487975	89536	487975	2		
B12	BATTERY ASSEMBLY	487975	89536	487975	REF		
C1	CAP, VAR, 1-5-0.25 PF, 2000V	218206	72982	530-000	2		
C2	CAP, VAR, 1-5-0.25 PF, 2000V	218206	72982	530-000	REF		
C3	CAP, MICA, 120 PF +/-5%, 500V	148486	72136	DM15F121J	2		
C4	CAP, MICA, 120 PF +/-5%, 500V	148486	72136	DM15F121J	REF		
C5	CAP, MICA, 1800 PF +/-5%, 500V	148353	89536	148353	1		
C6	CAP, POLYPROP, .01 UF +/-10%, 100V	446781	89536	446781	1		
C7	CAP, FILM, 1.0 UF +/-10%, 100V	447847	89536	447847	1		
C8	CAP, TA, 10 UF +/-20%, 15V	193623	56289	196D106X0015A1	5		
C9	CAP, POLYPROP, .22 UF +/-10%, 100V	446799	89536	446799	1		
C10	CAP, POLYESTER, .022 UF +/-10%, 1000V	448183	52763	MK1.1822322/10	1		
C11	CAP, MYLAR, .047 UF +/-10%, 250V	162008	73445	C280MAE/A47K	2		
C12	CAP, ELECT, 470 UF -10/+75%, 16V	501510	89536	501510	2		
C13	CAP, ELECT, 470 UF -10/+75%, 16V	501510	89536	501510	REF		
C14	CAP, TA, 10 UF +/-20%, 15V	193623	56289	196D106X0015A1	REF		
C15	CAP, TA, 22 UF +/-20%, 15V	423012	56289	196D226X0015K1	1		
C20	CAP, TA, 2.2 UF +/-20%, 20V	161927	56289	196D226X0020HA1	1		
C21	CAP, ELECT, 220 UF -10/+75%, 16V	435990	89536	435990	2		
C22	CAP, ELECT, 470 UF -10/+75%, 16V	501510	89536	501510	1		
C23	CAP, ELECT, 2200 UF -10/+75%, 16V	474981	89536	474981	1		
C24	CAP, ELECT, 220 UF -10/+75%, 16V	435990	89536	435990	REF		
C25	CAP, CER, .01 UF +/-20%, 100V	149153	56289	C023B101F103M	5		
C26	CAP, CER, .01 UF +/-20%, 100V	149153	56289	C023B101F103M	REF		
C27	CAP, TA, 2.2 UF +/-20%, 20V	161927	56289	196D226X0020HA1	REF		
C28	CAP, POLYPROP, .047 UF +/-10%, 100V	446773	89536	446773	1		
C29	CAP, MICA, 180 PF +/-5%, 500V	148460	72136	DM15F181J	1		
C30	CAP, MICA, 68 PF +/-5%, 500V	148510	72136	DM15F680J	1		
C31	CAP, MYLAR, .047 UF +/-10%, 250V	162008	73445	C280MAE/A47K	REF		
C32	CAP, CER, 1000 PF +/-10%, 500V	357806	56289	C016B102G-102K	5		
C33	CAP, TA, 10 UF +/-20%, 15V	193623	56289	196D106X0015A1	REF		
C34	CAP, ELECT, 47 -10/+75%, 10W	436006	89536	436006	1		
C35	CAP, CER, 1000 PF +/-10%, 500V	357806	56289	C016B102G-102K	REF		
C36	CAP, CER, 1000 PF +/-10%, 500V	357806	56289	C016B102G-102K	REF		
C37	CAP, CER, .025 UF +/-20%, 100V	168435	56289	C023B101H253M	1		
C38	CAP, TA, 39 UF +/-20%, 6V	163915	56289	196D396X0006KA1	2		
C39	CAP, TANT, 39 UF +/-20%, 6V	163915	56289	196D396X0006KA1	REF		

Table 601-2. A1 Main PCB Assembly, Battery Option (cont)

