

# V-4

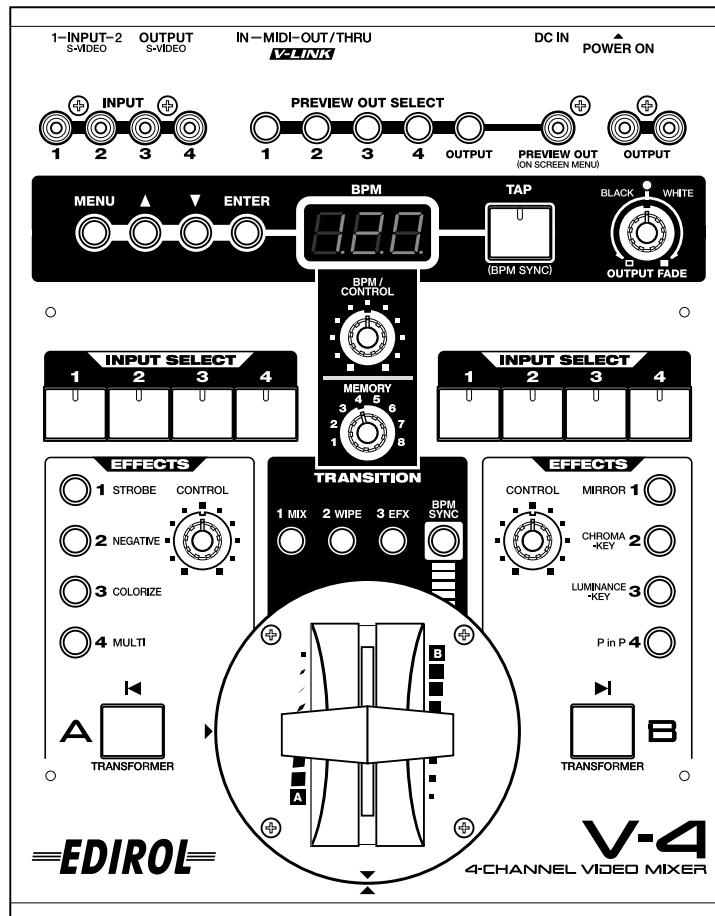
## 4-CHANNEL VIDEO MIXER

# SERVICE NOTES

## *Issued by RJA*

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## SPECIFICATIONS

### V-4: 4ch VIDEO MIXER

- Video format  
NTSC or PAL ITU601
- Video sampling rate  
13.5 MHz, 4:2:2 (Y: B-Y:R-Y), 8-bit
- Video input  
S-video: 4-pin mini DIN type x 2 jacks (inputs 1 or 2)  
Video (composite): RCA phono type x 4 (inputs 1-4; however if S-video is simultaneously input to 1/2, S-video takes priority)
- Video output  
S-video: 4-pin mini DIN type x 1 jack  
Video (composite): RCA phono type x 2 jacks
- Preview output  
Video (composite): RCA phono type x 1 jack
- Input level and impedance  
S-video output: luminance signal: 1 Vp-p, 75 ohm; chrominance signal: 0.286 mVp-p, 75 ohm (NTSC), 0.3 mVp-p, 75 ohm (PAL)  
Video (composite) output: 1 Vp-p, 75 ohm
- Output level and impedance  
S-video output: luminance signal: 1 Vp-p, 75 ohm; chrominance signal: 0.286 mVp-p, 75 ohm (NTSC), 0.3 mVp-p, 75 ohm (PAL)  
Video (composite) output (final output and preview output): 1 Vp-p, 75 ohm
- Control connectors  
MIDI IN : 5-pin DIN type  
MIDI OUT/THRU : 5-pin DIN type
- Transition effects  
Mix  
Wipe: hard edge wipe, soft edge wipe, multiborder wipe (more than 200 types)
- Video effects  
Strobe, still, negative, colorize, solarization, mirror, multi, shake, etc.
- Compositing effects  
Picture-in-picture, luminance key, chroma key
- Power supply  
Dedicated AC adaptor PSB-1U(R)
- Current consumption  
1500 mA
- Dimensions  
225 mm (W) x 295 mm (D) x 105 mm (H)
- Weight  
2.3 kg
- Accessories  
Owner's Manual English (#72231689)

AC Adaptor PSB-1U (#01901578)  
or PSB-1U (R) (#03017356)  
AC Card 120V for PSB-1U (#01903345)  
or AC Card 120V for PSB-1U (R) (#02562456)  
AC Cord 230V (#01903356)  
AC Cord 240V (#01903367)  
EURO Converter Plug ECP01-5A (#00905234)  
T-bar attachment screws x 4 pcs. (spares) (#40560534)

\*  $0 \text{ dBu} = 0.775 \text{ V rms}$

\* *In the interest of product improvement, the specifications and/or appearance of this unit are subject to change without prior notice.*



