DC VOLTS (V)

Accuracy: 0.3% +2 digits
0.75% +3 digits (1000V range)

Range	Applied	Tol +/-	Lo Limit	`Hi Limit	70% Tol	70% Lo	70% Hi
400mV	390	1.4	388.6	391.4	1.0	389.0	391.0
4	1	0.005	0.995	1.005	0.004	0.996	1.004
	2	0.008	1.992	2.008	0.006	1.994	2.006
	3	0.011	2.989	3.011	0.008	2.992	3.008
	3.9	0.014	3.886	3.914	0.010	3.890	3.910
40	39	0.14	38.86	39.14	0.10	38.90	39.10
400	390	1.4	388.6	391.4	1.0	389.0	391.0
1000	1000	11	989	1011	8	992	1008

AC VOLTS (V)

Accuracy:

0.5%	+3 digits	(30 - 1kHz)
1%	+5 digits	(to 10kHz & 1000V range)
2%	+5 digits	(to 30kHz)

Range	Applied	Freq Hz	Tol +/-	Lo Limit	Hi Limit	70% Tol	70% Lo	70% Hi
4	1	50	0.008	0.992	1.008	0.006	0.994	1.006
	2	50	0.013	1.987	2.013	0.009	1.991	2.009
	3	50	0.018	2.982	3.018	0.013	2.987	3.013
	3.9	50	0.023	3.877	3.923	0.016	3.884	3.916
	3.9	1k	0.023	3.877	3.923	0.016	3.884	3.916
	3.9	5k	0.044	3.856	3.944	0.031	3.869	3.931
	3.9	10k	0.044	3.856	3.944	0.031	3.869	3.931
	3.9	30k	0.083	3.817	3.983	0.058	3.842	3.958
40	39	50	0.23	38.77	39.23	0.16	38.84	39.16
	39	1k	0.23	38.77	39.23	0.16	38.84	39.16
	39	10k	0.44	38.56	39.44	0.31	38.69	39.31
	39	30k	0.83	38.17	39.83	0.58	38.42	39.58
400	390	50	2.3	387.7	392.3	1.6	388.4	391.6
	390	1k	2.3	387.7	392.3	1.6	388.4	391.6
	390	10k	4.4	385.6	394.4	3.1	386.9	393.1
750	700	50	12	688	712	8	692	708
	700	1k	12	688	712	8	692	708

RESISTANCE (OHMS)

Accuracy:

0.5%	+3 digits	
0.5%	+10 digits	(400 range)
1.2%	+8 digits	(40M range)

Range	Applied	Tol +/-	Lo Limit	Hi Limit	70% Tol	70% Lo	70% Hi
400	100	1.5	98.5	101.5	1.1	98.9	101.1
	390	3.0	387.0	393.0	2.1	387.9	392.1
4k	1	0.008	0.992	1.008	0.006	0.994	1.006
	3.9	0.023	3.877	3.923	0.016	3.884	3.916
40k	10	0.08	9.92	10.08	0.06	9.94	10.06
	39	0.23	38.77	39.23	0.16	38.84	39.16
400k	100	0.8	99.2	100.8	0.6	99.4	100.6
	390	2.3	387.7	392.3	1.6	388.4	391.6
4M	1	0.008	0.992	1.008	0.006	0.994	1.006
	3.9	0.023	3.877	3.923	0.016	3.884	3.916
40M	10	0.20	9.80	10.20	0.14	9.86	10.14
	20	0.32	19.68	20.32	0.22	19.78	20.22
	30	0.44	29.56	30.44	0.31	29.69	30.31
	39	0.55	38.45	39.55	0.39	38.61	39.39

FREQUENCY (Hz)

Accuracy: 0.05% +2 digits

Range	Applied	Tol +/-	Lo Limit	Hi Limit	70% Tol	70% Lo	70% Hi
200	100	0.07	99.93	100.07	0.05	99.95	100.05
	190	0.12	189.88	190.12	0.08	189.92	190.08
2k	1	0.0007	0.9993	1.0007	0.0005	0.9995	1.0005
	1.9	0.0012	1.8988	1.9012	0.0008	1.8992	1.9008
20k	10	0.007	9.993	10.007	0.005	9.995	10.005
	19	0.012	18.988	19.012	0.008	18.992	19.008
200k	100	0.07	99.93	100.07	0.05	99.95	100.05
	190	0.12	189.88	190.12	0.08	189.92	190.08

CAPACITANCE (uF)

Accuracy: 1.9% +2 digits
2.5% +15 digits 1000uF range)

Range	Applied	Tol +/-	Lo Limit	Hi Limit	70% Tol	70% Lo	70% Hi
1	0.1	0.004	0.096	0.104	0.003	0.097	0.103
	0.9	0.019	0.881	0.919	0.013	0.887	0.913
10	2	0.06	1.94	2.06	0.04	1.96	2.04
	9	0.19	8.81	9.19	0.13	8.87	9.13
100	20	0.6	19.4	20.6	0.4	19.6	20.4
	90	1.9	88.1	91.9	1.3	88.7	91.3
1000	200	20	180	220	14	186	214
	900	38	862	938	27	873	927

DC CURRENT (A)