REF DES	DESCRIPTION	FLUKE STOCK NO.	MFG SPLY CODE	MFG PART NO. OR TYPE	TOT QTY	REC QTY	NOTE
C40	CAP, MICA, 330 PF +/-5%, 500V	148445	72136	DM150 331J	1		
C41	CAP, TA, 10 UF +/-20%, 15V	193623	56289	196D106X0015A1		REF	
C42	CAP, TA, 10 UF +/-20%, 15V	193623	56289	196D106X0015A1		REF	
C43	CAP, CER, .01 UF +/-20%, 100V	149153	56289	C023B101F103M		REF	
CL1	DIODE, FED, CURRENT REGULATOR	393454	07910	1CR5290	1	1	
CR1	DIODE, SI, RECTIFIER, 2 AMP, 50 VOLT	347559	14099	1N5400	1	1	
CR2	DIODE, SI, LO-CAP/LO-LEAK	348177	07263	FD7223	3	1	
CR3	DIODE, SI, LO-CAP/LO-LEAK	348177	07263	FD7223		REF	
CR4	DIODE, SI, RECTIFIER	343491	04713	1N4002	1	1	
CR5	DIODE, SI, HI-SPEED SWITCHING	203323	07910	1N4448	2	1	
CR6	DIODE, SI, HI-SPEED SWITCHING	203323	07910	1N4448		REF	
CR12	DIODE, SI, LO-CAP/LO-LEAK	348177	07263	FD7223		REF	
DS1	DIODE, LIGHT EMITTING	429555	12040	NSL5053/NSC003	1		
F1	FUSE, FAST ACTING, 2 AMP	376582	71400	AGX-2	1	5	
F2	FUSE, FAST ACTING, 3 AMP	475004	71400	DBS-3	1	5	
F3	FUSE, SLOW ACTING, 1/16 AMP	163030	71400	MDL1-16	1	3	
H1	SCREW, PHP, 6-32 X 1/4	385401	89536	385401	7		
H2	SCREW, PHP, 6-32 X 1/2	320051	89536	320051	1		
H3	SCREW, RHP, 4-40 X 1/4	256156	89536	256156	5		
H4	SCREW, THRD FORMING, 5-20 X 5/16	494641	78189	03-050500-01-0255C	4		
LCD1	LIQUID CRYSTAL DISPLAY	507673	89536	507673	1	1	
MP1	BEZEL, LCD	479642	89536	479642	1		
MP2	BRACKET, LCD	471730	89536	471730	1		
MP3	BUTTON, FUNCTION SWITCH	425900	89536	425900	4		
MP4	BUTTON, GREEN	510271	89536	510271	1		
MP5	BUTTON, OFFSET	510164	89536	510164	1		
MP6	BUTTON, RANGE SWITCH	426759	89536	426759	6		
MP7	CONNECTOR, ELASTOMERIC	453092	53217	02-60236	1		
MP8	DECAL, FRONT PANEL	508465	89536	508465	1		
MP9	FUSE HOLDER ASSEMBLY	516039	89536	516039	1		
MP10	INSERT, SILICONE	525139	89536	525139	2		
MP11	INSULATOR	495044	89536	495044	1		
MP12	INSULATOR	525196	89536	525196	1		
MP13	INTERCONNECT	507723	89536	507723	1	2	
MP14	PANEL, FRONT	510156	89536	510156	1		
MP15	RECEPTACLE, AC	471029	89536	471029	1		
MP16	RETAINER, FLEX	510198	89536	510198	1		
MP17	SHIELD, INSULATOR	516021	89536	516021	1		
MP18	SHIELD, MAIN	510172	89536	510172	1		

Table 601-2. A1 Main PCB Assembly, Battery Option (cont)

