

# Manual Supplement

Manual Title: 8922A  
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This supplement contains information necessary to ensure the accuracy of the above manual.

**CHANGE #1 - 12542**

Rev. - A, A1 Main PCB Assembly (8922A-4001)

On page 5-6:

ADD: C219/Cap, TA, 10  $\mu$ F  $\pm$ 20%/330662/56289/196D106X0020KA1/1

On pages 5-10 and 8-2:

ADD: C219 and its symbol between C212 and VR202.

On page 8-3:

ADD: Break connection to base of Q205, reconnect base to U207-15 & 12.  
C219 (electrolytic) between VR202-3 and +C210 (anode of C219 goes to VR202-3).**CHANGE #2 - 12543**

Rev. - A, AC PCB Assembly (8922A-4003)

On page 5-12:

DELETE: C26/Cap, Cer, 68 pF  $\pm$ 2%, 100V/362756/80031/2222-631-10689/1

On page 5-13:

ADD: C63/Cap, Cer, 150 pF  $\pm$ 2%, 100V/362764/80031/2222-638-34151/1  
ADD: C64/Cap, Cer, 27 pF  $\pm$ 2%, 100V/362749/80031/222-631-10689/1  
DELETE: C62/Cap, Cer, 0.025  $\mu$ F  $\pm$ 20%, 100V/168435/56289/CO23B101H253M/1

On page 5-15:

ADD: R32/Res, comp, 1k  $\pm$ 5%, 1/4W/148023/01121/CB1025/2Under **TOT QTY**, row R54,

CHANGE: 2 TO: REF

On page 5-18 and 8-6:

DELETE: C26, C62, and their symbols  
ADD: C63 and its symbol between C17 and Q12  
ADD: C64 and its symbol between Q26 and Q19  
ADD: R32 and its symbol between Q11 and C25

On page 8-7:

DELETE: C62 and its symbol  
ADD: R32 and its symbol between the base of Q21 and the junction of C14 and Q11.  
ADD: C64 and its symbol between the base and emitter of Q19.  
ADD: C63 and its symbol between the emitter of Q10 and circuit ground.**CHANGE #3 - 13207**

Rev.- B, A1 Main PCB Assy. (8922A-4001/4001S)

On page 5-6:

CHANGE: J6/CONNECTOR FEMALE BNC (8920A ONLY)/414201/02660/31-010/1  
TO: J6/CONNECTOR FEMALE BNC/152033/95712/30355/1/1**CHANGE #4**

On page Table 4-1:

CHANGE: DVM/3 1/2 Digits, 0.25% Resolution/JF-8020A  
TO: DVM/0.25% Accuracy/JF-8020A

CHANGE: Function Generator, /2 Hz Sine Wave  
 TO: Lo Frequency Generator/2 Hz Sine Wave, 1V rms, 0V DC/GR1310-B

ADD: Small Signal Diode/Silicon/1N448, JF #203323

On page 4-3, paragraph 4-16, line 14:

CHANGE: ...a relative humidity of 80%  
 TO: ...a relative humidity of less than 80%

On page 4-4, last line:

CHANGE: AC / Use rms voltmeter and function generator/AUTORANGE  
 TO: AC + DC (Damping) / Use rms voltmeter and function generator

On page 4-5, replace paragraph 4-25 with the following:

4-25. This procedure will verify that the UUT's low level AC performance meets the specifications of Section 1. Set up the test equipment as show in Figure 4-3, paragraph 4-38, and complete the AC low Level Calibration procedure, modifying three steps as shown below:

- 2d. Make no adjustments. Allow 1.000  $\pm$ 40 digits.
- 2e. Allow 0.180 to 0.188 after settling.
- 3j. Allow 0.176 to 0.189 after settling.

On page 4-6, Table 4-5, under the "UUT DISPLAY" column:

CHANGE: "UUT DISPLAY  $\pm$ 6 COUNTS"  
 TO: "UUT DISPLAY"

CHANGE: 1.000  $\pm$ 30 counts  
 TO: 1.000 +15 counts

CHANGE: 02.00 or mV rms (see comment)  $\pm$ 6 counts.  
 TO: 02.00 or mV rms (see comment)  $\pm$ 12 counts.

On Figure 4-3:

The arrow from the "ATTENUATOR OUTPUT" should be shown going to the very end of the "BNC CONNECTOR" not to the "50 $\Omega$  TERM".

On page 4-9, upper left hand corner, change the 5 on the rectangle to 4.