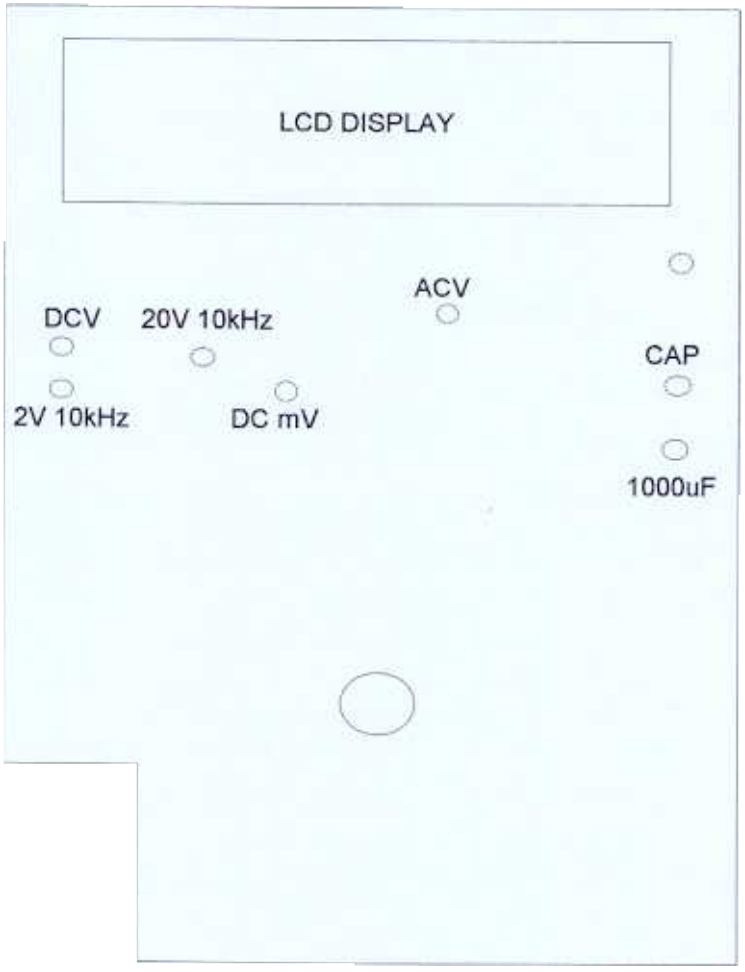
Accuracy: 0.5% +1 digit
1% +5 digits (4A & 10A range)

Range	Applied	Tol +/-	Lo Limit	Hi Limit	70% Tol	70% Lo	70% Hi
400uA	100	0.6	99.4	100.6	0.4	99.6	100.4
	390	2.1	387.9	392.1	1.5	388.5	391.5
4000uA	1000	6	994	1006	4	996	1004
	3900	21	3879	3921	15	3885	3915
40mA	10	0.06	9.94	10.06	0.04	9.96	10.04
	39	0.21	38.79	39.21	0.15	38.85	39.15
400mA	100	0.6	99.4	100.6	0.4	99.6	100.4
	390	2.1	387.9	392.1	1.5	388.5	391.5
4	1	0.015	0.985	1.015	0.011	0.989	1.011
	3.9	0.044	3.856	3.944	0.031	3.869	3.931
10	10	0.15	9.85	10.15	0.11	9.89	10.11

AC CURRENT (A)

Accuracy: 1% +5 digits
1.5% +5 digits (10A range)

Range	Applied	Freq Hz	Tol +/-	Lo Limit	Hi Limit	70% Tol	70% Lo	70% Hi
400uA	390	50	4.4	385.6	394.4	3.1	386.9	393.1
	390	1k	4.4	385.6	394.4	3.1	386.9	393.1
	390	4k	4.4	385.6	394.4	3.1	386.9	393.1
4000uA	3900	50	44	3856	3944	31	3869	3931
	3900	1k	44	3856	3944	31	3869	3931
	3900	4k	44	3856	3944	31	3869	3931
40mA	39	50	0.44	38.56	39.44	0.31	38.69	39.31
	39	1k	0.44	38.56	39.44	0.31	38.69	39.31
	39	4k	0.44	38.56	39.44	0.31	38.69	39.31
400mA	390	50	4.4	385.6	394.4	3.1	386.9	393.1
	390	1k	4.4	385.6	394.4	3.1	386.9	393.1
	390	4k	4.4	385.6	394.4	3.1	386.9	393.1
4	3.9	50	0.044	3.856	3.944	0.031	3.869	3.931
	3.9	1k	0.044	3.856	3.944	0.031	3.869	3.931
10	10	50	0.2	9.8	10.2	0.14	9.86	10.14
	10	1k	0.2	9.8	10.2	0.14	9.86	10.14



SUB-ASSEMBLY DISPLAY BOARD

REQUIRED MEASURING INSTRUMENTS

1) Digital Multimeter (> 0.5 CLASS) ------- 1 set
2) Oscilloscope (> 40MHz) ------- 1 set
3) Multi Function Calibrator * (> DATRON 4700 CLASS) ------- 1 set
   * The accuracy of Calibrator should be at least 10 times the accuracy of the Meter.

2. TEST

2 The Naked Eye Examination

At first examination the P.C. boards whether they have damaged parts or wrong valued parts comparing with the P.C.B. Parts location layouts after departing the battery from the meter.