REF DES	DESCRIPTION	FLUKE STOCK NO.	MFG SPLY CODE	MFG PART NO. OR TYPE	TOT QTY	REC QTY	N O T E
MP19	SHIELD, TOP	510180	89536	510180	1		
MP20	SOCKET, 4-PIN	417311	30035	55-109-1-04	1		
MP21	SOCKET, 5-PIN	417899	52872	CA-055-TSD	1		
MP22	SPRING, COMPRESSION COIL	422824	83553	C0240-026-0500-S	1		
MP23	SUPPORT, HYBRID (10 U32)	515635	89536	515635	1		
MP24	HEATSINK	473785	91502	PSC2-10B	1		
MP25	HOUSING, LED	522243	89536	522243	1		
MP26	LABEL, FIRE PROTECTION	483602	89536	483602	1		
MP27	PAD, ABSORBENT	483610	89536	483610	2		
MP28	RETAINER, BATTERY	471052	89536	471052	2		
Q1	XSTR, SI, NPN	218396	89536	218396	5	1	
Q2	XSTR, SI, NPN	218396	89536	218396	REF		
Q3	XSTR, SI, NPN	329698	89536	329698	1	1	
Q4	XSTR, SI, PNP	225599	07263	2N4250	2	1	
Q5	XSTR, PNP,	340026	07263	MPS6563	1	1	
Q6	XSTR, SI, NPN, PWR	477331	04713	MDS01A	1	1	
Q7	XSTR, FET	370072	89536	370072	2	1	
Q8	XSTR, FET	370072	89536	370072	REF		
Q10	XSTR, SI, PNP	195974	04713	2N3906	2	1	
Q11	XSTR, SI, PNP	195974	04713	2N3906	REF		
Q12	XSTR, SI, NPN	168716	07263	519254	1	1	
Q14	XSTR, SI, PNP (SELECTED)	380394	89536	380394	3	1	
Q15	XSTR, SI, PNP (SELECTED)	380394	89536	380394	REF		
Q16	XSTR, SI, PNP	225599	07263	2N4250	REF		
Q17	XSTR, SI, PNP (SELECTED)	380394	89536	380394	REF		
Q18	XSTR, SI, NPN	218396	89536	218396	REF		
Q19	XSTR, FET, DUAL N-CHANNEL	419283	89536	419283	1	1	
R1	RES, COMP, 100K +/-10%, 1W	109397	01121	CB1041	1		
R2*	RES, WW, 1000 +/-10%, 2W	474080	89536	474080	1		
R3	RES, MTL. FILM, 1000 +/-0.5%, 1/10W	514265	89536	514265	1	1	
R5	RES, VAR. CER, 100K +/-10%, 1/2W	529099	89536	529099	1		
R6	RES, VAR, 100 +/-10%, 1/2W	529115	89536	529115	1		
R7	RES, VAR, CER, 1K +/-10%, 1/2W	513259	89536	513259	1		
R8	RES, COMP, 220K +/-10%, 2W	110197	01121	HB1011	1		
R11	RES, VAR, CER, 500 +/-10%, 1/2W	447730	89536	447730	1		
R12	RES, VAR CERMET, 200 +/-10%, 1/2W	474973	89536	474973	1		
R13	RES, MTL. FILM, 54.9K +/-1%, 1/8W	271353	89536	271353	1		
R14	RES, COMP, 4.7M +/-5%, 1/4W	220046	01121	CB4755	3		
R15	RES, DEP. CAR, 20 +/-5%, 1/4W	442202	80031	CR251-4-5P20E	1		



Table 601-2. A1 Main PCB Assembly, Battery Option (cont)