On page 4-10, Table 4-7, step 1b under the "READ DISPLAY" column:

CHANGE: 1/10th of reading in step 3.  
 TO: 1/10th of reading in step 1.

On page 4-11, Table 4-7, make the following changes:

Delete step 8.  
 Change step 20, TO: Apply 23.0 mV....between 23.5 and 24.5 mV.

On page 4-12, paragraph 4-39, add the following note to the end of step 1c:

**NOTE**

**DO NOT DISASSEMBLY THE ATTENUATOR TO MONITOR INPUT OR OUTPUT LEVELS**

Change step 2b:

FROM:           b. Switch the leveled generator to the X1...  
TO:               b. Switch the leveled generator to X1...

On page 4-14, step 3 of paragraph 4-43:

FROM:           Turn R111 slightly clockwise so the ...  
TO:               Turn R127 back, slightly counter clockwise, so that...

Add the following caution between paragraph heading 4-44 and paragraph 4-45:

**CAUTION**

**TO PREVENT DAMAGE TO THE RMS SENSOR BY TEST EQUIPMENT  
LOADING:**

Place a small silicon diode across sensor output on J106, cathode to pin 3 and anode to pin 4, before connecting any test equipment to the sensor circuit.

ALTERNATE: If on hand, use the protection diode fixture from replacement kit (8920A-7001K, JF #489377).

NOTE: When either method is used the 8922A will not reach full scale, and the autorange function will be inoperative.

On page 4-18, add the following sentence to the end of step 5, paragraph 4-49:

"The extra (5th) pin should be to the rear of J106."

On page 4-19, change step 13, paragraph 4-49:

FROM:   ...listed in Table 4-6 Low and ...  
TO:       ...listed in Table 4-7 Low and ...

Change step 14, para. 4-49:

FROM:           Monitor the ac voltage at TP5\* with a DVM.....  
TO:               Monitor the ac voltage at TP5\* with a Fluke 931B....

**CHANGE #5**

On page 1-5, add the following specification:

PROTECTION CLASS   CLASS 1 (As defined in IEC 348.)

On page 4-9, the designations for Q41 and Q33 are reversed,

CHANGE:       Q41  
TO:             Q33

CHANGE:       Q33  
TO:             Q41

There are two Q38s shown, change the Q38 next to C33 to Q39.

On page 4-14, step 3,

CHANGE: R111  
TO: R127

On page 4-16, steps 46 and 48,

CHANGE: ...0.45V +/-10%  
TO: ...23.6 mV +/-10%

#### CHANGE #6

On page 2-4, under paragraph 2-15,

DELETE: ....(For metric fuse, use 1/8A, slow acting, 5 x 20 mm glass tube type.)

On page 4-3, under paragraph 4-14,

DELETE: ....(Metric uses 5x20 mm, 1/8 amp slow acting).

On page 5-6, Table 5-2,

DELETE: F1IFUSE,SLO-BLO,1/8 AMP METRIC,5 X 20MM,GLASS TUBE I467233I89536I467233I

#### CHANGE #7

On page 4-4, Table 4-3, change the first entry under DISPLAY,

FROM: 1.000  
TO: 1.900

Under INPUT LEVEL,

CHANGE: 1.9 mV  
TO: 1.0 mV

#### CHANGE #8

On page 4-12, under paragraph 4-39,

Change step 3c,

FROM: Verify that the UUT display is between 17.70 and 17.20 mV.  
TO: The UUT should typically display between 17.70 and 17.10 mV.

Change step 3g,

FROM: Verify that the UUT display is between 1.770 and 1.720 mV.  
TO: The UUT should typically display between 1.770 and 1.710 mV.

**CHANGE #9**

On page 4-19, replace Table 4-12 with the following:

Table 4-12. R19/R34, R66/R76 Resistive Values  
(mF,  $\pm 1\%$ , 1/8W)

VALUE	VALUE
332K	48.7K
169K	43.2K
115K	38.3K
86.6K	34.8K
68.1K	31.6K
57.6K	

**CHANGE #10**

On pages 5-14 and 5-15,

CHANGE: Q37|DUAL FET/RESISTOR SET (Q37,R46)| | | I1|2  
TO: Q37|DUAL FET/RESISTOR SET (Q37,R46)|476788|89536|476788|1|2

CHANGE: R46|RESISTOR/DUAL FET SET (SEE Q37)| | | IREF  
TO: R46|RESISTOR/DUAL FET SET (Q37,R46)|476788|89536|476788|REF

**CHANGE #11**

On page 5-16, Table 5-4, add flagnote 4, to R96, R97, R105, and R110.