# LOCATION OF CONTROLS PARTS LIST

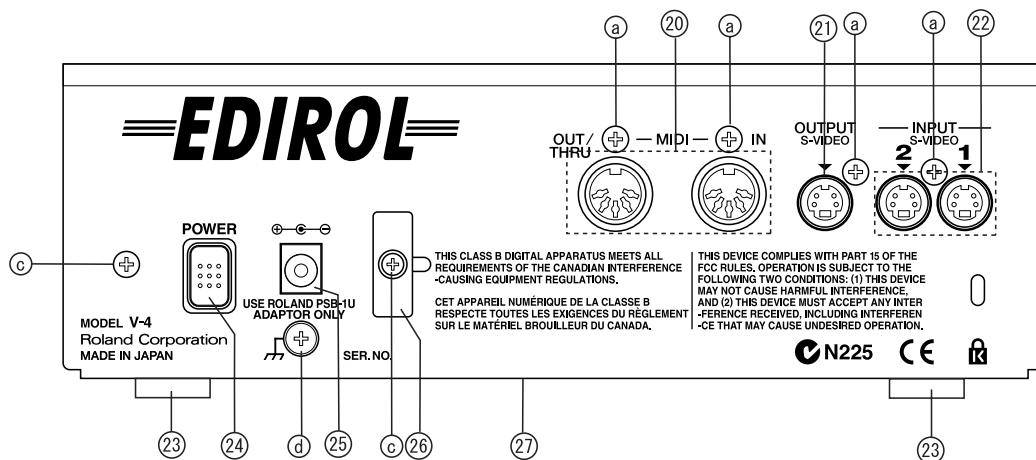
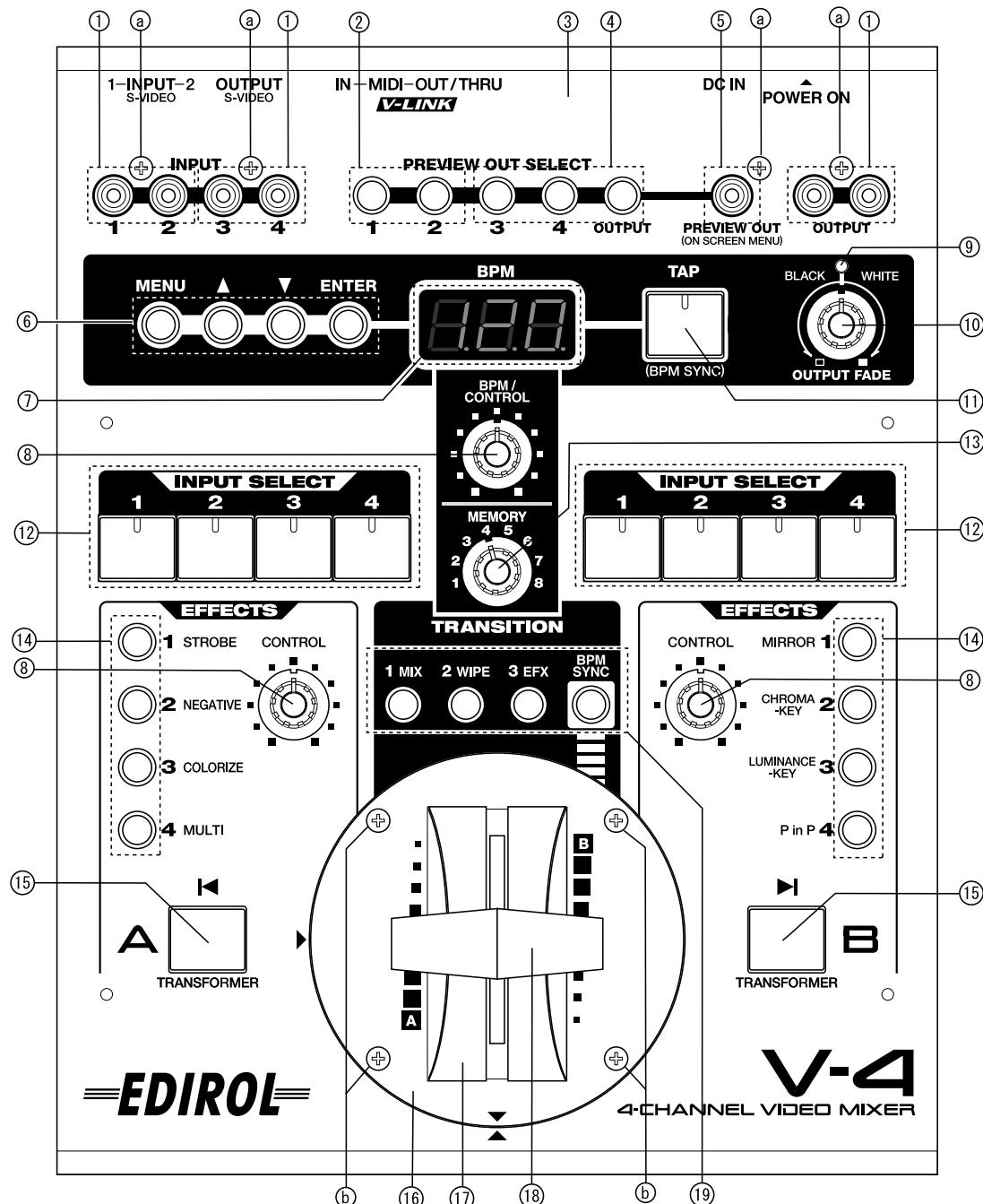
## [Parts]

No	Part Code	Part Name	Description	Q'ty
1	01456823	RCA(PIN) JACK	YKC21-3502	2 +1
2	01343478	TACT SWITCH	SKQNAE	2
	01787045	LED (ORANGE)	SLR-325DCT31	2
	02239701	Y C-KEYTOP MX2H CLR		1
3	72231923	TOP CASE ASSY		1
4	01343478	TACT SWITCH	SKQNAE	3
	01787045	LED (ORANGE)	SLR-325DCT31	3
	02784601	Y C-KEYTOP MX3H CLR		1
5	00562023	RCA CONNECTOR (PIN)	YKC21-3017	1
6	00348490	LED (RED)	SLR-325VCT31	1
	00560745	LED (GREEN)	SLR-325MCT31	2
	01343478	TACT SWITCH	SKQNAE	4
	01787045	LED (ORANGE)	SLR-325DCT31	1
	02450201	Y C-KEYTOP	MX4H CLR	1
7	01342534	LED 7 SEGMENT	SL-9351S	1
	03019390	DISPLAY COVER		1
8	02452912	SF-A BLK/LCG	J R-KNOB	3
	02455223	9M/M ROTARY POT.	EVUF2KFK4B14	3
9	00127367	LED (RED/GREEN)	SPR-39MVW	1
	01906623	LED SPACER	LH-36-8.5	1
10	02452912	J R-KNOB	SF-A BLK/LCG	1
	02784689	9M/M ROTARY POT.	EVUF3KFK4B14	1
11	00125590	TACT SWITCH	EVQ QJJ 05Q	1
	00348490	LED (RED)	SLR-325VCT31	1
	02016467	Y S-KEYTOP	LD1H RED	1
12	00125590	TACT SWITCH	EVQ QJJ 05Q	8
	01787045	LED (ORANGE)	SLR-325DCT31	8
	02784578	Y S-KEYTOP	LD4H LCG	2
13	02452912	J R-KNOB	SF-A BLK/LCG	1
	02784678	ROTARY SWITCH	SRBV181000	1
14	00560745	LED (GREEN)	SLR-325MCT31	8
	01343478	TACT SWITCH	SKQNAE	8
	02450201	Y C-KEYTOP	MX4H CLR	2
15	00125590	TACT SWITCH	EVQ QJJ 05Q	2
	03126634	Y S-KEYTOP	LX1H RED	2
16	72231934	T-BAR PANEL ASSY		1
17	03019412	T-BAR ESCUTCHEON		1
18	71789367	T-BAR ASSY		1
19	00348490	LED (RED)	SLR-325VCT31	1
	00560745	LED (GREEN)	SLR-325MCT31	3
	01343478	TACT SWITCH	SKQNAE	4
	02450201	Y C-KEYTOP	MX4H CLR	1
20	13429676	MIDI CONNECTOR	YKF51-5048 (TWIN)	1
21	02783534	DIN CONNECTOR Y/C1P	YKF51-5506 FRAME GND	1
22	02783523	DIN CONNECTOR Y/C2P	YKF51-5512 SWITCH FRAME	1
23	01235378	FOOT		4
24	01676512	PUSH SWITCH	SDKLA1-B	1
	32490595	P S-KEY	MX BLK	1
25	13449720	DC JACK	HEC2305-01-250	1
26	22365714	CORD HOOK	236-714	1
27	02784556	BOTTOM COVER		1