Especially examine the height of inserted parts whether they are higher than that of the LCD Module or not.

2.2. Initial Test

2.2.1. Assemblying the main board with the sub-board, connect a 9V battery to the battery terminals.

2.2.2. Using DMM, examine that the voltage value between Max134's PIN 14 and PIN 30 is 2.95V.
[Standard : 2.7V - 3.2V]

2.2.3. Using DMM, examine that the voltage value between Max134's PIN 14 and PIN 29 is 5V.
[Standard : 4.5V - 5.5V]

es

2.3.1. Press the ON/OFF button to turn the meter on.
2.3.2. turn the rotary switch to the position of DC mV.
2.3.3. Connect the voltage output terminal of Calibrator to the COM terminal and VΩHz terminal separately and then set Calibrator at DC 100mV.
2.3.4. Adjust VR2 (CAL) of the meter and set it at 100mV.
[Standard : DC 100.0mV (NOMINAL)]
* At this time, for the POWER-ON-ZERO-OFFSET calibration, turn the meter OFF and then ON by pressing the ON/OFF button. If the meter does not read 100mV. repeat 2.3.3. and 2.3.4. continuously until the meter reads 100mV.
2.3.5. Turn the rotary switch to the position of DC V.
2.3.6. Set Calibrator at DC 1V.
2.3.7. Adjust VR1 (DC) of the meter and set it at 1V.
2.3.8. Setting Calibrator at each voltage value of the following Table 1, examine the measured value for each range.

	0000	1000	ERROR
400mV			±0.3% rdg ± 5 digit
			±0.75% rdg ± 3 digit

ABLE

2.4 AC Volt Test

2.4.1. Turn the rotary switch to the postion of AC V.
2.4.2. Press RANGE button and set the meter at 1.000V range.
2.4.3. Connect the voltage output terminal of Calibrator to the COM terminal and VΩHz terminal separately and then set Calibrator at 0V and adjust VR3 (OFS) of the meter and set it at 0V to have 0V shown on the LCD display.
2.4.4. Setting the rotary switch at the position of AC V, press RANGE button for 3 or so seconds. Then, the meter is now working in Auto Ranging.
*2.4.5. Set Calibrator at AC 1V.
*2.4.6. Adjust VR4 (AC) of the meter and set it at 1V.
[Standard : AC 1.000V (NOMINAL)]
*2.4.7. Setting Calibrator at each voltage value of the following Table 2. examine the measured value for each range.

	0000	1000	ERROR
4V			±0.5% rdg ± 3 digit
750V			±1.0% rdg ± 5 digit

TABLE 2

The software on μ-controller of the meter was designed for both 50Hz and 60Hz. Thus, test as 2.4.5. ~ 2.4.7. for 50Hz or for 60Hz in each case whether the measured values should be within the specifications of table 2.

DC Current Test

1 400mA Range Test

2.5.1.1 Set Calibrator at DC Current 390mA.

2.5.1.2 Connect the test lead of the meter to the Current terminal of Calibrator and then connect the test lead with COM terminal and mAμA terminal of the meter separately after turning the rotary switch to the position of DC mA

2.5.1.3 Examine the measured values on the LCD display.
[Standard : 390.0mA ±0.5% rdg + 1 digit]

2.5.1.4 Read each measured value at 0A, 400μA, 4mA, 40mA and 395mA
[Standard : ±0.5% rdg + 1 digit]

2.5.2 10A Range Test

2.5.2.1 Move the test lead from mAμA terminal to A terminal.

2.5.2.2 Turn the rotary switch to the position of DC A.

2.5.2.3 Set Calibrator at DC Current 10A.

2.5.2.4 Regarding the measured values shown on the LCD display. contact the jumper with SHUNT (SH) and look for the point at which the LCD display shows 10.00A.
Then, solder that point on SHUNT (SH) with jumper.
After waiting for a while until the heat of SHUNT gets cold, examine whether the LCD display shows 10.00A or not.
[Standard : 10.00A ±1% rdg + 5 digits]

2.5.2.5 Read each measured value at 0A and 4A.
[Standard : ±1% rdg + 5 digits]

2.6 AC Current Test

2.6 400mA Range Test

2.6.1.1 Set Calibrator at AC Current 390mA (50Hz or 60Hz)

2.6.1.2 Connect the test lead of the meter to the Current terminal of Calibrator and then connect the test lead with COM terminal and mAμA terminal of the meter separately after turning the rotary switch to the position of AC mA.

2.6.1.3 Examine the measured values on the LCD display.
[Standard : 390.0mA ±0.75%rdg + 3 digits]

2.6.1.4 Read each measured value at 0A, 400μA, 4mA, 40mA and 395mA.
[Standard : ±0.75% rdg + 3 digits]

10A Range Tes

2.6.2.1. Move the test lead from mAμA terminal to A terminal.
2.6.2.2. Turn the rotary switch to the position of AC A.
2.6.2.3. Set Calibrator at AC Current 10A and read the measured value on the LCD display.
[Standard : 10.00A ± 1% rdg + 5 digits]
2.6.2.4. Read each measured value at 0A and 4A.
[Standard : ± 1% rdg + 5 digits]

2.7. Resistor Test

2.7

2.7.3

[	400 Ω	± 0.5% + 3 digits]
	4KΩ	"
	40KΩ	"
	400KΩ	"
	4MΩ	"

2.7.4. Set Calibrator at 10MΩ. Adjust VR8 to have 10MΩ shown on the LCD display.
[Standard : 40MΩ ± 1% + 10 digits]
2.7.5. Change the mode calibrator to DC 1000V and make the current flow of 2 or so seconds.
2.7.6. Change the mode of calibrator to Ω mode again and reexamine as 2.7.1. ~ 2.7.3. whether there is no change.

