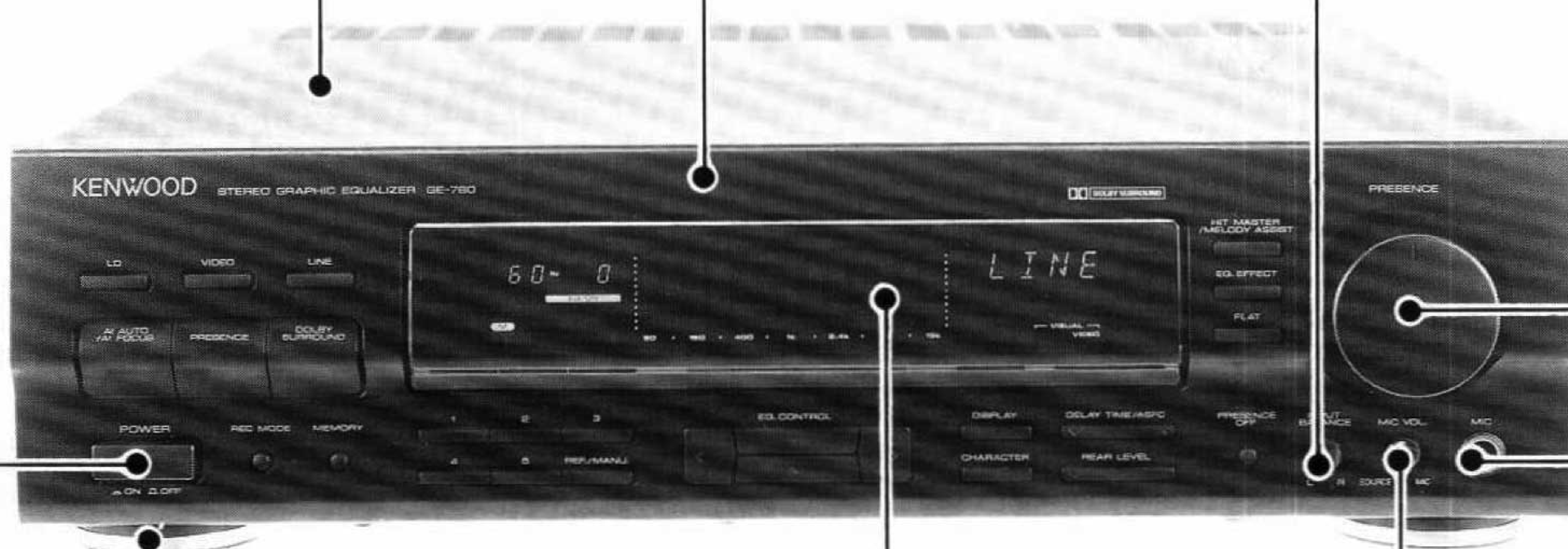
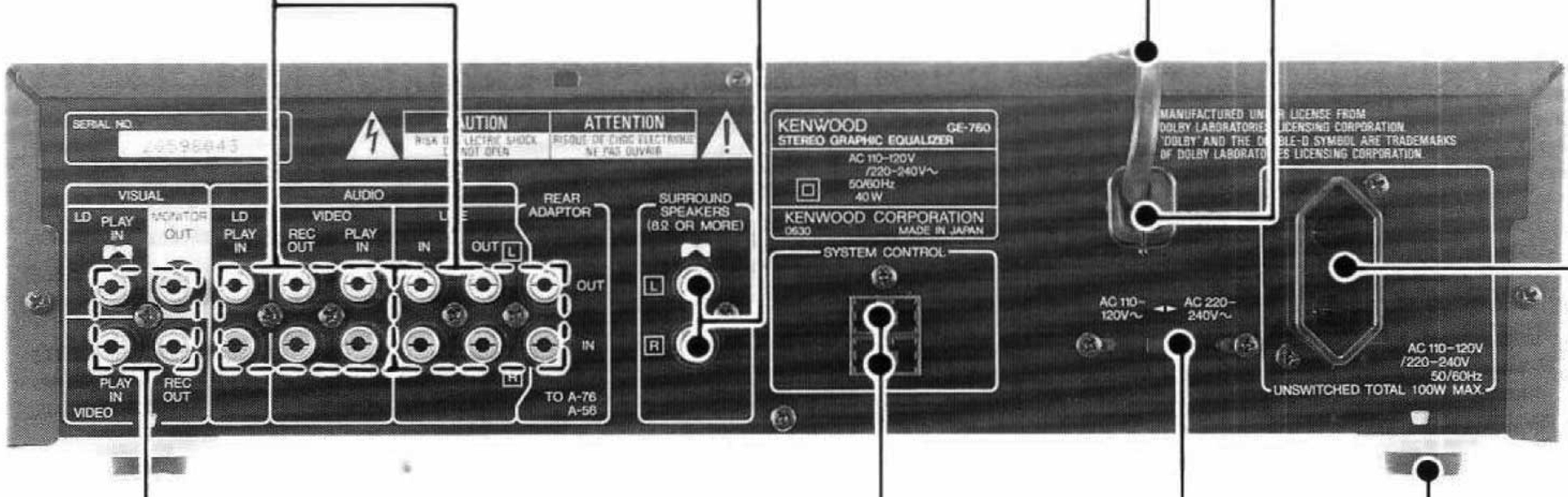
STEREO GRAPHIC EQUALIZER

GE-760

SERVICE MANUAL

KENWOOD





***Refer to parts list on page 22.**

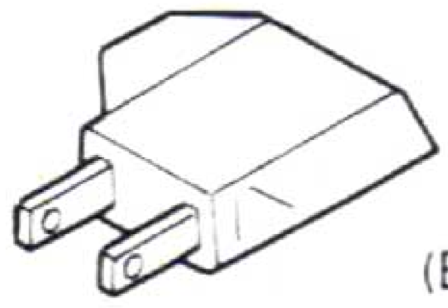
CONTENTS/ACCESSORIES

CONTENTS

ACCESSORIES

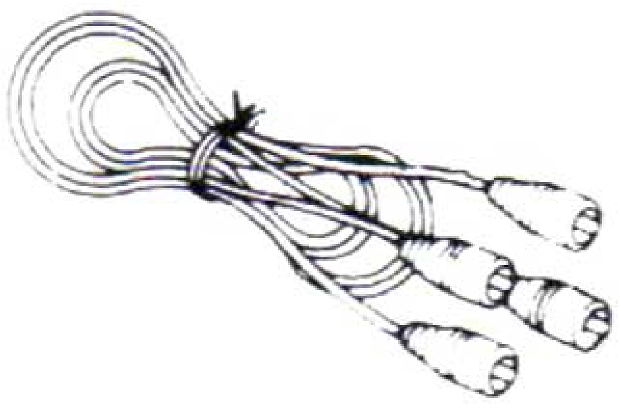
AC plug adaptor 1

Except for some areas : M type only
For the unit with a European AC plug in areas other than Europe.



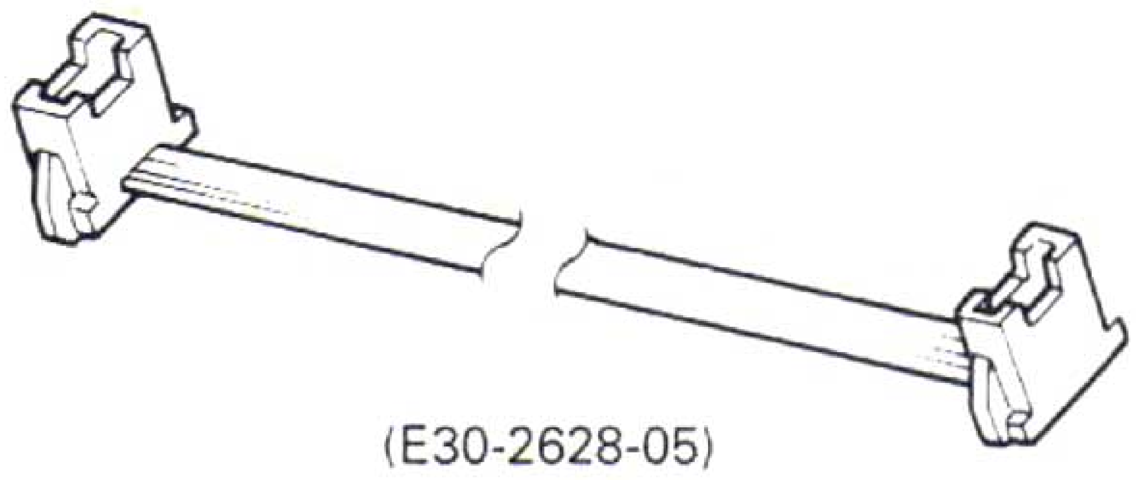
(E03-0115-05)

Audio cord 3



(E30-0505-05)

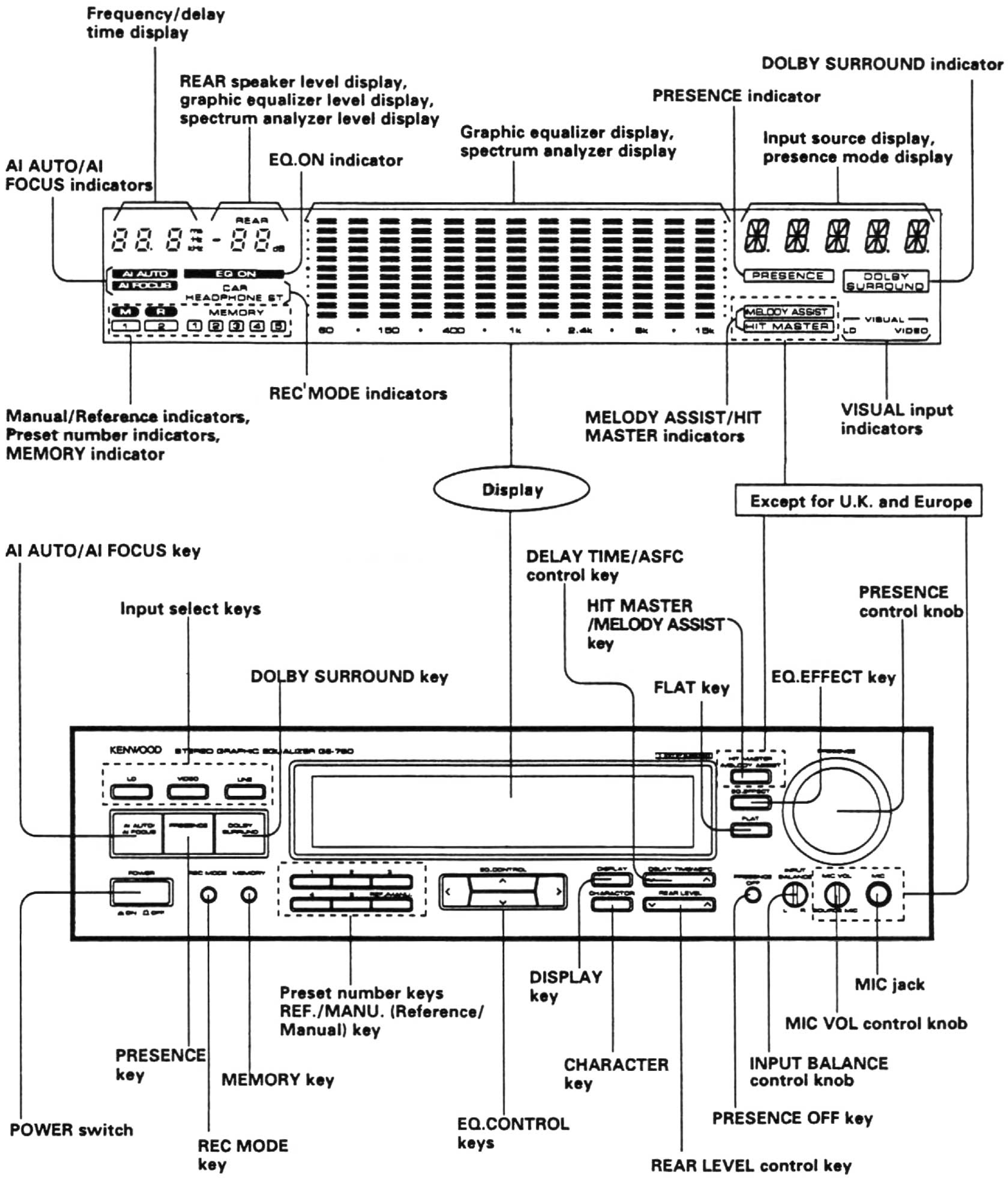
System control cord 1



(E30-2628-05)