## [Screws]

No	Part Code	Part Name	Description	Q'ty
a	40011101	SCREW 3x8	BINDING TAPITTE B BZC	8
b	40560534	SCREW M3x6	FLAT MACHINE SUS	4
c	40237101	SCREW M3x8	PAN MACHINE W/SW+PW FE BZC	2
d	40458345	SCREW M4x8	PAN MACHINE W/SW+SMALL PW NI	1

## LOCATION OF CONTROLS



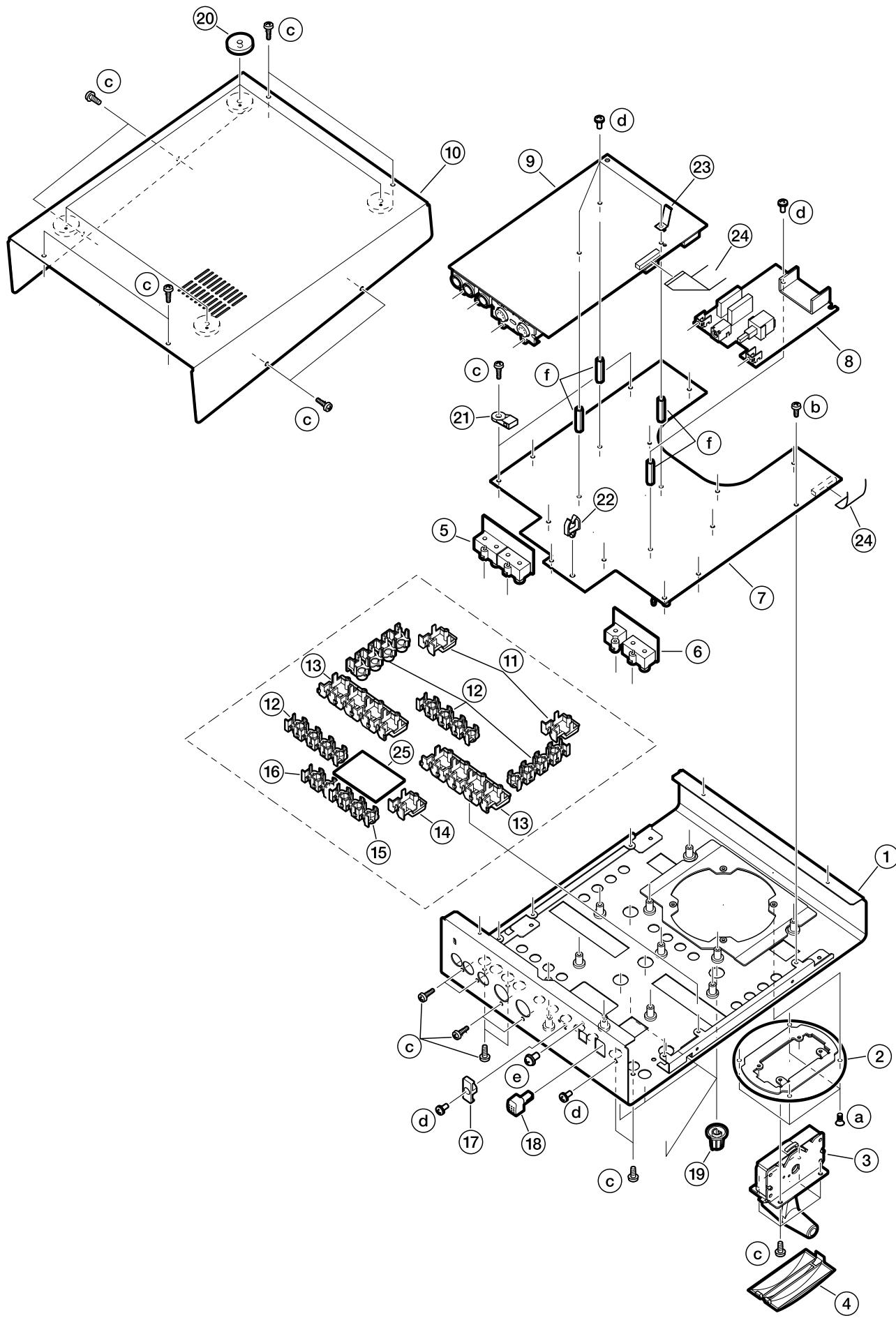
**EXPLODED VIEW PARTS LIST****[Parts]**

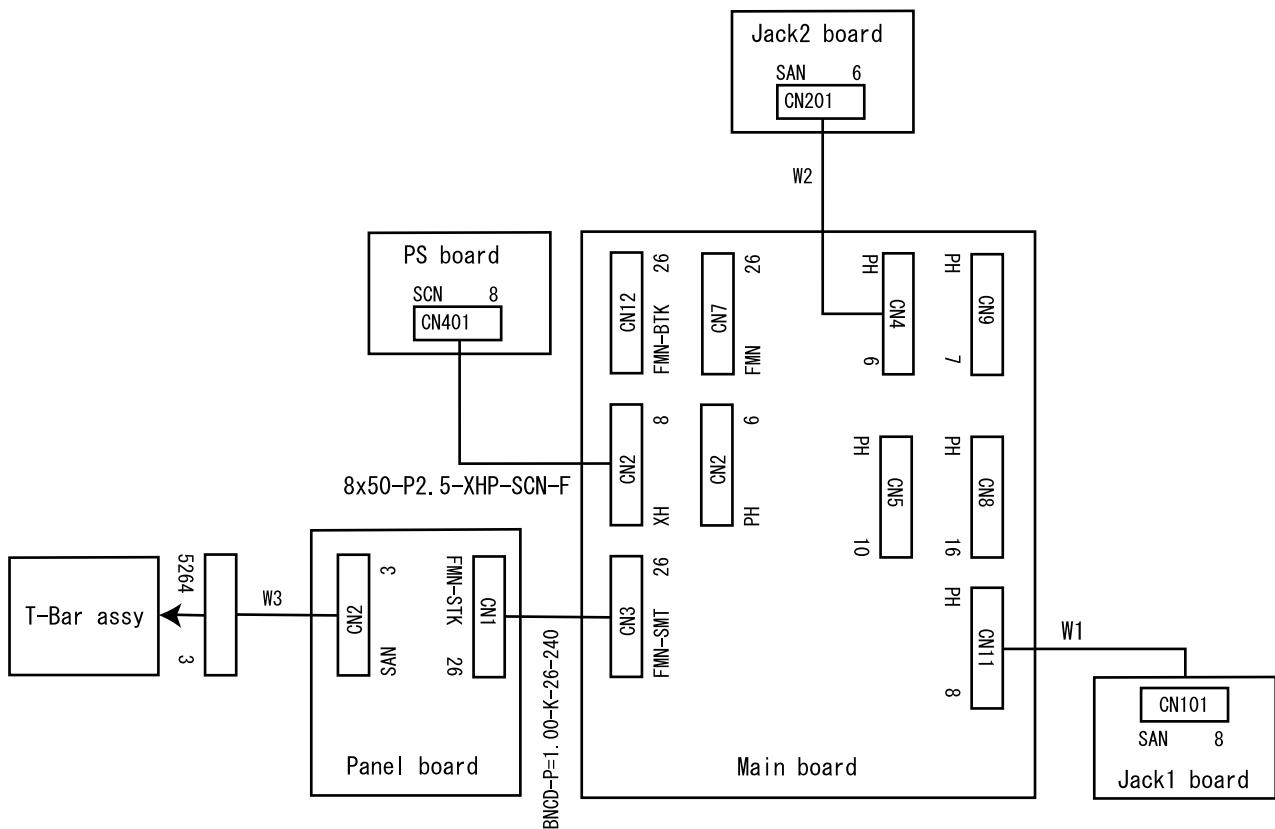
No	Part Code	Part Name	Description	Q'ty
1	72231923	TOP CASE ASSY		1
2	72231934	T-BAR PANEL ASSY		1
3	71789367	T-BAR ASSY		1
4	03019412	T-BAR ESCUTCHEON		1
5	72230012	JACK1 BOARD ASSY		1
6	72230023	JACK2 BOARD ASSY		1
7	72230845	PANEL BOARD ASSY		1
8	72129990	PS BOARD ASSY		1
9	72230834	MAIN BOARD ASSY		1
10	02784556	BOTTOM COVER		1
11	03126634	Y S-KEYTOP	LX1H RED	2
12	02450201	Y C-KEYTOP	MX4H CLR	4
13	02784578	Y S-KEYTOP	LD4H LCG	2
14	02016467	Y S-KEYTOP	LD1H RED	1
15	02784601	Y C-KEYTOP	MX3H CLR	1
16	02239701	Y C-KEYTOP	MX2H CLR	1
17	22365714	CORD HOOK	236-714	1
18	32490595	P S-KEY	MX BLK	1
19	02452912	J R-KNOB	SF-A BLK/LCG	5
20	01235378	FOOT		4
21	40016545	INSULOK TIE	SKM-1	2
22	01561323	HOOK CLAMP	UAMS-09-0	1
23	22175316	PANEL SPRING	217-316	1
24	03125967	BAN CARD	BNCD-P=1.00-K-26-240	1
25	03019390	DISPLAY COVER		1

**[Screws]**

No	Part Code	Part Name	Description	Q'ty
a	40560534	SCREW M3x6	FLAT MACHINE SUS	4
b	40011056	SCREW 3x6	BINDING TAPITTE B ZC	12
c	40011101	SCREW 3x8	BINDING TAPITTE B BZC	22
d	40237101	SCREW M3x8	PAN MACHINE W/SW+PW FE BZC	6
e	40458345	SCREW M4x8	PAN MACHINE W/SW+SMALL PW NI	1
f	22150596	BOSS NUT	M3-L5.5-H25-A6-B6-N3	4

## EXPLODED VIEW



**WIRING DIAGRAM**

# PARTS LIST

**SAFETY PRECAUTIONS:**  
The parts marked  $\Delta$  have safety-related characteristics. Use only listed parts for replacement.

## CONSIDERATION ON PARTS ORDERING

When ordering any parts listed in the parts list, please specify the following items in the order sheet.

QTY	PART NUMBER	DESCRIPTION	MODEL NUMBER
Ex. 10	22575241	Sharp Key	C-20/50
15	2247017300	Knob (orange)	DAC-15D

Failure to completely fill the above items with correct number and description will result in delayed or even undelivered replacement.