REF QES	DESCRIPTION	FLUKE STOCK NO.	MFG SPLY CODE	MFG PART NO. OR TYPE	TOT QTY	REC QTY	NOTE
R16	RES, MTL. FILM, 900 +/-0.1%, 1/8W	461988	91637	CM 55901	1		
R17	RES, MTL. FILM 90 +/-0.1%, 1/8W	461970	91637	CM 55902	1		
R18	RES, WW, 9 +/--.15%, 1W	461962	89536	461962	1	1	
R19	RES, COMP, 100K +/-5%, 2W	285056	89536	285056	1		
R20	RES, COMP, 2.2M +/-10%, 1/2W	108225	89536	285056	1		
R21	RES, COMP, 22M +/-5%, 1/4W	221986	01121	CB2265	1		
R23	RES, DEP. CAR, 100 +/-5%, 1/4W	348771	80031	CR251-4-5P100E	2		
R24	RES, COMP, 4.7M +/-5%, 1/4W	220046	01121	CB4755	REF		
R25	RES, DEP. CAR, 12 +/-5%, 1/4W	442178	80031	CR251-4-5P0.2E	1		
R26	RES, DEP. CAR, 9.1 +/-5%, 1/4W	441303	80031	CR251-4-5P9.1E	1		
R27	RES, COMP, 10 +/-10%, 1/2W	108092	01121	CB1001	1		
R28	RES, DEP. CAR, 1K +/-5%, 1/4W	343426	80031	CR251-4-5P1K	1		
R29	RES, VAR, 1M +/-10%, 1/2W	485052	89536	485052	1	1	
R30	RES, DEP. CAR, 470K +/-5%, 1/4W	342634	80031	CR251-4-5P470K	1		
R31	RES, COMP, 470 +/-10%, 1/2W	108415	89536	108415	1		
R32	RES, DEP. CAR, 1M +/-5%, 1/4W	348987	80031	CR251-4-5P1M	REF		
R33	RES, DEP. CAR, 1M +/-5%, 1/4W	348987	80031	CR251-4-5P1M	REF		
R35	RES, MTL. FILM, 59K +/-1%, 1/8W	261677	89536	261677	1		
R36	RES, DEP. CAR, 15K +/-5%, 1/4W	348854	80031	CR251-4-5P15K	3		
R37	RES, COMP, 4.7M +/-5%, 1/4W	220046	01121	CB4755	REF		
R38	RES, DEP. CAR, 15K +/-5%, 1/4W	348854	80031	CR251-4-5P15K	REF		
R39	RES, MTL. FILM, 232K +/-1%, 1/8W	276618	91637	CM 552323	1		
R40	RES, DEP. CAR, 680 +/-5%, 1/4W	368779	80031	CR251-1-5P680E1	1		
R42	RES, DEP. CAR, 27K +/-5%, 1/4W	441501	80031	CR251-4-5P27KT	2		
R43	RESISTOR (SELECTED IN TEST)	442525	89536	442525			1
R44	RES, DEP. CAR, 100 +/-5%, 1/4W	348771	80031	CR251-4-5P100E	REF		
R45	RES, COMP, 4.7M +/-5%, 1/4W	220046	01121	CB4755	REF		
R47	RES, DEP. CAR, 3.9K +/-5%, 1/4W	342600	80031	CR251-4-5P3K9T	1		
R48	RES, DEP. CAR, 15K +/-5%, 1/4W	348854	80031	CR251-4-5P15K	REF		
R49	RES, DEP. CAR, 27K +/-5%, 1/4W	441501	80031	CR251-4-5P27K	REF		
R51	RES, DEP. CAR, 100 +/-5%, 1/4W	348771	80031	CR251-4-5P100E	1		
R52	RES, COMP, 47M +/-10%, 1/2W	529099	89536	529099	1		
R53	RES, COMP, 4.7M +/-5% 1/4W	220046	01121	CB4755	REF		
R54	RES, DEP. CAR, 1M +/-5%, 1/4W	348987	80031	CR251-4-5P1M	REF		
R55	RES, DEP. CAR, (SELECTED IN TEST)						1
R56	RES, DEP. CAR, 1 +/-5%, 1/4W	357665	80031	CR251-4-5P1E	1		
RV1	THERMISTOR	446849	50157	180Q10200	1	1	
RV1	VARISTOR	447672	09214	V430MA7	3	3	
RV2	VARISTOR	447672	09214	V430MA7	REF		
RV3	VARISTOR	447672	09214	V430MA7	REF		

Table 601-2. A1 Main PCB Assembly, Battery Option (cont)