Instruction manual		Warranty card
B60-0978-00	: ENGLISH	B46-0096-33 (X)
B60-0979-00 (E)	: FRENCH, GERMAN DUTCH, ITALIAN	B46-0122-23 (E)
B60-0980-00 (M, E)	: SPANISH	B46-0143-13 (T)
B60-0981-00 (M)	: CHINESE	–

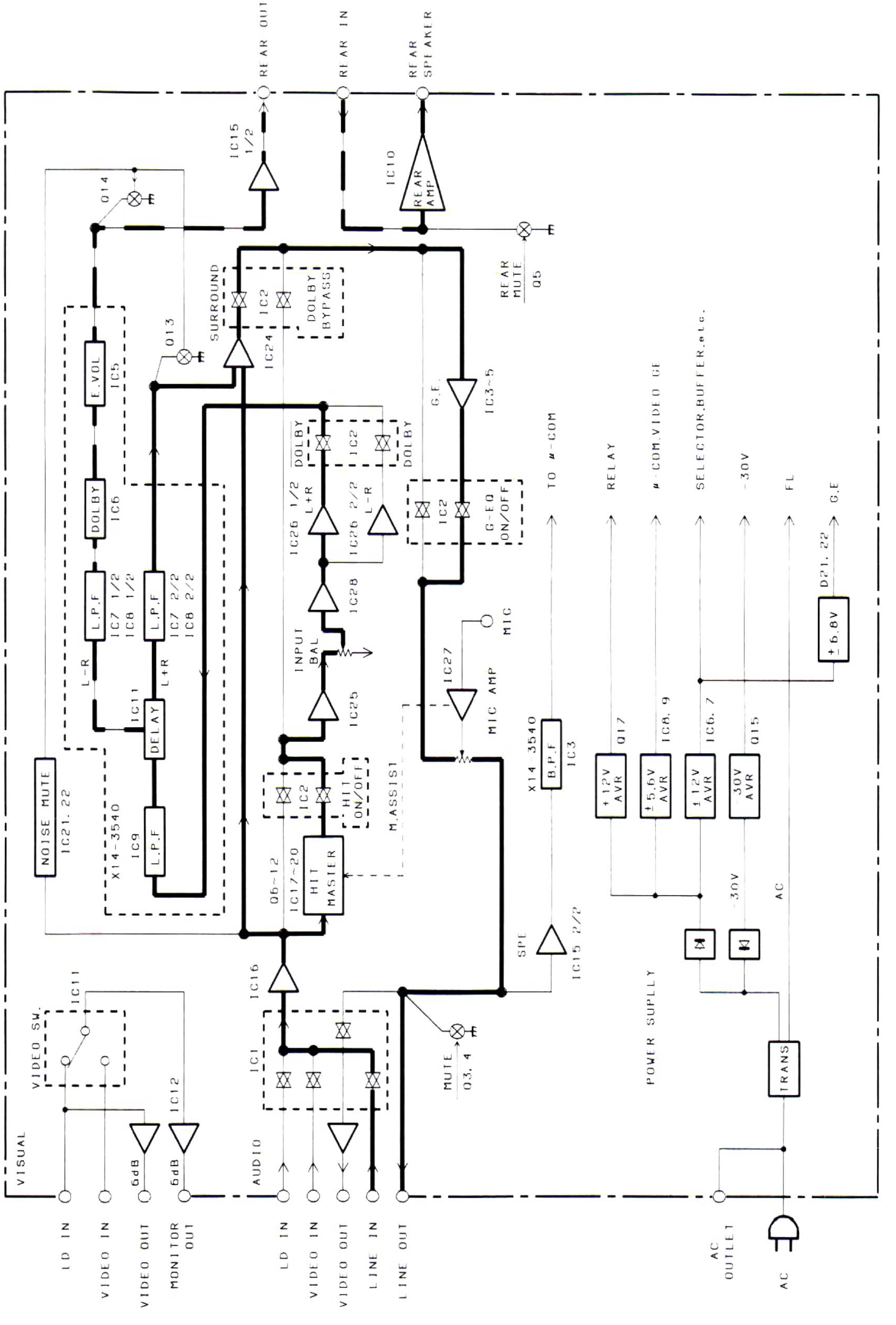
CONTROL / CONDITIONS BY DESTINATION



CONDITIONS BY DESTINATION

Destination	Unit		Hitmaster function
	Control unit	Display unit	Mic
M	X11-3290-21	X14-3540-00	O
X	X11-3290-71		
T	X11-3290-51	X14-3542-71	X
E	X11-3292-71		

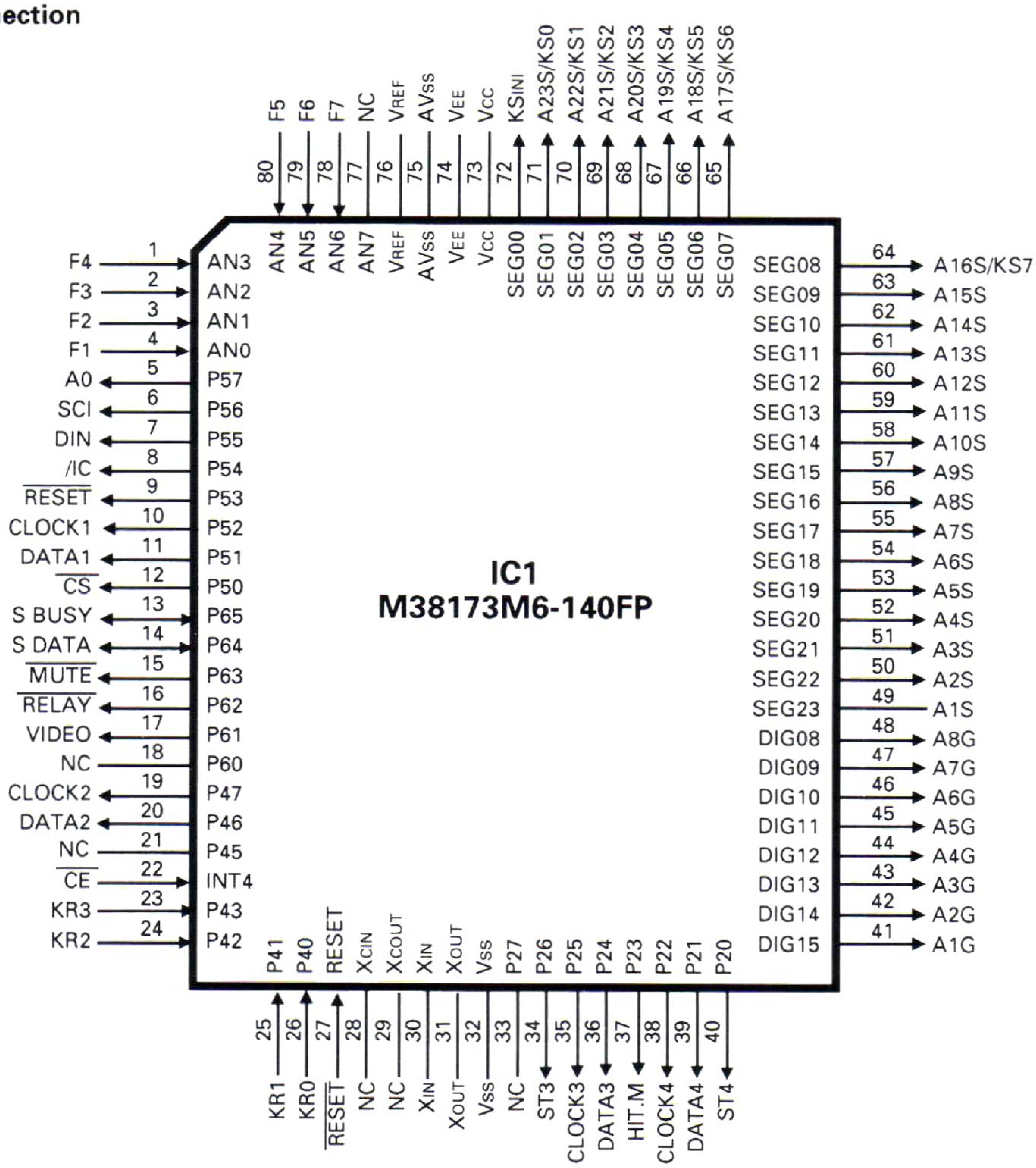
BLOCK DIAGRAM



CIRCUIT DESCRIPTION

1. Main microprocessor : M38173M6-140FP (X14- : IC1)

1-1. Pin connection



1–2. Pin function

Pin No.	Pin Name	I/O	Name	Description
1	AN3	I	F4	1kHz analog signal input
2	AN2	I	F3	400Hz analog signal input
3	AN1	I	F2	150Hz analog signal input
4	AN0	I	F1	60Hz analog signal input
5	P57	O	A0	Surround processor ADDRESS/DATA discrimination signal output
6	P56	O	SCI	Surround processor CLOCK signal output
7	P55	O	DIN	Surround processor DATA signal output
8	P54	O	/IC	Surround processor RESET signal output
9	P53	O	RESET	CXP2201 RESET signal output
10	P52	O	CLOCK1	CXP2201 CLOCK signal output
11	P51	O	DATA1	CXP2201 DATA signal output
12	P50	O	CS	CXP2201 CHIP SELECT signal output
13	P65	I/O	S BUSY	System serial BUSY signal
14	P64	I/O	S DATA	System serial DATA signal
15	P63	O	MUTE	Signal mute
16	P62	O	RELAY	Rear relay control
17	P61	O	VIDEO	Visual signal select

Pin No.	Pin Name	I/O	Name	Description
18	P60	–	NC	No used
19	P47	O	CLOCK2	EQ volume CLOCK signal output
20	P46	O	DATA2	EQ volume DATA signal output
21	P45	–	NC	No used
22	INT4	I	$\overline{\text{CE}}$	Back up detection (chip enable)
23~26	P43~40	I	KR3~KR0	Key return signal input
27	RESET	I	$\overline{\text{RESET}}$	Reset signal detection
28, 29	XCIN, XCOUT	–	NC	No used
30	XIN	–	XIN	Oscillator (6MHz) System clock input
31	XOUT	–	XOUT	Oscillator (6MHz) System clock output
32	Vss	–	Vss	GND
33	P27	–	NC	No used
34	P26	O	ST3	Selector IC ST signal output
35	P25	O	CLOCK3	Selector IC CLOCK signal output
36	P24	O	DATA3	Selector IC DATA signal output
37	P23	O	HIT. M	HIT MASTER / MELODY ASSIST
38	P22	O	CLOCK 4	Rear speaker electric volume CLOCK signal output
39	P21	O	DATA4	Rear speaker electric volume DATA signal output
40	P20	O	ST4	Rear speaker electric volume ST signal output
41~48	DIG15~08	O	A1G~A8G	Fluorescent digit driving signal output
49~63	SEG23~09	O	A1S~A15S	Fluorescent segment driving signal output
64~71	SEG08~01	O	A16S/KS7~ A23S/KS0	Fluorescent segment driving signal output and key scan signal output
72	SEG00	O	KSINI	$\overline{\text{With HIT-MASTER}}$ / Without HIT-MASTER
73	Vcc	–	Vcc	Power supply (+5V)
74	VEE	–	VEE	GND
75	AVss	–	AVss	GND
76	VREF	–	VREF	Analog to digital converter reference voltage (+5V)
77	AN7	–	NC	No used
78	AN6	I	F7	15kHz analog signal input
79	AN5	I	F6	6kHz analog signal input
80	AN4	I	F5	2.4kHz analog signal input

1-3. Key matrix

	KR0 (26)	KR1(25)	KR2 (24)	KR3 (23)
KSINI (72)	$\overline{\text{With HIT-MASTER}}$ / Without HIT-MASTER	–	GE-560 / $\overline{\text{GE-760}}$	–
KS0 (71)	MR2	MR3	▽ f–	MR1
KS1 (70)	DISPLAY	△ f+	△ L+	DELAY TIME –
KS2 (69)	HIT-MASTER / MELODY ASSIST	EQ EFFECT	FLAT	DELAY TIME +
KS3 (68)	REAR LEVEL +	▽ L–	CHARACTER	REAR LEVEL –
KS4 (67)	PRESENCE MODE UP	PRESENCE MODE DOWN	PRESENCE MODE OFF	M/R
KS5 (66)	MR5	MR4	REC MODE	MEMORY
KS6 (65)	–	AI AUTO / AI FOCUS	PRESENCE MODE ON	DOLBY SURROUND
KS7 (64)	–	LD	VIDEO	LINE

CIRCUIT DESCRIPTION

2. Initialize and Test mode

2-1. Setting of initial conditions

While pressing the MEMORY key, turn the AC ON.