2.8. Continuity Test

2.8.1. Turn the rotary switch to the position of •))).
2.8.2. Connect a 100Ω resistor to the Test leads and examine whether the meter sounds beep at under 100Ω.
At this time the measured value of the resistance should be shown on the LCD display of the meter.

2.9 Diode Test

2.9.1. Turn the rotary switch to the position of ⊸⊳.

2.9.2. Connect the black test lead to COM terminal and connect the red test lead to VΩHz terminal of the meter separately and then connect the black lead to the CATHODE of any Germanium Diode and connect the red lead to the ANODE of any Germanium Diode separately. And read the measured value.

2.9.3. Read and examine the measured value when reverse connection.
[Standard : OFL indication]

2.10 Frequency Test

2.10.1.

2.10.2. and connect the test

2.10.3. of

[

of

[

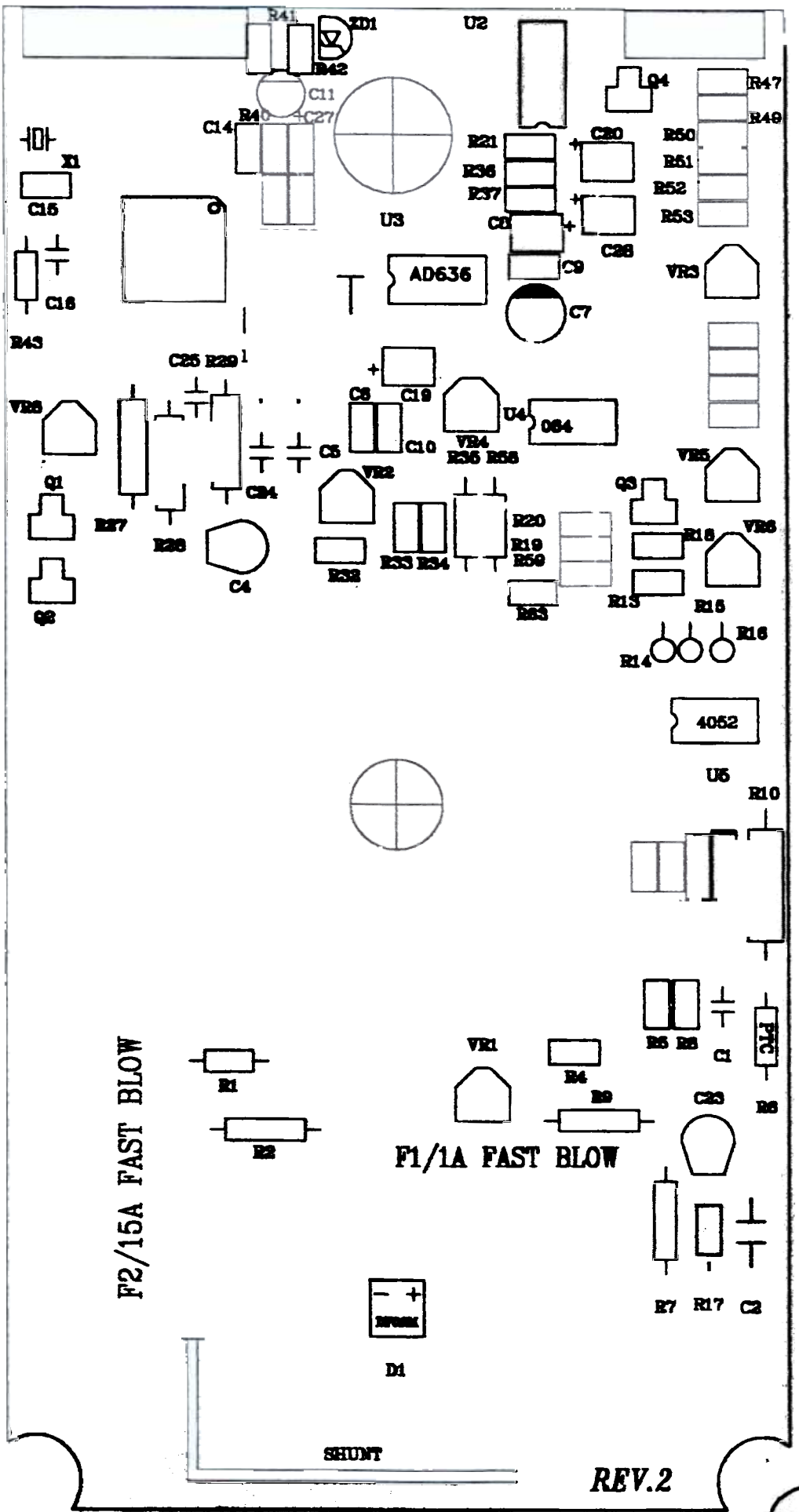
2.11 Capacitance Test

2.12.1. Turn the rotary switch to the position of CAP.

2.12.2. Connect the lead to COM terminal and VΩHzCAP terminal of the meter separately and then set Calibrator at 90μF.

2.12.3. Adjust VR5 103 (CAP) to have 90.00μF shown on the LCD display.

2.12.4. Set Calibrator at 900μF and adjust VR6 102 (CAP) to have 900.0μF shown on the LCD display of the meter.



VR3 AC Volt OFFSET

VR8: 40MΩ adjust
VR4: AC Volt "
VR5: Capacitance (Low)
VR2: DC mV
VR6: Capacitance (High)