REF DES	DESCRIPTION	FLUKE STOCK NO.	MFG SPLY CODE	MFG PART NO. OR TYPE	TOT QTY	REC QTY	NOTE
S1-S10	SWITCH ASSEMBLY	507707	89536	507707	1		
S11	SWITCH	473736	89536	473736	2		
S12	SWITCH	473736	89536	473736	40		
T2	TRANSFORMER	514489	89536	514489	1		
T3	TRANSFORMER	510486	89536	510486	1		
U1	RESISTOR NETWORK	501080	89536	501080	1	1	
U2	RESISTOR NETWORK	512905	89536	512905	1	1	
U3	RESISTOR NETWORK	513556	89536	513556	1	1	
U4	RESISTOR NETWORK	513580	89536	513580	1	1	
U5	RESISTOR NETWORK	519736	89536	519736	1	1	
U6	2-RESISTOR SHUNT	461491	89536	461491	1	1	
U7	IC, OP-AMP, DUAL, 8-PIN DIP	418566	18324	LM358N/CR3999	2	1	
U8	IC, OP-AMP, DUAL, 8-PIN DIP	418566	18324	LM358N/CR3999	REF		
U9	IC, LOW POWER, DUAL - V - COMPARATOR	478354	01295	LM393N	2	1	
U10	⊗ IC, C-MOS, LIQUID-CRYSTAL 4-SEGMENT	453225	02735	CD4054BE	5	1	
U11	⊗ IC, C-MOS, LIQUID-CRYSTAL 4-SEGMENT	453225	02735	CD4054BE	REF		
U12	⊗ IC, C-MOS, LIQUID-CRYSTAL DSPLY DRIVERS	507376	02735	CD4056BE	4	1	
U13	⊗ IC, C-MOS, LIQUID-CRYSTAL DSPLY DRIVERS	507376	02735	CD4056BE	REF		
U14	⊗ IC, C-MOS, LIQUID-CRYSTAL DSPLY DRIVERS	507376	02735	CD4056BE	REF		
U15	⊗ IC, C-MOS, LIQUID-CRYSTAL DSPLY DRIVERS	507376	02735	CD4056BE	REF		
U16	⊗ IC, C-MOS, LIQUID-CRYSTAL 4-SEGMENT	453225	02735	CD4054BE	REF		
U17	⊗ IC, MICROPROCESSOR	524900	89536	524900	1	1	
U18	⊗ IC, SELECTED	515999	89536	515999	1	1	
U19	⊗ IC, SELECTED	516005	89536	516005	2	1	
U20	⊗ IC, SELECTED	516005	89536	516005	REF		
U21	IC, OPERATIONAL AMP, J-FET INPUT	418780	12040	LF351	2	1	
U22	⊗ IC, C-MOS, QUAD BI SWITCH, 14-PIN	363838	12040	HM5616AN	1	1	
U23	IC, OPERATIONAL J-FET INPUT	418780	12040	LF351	REF		
U26	IC, LIN, ADJUST VOLT REGULATOR	473793	12040	LM317MP	1		1
U27	RESISTOR NETWORK	513598	89536	513598	1	1	
U28	RECTIFIER BRIDGE	418582	83003	VM08	2	1	
U30	RECTIFIER BRIDGE	418582	83003	VM08	REF		
U31	IC, LOW POWER, DUAL VOLTAGE COMPARATOR	478354	01295	LM393N	REF		
U32	HYBRID RMS TO DC CONVERTER KIT	537209	89536	537209	1	1	
U33	RESISTOR NETWORK	513564	89536	513564	1	1	
U34	RESISTOR NETWORK	519728	89536	519728	1	1	
VR1	DIODE, ZENER, KIT	537191	89536	537191	1	1	
VR2	DIODE, ZENER, 5.6V (SELECTED)	535559	89536	535559	2	1	
VR3	DIODE, ZENER, 5.6V (SELECTED)	535559	89536	535559	REF		2
W1	WIRE ASSEMBLY, RED	537159	89536	537159	1		

Table 601-2. A1 Main PCB Assembly, Battery Option (cont)

REF DES	DESCRIPTION	FLUKE STOCK NO.	MFG SPLY CODE	MFG PART NO. OR TYPE	TOT QTY	REC QTY	NOTE
W2	WIRE ASSEMBLY, BLK	537167	89536	537167	1		
W3	WIRE ASSEMBLY, WHI	489096	89536	489096	1		
W4	WIRE ASSEMBLY, BLK	489104	89536	489104	1		
W5	WIRE ASSEMBLY, WHI	489120	89536	489120	1		
W6	WIRE ASSEMBLY, GRN/YEL	489112	89536	489112	1		
XF3	FUSE CLIP (TO F3)	485219	11503	3529	2		
XU17	SOCKET, IC	429282	09922	D1LB40P-10B	1		
Y1	CRYSTAL, 4 MHZ	513663	89536	513663	1		

NOTES:  
 1. MAY OR MAY NOT BE INSTALLED.  
 2. R2 IS A FUSIBLE RESISTOR. USE EXACT REPLACEMENT TO INSURE SAFETY.  
 3. FOR REV A, B AND C, ON THE MAIN PCB, BATTERY OPTION, R47 MUST BE REPLACED WITH A 3.9K $\Omega$  RESISTOR (FLUKE P/N 342600) WHENEVER VR3 IS REPLACED.