2-2. Test mode

Setting : While pressing the FLAT key, turn the AC ON.

Contents : If the system is set to the test mode, all the indicator elements lights up. If any key is pressed, the system returns to normal indicating condition.

a) Set the contents of MANUAL PRESET MEMORY key as follows.
M1 key → FLAT curve
M2 key → MAX curve
M3 key → MIN curve

b) Each time the DISPLAY key is pressed, the display is changed.

EQ display → Spectrum analyzer display
↑ Segment check display ←

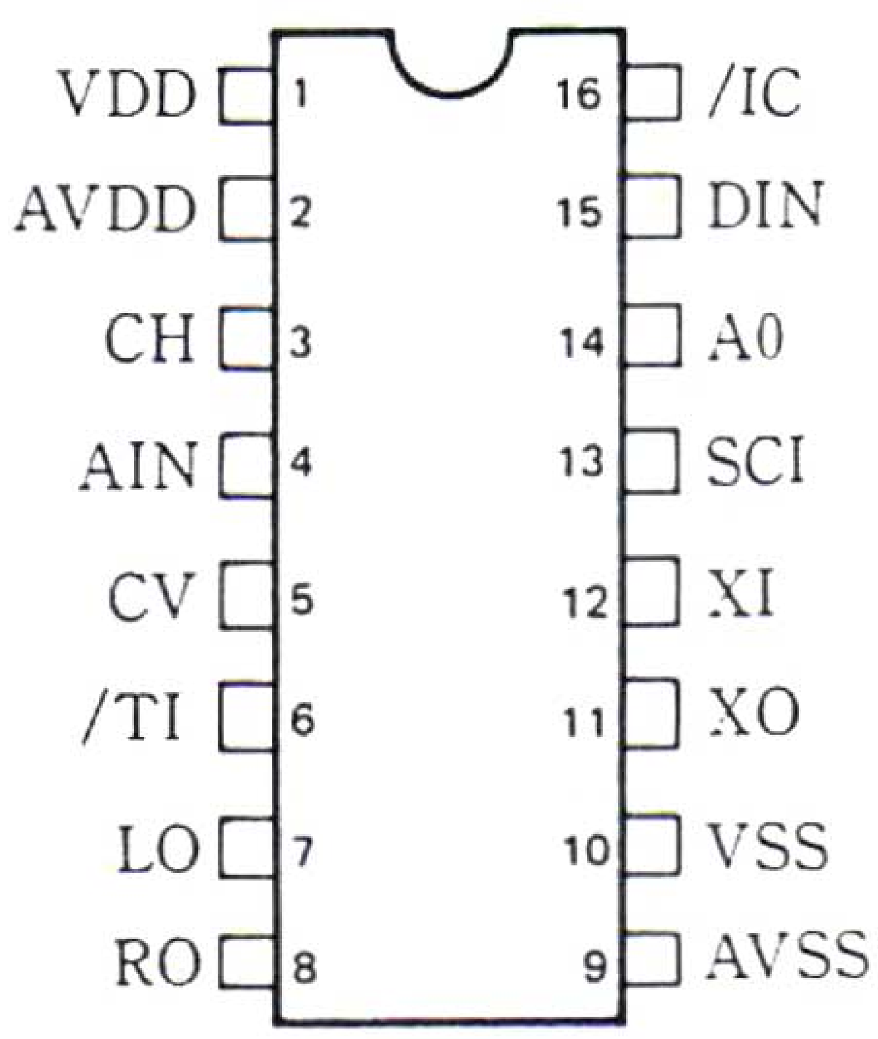
In the normal mode of the spectrum analyzer display, the indicator elements are turned on and off inversely (They all light up when no signals are input).

c) In the surround made, each time the REAR LEVEL UP/DOWN key is pressed, the rear level is changed as follows.
0dB ↔ –10dB ↔ –40dB

d) In the Dolby surround made, each time the DELAY TIME UP/DOWN key is pressed, the delay time is changed as follows
16ms ↔ 23ms ↔ 30ms

3. Surround Processor : YM7128 (X14- : IC11)

3-1. Pin connection



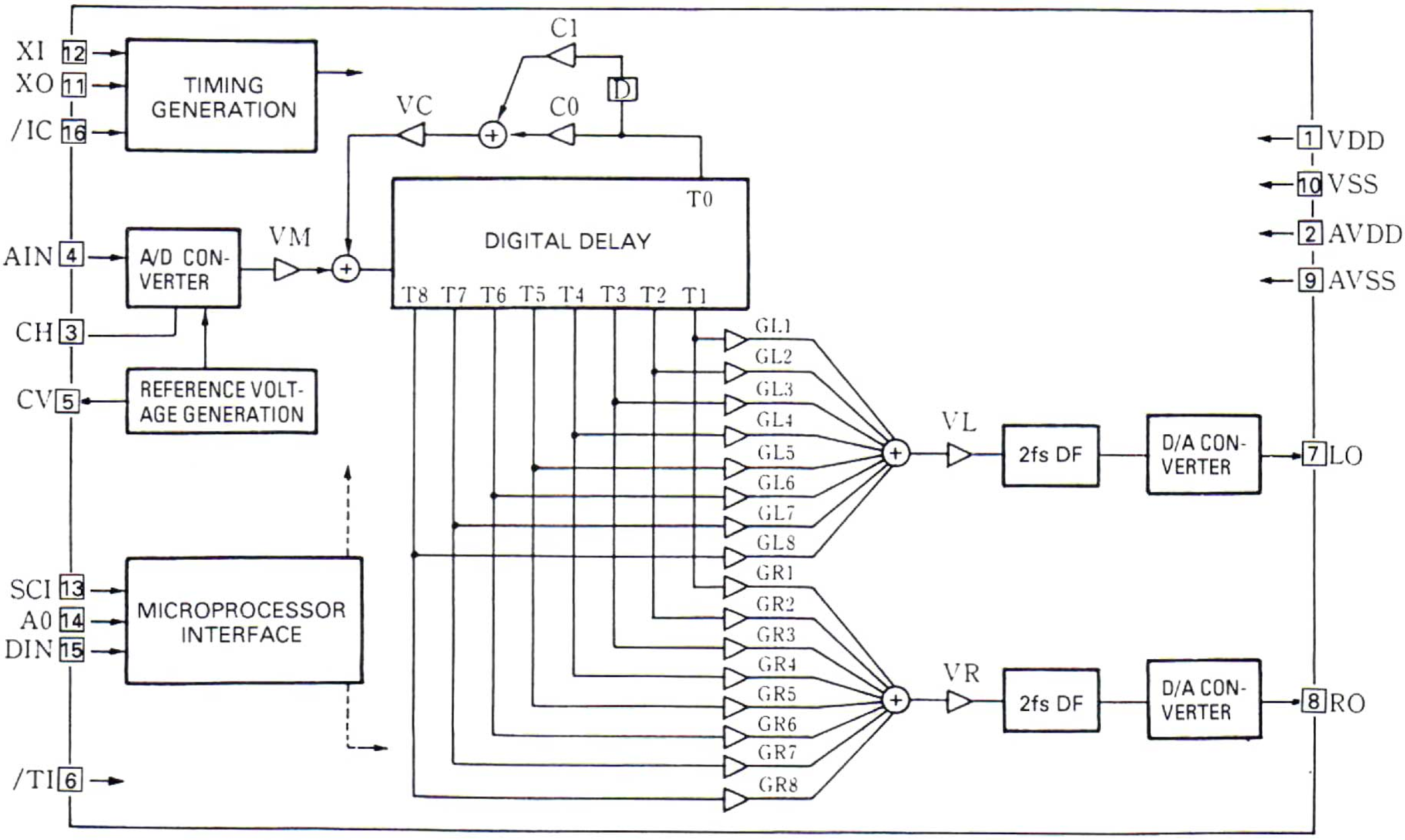
TOP VIEW

3-2. Pin functions

Pin no.	Pin name	I/O	Function
1	VDD	–	+5V power supply (For digital)
2	AVDD	–	+5V power supply (For analog)
3	CH	O	External capacitor connected pin for sample hold
4	AIN	I	Analog signal input pin
5	CV	O	Reference voltage for A/D converter
6	/TI	I	Test input pin (No connected)
7	LO	O	L channel signal output (Analog signal output)
8	RO	O	R channel signal output (Analog signal output)
9	AVss	–	GND (For analog)
10	Vss	–	GND (For digital)
11	XO	O	Connect the oscillator (7.16MHz)
12	XI	I	Connect the oscillator (7.16MHz)
13	SCI	I	Data shift clock input
14	A0	I	Address/Data discrimination signal input pin
15	DIN	I	Data input pin
16	/IC	I	Initial clear pin

CIRCUIT DESCRIPTION

3-3. Block diagram



3-4. Out line of principle

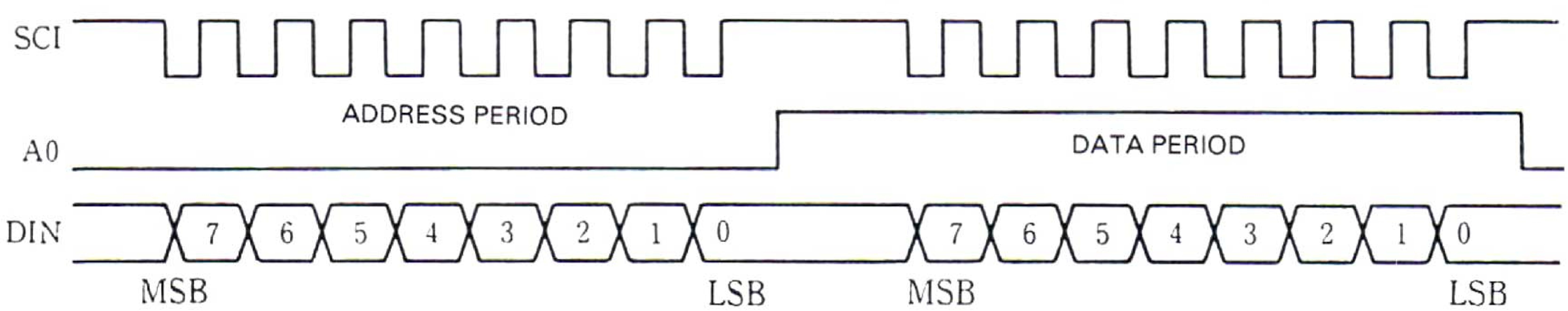
As shown in the block diagram, the input analog signal at the AIN terminal is converted into a 14-bit digital signal at the sampling frequency of 23.6kHz by the A/D converter of 14-bit floating type, then attenuated by the digital attenuator VM. The tap T0 output of the digital delay is sent through the low-pass filter of primary FIR type, then attenuated by the VC. These signals are added, then input to the digital delay.