VR1: DC Volt adjust

MODEL 503RMS MAIN SILK SIDE

회인계기(주)	부품목록(BOM)	REV.NO	1
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MODEL	FINE 503 RMS	DATE	1998 년 9 월 01 일	작성	검토	승인
CODE	ASS'Y SHIPPING	CUSTOMER	FINE			

NO	CODE NO	DESCRIPTION	SPECIFICATION	VENDER	UNIT	Q'TY	REF.NO	REMARK
1	02-010-001-0	TEST LEAD	TFTL 500VIGS클립有, 1600mm	진아 산업	PCS	1		
	04-002-013-0	INNER BOX	FINE 503	태환문화사	PCS	1		
	04-009-014-0	CARTON BOX	480x435x270(200,500,110)	태환문화사	PCS			
4	04-009-009-0	PAD	540x400x7 (200,1종)	태환문화사	PCS	2		
5	04-001-013-0	MANUAL	FINE 503	태환문화사	PCS	1		
6	01-034-019-0	SILLICA, GEL	50x50 (WxL)	은천 문구	PCS	1		
7	01-034-009-0	P.P 벤드		은천 문구	ROLL			
8	01-034-016-0	OPP TAPE		은천 문구	BOX			
9	01-034-013-1	POLY BAG	160x320	은천 문구	PCS	1		
	00-503-010-1	ASS'Y SET						
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NOTE

화인계기(주)	부품목록(BOM)	REV.NO	1
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MODEL	FINE 503 RMS	DATE	1998 년 9 월 01 일	작성		검토		승인	
CODE	ASS'Y SET	CUSTOMER	FINE						

NO	CODE NO	DESCRIPTION	SPECIFICATION	VENDER	UNIT	Q'TY	REF.NO	REMARK
1	00-503-020-1	ASS'Y PCB	FINE 503	북성 메카	PCS	1		
2	00-503-020-2	ASS'Y TOP CASE	FINE 503	화인 계기	PCS	1		
3	01-022-016-0	BOTTOM ASSY	500 FINE D/G	화성 산업	PCS	1		
4	00-503-020-4	ASS'Y HOLSTER	FINE 500	동북 정공	PCS	1		
	01-020-019-0	SCREW, BOTTOM	T/S 2종 3x12 (둥근머리)	대성볼트센타	PCS	3		
6	01-020-017-0	SCREW, BATTERY CAP	T/S 1종 2.6x8 (접시머리)	대성볼트센타	PCS	2		
7	04-007-002-0	STICKER, NUMBERING	5x23 (WxL)	석정 인쇄	PCS	1		
8	01-012-025-0	BATTERY, ISOLATE	51x26.4x8 (WxLxH)	대명플라스틱	PCS	1		
9	01-021-024-0	RUBBER PAD	500용 (사각)	화성 산업	PCS	1		
10	03-011-001-0	BATTERY	9V (6F22)	서 통	PCS	1		
11	01-008-001-0	BATTERY CAP	500 D/G	동북 정공	PCS	1		
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NOTE

화인계기(주)	부품목록(BOM)	REV.NO	1
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MODEL	FINE 503 RMS	DATE	1998 년 9 월 01 일	작성		검토		승인	
CODE	ASS'Y TOP CASE	CUSTOMER	FINE						

NO	CODE NO	DESCRIPTION	SPECIFICATION	VENDER	UNIT	Q'TY	REF.NO	REMARK
1	01-001-021-0	CASE, TOP	ABS 난연, 503 D/G	현대 실크	PCS	1		
2	01-016-026-0	RUBBER, S/W	5013	경원 산업	PCS	1		
3	01-004-003-0	KNOB, ROTARY	500용 D/G	동북 정공	PCS	1		
4	01-012-005-0	CAM, ROTARY	501용 RED	동북 정공	PCS	1		
5	01-012-006-0	LUG(A)	501용 RED	동북 정공	PCS	1		
6	01-012-007-0	LUG(B)	501용 RED	동북 정공	PCS	1		
7	01-009-001-0	SOCKET, JACK (A)	500용 RED(A)	동북 정공	PCS	1		
8	01-009-003-0	SOCKET, JACK (B)	500용 D/G (B) 0.1	동북 정공	PCS	1		
9	01-009-004-0	SOCKET, JACK (C)	500용 D/G (C) 3.4	동북 정공	PCS	1		
10	01-019-010-0	ROTARY SPRING	501用	대성 산업	PCS	2		
11	01-020-004-0	BALL, BEARING	5Φ	대성볼트센터	PCS	2		
12	01-020-001-0	E-RING	4¢	대성볼트센터	PCS	1		
13	01-014-019-0	NAME PLATE	FINE 503	세화 정공	PCS	1		
14	01-013-007-0	WINDOW, LCD	500 DIGITAL	세화 정공	PCS	1		
15	01-018-002-0	INSERT, ROTARY	5x24.5	고성 산업	PCS	1		
16	03-012-001-0	PIEZO	20m/m (4KHz)	현풍 전자	PCS	1		
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NOTE	