On page 5-17, add note 4, as follows:

4. THESE RESISTORS ARE PART OF THE RMS SENSOR KIT AND MAY BE OBTAINED WITH THE SENSOR BY ORDERING PART #489377 (SEE SECTION 4,"RMS SENSOR REPLACEMENT")

**CHANGE #12**

On page 5-16, Table 5-4,

CHANGE: U1|RMS SENSOR |433839|89536|433839|1|1  
TO: U1|RMS SENSOR KIT|489377|89536|489377|1|1

**CHANGE #13**

On page 5-17, under note 2,

CHANGE: ....MATCHED PAIRED SETS, PART NUMBER 476700. ...  
TO: ....MATCHED PAIRED SETS, PART NUMBER 476788. ...

**CHANGE #14 - 17049**

On page 5-3, Table 5-2,

DELETE:	MP3IBAIL	I467555I89536I467555I1
	MP10IBASE,STANDARD	I454702I89536I454702I1
	MP12IDECAL,BASE SIDES	I473652I89536I473652I2
	MP13ILATCH	I467548I89536I467548I2
	MP14IFOOT	I467571I89536I467571I4

**CHANGE #15 - 17295**

On page 5-3, Table 5-1,

CHANGE:	R204IRES,MTL. FILM,16.5K,+/-1%,1/8WI293696I89536I293696	I1I2
TO:	R204IRES,MTL. FILM,20.5K,+/-1%,1/8WI261669I91637ICMF552052FT-11I1I2	

**CHANGE #16 - 25894**

On page 5-3, Table 5-1,

CHANGE:	H3I.....I256156I73734I23022I13
TO:	H3I.....I256156I73734I23022I15

**CHANGE #17 - 17046**

Rev. -B, A1 Main PCB Assembly (8922A-4001)

On pages 5-6, 5-7 and 5-8, Table 5-2,

DELETE:	H205ILOCKWASHER,SPLIT,#5	I111328I89536I111328	I2
	J401IPOST,CONTACT	I417329I22526I65500-104	I1
	J501IPOST,CONTACT	I474213I22526I65500-108	I1I1
	J601IPOST,CONTACT	I478693I22526I65500-110	I1
	S208ISWITCH,OFF/ON	I453605I89536I453605	I1
CHANGE:	H206INUT,HEX	I110635I89536I110635	I2
TO:	H206INUT,CAP,EXT.LOCK,STL,4-40I195255I78189I511-041800-00I2		
ADD:	H207IWASHER,LOCK,EXTERNAL,STEEL,0.500 ID	I175943I89462I5005-75-PPI1	

**CHANGE #18 - 32234**

Rev. -E, A1 Main PCB Assembly (8922A-4001)

On page 5-8, Table 5-2,

CHANGE:	R225IRES,MTL. FILM, 90.9K +/-1%,1/8WI223537I91637ICMF559092F	I1
TO:	R225IRES,MTL. FILM, 90.9K +/-1%,1/8WI720581I91637ICMF559092FT-1I1	
CHANGE:	R238IRES,MTL.FILM,100K +/-1%,1/8WI248807I91637ICMF551003F	I1
TO:	R238IRES,MTL.FILM,100K +/-1%,1/8WI719484I91637ICMF551003FT-1I1	

**CHANGE #19 - 38274**

Rev. -F, A1 Main PCB Assembly (8922A-4001)

On page 5-8, Table 5-2,

CHANGE: R219,222IRES,COMP,1K +/-5%,1/4W|148023|01121|CB1025 I2  
 TO: R219,222IRES,COMP,1K +/-5%,1/4W|573170|59124|CF1-4102JB|2

**CHANGE #20 - 39042**

Rev. -K, A2 AC PCB Assembly (8922A-4003)