The digital delay has 9 output taps, which can be selected with the register T0 ~ T8. The 8 tap outputs of T1 ~ T8 are attenuated by the respective digital attenuator GL1 ~ GL8 and GR1 ~ GR8 for each channel, then they are added and attenuated by the digital attenuator VL or VR, and input to the double oversampling digital filter. Since this filter attenuates the returning noise which appears in the D/A conversion output, the load on the external analog pass filter is lowered. The sampling rate of the digital input to the D/A converter is double, or 47.1kHz.

3-5. Microprocessor interface

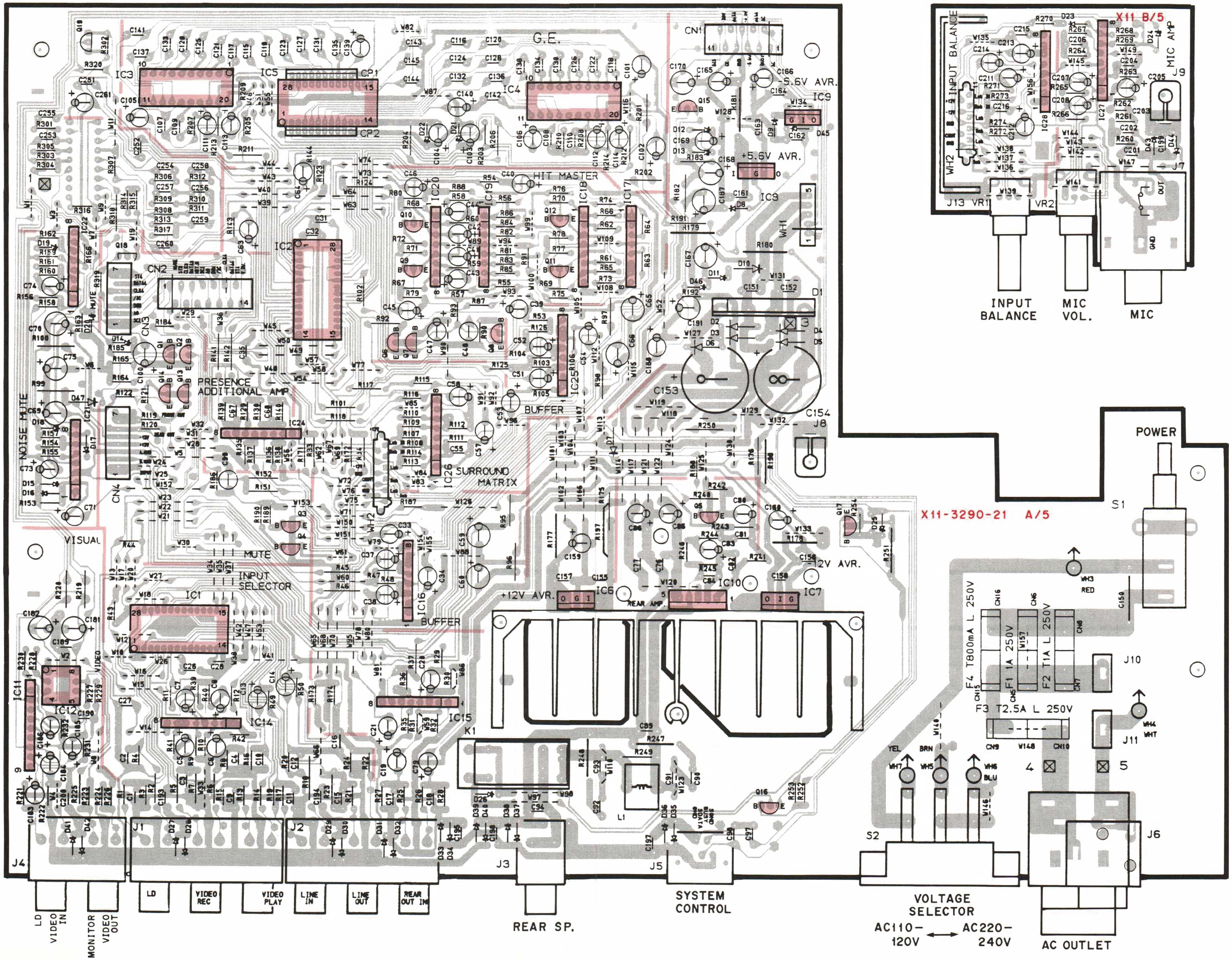
All of the digital attenuation value, delay time, coefficient of FIR low-pass filter, etc. are set by entering their data in the registers.

8-bit address data are sent synchronized with SCI with A0="L". The register address is taken in at the rise of A0. Then, 8-bit address data are sent synchronized with SCI with A0="H". The register data is rewritten at the fall edge of A0.



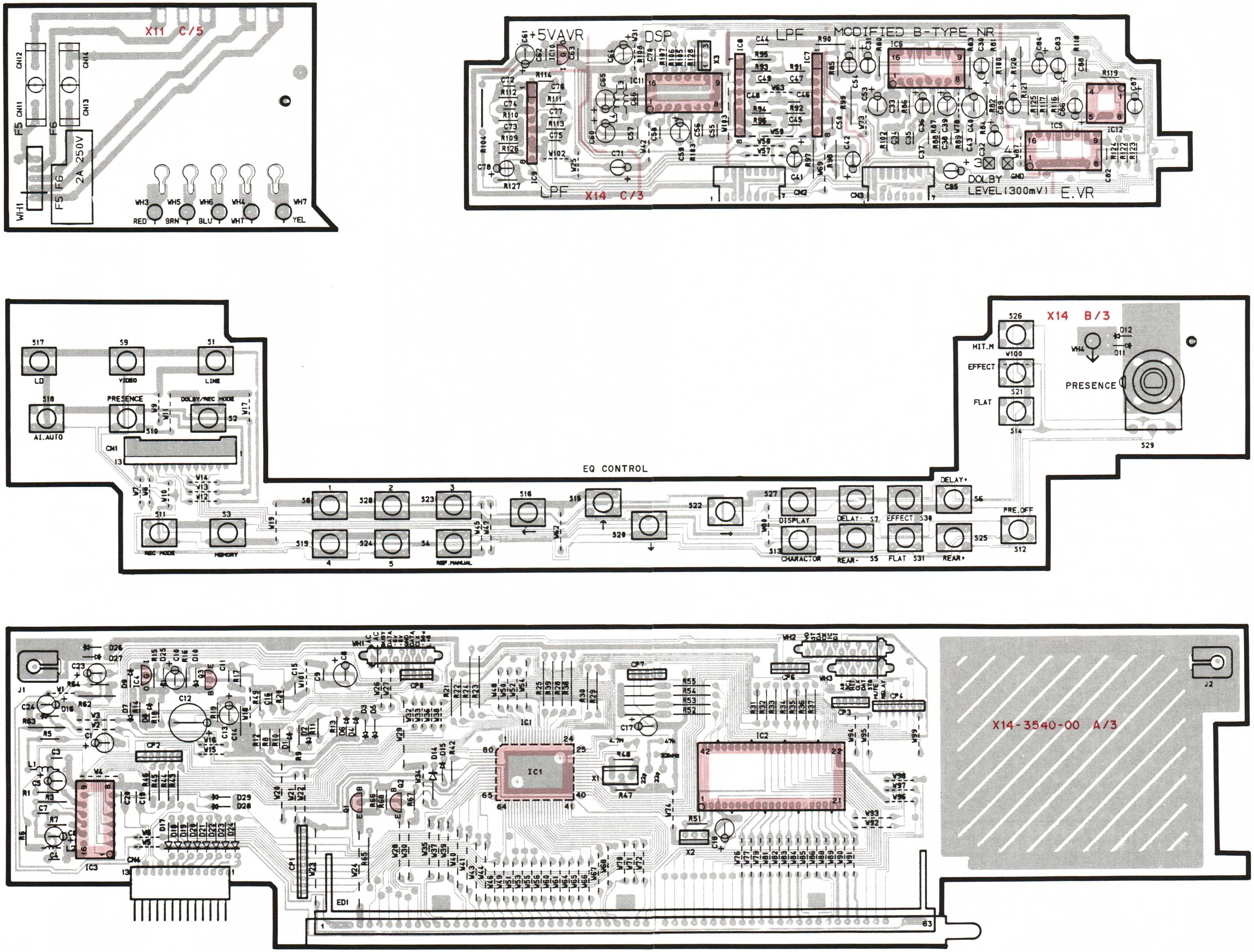
• When initialized and cleared, the VM, VC, VL, and VR registers are reset to 0. The values of the other registers are not set specially.

PC BOARD (COMPONENT SIDE VIEW)



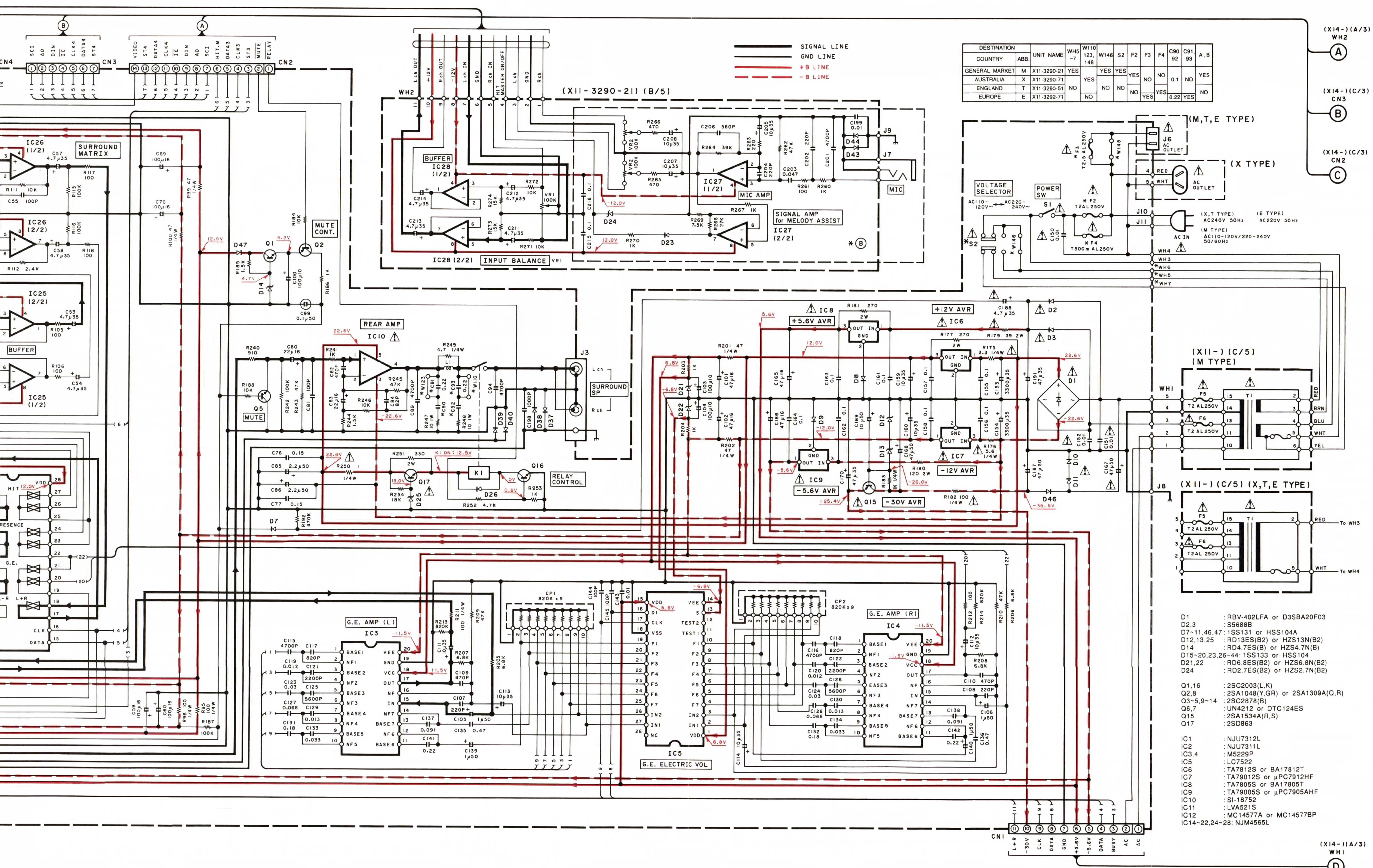
Refer to the schematic diagram for the values of resistors and capacitors.