화인계기(주)	부품목록(BOM)	REV.NO	1
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MODEL	FINE 503 RMS	DATE	1998 년 9 월 01 일	작성		검토		승인	
CODE	ASS'Y BOTTOM CASE	CUSTOMER	FINE						

NO	CODE NO	DESCRIPTION	SPECIFICATION	VENDER	UNIT	Q'TY	REF.NO	REMARK
1	01-002-010-0	CASE, BOTTOM	500용 FINE D/G 시급	동북 정공	PCS	1		
2	01-021-022-0	RUBBER, PAD	500용	화성 산업	PCS	1		
3	01-021-016-0	SPONGE, BATTERY	501용	화성 산업	PCS	1		
4	01-021-010-0	PLATE, ISOLATE(FIBER)	501용	화성 산업	PCS	1		
5	01-021-003-0	PLATE, SHIELD	501용	화성 산업	PCS	1		
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NOTE	

화인계 I(주)

부품목록(BOM)

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MODEL	FINE 503 RMS	DATE	1998 년 9 월 01 일	작성	검토	승인
CODE	ASS'Y PCB	CUSTOMER	FINE			

NO	CODE NO	DESCRIPTION	SPECIFICATION	VENDER	UNIT	Q'TY	REF.NO	REMARK
1	00-503-030-1	ASS'Y MAIN PCB	FINE 503	북성 메키	PCS	1		
2	00-503-030-2	ASS'Y SUB PCB	FINE 503	북성 메키	PCS	1		
3	00-503-030-3	ASS'Y SLIDE		화인 계기	PCS	1		
4	02-002-014-0	LCD	LS-04222A (503/7/9)	삼성 전관	PCS	1		
5	01-006-002-0	BRACKET, LCD	500용 I/B	동북 정공	PCS	1		
6	01-011-002-0	BACK, LIGHT	503 홀無 B/K	동북 정공	PCS	1		
7	01-019-004-0	SPRING, GROUND	200용 식도금 7x9x5x0.6x9	대성 산업	PCS	1		
8	01-015-002-0	ZEBRA, LCD	74.5x8.3x2 (500)	동남 실리콘	PCS	2		
9	01-020-007-0	SCREW	M/S 3x5 (동근)	대성볼트센터	PCS	4		
10	01-019-005-0	SPRING, PIEZO	220용 식도금 5x5x5x0.4x7	대성 산업	PCS	2		
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MODEL	FINE 503 RMS	DATE	1998 년 9 월 01 일	작성		검토		승인	
CODE	ASS'Y HOLSTER	CUSTOMER	FINE						

NO	CODE NO	DESCRIPTION	SPECIFICATION	VENDER	UNIT	Q'TY	REF.NO	REMARK
1	01-003-004-0	HOLSTER	500 Y/L	동북 정공	PCS	1		
2	01-003-007-0	TILT STAND	200 B/K	동북 정공	PCS	1		
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MODEL	FINE 503 RMS	DATE	1998 년 9 월 01 일	작성		검토		승인	
CODE	ASS'Y SLIDE	CUSTOMER	FINE						

NO	CODE NO	DESCRIPTION	SPECIFICATION	VENDER	UNIT	Q'TY	REF.NO	REMARK
1	01-005-001-0	KNOB, SLIDE	200용 B/K	동북 성공	PCS	1		
2	01-017-010-0	SLIDE, CONTACT	200용	동아 정밀	PCS	6		
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MODEL	FINE 503 RMS	DATE	1998 년 12 월 15 일	작성		검토		승인	
CODE	ASS'Y MAIN PCB	CUSTOMER	FINE						