NOTE: The parts marked # are new. (initial parts)

MB -> MAIN BOARD ASSY, PB -> PANEL BOARD ASSY, PS -> PS BOARD ASSY, JB1 -> JACK1 BOARD ASSY, JB2 -> JACK2 BOARD ASSY

CASING					Q'ty
#	02784556	BOTTOM COVER			1
#	03019390	DISPLAY COVER			1
#	72231923	TOP CASE ASSY			1
	71789367	T-BAR ASSY			1
#	03019412	T-BAR ESCUTCHEON			1
#	72231934	T-BAR PANEL ASSY			1
<b>KNOB, BUTTON</b>					
	02239701	Y C-KEYTOP	MX2H CLR		1
	02784601	Y C-KEYTOP	MX3H CLR		1
	02450201	Y C-KEYTOP	MX4H CLR		4
	02016467	Y S-KEYTOP	LD1H RED		1
#	02784578	Y S-KEYTOP	LD4H LCG		2
#	03126634	Y S-KEYTOP	LX1H RED		2
	32490595	P S-KEY	MX BLK		1
	02452912	JR-KNOB	SF-A BLK/LCG		5
<b>SWITCH</b>					
$\Delta$	01676512	SDKLA1-B	PUSH SWITCH	SW401 on PS	1
#	02784678	SRBV181000	ROTARY SWITCH	SW1 on PB	1
	00125590	EVQ QJJ 05Q	TACT SWITCH	SW33,SW2,SW12,SW13,SW14,SW15,SW16, SW17,SW18,SW19,SW28 on PB	11
	01343478	SKQNAE	TACT SWITCH	SW11,SW29,SW26,SW25,SW24,SW23,SW22 ,SW31,SW20,SW30,SW10,SW9,SW8,SW7,S W6,SW5,SW4,SW21,SW3,SW32,SW27 on PB	21
<b>JACK, EXT TERMINAL</b>					
	13449720	HEC2305-01-250	DC JACK	JK401 on PS	1
#	01456823	YKC21-3502	RCA(PIN) JACK	JK102,JK101 on JB1. JK202 on JB2	2
	00562023	YKC21-3017	RCA(PIN) JACK	JK201 on JB2	+1
#	02783523	YKF51-5512 SWITCH FRAME	DIN CONNECTOR Y/C2P	JK4 on MB	1
#	02783534	YKF51-5506 FRAME GND	DIN CONNECTOR Y/C1P	JK3 on MB	1
	13429676	YKF51-5048 (TWIN)	MIDI CONNECTOR	JK1 on MB	1
<b>DISPLAY UNIT</b>					
	01342534	SL-9351S	LED 7 SEGMENT	LED1 on PB	1
<b>PCB ASSY</b>					
#	72230834	MAIN BOARD ASSY			1
#	72230845	PANEL BOARD ASSY			1
	NOTE: 'PANEL BOARD ASSY' includes the following parts.				
#	03125978	WIRING W3		CN2 on PB	1
	01906623	LED SPACER	LH-36-8.5		1
	*****	PWB SPACER BOARD			1
#	72129990	PS BOARD ASSY			1
	NOTE: 'PS BOARD ASSY' includes the following parts.				
#	0278467	WIRING	8x50-P2.5-XHP-SCN-F		1
#	03017923	HEATSINK			1
	12199584	GROUNDING TERMINAL	M1698	TER401,TER402 on PS	2
	40011067	SCREW 3x8	BINDING TAPITTE B FE ZC		4
#	40560545	SILICON GLUE	SE9176 100G CLEAR(G)		1
	*****	SILICONES GREASE	YG6260		1
#	72230012	JACK1 BOARD ASSY			1
	NOTE: 'JACK1 BOARD ASSY' includes the following parts.				