PC BOARD (COMPONENT SIDE VIEW)



Refer to the schematic diagram for the values of resistors and capacitors.

• DC voltages are as measured with a high
units.



<table>
<tr><th colspan="2">DESTINATION</th><th rowspan="2">UNIT NAME</th><th rowspan="2">WH5 ~7</th><th rowspan="2">W110 123, 148</th><th rowspan="2">W146</th><th rowspan="2">S2</th><th rowspan="2">F2</th><th rowspan="2">F3</th><th rowspan="2">F4</th><th rowspan="2">C90, 92</th><th rowspan="2">C91, 93</th><th rowspan="2">A, B</th></tr>
<tr><th>COUNTRY</th><th>ABB.</th></tr>
<tr><td>GENERAL MARKET</td><td>M</td><td>X11-3290-21</td><td>YES</td><td rowspan="3">YES</td><td>YES</td><td>YES</td><td rowspan="2">YES</td><td rowspan="3">NO</td><td rowspan="2">NO</td><td rowspan="3">0.1</td><td rowspan="3">NO</td><td rowspan="2">YES</td></tr>
<tr><td>AUSTRALIA</td><td>X</td><td>X11-3290-71</td><td rowspan="3">NO</td><td rowspan="3">NO</td><td rowspan="3">NO</td></tr>
<tr><td>ENGLAND</td><td>T</td><td>X11-3290-51</td><td rowspan="2">NO</td><td rowspan="2">YES</td><td rowspan="2">NO</td></tr>
<tr><td>EUROPE</td><td>E</td><td>X11-3292-71</td><td>NO</td><td>YES</td><td>0.22</td><td>YES</td></tr>
</table>

D1 : RBV-402LFA or D3SBA20F03
D2,3 : S5688B
D7~11,46,47 : 1SS131 or HSS104A
D12,13,25 : RD13ES(B2) or HZS13N(B2)
D14 : RD4.7ES(B) or HZS4.7N(B)
D15~20,23,26~44: 1SS133 or HSS104
D21,22 : RD6.8ES(B2) or HZS6.8N(B2)
D24 : RD2.7ES(B2) or HZS2.7N(B2)

Q1,16 : 2SC2003(L,K)
Q2,8 : 2SA1048(Y,GR) or 2SA1309A(Q,R)
Q3~5,9~14 : 2SC2878(B)
Q6,7 : UN4212 or DTC124ES
Q15 : 2SA1534A(R,S)
Q17 : 2SD863

IC1 : NJU7312L
IC2 : NJU7311L
IC3,4 : M5229P
IC5 : LC7522
IC6 : TA7812S or BA17812T
IC7 : TA79012S or µPC7912HF
IC8 : TA7805S or BA17805T
IC9 : TA79005S or µPC7905AHF
IC10 : SI-18752
IC11 : LVA521S
IC12 : MC14577A or MC14577BP
IC14~22,24~28: NJM4565L

GE-760 (M) (1/2)

e as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and

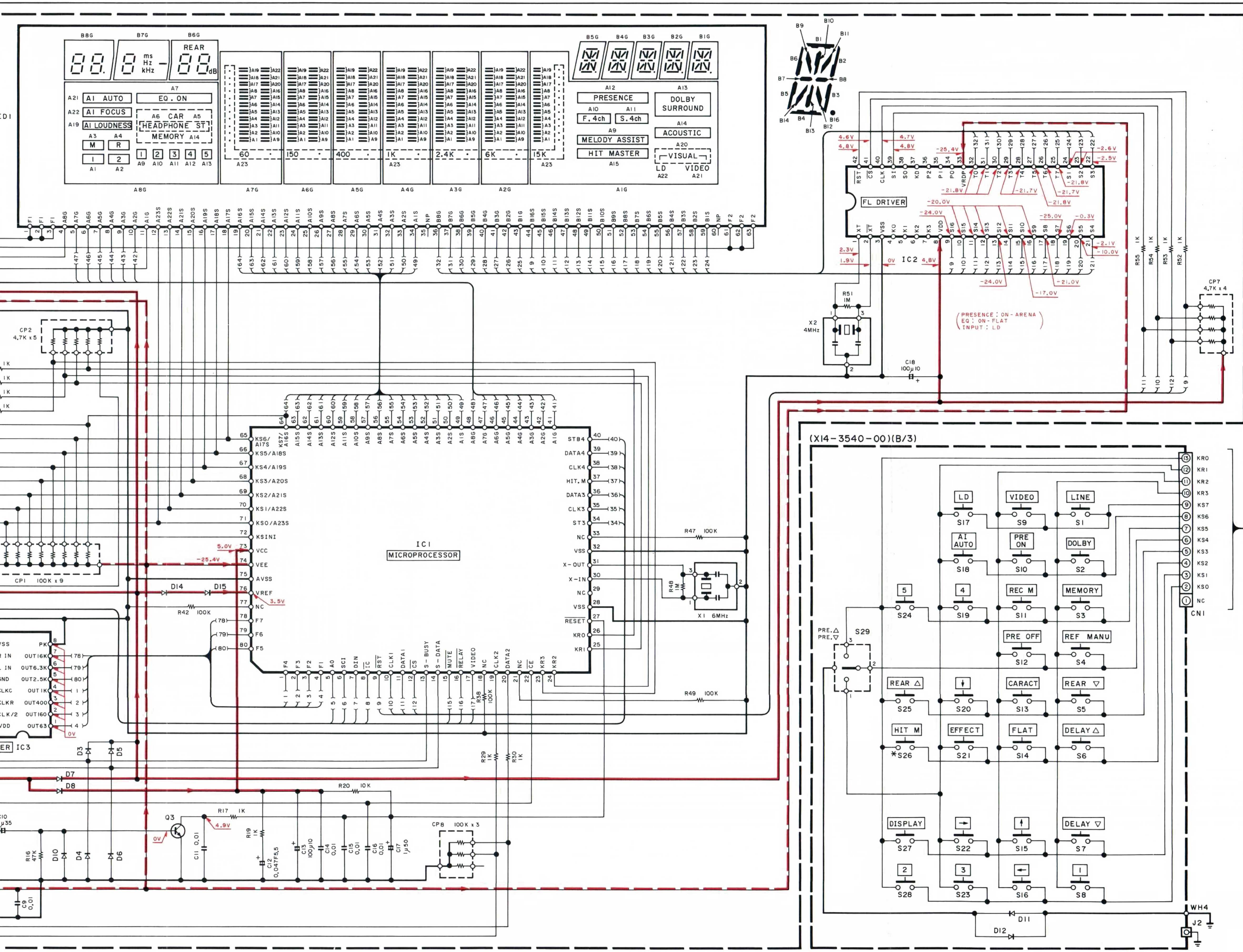
CAUTION : For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer. DOLBY and the double-D symbol are tradmarks of Dolby Laboratories Licensing Corporation. Noise reduction circuit made under license from Dolby Laboratories Licensing Corporation.

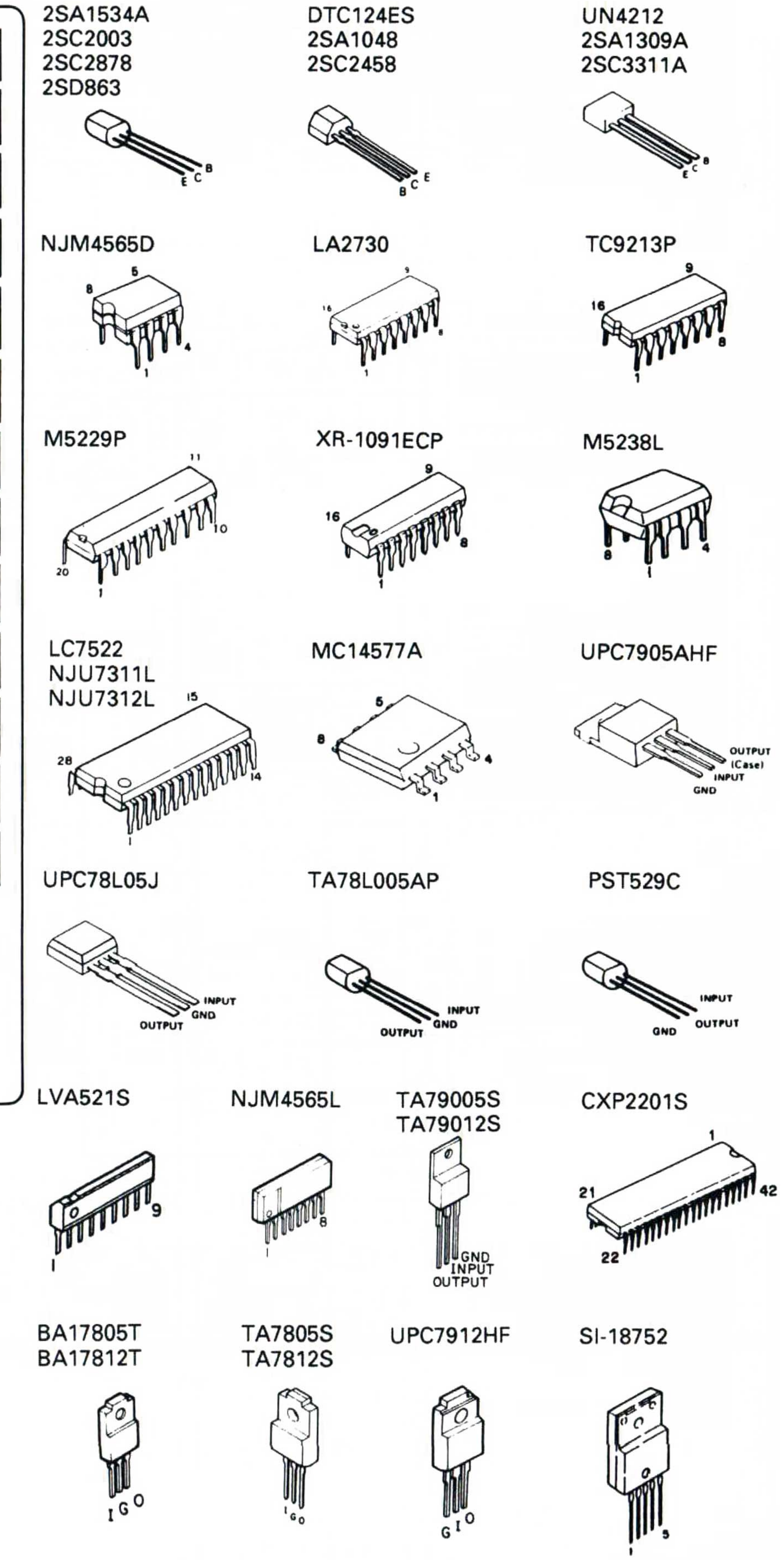
D1~12,14,15,17~24,26,27,29
: 1SS133 or HSS104
D16 : RD8.2ES(B2) or HZS8.2N(B2)
D25 : RD2.7ES(B2) or HZS2.7N(B2)

Q1~3 : 2SC2458(Y,GR) or 2SC3311A(Q,R

IC1 : M38173M6-140FP
IC2 : CXP2201S
IC3 : XR-1091ECP
IC4 : PST529C
IC5 : TC9213P
IC6 : LA2730
IC7,9 : NJM4565L
IC12 : NJM4565D
IC8 : M5238L
IC10 : µPC78L05J or TA78L005AP
IC11 : YM7128B or YM7128
ED1 : FIP13AW20Y