NO	CODE NO	DESCRIPTION	SPECIFICATION	VENDER	UNIT	Q'TY	REF.NO	REMARK
1	02-001-030-1	P.C.B	503RMS MAIN (SMD)	모던써키트	PCS	1		
2	03-001-023-0	I. C	MAX 134CMH	MAXIM	PCS	1	U1	
3	03-001-017-0	I. C	AD 636JH	동백 전자	PCS	1	U3	
4	03-001-034-0	I. C	NJU 4052BM	신명 교역	PCS	1	U5	
5	03-001-036-0	I. C	NJU 4053BM	신명 교역	PCS	1	U2	
6	03-001-029-0	I. C	NJU 064M	신명 교역	PCS	1	U4	
7	01-032-021-0	RESISTOR	1/2W 9.9M D	삼원 전자	PCS	1	R27	
8	01-032-019-2	RESISTOR	1/2W 4.95M D	삼원 전자	PCS	2	R7,9	
9	01-032-019-0	RESISTOR	1/2W 1.11M D	삼원 전자	PCS	1	R28	
10	01-032-050-0	RESISTOR	1/4W 1M D	삼원 전자	PCS	1	R16	
11	01-032-043-0	RESISTOR	1/4W 101K D	삼원 전자	PCS	1	R29	
12	01-032-042-0	RESISTOR	1/4W 100K D	삼원 전자	PCS	1	R14	
13	01-032-041-0	RESISTOR	1/4W 90K D	삼원 전자	PCS	1	R58	
14	01-032-040-0	RESISTOR	1/4W 10K D	삼원 전자	PCS	3	R15,30,35	
15	01-032-038-0	RESISTOR	1/4W 1K D	삼원 전자	PCS	1	R31	
16	01-032-027-0	RESISTOR	1/4W 99Ω D	삼원 전자	PCS	1	R1	
17	01-032-059-0	RESISTOR	1W 0.980Ω D	삼원 전자	PCS	1	R2	
18	01-032-137-0	RESISTOR	1/4W 602K F	삼원 전자	PCS	1	R43	
19	01-032-237-3	RESISTOR CHIP	2012 19.1K F	주원 전자	PCS	1	R41	
20	01-032-610-0	RESISTOR CHIP	2012 10M J	주원 전자	PCS	1	R61	REV
21	01-032-522-0	RESISTOR CHIP	2012 2.2M J	주원 전자	PCS	1	R38	
22	01-032-468-0	RESISTOR CHIP	2012 680K J	주원 전자	PCS	1	R62	
23	01-032-447-0	RESISTOR CHIP	2012 470K J	주원 전자	PCS	2	R12,51	
24	01-032-251-0	RESISTOR CHIP	2012 330K J	주원 전자	PCS	2	R5,40	
25	01-032-250-1	RESISTOR CHIP	2012 220K J	주원 전자	PCS	2	R [illegible],8	
26	01-032-250-0	RESISTOR CHIP	2012 200K J	주원 전자	PCS	1	R [illegible]	

NOTE	REV : R59,63 삭제

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MODEL	FINE 503 RMS	DATE	1998 년 12 월 15 일	작성		검토		승인	
CODE	ASS'Y MAIN PCB	CUSTOMER	FINE						

NO	CODE NO	DESCRIPTION	SPECIFICATION	VENDER	UNIT	Q'TY	REF.NO	REMARK
1	01-032-249-0	RESISTOR CHIP	2012 100K J	주원 전자	PCS	7		NOTE 1
2	01-032-249-2	RESISTOR CHIP	2012 51K J	주원 전자	PCS	1	R20	
3	01-032-248-4	RESISTOR CHIP	2012 47K J	주원 전자	PCS	1	R60	
4	01-032-248-5	RESISTOR CHIP	2012 22K J	주원 전자	PCS	1	R57	
5	01-032-248-6	RESISTOR CHIP	2012 20K J	주원 전자	PCS	1	R37	
6	01-032-248-0	RESISTOR CHIP	2012 10K J	주원 전자	PCS	4	R18,34,36,54	REV
7	01-032-247-3	RESISTOR CHIP	2012 5.1K J	주원 전자	PCS	2	R33,42	
8	01-032-246-2	RESISTOR CHIP	2012 3K J	주원 전자	PCS	1	R56	
9	01-032-245-0	RESISTOR CHIP	2012 470Ω J	주원 전자	PCS	2	R19,50	
10	01-032-244-2	RESISTOR CHIP	2012 47Ω J	주원 전자	PCS	1	R21	
11	01-032-195-1	RESISTOR	1 W 470Ω J	심원 전자	PCS	1	R10	
12	02-004-012-0	SEMI V/R	200K	레피드전자	PCS	3	VR1,3,8	
13	02-004-008-0	SEMI V/R	10K	레피드전자	PCS	1	VR5	
14	02-004-004-0	SEMI V/R	1K	레피드전자	PCS	1	VR6	
15	02-004-003-0	SEMI V/R	500	레피드전자	PCS	1	VR4	
16	03-010-003-0	MULTITURN V/R	2K	동원 전기	PCS	1	VR2	
17	01-027-013-1	CAP-ELECT	100uf/50v (6x5)	우경 전자	PCS	1	C7	
18	01-027-013-0	CAP ELECT	47uf/50v (5x7)	우경 전자	PCS	1	C11	
19	01-026-610-0	CHIP TANTAL	2012 10uF	주원 전자	PCS	2	C19,20	
20	01-026-522-0	CHIP TANTAL	2012 2.2uF	주원 전자	PCS	1	C8	
21	01-026-510-0	CHIP TANTAL	2012 1uF	주원 전자	PCS	1	C28	
22	01-029-003-0	CHIP CERAMIC	2012 104p Z	주원 전자	PCS	3	C6,9,10	
23	01-029-002-0	CHIP CERAMIC	2012 103p Z	주원 전자	PCS	1	C27	
24	01-029-002-4	CHIP CERAMIC	2012 472p	주원 전자	PCS	1	C14	
25	01-029-001-5	CHIP CERAMIC	2012 30pF/10v	주원 전자	PCS	1	C15	
26	02-003-035-0	CAPACITOR CERAMIC	200pF / 1KV	동은 전자	PCS	1	C1	

NOTE	NOTE 1 : R13,17,39,47,49,52,53 REV : R32 식제

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MODEL	FINE 503 RMS	DATE	1998 년 9 월 01 일	작성		검토		승인	
CODE	ASS'Y MAIN PCB	CUSTOMER	FINE						