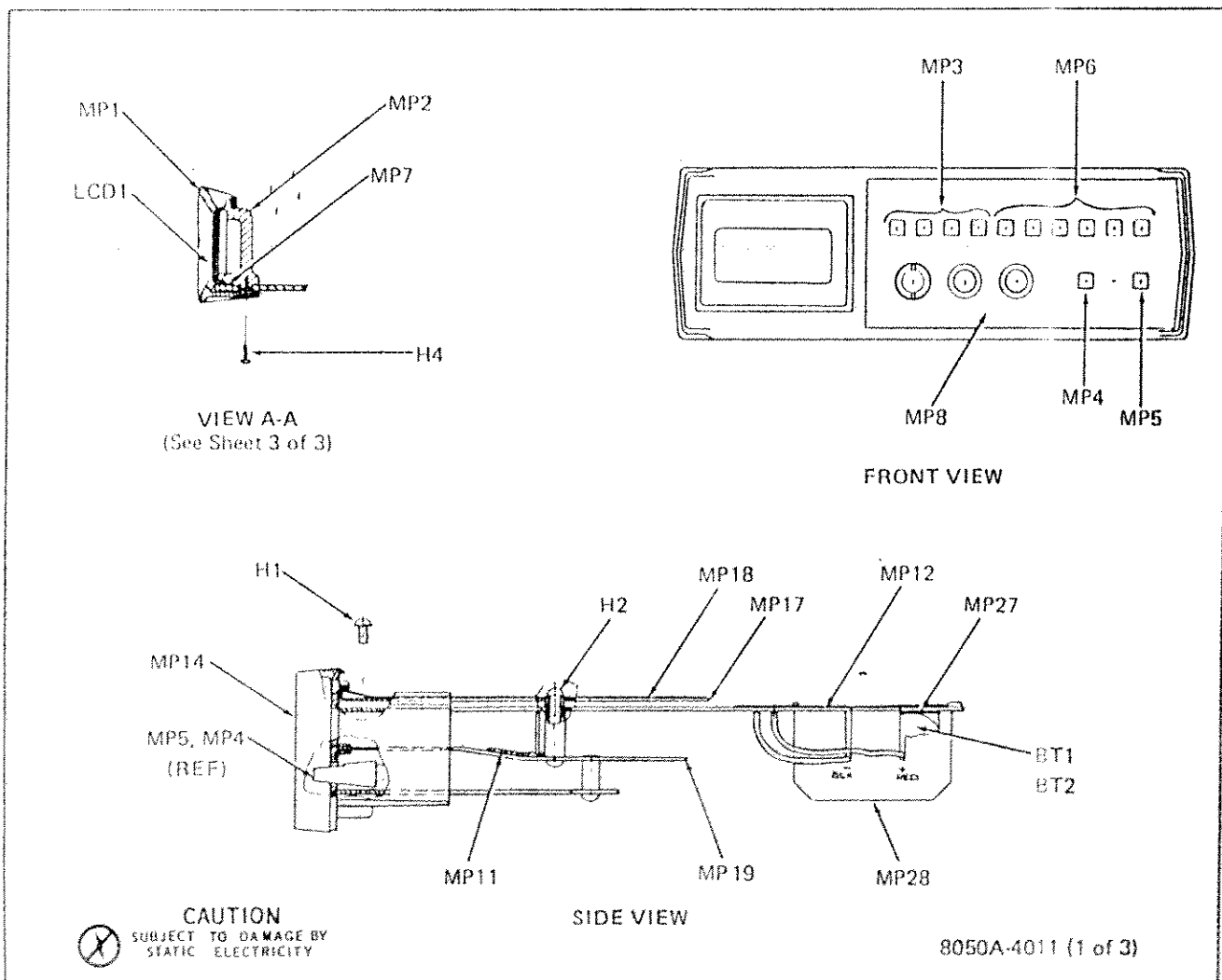


Figure 601-2. A1 Main PCB Assembly, Battery Option

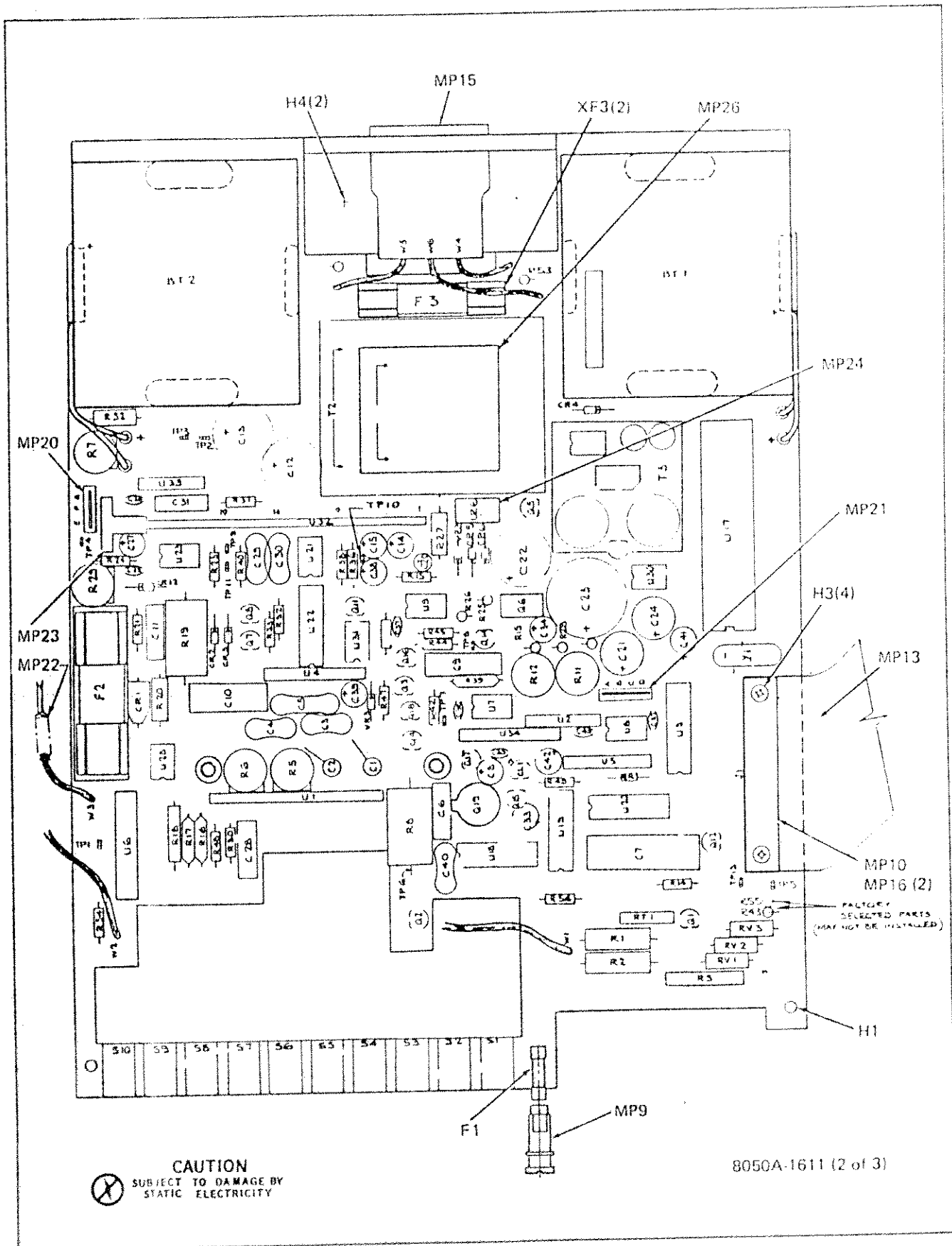