DESTINATION		UNIT NAME	D29	S26
COUNTRY	ABB.			
GENERAL MARKET AUSTRALIA	M X	X14-3540-00	NO	YES
ENGLAND EUROPE	T E	X14-3542-71	YES	NO





- DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

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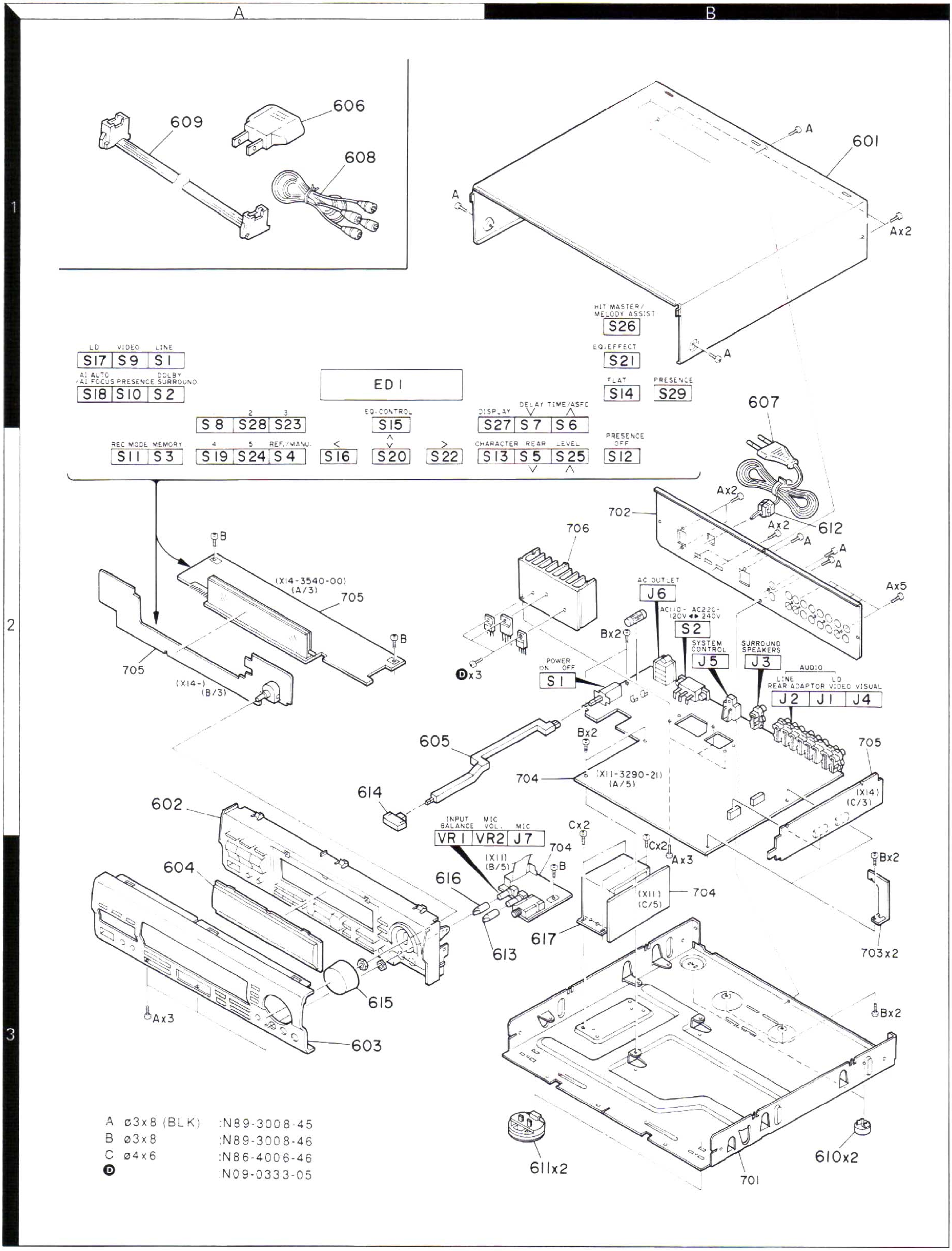
EXPLODED VIEW (UNIT)



Parts with the exploded numbers larger than 700 are not supplied.

PARTS LIST

⁎ New Parts

Parts without **Parts No.** are not supplied.

Les articles non mentionnes dans le **Parts No.** ne sont pas fournis.

Teile ohne **Parts No.** werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Desti-nation 仕向	Re-marks 備考
			GE-760			
601	1B	⁎	A01-2968-01	METALLIC CABINET		
602	2A	⁎	A22-1567-11	SUB PANEL	MX	
602	2A	⁎	A22-1593-11	SUB PANEL	TE	
603	3A	⁎	A60-0243-02	PANEL	MX	
603	3A	⁎	A60-0244-02	PANEL	TE	
604	3A	⁎	B10-1926-03	FRONT GLASS		
-			B46-0096-33	WARRANTY CARD	X	
-			B46-0122-23	WARRANTY CARD	E	
-			B46-0143-13	WARRANTY CARD	T	
-		⁎	B60-0978-00	INSTRUCTION MANUAL(ENGLISH)		
-		⁎	B60-0979-00	INSTRUCTION MANUAL(F,G,D,I)	E	
-		⁎	B60-0980-00	INSTRUCTION MANUAL(SPANISH)	ME	
-		⁎	B60-0981-00	INSTRUCTION MANUAL(CHINESE)	M	
605	2A	⁎	D21-1686-03	EXTENSION SHAFT		
⚠ 606	1A		E03-0115-05	AC PLUG ADAPTOR	M	
⚠ 607	1B		E30-0459-05	AC POWER CORD	ME	
⚠ 607	1B		E30-1341-05	AC POWER CORD	X	
⚠ 607	1B		E30-1416-05	AC POWER CORD	T	
608	1A		E30-0505-05	AUDIO CORD		
609	1A		E30-2628-05	CORD WITH CONNECTOR		
-			G11-0155-14	SOFT TAPE (40X9X2)		
-		⁎	H10-5320-02	POLYSTYRENE FOAMED FIXTURE(L)		
-		⁎	H10-5321-02	POLYSTYRENE FOAMED FIXTURE(R)		
-			H25-0224-04	PROTECTION BAG	MXE	
-			H25-0232-04	PROTECTION BAG (235X350X0.03)	MXE	
-			H25-0651-04	PROTECTION BAG	T	
-			H25-0653-04	PROTECTION BAG	T	
-		⁎	H50-0424-04	ITEM CARTON CASE		
610	3B		J02-0370-05	FOOT(REAR)		
611	3B		J02-1040-05	FOOT(FRONT)		
⚠ 612	2B		J42-0083-05	POWER CORD BUSHING		
-			J61-0307-05	WIRE BAND		
613	3B		K29-3741-04	KNOB(INPUT BALANCE)		
614	2A		K29-4015-04	KNOB(POWER)		
615	3A	⁎	K29-4420-04	KNOB(PRESENCE)		
616	3B		K29-3741-04	KNOB(MIC VOL.)	MX	
⚠ 617	3B	⁎	L07-0537-05	POWER TRANSFORMER	M	
⚠ 617	3B	⁎	L07-0538-05	POWER TRANSFORMER	XT	
⚠ 617	3B	⁎	L07-0539-05	POWER TRANSFORMER	E	
A	1B		N89-3008-45	BINDING HEAD TAPTITE SCREW		
B	2B		N89-3008-46	BINDING HEAD TAPTITE SCREW		
C	3B		N86-4006-46	BINDING HEAD TAPTITE SCREW		
D	2B		N09-0333-05	TAPPING SCREW (3X12)		
			CONTROL UNIT (X11-3290-21)			
C1 -4			CK45FB1H471K	CERAMIC 470PF K		
C5 -8			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C9 -12			CK45FB1H471K	CERAMIC 470PF K		
C13 ,14			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C15 -18			CK45FB1H471K	CERAMIC 470PF K		
C19 -21			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		

L:Scandinavia **K:**USA **P:**Canada

Y:PX(Far East, Hawaii) **T:**England **E:**Europe

Y:AAFES(Europe) **X:**Australia **M:**Other Areas

⚠ indicates safety critical components

PARTS LIST

＊ New Parts
Parts without Parts No. are not supplied.
Les articles non mentionnes dans le Parts No. ne sont pas fournis.
Teile ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格			Desti-nation 仕向	Re-marks 備考
C26 ,27			CK45FF1H103Z	CERAMIC	0.010UF	Z		
C28			CK45FB1H471K	CERAMIC	470PF	K		
C31 ,32			CK45FF1H103Z	CERAMIC	0.010UF	Z		
C33 ,34			CE04KW1V100M	ELECTRO	10UF	35WV		
C35			CK45FB1H471K	CERAMIC	470PF	K		
C37 -40			CE04KW1V4R7M	ELECTRO	4.7UF	35WV		
C41 ,42			CE04KW1H010M	ELECTRO	1.0UF	50WV	MX	
C43 ,44			CE04KW1HR22M	ELECTRO	0.22UF	50WV	MX	
C45 ,46			CE04KW1V100M	ELECTRO	10UF	35WV	MX	
C47			CE04KW1A101M	ELECTRO	100UF	10WV	MX	
C48			CE04HW1H2R2M	NP-ELEC	2.2UF	50WV	MX	
C51 -54			CE04KW1V4R7M	ELECTRO	4.7UF	35WV		
C55			CC45FSL1H101J	CERAMIC	100PF	J		
C57 ,58			CE04KW1V4R7M	ELECTRO	4.7UF	35WV		
C59 ,60			CE04KW1C101M	ELECTRO	100UF	16WV		
C63 ,64			CE04KW1V4R7M	ELECTRO	4.7UF	35WV		
C65 ,66			CE04KW1C101M	ELECTRO	100UF	16WV		
C67 ,68			CC45FSL1H221J	CERAMIC	220PF	J		
C69 ,70			CE04KW1C101M	ELECTRO	100UF	16WV		
C71			CE04KW1V4R7M	ELECTRO	4.7UF	35WV		
C73 ,74			CE04KW1V4R7M	ELECTRO	4.7UF	35WV		
C75			CE04KW1E101M	ELECTRO	100UF	25WV		
C76 ,77			CF92FV1H154J	MF	0.15UF	J		
C79			CE04KW1V4R7M	ELECTRO	4.7UF	35WV		
C80			CE04KW1C220M	ELECTRO	22UF	16WV		
C81			CC45FSL1H101J	CERAMIC	100PF	J		
C82			CK45FB1H471K	CERAMIC	470PF	K		
C83			CE04KW1C220M	ELECTRO	22UF	16WV		
C84			CC45FSL1H820J	CERAMIC	82PF	J		
C85 ,86			CE04KW1H2R2M	ELECTRO	2.2UF	50WV		
C89			CK45FF1H472Z	CERAMIC	4700PF	Z		
C90			CF92FV1H104J	MF	0.10UF	J	MXT	
C90			CF92FV1H224J	MF	0.22UF	J	E	
C91			CF92FV1H224J	MF	0.22UF	J	E	
C92			CF92FV1H104J	MF	0.10UF	J	MXT	
C92			CF92FV1H224J	MF	0.22UF	J	E	
C93			CF92FV1H224J	MF	0.22UF	J	E	
C94			CK45FF1H472Z	CERAMIC	4700PF	Z		
C97 ,98			CC45FSL1H221J	CERAMIC	220PF	J		
C99			CE04HW1H0R1M	NP-ELEC	0.1UF	50WV		
C100			C90-3222-05	ELECTRO	100UF	10WV		
C101,102			CE04KW1C470M	ELECTRO	47UF	16WV		
C103,104			CE04KW1A101M	ELECTRO	100UF	10WV		
C105,106			CE04KW1H010M	ELECTRO	1.0UF	50WV		
C107,108			CC45FSL1H221J	CERAMIC	220PF	J		
C109,110			CK45FB1H471K	CERAMIC	470PF	K		
C111-114			CE04KW1V100M	ELECTRO	10UF	35WV		
C115,116			CF92FV1H472J	MF	4700PF	J		
C117,118			CK45FB1H821K	CERAMIC	820PF	K		
C119,120			CF92FV1H123J	MF	0.012UF	J		
C121,122			CF92FV1H222J	MF	2200PF	J		
C123,124			CF92FV1H303J	MF	0.030UF	J		
C125,126			CF92FV1H562J	MF	5600PF	J		
C127,128			CF92FV1H683J	MF	0.068UF	J		
C129,130			CF92FV1H133J	MF	0.013UF	J		