On page 5-13, Table 5-4,

CHANGE: Q8,36|XSTR,SI,PNP|453829|24355|AD821 I2|1  
 TO: Q8,36|XSTR,SI,PNP|875752|34371|ITS31945|2|1

**CHANGE #21 - 19481**

On page 5-3, Table 5-1,

CHANGE: MP8|COVER,AC SHIELD|456848|89536|456848|1  
 TO: MP8|COVER,AC SHIELD|737577|89536|737577|1

**CHANGE #22 - 41025**

On page 5-3, Table 5-1,

CHANGE: H3|.....|256156|73734|23022|15  
 TO: H3|.....|256156|73734|23022|4

ADD: H5|SCREW,MACH,PH,P,SS,THD|558841|COMMERCIAL|5

CHANGE: MP8|COVER,AC SHIELD|737577|89536|737577|1  
 TO: MP8|COVER,AC SHIELD|891692|89536|891692|1

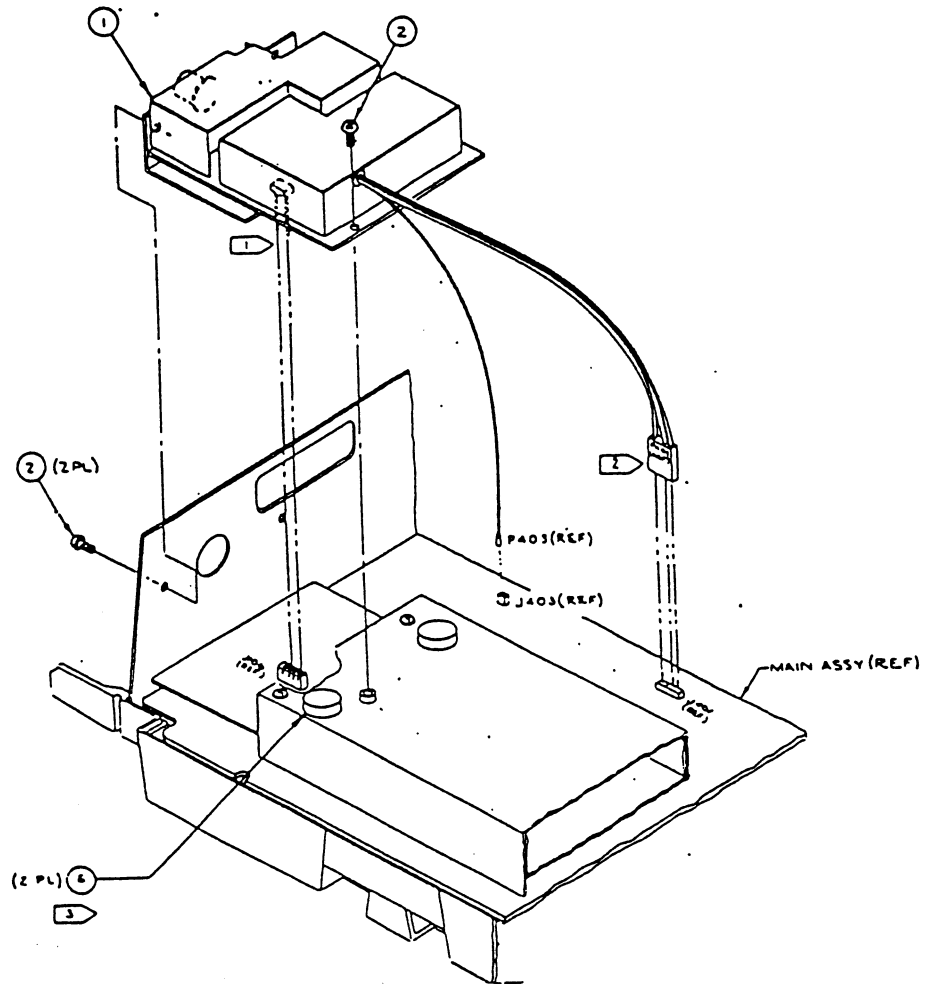
**CHANGE #23**

On page 603-1, paragraph 603-6, add new steps 4 and 5 as follows, and renumber old steps 4 and 5 as step 6 and 7.

4. Connect ground wire (P403) to J403 on the A1 Main PCB Assembly.
5. Place the rubber foot on the AC shield near the screws as shown in Figure 603-1.



On page 603-2, replace Figure 603-1 with:



**CHANGE #24 - 41753**

On page 5-3, Table 5-1,

CHANGE: A2IAC PCB ASSEMBLY|510602|89526|510602|1  
 TO: A2IAC BOARD,TESTED|652230|89526|652230|1

DELETE: MP8|COVER,AC SHIELD|891692|89536|891692|1

On page 5-4, Figure 5-1, delete MP8.