PCB ASSY				
#	03018556	WIRING W1	CN101 on JB1	1
#	72230023	JACK2 BOARD ASSY		1
		NOTE: 'JACK2 BOARD ASSY' includes the following parts.		
#	03018567	WIRING W2	CN201 on JB2	1
IC				
	02672601	HD6437016E21FD2 VER1.00	IC (32BIT CPU)	1
	*****	LH28F800BVE-BV85	IC (FLASH MEMORY/BLANK)	1
	*****	KC2S200-5FG256C	IC (FPGA)	1
#	03127234	BR24C16F-E2	IC (EEPROM)	1
	02671378	LC324260BJ-60-TLM	IC (DRAM)	1
	03018301	K4S641632F-TC75	IC (SDRAM)	2
	01677756	HD74HC138P	IC (CMOS)	1
	01677823	HD74HC574P	IC (CMOS)	1
	00781689	TC74HC238AP	IC (CMOS)	1
	01672634	TC74HC4052AFT(EL)	IC (TTL)	5
	02892334	TC74LXC245FT(EL)	IC (CMOS)	2
#	03015389	TC74VHC153FT(EL)	IC (CMOS)	1
	01897967	TC74VHC74FT(EL)	IC (CMOS)	1
	15249104	TC7504F(TE85L)	IC (CMOS)	1
	01121845	TC7W04FU TE12L	IC (CMOS)	2
	01349590	TC7WU04FU(TE12L)	IC (CMOS)	1
	15199937	M51953BFP-600C	IC (RESET)	1
	02900545	PC410LKNIP	IC (PHOTO COUPLER)	1
△	02898412	NJM2374AD	IC (SWITCHING REGULATOR)	1
	15199222	UPC2405HF	IC (V RGL)	1
#	03015912	REGULATOR UPC2905T-T2	IC (REGULATOR)	3
#	02783601	UPC2925T-T1	IC (REGULATOR)	1
	01678512	UPC2933T-T2	IC (REGULATOR)	2
	01342978	TC160G22AF-1253	IC (CUSTOM)	1
#	03015545	LC74781M	IC (VIDEO)	1
#	03016334	NJM2283V(TE1)	IC (VIDEO)	2
	02344434	MSM7664BTB	IC (DIGITAL VIDEO DECODER)	2
	02340734	MSM7654GA	IC (DIGITAL VIDEO DECODER)	1
	00564890	NJM2267M(TE3)	IC (DUAL VIDEO 6DB AMP)	3
	00564901	NJM2268M(TE3)	IC (DUAL VIDEO 6DB AMP)	1
TRANSISTOR				
	01121278	2SA1576A T106 QRS	TRANSISTOR	Q7,Q8,Q9,Q14,Q10,Q11,Q12,Q13,Q18,Q17, Q16,Q15 on MB
	01121289	2SC4081 T106 QRS	TRANSISTOR	Q6,Q19 on MB
	02904634	2SJ438	TRANSISTOR	Q401 on PS
	15329503	DTA124EK T146	DIGITAL TRANSISTOR	Q4,Q2,Q5 on MB
	15129164	DTC114ESTP	DIGITAL TRANSISTOR	Q10,Q9,Q8,Q11,Q12,Q13,Q14,Q15 on PB
	15119163	RN2227(TPE4)	TRANSISTOR	Q1,Q2,Q3,Q4,Q5,Q7,Q6 on PB
	01898034	RN2402 (TE85L)	TRANSISTOR	Q3 on MB
DIODE				
	15019126	1SS133 T-77	SWITCHING DIODE	D25,D15,D16,D17,D29,D28,D14,D26,D11,D 24,D23,D22,D21,D20,D27,D4,D30,D33,D32, D31,D1,D13,D3,D19,D5,D6,D7,D8,D10,D9, D18,D12,D2 on PB
	15039179	SB20-03E	DIODE	D402,D401 on PS
	00127367	SPR-39MVW	LED (RED/GREEN)	LED9 on PB
	02671245	SML-310LLT86	LED	LED3,LED1,LED2 on MB
	00348490	SLR-325VCT31	LED (RED)	LED28,LED14,LED2 on PB
	00560745	SLR-325MCT31	LED (GREEN)	LED30,LED4,LED17,LED18,LED3,LED27,L ED29,LED19,LED20,LED25,LED26,LED32, LED31 on PB
	01787045	SLR-325DCT31	LED (ORANGE)	LED24,LED11,LED12,LED13,LED15,LED16 ,LED21,LED23,LED8,LED7,LED6,LED5,LE D10,LED22 on PB
	01121323	DA204U T106	DIODE ARRAY	DA6,DA5,DA4,DA3,DA1,DA11,DA2 on MB
RESISTOR				
	13749773T0	SR25TRE 101 J	CARBON RESISTOR	R404 on PS
	13749797T0	SR25TRE 102 J	CARBON RESISTOR	R403 on PS
	13749821T0	SR25TRE 103 J	CARBON RESISTOR	R401 on PS
	13749759T0	SR25TRE 270 J	CARBON RESISTOR	R3,R7,R6,R4,R2,R1,R8,R5 on PB
	01011856	RPC05T 0R0 J	MTL.FILM RESIST0R	R189,R83,R82,R81,R69,R64,R57,R96,R84,R1 78,R28,C268 on MB
	00567023	RPC05T 101 J	MTL.FILM RESISTOR	R100,R101,R162,R166,R164,R165,R99,R21,R 177,R163,R78,R54,R50,R43,R25,R20,R10,R17 9,R45,R32,R184,R37,R183 on MB