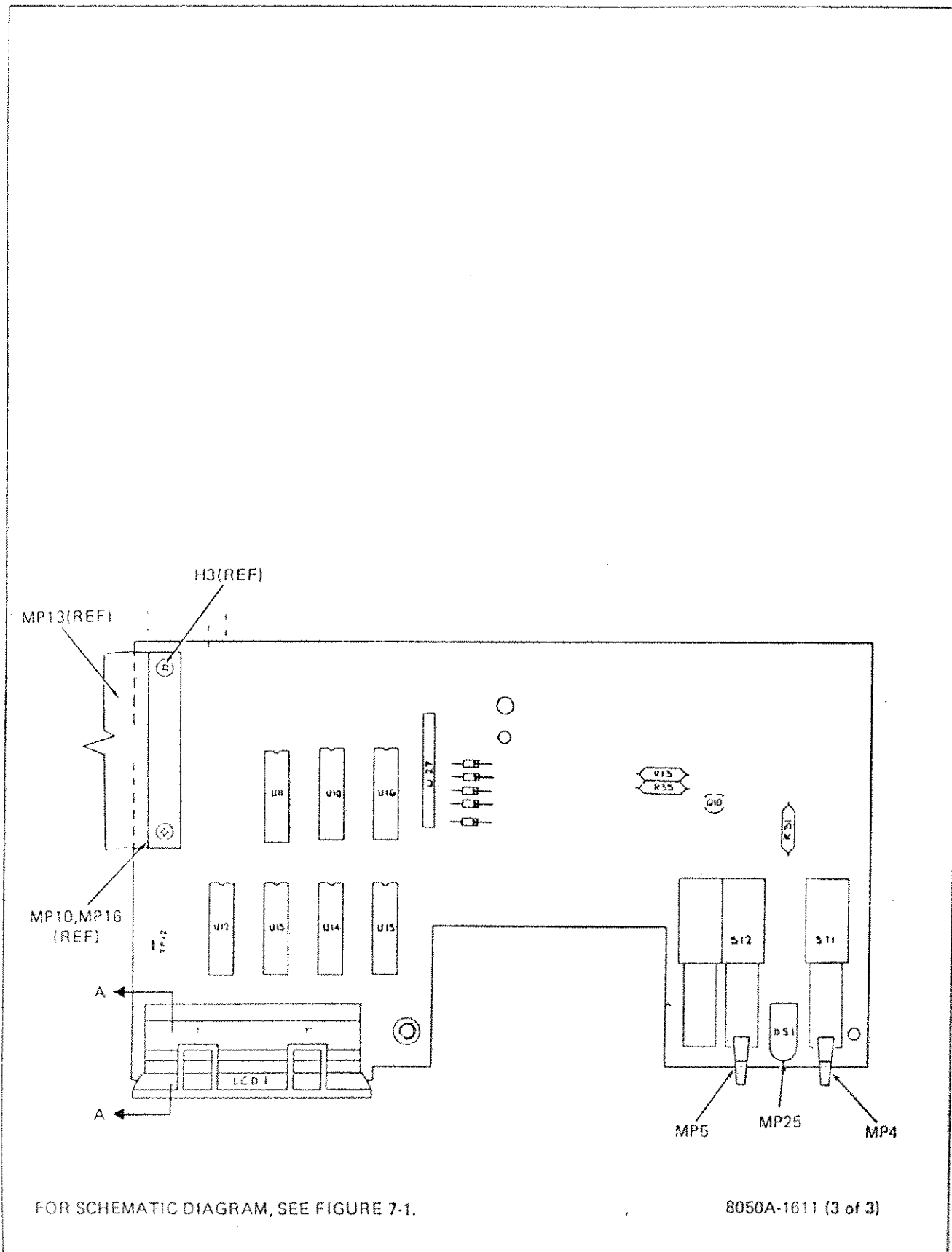


Figure 601-2. A1 Main PCB Assembly, Battery Option (cont)



FOR SCHEMATIC DIAGRAM, SEE FIGURE 7-1.

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Figure 601-2. A1 Main PCB Assembly, Battery Option (cont)



1 2 3 4