**CHANGE #25 - 43354**

Rev. -K, A1 Main PCB Assembly (8922A-4001)

On page 5-7, Table 5-2,

DELETE: MP210|COVER,AC SWITCH|475681|89536|475681|1

**CHANGE #26 - 44461**

Rev. - L, A1 Main PCB Assembly (8922A-4001)

On page 5-11, Table 5-3,

CHANGE: A1A1IDISPLAY PCB ASSEMBLYI456921I89536I456921I1  
 TO: A1A1IDISPLAY PCB ASSEMBLYI456897I89536I456897I1

**CHANGE #27 - 41816**

Rev. -M, A2 AC Main PCB Assembly (8922A-4003)

On pages 5-6 and 5-7, Table 5-2,

ADD: H208ICOVER,AC SHIELDI891692I89536I891692I1MP244ISCREW,PH,P,LOCK,STL,4-40,1.000I157008I74594I157008I1

**CHANGE #28 - 43781**

Rev. -N, A2 AC PCB Assembly (8922A-4003)

On pages 5-12, 5-13 and 5-14, Table 5-4,

DELETE: Q8IXSTR,STI,PNP I453829I24355IAD821I2I1  
 Q36IXSTR,STI,PNPI453829I24355IAD821I2I1

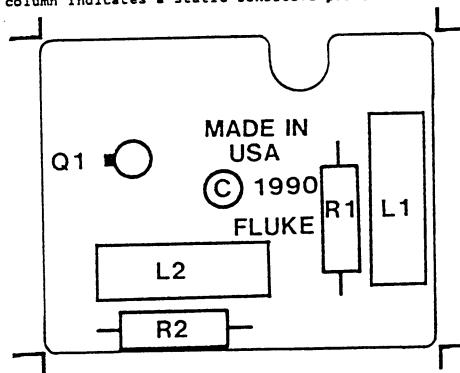
ADD: A2A1IASSY,ACTIVE LOADI885442I89536I885442I1

After page 5-18, add the following:

Table 5-5. A2A1 Active Load Assembly

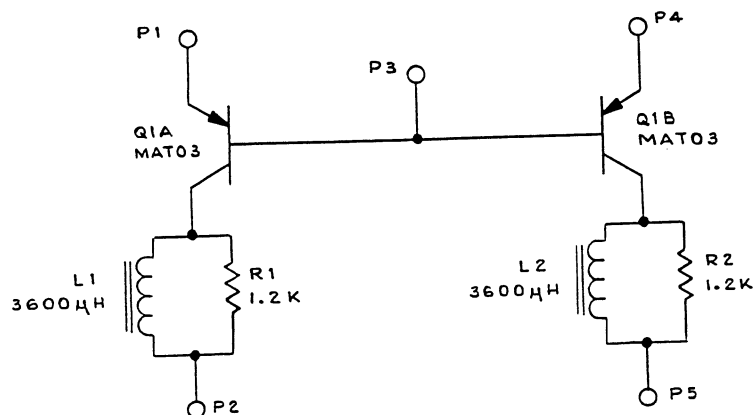
REFERENCE DESIGNATOR		DESCRIPTION	FLUKE STOCK	MFRS SPLY	MANUFACTURERS PART NUMBER OR GENERIC TYPE	TOT QTY	N O T
-A>-NUMERICS	S		--NO--	-CODE-			-E-
J 1- 5		PIN, SINGLE, PWB, 0.025 SQ	267633	00779	87022-2	5	
L 1, 2		INDUCTOR, 3900UH, +-10%, 1.8MHZ, SHLD	363176	24759	MR-3900J&K	2	
Q 1		TRANSISTOR, SI, PNP, DUAL, TO-78	875752	24355	MAT-03AH	1	
R 1, 2		RES, CF, 1.2K, +-5%, 0.25W	573196	59124	CF1/4 122J	2	

An \* in 'S' column indicates a static-sensitive part.



**8920A-1615**  
**Active Load**

After page 8-8, Figure 8-3, add the following:



**8920A-1015  
Active Load**

On pages 5-18, 8-6 and 8-8, Figure 5-4 and Figure 8-3, delete Q8 and Q36.

**CHANGE #29 - 44267,44390**

Rev. -P, A2 AC PCB Assembly (8922A-4003)

On page 5-13, Table 5-4,

CHANGE: MP203ISLEEV,TEFLON,0.042ID,NATURALI175976I83750I175976I1  
 TO: MP203ISLEEV,TEFLON,0.042ID,NATURAL I334953I83750IFLEXITETFE12-NATURALI1

**CHANGE #30**

On page 1-5, Table 1-3, add:

Electromagnetic Compatibility..... For field strengths between 1 V/m and 3 V/m, add 60 mV to all specifications.