RESISTOR				
00567156	RPC05T 102 J	MTL.FILM RESISTOR	R131,R31,R142,R141,R139,R136,R144,R128, R122,R118,R115,R110,R75,R148,R42,R146,R 53,R173,R150,R7,R143,R174,R176,R172,R17 1,R170,R169,R159,R158,R156,R154,R151,R1 75 on MB	33
00567289	RPC05T 103 J	MTL.FILM RESISTOR	R19,R6,R133,R132,R126,R123,R107,R55,R44, R23,R18,R17,R15,R8,R9,R13,R30,R14,R16 on MB	19
00567412	RPC05T 104 J	MTL.FILM RESISTOR	R187 on MB	1
00567556	RPC05T 105 J	MTL.FILM RESISTOR	R180 on MB	1
00567045	RPC05T 151 J	MTL.FILM RESISTOR	R67,R66,R58,R71,R72,R59 on MB	6
00567178	RPC05T 152 J	MTL.FILM RESISTOR	R112 on MB	1
00567067	RPC05T 221 J	MTL.FILM RESISTOR	R5,R80,R22,R188,R4,R3 on MB	6
00567323	RPC05T 223 J	MTL.FILM RESISTOR	R157,R153,R135,R108,R149,R127,R120,R109 ,R145,R114,R138,R130,R117 on MB	13
00567212	RPC05T 332 J	MTL.FILM RESISTOR	R111,R24 on MB	2
00567112	RPC05T 471 J	MTL.FILM RESISTOR	R106,R105 on MB	2
00567245	RPC05T 472 J	MTL.FILM RESISTOR	R87,R86,R85,R41,R40,R88,R11,R12,R89,R91, R92,R104,R94,R97,R98,R102,R103,R93 on MB	18
00567001	RPC05T 750 J	MTL.FILM RESISTOR	R147,R160,R152,R140,R137,R134,R129,R125 ,R119,R116,R74,R155,R33,R113,R73,R70,R63 ,R35,R48,R47,R46,R34,R56 on MB	23
00567145	RPC05T 821 J	MTL.FILM RESISTOR	R76 on MB	1
15419706	RR1220P-122-D 1.2K OHM (CHIP)	MTL.FILM RESISTOR	R39,R52,R185 on MB	3
00566067	RR1220P-151-D 150 OHM (CHIP)	MTL.FILM RESISTOR	R61 on MB	1
01013890	RR1220P-221-D 220 OHM 1/10W	MTL.FILM RESISTOR	R60 on MB	1
15419725	RR1220P-223D 22KOHM (CHIP)	MTL.FILM RESISTOR	R65 on MB	2
15419724	RR1220P-333-D 33K OHM (CHIP)	MTL.FILM RESISTOR	R62 on MB	1
00348767	RR1220P-471-D 470 OHM (CHIP)	MTL.FILM RESISTOR	R186 on MB	1
00564256	RR1220P-682-D 6.8K OHM (CHIP)	MTL.FILM RESISTOR	R51,R38 on MB	2
01900890	SN14K2CT26 1001F	MTL.FILM RESISTOR	R407,R406 on PS	2
01890478	SN14K2CT26 8201F	MTL.FILM RESISTOR	R405 on PS	1
01458689	SRPX2 L15 0.1 J	MTL.FILM RESISTOR	R402 on PS	1
01457145	EXBE10C103J	RESISTOR ARRAY	RA48,RA39,RA12,RA5 on MB	4
00126112	EXBV8V101JV	RESISTOR ARRAY	RA35,RA26,RA47,RA28,RA29,RA30,RA31, RA32,RA24,RA34,RA25,RA36,RA37,RA38, RA40,RA41,RA42,RA43,RA44,RA45,RA46, RA33,RA14,RA3,RA4,RA6,RA7,RA8,RA27, RA2,RA10,RA9,RA15,RA16,RA17,RA18,RA 19,RA20,RA21,RA22,RA1,RA23 on MB	42
15409115	EXBV8V223JV	RESISTOR ARRAY	RA11,RA13 on MB	2
POTENTIOMETER				
02455223	EVUF2KFK4B14	9M/M ROTARY POT.	VR2,VR4,VR3 on PB	3
# 02784689	EVUF3KFK4B14	9M/M ROTARY POT.	VR1 on PB	1
CAPACITOR				
01674612	ECJ1VB1H103K	CERAMIC CAPACITOR	C145,C135,C136,C137,C138,C139,C140,C14 1,C142,C143,C153,C252,C134,C172,C146,C1 47,C148,C150,C151,C152,C155,C154,C42,C1 44,C33,C3,C4,C5,C6,C7,C8,C255,C9,C10,C1 1,C12,C13,C44,C32,C66,C130,C129,C128,C1 27,C14,C125,C133,C65,C64,C63,C62,C43,C4 1,C40,C126,C173 on MB	56
01674478	ECJ1VB1H122K	CERAMIC CAPACITOR	C122 on MB	1
01674334	ECUV1H101JCV	CERAMIC CAPACITOR	C222,C221,C224,C225,C226,C227,C228,C2 3,C220,C216,C219,C218,C217,C209,C210,C2 11,C212,C213,C214,C215,C229 on MB	21
01674189	ECUV1H120JCV	CERAMIC CAPACITOR	C207,C254,C253,C208,C116,C117 on MB	6
01674356	ECUV1H151JCV	CERAMIC CAPACITOR	C248,C249,C246,C250,C251,C247 on MB	6
01674212	ECUV1H220JCV	CERAMIC CAPACITOR	C264,C257 on MB	2
01674389	ECUV1H221JCV	CERAMIC CAPACITOR	C75,C46,C68,C55 on MB	4
01674234	ECUV1H330JCV	CERAMIC CAPACITOR	C106,C170,C169,C166,C112,C94,C85,C167, C100 on MB	9
15369108	ECEV0JA470SR	CERAMIC CAPACITOR	C107,C101,C98,C262,C87,C86,C89,C242,C1 11,C80,C78,C60,C58,C113,C263 on MB	15
01674423	ECUV1H471JCV	CERAMIC CAPACITOR	C30 on MB	1
00567978	GRM39F104Z25PT	CERAMIC CAPACITOR	C2,C15,C16,C17,C18,C19,C20,C21,C22,C23, C24,C26,C27,C28,C31,C34,C47,C49,C50,C51 ,C52,C53,C69,C71,C72,C73,C74,C83,C88,C9 0,C91,C93,C95,C97,C104,C105,C109,C114,C 115,C123,C124,C131,C149,C156,C157,C159, C162,C164,C174,C175,C177,C178,C179,C18 0,C184,C186,C188,C197,C198,C199,C206,C2 31,C233,C235,C244,C245,C256,C259,C261,C 265 on MB	70
13639557M0	ECA1CM102B	CHEMICAL CAPACITOR	C403 on PS	1
13649270	ECA1CM222B 2200UF/16V	CAPACITOR	C402 on PS	1
13639512M0	ECEA0JKA101B	CHEMICAL CAPACITOR	C408 on PS	1
15369109	ECEV0JA101SP	CHEMICAL CAPACITOR	C232,C236,C176,C234,C25,C37,C38,C48 on MB	8
02454889	ECEV0JA221WP	CHEMICAL CAPACITOR	C102,C84,C99,C110 on MB	4