NO	CODE NO	DESCRIPTION	SPECIFICATION	VENDER	UNIT	Q'TY	REF.NO	REMARK
1	03-003-006-0	CAPACITOR	224K / 63V	대흥콘덴서	PCS	1	C22	
2	03-003-002-0	CAPACITOR	104K / 63V	대흥콘덴서	PCS	1	C2	
3	01-028-006-6	CAP-MYLAR	331k/100v	대흥콘덴서	PCS	1	C25	
4	03-003-009-0	CAPACITOR	473K / 63V	대흥콘덴서	PCS	1	C5	
5	03-003-008-0	CAPACITOR	472K / 63V	대흥콘덴서	PCS	1	C16	
6	02-007-004-0	TRANSISTOR(T.R)	KST 42TF (SMD)	한국반도체	PCS	3	Q1,2,3	
7	02-007-003-1	TRANSISTOR(T.R)	KST 3906 MTF	한국반도체	PCS	1	Q4	
8	01-031-004-0	TRIMER	5¢ 5p	우경 전자	PCS	1	C23	
9	01-031-005-0	TRIMER	5¢ 50p	우경 전자	PCS	1	C4	
10	01-019-002-0	SHUNT	1.6¢	대성 산업	PCS	1	SHUNT	
11	01-025-006-0	WIRE SHUNT	Y/L DMM ALL	코리아전자	PCS	1		
12	01-033-008-0	PTC(THERMISTOR)	1K	지화 전자	PCS	1	R6	
13	01-030-004-1	DIODE	IN4148 (SMD)	주원 전자	PCS	2	D4,5	
14	03-009-002-0	DIODE	DF06M	LITE ON	PCS	1	D1	
15	03-004-001-0	X-TAL(CRYSTAL)	32.768KHZ	제일 상사	PCS	1	X1	
16	03-008-001-0	FUSE	BBS 1A	동익 산업	PCS	1	F1	
17	03-008-003-0	FUSE	KTK 15A	동익 산업	PCS	1	F2	
18	01-017-011-0	FUSE HOLDER	200용	동아 정밀	PCS	4		
19	03-002-014-0	CONNECTOR FEMALE	2x8PIN (P:2.54, H:5.5)	성진 산업	PCS	1	CON1	
20	03-002-010-0	CONNECTOR FEMALE	2x5PIN (P:2.54, H:5.5)	성진 산업	PCS	1	CON2	
21	01-018-016-0	INPUT SOCKET	200 8¢	고성 산업	PCS	4		
22	01-020-007-0	SCREW	M/S 3x5 (동근)	대성볼트센타	PCS	4		
23	01-018-009-0	SPACER HEX	200	고성 산업	PCS	4		
24	01-028-005-1	CAP-MYLAR	472k/50v	대흥콘덴서	PCS	1	C24	
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MODEL	FINE 503 RMS	DATE	1998 년 12 월 16 일	작성		검토		승인	
CODE	ASS'Y SUB PCB	CUSTOMER	FINE						

NO	CODE NO	DESCRIPTION	SPECIFICATION	VENDER	UNIT	Q'TY	REF.NO	REMARK
1	02-001-031-1	P.C.B	503 SUB (SMD)	모던씨키트	PCS	1		
2	03-001-011-0	I.C	75P316GF150. 503/7	한능 전자	PCS	1	U1	
3	03-001-031-0	I.C	NJU 4011 BM	신명 교역	PCS	1	U2	
4	01-032-249-0	RESISTOR CHIP	2012 100K J	주원 전자	PCS	3	R4,11,12	
5	01-032-248-5	RESISTOR CHIP	2012 22K J	주원 전자	PCS	3	R2,9,10	
6	01-032-247-2	RESISTOR CHIP	2012 4.7K J	주원 전자	PCS	2	R1,3	
7	01-027-013-0	CAPACITOR ELECT	47uF/50V (5x7)	우경 전자	PCS	1	C6	
8	01-026-610-0	CHIP TANTAL	2012 10uF	주원 전자	PCS	1	C4	
9	01-026-547-0	CHIP TANTAL	2012 4.7uF	주원 전자	PCS	1	C1	
10	01-029-002-4	CHIP CERAMIC	2012 472p	주원 전자	PCS	1	C5	
11	01-029-002-0	CHIP CERAMIC	2012 103p Z	주원 전자	PCS	1	C7	
12	01-029-001-8	CHIP CERAMIC	2012 56p/10v	주원 전자	PCS	2	C2,3	
13	02-011-001-0	X-TAL(CRYSTAL)	4.194304MHZ	제일 상사	PCS	1	X1	
14	02-007-003-1	TRANSISTOR(T.R)	KST 3906 MTF	한국반도체	PCS	1	Q1	
15	02-007-001-1	TRANSISTOR(T.R)	KST 2222A MTF	한국반도체	PCS	1	Q2	
16	03-002-013-0	CONNECTOR	16PIN MALE (2x8)	성진 산업	PCS	1	CON1'	
17	03-002-009-0	CONNECTOR	10PIN MALE (2x5)	성진 산업	PCS	1	CON2'	
18	01-117-002-0	BATTERY SNAP	50mm RED , BLACK	우경 전자	PCS	1		
19	01-030-004-1	DIODE	IN4148 (SMD)	주원 전자	PCS	1	D1	
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NOTE	REV : R4 (24K) => R4(100K)