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C131,132			CF92FV1H184J	MF 0.18UF J		
C133,134			CF92FV1H333J	MF 0.033UF J		
C135,136			CF92FV1H474J	MF 0.47UF J		
C137,138			CF92FV1H913J	MF 0.091UF J		
C139,140			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C141,142			CF92FV1H224J	MF 0.22UF J		
C143			CK45FF1H103Z	CERAMIC 0.010UF Z		
C144,145			CC45FSL1H101J	CERAMIC 100PF J		
⚠ C150			C91-1439-05	FILM 0.01UF 250VAC		
⚠ C151,152			CK45FF1H103Z	CERAMIC 0.010UF Z		
C153,154			CE04KW1V332M	ELECTRO 3300UF 35WV		
C155-158			CF92FV1H104J	MF 0.10UF J		
C159,160			CE04KW1V100M	ELECTRO 10UF 35WV		
C161-164			CF92FV1H104J	MF 0.10UF J		
C165,166			CE04KW1C470M	ELECTRO 47UF 16WV		
⚠ C167,168			CE04KW1H470M	ELECTRO 47UF 50WV		
C169		*	C90-3319-05	ELECTRO 10UF 50WV		
C170			CE04KW1V470M	ELECTRO 47UF 35WV		
C181,182			CE04KW0J221M	ELECTRO 220UF 6.3WV		
C183-186			CE04KW1V100M	ELECTRO 10UF 35WV		
C187			CE04KW1H470M	ELECTRO 47UF 50WV		
C188			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C189,190			CK45FF1H103Z	CERAMIC 0.010UF Z		
C191			CE04KW1V470M	ELECTRO 47UF 35WV		
C193-195			CK45FF1H103Z	CERAMIC 0.010UF Z		
C197			CK45FF1H103Z	CERAMIC 0.010UF Z		
C198			CK45FB1H102K	CERAMIC 1000PF K		
C199			CK45FF1H103Z	CERAMIC 0.010UF Z	MX	
C200			CK45FF1H103Z	CERAMIC 0.010UF Z		
C201			CK45FF1H472Z	CERAMIC 4700PF Z	MX	
C202			CC45FSL1H221J	CERAMIC 220PF J	MX	
C203			CF92FV1H473J	MF 0.047UF J	MX	
C204			CC45FSL1H221J	CERAMIC 220PF J	MX	
C205			CE04KW1V100M	ELECTRO 10UF 35WV	MX	
C206			CK45FB1H561K	CERAMIC 560PF K	MX	
C207,208			CE04KW1V100M	ELECTRO 10UF 35WV	MX	
C211-214			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C215,216			CF92FV1H104J	MF 0.10UF J		
J1 ,2	2B		E13-0633-05	PHONO JACK(AUDIO I/O)		
J3	2B	*	E63-0062-05	PHONO JACK(SURROUND SPEAKERS)		
J4	2B		E13-0490-05	PHONO JACK(VISUAL I/O)		
J5	2B		E08-0312-05	RECTANGULAR RECEPTACLE(S.CONT)		
⚠ J6	2B		E03-0108-05	AC OUTLET	ME	
⚠ J6	2B		E03-0109-05	AC OUTLET	T	
⚠ J6	2B		E03-0114-05	AC OUTLET	X	
J7	3B		E11-0206-05	PHONE JACK(MIC)	MX	
⚠ F2			F06-1022-05	FUSE (SEMKO) (250V T1A)	MX	
⚠ F3			F05-2525-05	FUSE (SEMKO) (250V T2.5A)	E	
⚠ F4			F05-8013-05	FUSE (SEMKO) (250V T800mA)	TE	
⚠ F5 ,6			F06-2021-05	FUSE (SEMKO) (250V T2A)		
CN7 ,8			J13-0075-05	FUSE CLIP	MX	
CN9 -16			J13-0075-05	FUSE CLIP	E	
CN11-14			J13-0075-05	FUSE CLIP	MX	
CN11-16			J13-0075-05	FUSE CLIP	T	

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L1			L39-0085-05	PHASE COMPENSATION COIL		
CP1 ,2		⁎	R90-0893-05	MULTI-COMP 820K X9		
R95 ,96			RD14NB2E101J	RD 100 J 1/4W		
R97 -100			RD14NB2E470J	RD 47 J 1/4W		
⚠ R175			RD14NB2E3R3J	RD 3.3 J 1/4W		
⚠ R176			RD14NB2E5R6J	RD 5.6 J 1/4W		
⚠ R177			RS14KB3D271J	FL-PROOF RS 270 J 2W		
⚠ R179			RS14KB3D390J	FL-PROOF RS 39 J 2W		
R180			RS14KB3D121J	FL-PROOF RS 120 J 2W		
R181			RS14KB3D271J	FL-PROOF RS 270 J 2W		
⚠ R182			RD14NB2E101J	RD 100 J 1/4W		
R201,202			RD14NB2E470J	RD 47 J 1/4W		
R219,220			RD14NB2E100J	RD 10 J 1/4W		
R247,248			RS14KB3A100J	FL-PROOF RS 10 J 1W		
⚠ R250			RD14NB2E1R0J	RD 1.0 J 1/4W		
R251			RS14KB3D331J	FL-PROOF RS 330 J 2W		
VR1	3B	⁎	R05-5049-05	POTENTIOMETER(INPUT BALANCE)		
VR2	3B	⁎	R10-5057-05	POTENTIOMETER(MIC VOL.)	MX	
K1			S51-2093-05	MAGNETIC RELAY(SURROUND SP.)		
K1			S76-0008-05	MAGNETIC RELAY(SURROUND SP.)		
⚠ S1	2B		S40-1153-05	PUSH SWITCH(POWER)		
⚠ S2	2B		S62-0001-05	SLIDE SWITCH(AC110-120/220-240	M	
⚠ D1			D3SBA20F03	DIODE		
⚠ D1			RBV-402LFA	DIODE		
⚠ D2 ,3			S5688B	DIODE		
⚠ D7 -11			HSS104A	DIODE		
⚠ D7 -11			1SS131	DIODE		
D12 ,13			HZS13N(B2)	ZENER DIODE		
D12 ,13			RD13ES(B2)	ZENER DIODE		
D14			HZS4.7N(B)	ZENER DIODE		
D14			RD4.7ES(B)	ZENER DIODE		
D15 -20			HSS104	DIODE		
D15 -20			1SS133	DIODE		
D21 ,22			HZS6.8N(B2)	ZENER DIODE		
D21 ,22			RD6.8ES(B2)	ZENER DIODE		
D23			HSS104	DIODE	MX	
D23			1SS133	DIODE	MX	
D24			HZS2.7N(B2)	ZENER DIODE	MX	
D24			RD2.7ES(B2)	ZENER DIODE	MX	
D25			HZS13N(B2)	ZENER DIODE		
D25			RD13ES(B2)	ZENER DIODE		
D26 -42			HSS104	DIODE		
D26 -42			1SS133	DIODE		
D43 ,44			HSS104	DIODE	MX	
D43 ,44			1SS133	DIODE	MX	
D46 ,47			HSS104A	DIODE		
D46 ,47			1SS131	DIODE		
IC1			NJU7312L	IC(ANALOG SWITCH)		
IC2			NJU7311L	IC(ANALOG SWITCH)		
IC3 ,4			M5229P	IC(7CH GRAPHIC EQUALIZER)		
IC5			LC7522	IC(7CH GRAPHIC EQUALIZER)		
⚠ IC6			BA17812T	IC(VOLTAGE REGULATOR) +12V)		
⚠ IC6			TA7812S	IC(VOLTAGE REGULATOR/ +12V)		

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⚠ IC7			TA79012S	IC(VOLTAGE REGULATOR) -12V)		
⚠ IC7			UPC7912HF	IC(VOLTAGE REGULATOR/ -12V)		
⚠ IC8			BA17805T	IC(VOLTAGE REGULATOR) +5V)		
⚠ IC8			TA7805S	IC(VOLTAGE REGULATOR/ +5V)		
⚠ IC9			TA79005S	IC(VOLTAGE REGULATOR) -5V)		
⚠ IC9			UPC7905AHF	IC(VOLTAGE REGULATOR/ -5V)		
⚠ IC10			SI-18752	IC(POWER IC)		
IC11			LVA521S	IC(VIDEO SWITCH)		
IC12			MC14577A	IC(DUAL VIDEO AMP)		
IC12		*	MC14577BP	IC(DUAL VIDEO AMP)		
IC14-16			NJM4565L	IC(OP AMP X2)		
IC17-20			NJM4565L	IC(OP AMP X2)	MX	
IC21,22			NJM4565L	IC(OP AMP X2)		
IC24-26			NJM4565L	IC(OP AMP X2)		
IC27			NJM4565L	IC(OP AMP X2)	MX	
IC28			NJM4565L	IC(OP AMP X2)		
Q1			2SC2003(L,K)	TRANSISTOR		
Q2			2SA1048(Y,GR)	TRANSISTOR		
Q2			2SA1309A(Q,R)	TRANSISTOR		
Q3 -5			2SC2878(B)	TRANSISTOR		
Q6 ,7			DTC124ES	DIGITAL TRANSISTOR	MX	
Q6 ,7			UN4212	TRANSISTOR	MX	
Q8			2SA1048(Y,GR)	TRANSISTOR	MX	
Q8			2SA1309A(Q,R)	TRANSISTOR	MX	
Q9 -12			2SC2878(B)	TRANSISTOR	MX	
Q13 ,14			2SC2878(B)	TRANSISTOR		
⚠ Q15			2SA1534A(R,S)	TRANSISTOR		
Q16			2SC2003(L,K)	TRANSISTOR		
⚠ Q17			2SD863	TRANSISTOR		
DISPLAY UNIT (X14-3540-00)						
C1			CE04KW1V100M	ELECTRO 10UF 35WV		
C3 ,4			CK45FF1H103Z	CERAMIC 0.010UF Z		
C5 ,6			CE04KW1A101M	ELECTRO 100UF 10WV		
C7			CF92FV1H102J	MF 1000PF J		
C8			CE04KW1V470M	ELECTRO 47UF 35WV		
C9			CK45FF1H103Z	CERAMIC 0.010UF Z		
C10			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C11			CK45FF1H103Z	CERAMIC 0.010UF Z		
C12			C90-1827-05	BACKUP 0.047F 5.5WV		
C13			CE04KW1A101M	ELECTRO 100UF 10WV		
C14			C91-0769-05	CERAMIC 0.01UF K		
C15 ,16			CK45FF1H103Z	CERAMIC 0.010UF Z		
C17			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C18			CE04KW1A101M	ELECTRO 100UF 10WV		
C19 ,20			CC45FSL1H470J	CERAMIC 47PF J		
C23 ,24			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C30			C90-3225-05	ELECTRO 10UF 16WV		
C31 ,32			C90-3242-05	ELECTRO 4.7UF 35WV		
C33			CF92FV1H334J	MF 0.33UF J		
C34			CF92FV1H104J	MF 0.10UF J		
C35			CF92FV1H333J	MF 0.033UF J		
C36			C90-3253-05	ELECTRO 1UF 50WV		
C37			CF92FV1H273J	MF 0.027UF J		
C38			CF92FV1H472J	MF 4700PF J		
C39		*	C90-3226-05	ELECTRO 22UF 16WV		