<b>CAPACITOR</b>				
	15369152	ECEV1CA100SR	CHEMICAL CAPACITOR	C57,C56,C59,C61,C76,C96,C160,C204,C258, C81,C77,C192,C189,C171,C168,C165,C201, C163,C196,C158,C79,C82,C108,C260 on MB
	02014356	ECEV1CA101WP	CHEMICAL CAPACITOR	C230,C29 on MB
01904856	ECEV1CA470WR	CHEMICAL CAPACITOR	C132 on MB	
15369168	ECEV1EA4R7SR	CHEMICAL CAPACITOR	C190,C193,C202,C200,C181,C182,C183,C19 4,C187 on MB	
	15369262	ECEV1HA010SR	CHEMICAL CAPACITOR	C54,C45,C39,C70,C67,C121,C237,C238,C23 9,C240,C241,C267 on MB
#	03018545	RPE2C1H101J2M1A01A	MLT.LAY.CERAMIC CAPACITOR	C104,C103,C102,C101 on JB1. C203,C202,C201 on JB2
#	03126523	RPE2C1H121J2M1Y01A	MLT.LAY.CERAMIC CAPACITOR	C404 on PS
	13529132	RPE132-901F104Z50	MLT.LAY.CERAMIC CAPACITOR	C3,C4,C5,C6,C7,C8,C1 on PB. C401,C405,C406,C407 on PS
				+7
<b>INDUCTOR, COIL, FILTER</b>				
	02780389	ELC10D470E	CHOKE COIL	L402,L401 on PS
	00237212	SH-202	CHOKE COIL	FL401 on PS
#	03015489	LQH31MN330J03L	COIL	L32 on MB
#	03126123	LQH31MN3R9J03L	COIL	L45,L44,L43 on MB
	12449300	BL02RN1-R62	FERRITE CORE	L104,L103,L102,L101 on JB1. L203,L202,L201 on JB2
	01783590	BLM11B601SPT	FERRITE-BEAD	R182,R36,L41,L42,R49 on MB
	01909645	EXCML16A270U	FERRITE-BEAD	L7,L4,L6,L36,L3,L29,L31,L35,L39,L40,L46 on MB
				11
<b>CRYSTAL, RESONATOR</b>				
#	02783589	CX-49G 27.000MHZ	CRYSTAL	X5 on MB
#	03015534	MG5100SACZ 14.318M/17.734M	OSCILLATOR	X4 on MB
				1
<b>CONNECTOR</b>				
	02012034	26FMN-BTK	CONNECTOR	CN12,CN7 on MB
	02670912	26FMN-SMT-TF	CONNECTOR	CN3 on MB
	13369541	B10B-PH-K-S JST	CONNECTOR	CN5 on MB
	13369503	B7B-PH-K-S JST	CONNECTOR	CN9 on MB
	13369504	B8B-PH-K-S JST	CONNECTOR	CN11 on MB
	13369556	B8B-XH-A JST	CONNECTOR	CN2 on MB
	13369561	B16B-PH-K-S	CONNECTOR	CN8 on MB
	13369566	B6B-PH-K-S JST(6P)	CONNECTOR	CN4,CN1 on MB
	02671201	26FMN-STK	CONNECTOR	CN1 on PB
				1
<b>WIRING, CABLE</b>				
#	03125967	BAN CARD	BNCD-P=1.00-K-26-240	1
<b>SCREW</b>				
	40011056	SCREW 3x6	BINNING TAPITTE B ZC	12
#	40560534	SCREW M3x6	FLAT MACHINE SUS	8
	40011101	SCREW 3x8	BINNING TAPITTE B BZC	22
	40237101	SCREW M3x8	PAN MACHINE W/SW+PW FE BZC	6
	40458345	SCREW M4x8	PAN MACHINE W/SW+SMALL PW NI	1
#	22150596	BOSS NUT	M3-L5.5-H25-A6-B6-N3	4
<b>PACKING</b>				
#	03232290	ACCESSORY PAD		1
#	03019167	TOP PAD		1
#	03019178	BOTTOM PAD		1
#	03019156	PACKING CASE		1
#	03233223	OUTER PACKING CASE		(1/2)
<b>MISCELLANEOUS</b>				
	22365714	CORD HOOK	236-714	1
	40122490	DOUBLE-FACED TAPE	#500 W5MM 20M 40P	1
	01235378	FOOT		4
	01561323	HOOK CLAMP	UAMS-09-0	1
	40016512	INSULOK TIE	80M/M T-18S	2
	40016545	INSULOK TIE	SKM-1	2
	40451856	LABEL	EDIROL for PACKAGE	1
#	40457356	LABEL	NTSC/PAL	1
	22175316	PANEL SPRING	217-316	1
	40349945	NITTO TAPE #29	18MMx35M	1
<b>ACCESSORIES (STANDARD)</b>				
#	72129912	OWNER'S MANUAL	JAPANESE	1
#	72231689	OWNER'S MANUAL	ENGLISH	1