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C40			C90-3222-05	ELECTRO 100UF 10WV		
C41 ,42			C90-3225-05	ELECTRO 10UF 16WV		
C43			CF92FV1H822J	MF 8200PF J		
C44			CF92FV1H133J	MF 0.013UF J		
C45			CF92FV1H303J	MF 0.030UF J		
C46			CK45FB1H821K	CERAMIC 820PF K		
C47			CF92FV1H112J	MF 1100PF J		
C48 ,49			CF92FV1H123J	MF 0.012UF J		
C50			CF92FV1H473J	MF 0.047UF J		
C53			CE04KW1C470M	ELECTRO 47UF 16WV		
C54			C90-3242-05	ELECTRO 4.7UF 35WV		
C55 ,56			CC45FSL1H101J	CERAMIC 100PF J		
C57			CF92FV1H104J	MF 0.10UF J		
C58			CF92FV1H392J	MF 3900PF J		
C59 -61			CE04KW1A101M	ELECTRO 100UF 10WV		
C62 ,63			CF92FV1H104J	MF 0.10UF J		
C64 ,65			CE04KW1A101M	ELECTRO 100UF 10WV		
C66			CF92FV1H104J	MF 0.10UF J		
C70			CK45FF1H103Z	CERAMIC 0.010UF Z		
C71			C90-3242-05	ELECTRO 4.7UF 35WV		
C72			CF92FV1H123J	MF 0.012UF J		
C73			CF92FV1H103J	MF 0.010UF J		
C74			CK45FB1H821K	CERAMIC 820PF K		
C75			CF92FV1H123J	MF 0.012UF J		
C76			CF92FV1H103J	MF 0.010UF J		
C77			CK45FB1H821K	CERAMIC 820PF K		
C78			C90-3242-05	ELECTRO 4.7UF 35WV		
C82			CK45FB1H102K	CERAMIC 1000PF K		
C83 ,84			C90-3225-05	ELECTRO 10UF 16WV		
C85 -87			C90-3242-05	ELECTRO 4.7UF 35WV		
C88			CC45FSL1H101J	CERAMIC 100PF J		
C89			C90-3242-05	ELECTRO 4.7UF 35WV		
L1 -4			L40-1091-17	SMALL FIXED INDUCTOR(1UH)		
X1		*	L78-0604-05	RESONATOR (6MHz)		
X2			L78-0244-05	RESONATOR (4MHz)		
X3		*	L78-0601-05	RESONATOR (7.16MHZ)		
CP1			R90-0493-05	MULTI-COMP 100KX9 J 1/6W		
CP2		*	R90-0892-05	MULTI-COMP 4.7K X5		
CP3			R90-0824-05	MULTI-COMP 4.7KX4		
CP4			R90-0500-05	MULTI-COMP 100KX6 J 1/4W		
CP6			R90-0482-05	MULTI-COMP 100KX4 J 1/6W		
CP7			R90-0824-05	MULTI-COMP 4.7KX4		
CP8			R90-0850-05	MULTI-COMP 100KX3 J 1/6W		
R62 ,63			RD14NB2E221J	RD 220 J 1/4W		
R97 ,98			RD14NB2E101J	RD 100 J 1/4W		
R99			RD14NB2E470J	RD 47 J 1/4W		
R100			RD14NB2E101J	RD 100 J 1/4W		
R104			RS14KB3A101J	FL-PROOF RS 100 J 1W		
R120			RD14NB2E101J	RD 100 J 1/4W		
S1 -25	1A		S40-1064-05	TACT SWITCH		
S26	1B		S40-1064-05	TACT SWITCH	MX	
S27 ,28	1A		S40-1064-05	TACT SWITCH		
S29	1B		S29-1156-05	ROTARY SWITCH(PRESENCE)		

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D1 -12			HSS104	DIODE		
D1 -12			1SS133	DIODE		
D14 ,15			HSS104	DIODE		
D14 ,15			1SS133	DIODE		
D16			HZS8.2N(B2)	ZENER DIODE		
D16			RD8.2ES(B2)	ZENER DIODE		
D17 -24			HSS104	DIODE		
D17 -24			1SS133	DIODE		
D25			HZS2.7N(B2)	ZENER DIODE		
D25			RD2.7ES(B2)	ZENER DIODE		
D26 ,27			HSS104	DIODE		
D26 ,27			1SS133	DIODE		
D29			HSS104	DIODE	TE	
D29			1SS133	DIODE	TE	
ED1	1A	*	FIP13AW20Y	INDICATOR TUBE		
IC1		*	M38173M6-140FP	IC(MICROPROCESSOR)		
IC2			CXP2201S	IC(DISPLAY)		
IC3			XR-1091ECP	IC(EQUALIZER FILTER)		
IC4			PST529C	IC(SYSTEM RESET)		
IC5			TC9213P	IC(2CH ELECTRONIC VOLUME)		
IC6			LA2730	IC(DOLBY SYSTEM)		
IC7			NJM4565L	IC(OP AMP X2)		
IC8			M5238L	IC(OP AMP X2)		
IC9			NJM4565L	IC(OP AMP X2)		
IC10			TA78L005AP	IC(VOLTAGE REGULATOR/ +5V)		
IC10			UPC78L05J	IC(VOLTAGE REGULATOR/ +5V)		
IC11		*	YM7128	IC(SURROUND PROCESSOR)		
IC11		*	YM7128B	IC(SURROUND PROCESSOR)		
IC12			NJM4565D	IC(OP AMP X2)		
Q1 -3			2SC2458(Y,GR)	TRANSISTOR		
Q1 -3			2SC3311A(Q,R)	TRANSISTOR		

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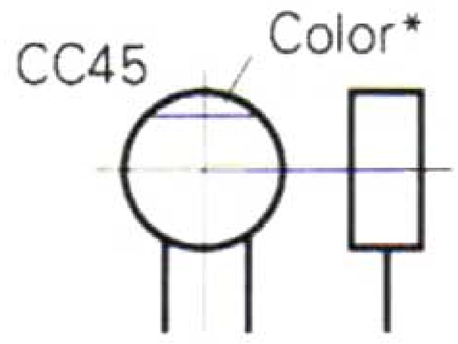
CAPACITORS

CC 45 TH 1H 220 J
1 2 3 4 5 6

1 = Type ... ceramic, electrolytic, etc.
2 = Shape ... round, square, ect.
3 = Temp. coefficient
4 = Voltage rating
5 = Value
6 = Tolerance



• Capacitor value

010 = 1pF
100 = 10pF
101 = 100pF
102 = 1000pF = 0.001μF
103 = 0.01μF

2 2 0 = 22pF
Multiplier
2nd number
1st number

• Temperature coefficient

1st Word	C	L	P	R	S	T	U
Color*	Black	Red	Orange	Yellow	Green	Blue	Violet
ppm/°C	0	-80	-150	-220	-330	-470	-750

2nd Word	G	H	J	K	L
ppm/°C	±30	±60	±120	±250	±500

Example : CC45TH = -470 ± 60ppm/°C

• Tolerance (More than 10pF)

Code	C	D	G	J	K	M	X	Z	P	No code
(%)	±0.25	±0.5	±2	±5	±10	±20	+40 -20	+80 -20	+100 -0	More than 10μF - 10 ~ +50 Less than 4.7μF -10 ~ +75

(Less than 10pF)

Code	B	C	D	F	G
(pF)	±0.1	±0.25	±0.5	±1	±2

• Voltage rating

2nd word / 1st word	A	B	C	D	E	F	G	H	J	K	V·
0	1.0	1.25	1.6	2.0	2.5	3.15	4.0	5.0	6.3	8.0	–
1	10	12.5	16	20	25	31.5	40	50	63	80	35
2	100	125	160	200	250	315	400	500	630	800	–
3	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	–

• Chip capacitors

(EX) C C 7 3 F S L 1 H 0 0 0 J
1 2 3 4 5 6 7
(Chip) (CH, RH, UJ, SL)

(EX) C K 7 3 F F 1 H 0 0 0 Z
1 2 3 4 5 6 7
(Chip) (B, F)

Refer to the table above.

1 = Type
2 = Shape
3 = Dimension
4 = Temp. coefficient
5 = Voltage rating
6 = Value
7 = Tolerance

Dimension (Chip capacitors)

Dimension code	L	W	T
Empty	5.6 ± 0.5	5.0 ± 0.5	Less than 2.0
A	4.5 ± 0.5	3.2 ± 0.4	Less than 2.0
B	4.5 ± 0.5	2.0 ± 0.3	Less than 2.0
C	4.5 ± 0.5	1.25 ± 0.2	Less than 1.25
D	3.2 ± 0.4	2.5 ± 0.3	Less than 1.5
E	3.2 ± 0.2	1.6 ± 0.2	Less than 1.25
F	2.0 ± 0.3	1.25 ± 0.2	Less than 1.25
G	1.6 ± 0.2	0.8 ± 0.2	Less than 1.0

RESISTORS

• Chip resistor (Carbon)

(EX) R K 7 3 E B 2 B 0 0 0 J
1 2 3 4 5 6 7
(Chip) (B,F)

Dimension (Chip resistor)

Dimension code	L	W	T
E	3.2 ± 0.2	1.6 ± 0.2	1.0
F	2.0 ± 0.3	1.25 ± 0.2	1.0
G	1.6±0.2	0.8±0.2	0.5±0.1

• Carbon resistor (Normal type)

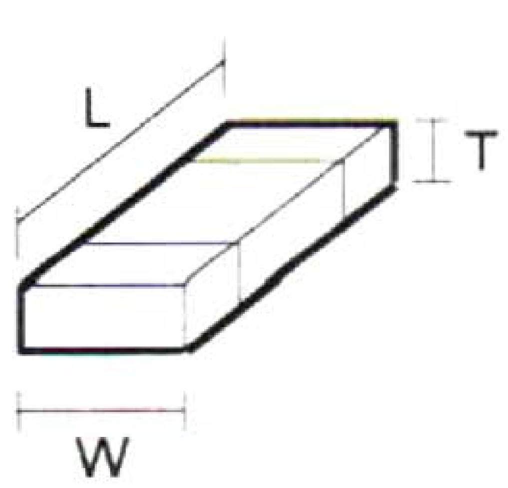
(EX) R D 1 4 B B 2 C 0 0 0 J
1 2 3 4 5 6 7

1 = Type
2 = Shape
3 = Dimension
4 = Temp. coefficient
5 = Rating wattage
6 = Value
7 = Tolerance

Rating wattage

Code	Wattage	Code	Wattage	Code	Wattage
1J	1/16W	2C	1/6W	3A	1W
2A	1/10W	2E	1/4W	3D	2W
2B	1/8W	2H	1/2W		

Dimension



SPECIFICATIONS

PERFORMANCE

Equalizer characteristic variable range	±10dB
Center frequencies	60Hz, 150Hz, 400Hz, 1kHz, 2.4kHz, 6kHz, 15kHz
Total harmonic distortion (at 1kHz, flat)	0.05%
Gain	0dB
Signal to noise ratio (IHF' 66)	100dB
Input impedance	47kΩ
Output impedance	2.2kΩ
Rated surround output power	
DIN (For U.K. and Europe) : 8Ω (1kHz, 1.0% T.H.D.)	10W+10W
IHF' 66 (For other countries) : 8Ω (1kHz, 1.0% T.H.D.)	10W+10W
EIAJ (For other countries) : 8Ω	15W+15W

GENERAL

Power consumption	48W
AC outlets (except for Australia)	
UNSWITCHED	1 (100W max.)
Dimensions	W : 360mm x H : 98mm x D : 357mm
Weight (Net)	4.2kg

Note : KENWOOD follows a policy of continuous advancements in development. For this reason specifications may be changed without notice. DOLBY and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation. Noise reduction circuit made under license from Doby Laboratories Licensing Corporation.

Note :
Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on, the General Market (M) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

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