**ACCESSORIES (STANDARD)**

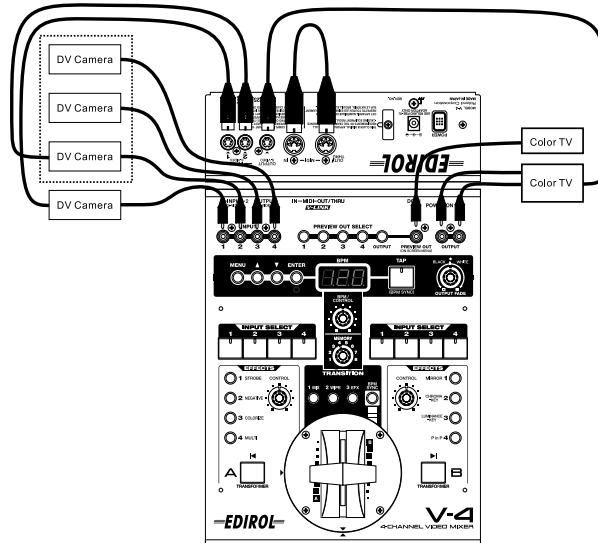
△	01901578	AC ADAPTOR WITHOUT AC CORD	PSB-1U UNIVERSAL	1
△	03017356	AC ADAPTOR WITHOUT AC CORD	PSB-1U (R) UNIVERSAL	1
△	01903334	AC CORD SET 100V	1.0M for PSB-1U, PSB-1U (R)	1
△	01903345	AC CORD SET 120V	1.0M for PSB-1U	1
△	02562456	AC CORD SET 120V	1.0M for PSB-1U (R) (NON POLAR)	1
△	01903356	AC CORD SET 230V	1.0M for PSB-1U, PSB-1U (R)	1
△	01903367	AC CORD SET 240V	1.0M for PSB-1U, PSB-1U (R)	1
△	00905234	EURO CONVERTER PLUG	ECP01-5A (PLUG for 230V)	1
	40348001	WARRANTY CARD	(JAPAN ONLY)	1
	40454934	WARRANTY REGISTRATION CARD	(US ONLY)	1

# IDENTIFYING THE VERSION NUMBER

1. Use a video cable to connect the V-4's PREVIEW OUT jack to the video input of your TV monitor.
2. While holding down the [MENU] and [ENTER] buttons, press the [POWER] switch to turn on the V-4. The TV monitor will show "V-4 Test Mode Menu." The version number will be displayed in the lowest line of "V-4 Test Mode Menu."



You must continue holding down the [MENU] and [ENTER] buttons until the Test Mode screen appears.



## TEST MODE

### Required equipment

- One to four video camera: for INPUT (recommended; DV video camera with S-video output)
- One TV monitor: for PREVIEW OUT
- One TV monitor: for OUTPUT and OUTPUT S-Video. S-video input jack required



You will need video cameras and TV monitors that are compatible with the color system (NTSC or PAL) you are testing.

- S-video cables (2 -- 3 pcs.)
- Video cables (2 -- 7 pcs.)
- MIDI cable (1 pc.)

### Starting the test program

1. Use a video cable to connect the V-4's PREVIEW OUT jack to the video input jack of your TV monitor.
2. Use a video cable or S-video cable to connect the output jack of your video camera to the V-4's INPUT1 jack or INPUT S-Video 1 jack.
3. Use a video cable or S-video cable to connect the OUTPUT jack or OUTPUT S-Video jack to the INPUT jack or INPUT S-Video jack of your TV monitor.

2. While holding down the [MENU] and [ENTER] buttons, press the [POWER] switch to turn on the power of the V-4. The TV monitor will show "V-4 Test Mode Menu." The version number is displayed on the bottom line of "V-4 Test Mode Menu."



You must continue holding down the [MENU] and [ENTER] buttons until the test mode menu screen appears.

### Test items

- 01:Tbar SET
- 02:Sw /Led TEST
- 03:Volume TEST
- 04:4M-DRAM TEST
- 05:16Kbit-EEPROM
- 06:PREVIEW OUT
- 07:IN-OUT TEST
- 08:MIDI-In/Out
- 09:FPGA LOAD
- 10:OSD TEST

### Selecting test items

When the test mode menu screen is displayed, press the [ ▲ ] [ ▼ ] buttons to select the desired test item.

### Executing and exiting test items

In the test mode menu screen, pressing the [ENTER] button will display a screen in which you can execute the selected test item.

In the test item execution screen, you can hold down the [MENU] button and press the [ENTER] button to exit the test item and return to the test mode menu screen.

## Test items

### 01:Tbar SET

- Move the video fader to the A position, and press the [Transformer A] button.  
The 'A' value will be set.



You must move the video fader all the way to the A position.

- Move the video fader to the B position, and press the [Transformer B] button.  
The 'B' value will be set.



You must move the video fader all the way to the B position.

- Hold down the [MENU] button and press the [ENTER] button.  
You will exit the "Tbar SET" and return to the test mode menu screen.  
Next the display will indicate "Tbar SET OK."

### 02:Sw/Led TEST

- All LEDs will light.  
Verify that the LEDs are lit correctly as shown below.

PREVIEW OUT SELECT 1 -- 4, OUTPUT: orange

MENU: red

△ , ▽ : green

ENTER: orange

BPM: red (8-segment LED x 3 digits)

TAP: red

OUTPUT FADE: orange (red and green lit simultaneously)

INPUT SELECT A 1 -- 4: orange

EFFECTS A 1 -- 4: green

INPUT SELECT B 1 -- 4: orange

EFFECTS B 1 -- 4: green

1 MIX, 2 WIPE, 3 EFX: green

BPM SYNC: red

- One by one, press the button of each lit LED.  
Verify that the LED for the corresponding button goes dark.  
When you press the [TRANSFORMER A] button, the green OUTPUT FADE indicator will go dark.  
When you press the [TRANSFORMER B] button, the red OUTPUT FADE indicator will go dark.
- Turn the [MEMORY] dial from 1 through 8, and then back to 1.  
The BPM (8-segment LED x 3 digits) indicator will go dark one segment at a time.  
All three digits will go dark in the same way.
- Hold down the [MENU] button and press the [ENTER] button.  
You will exit the "Sw/Led TEST" and return to the test mode menu screen.  
Next the display will indicate "Sw/Led TEST OK."

### 03:Volume TEST

- The A/D value of VR1 -- VR5 will be displayed.  
VR1 -- VR5 correspond to the following controls.

VR1: OUTPUT FADE

VR2: CONTROL B

VR3: BPM/CONTROL

VR4: CONTROL A

VR5: VIDEO FADER

- Operate each control.

When the maximum and minimum values of each controller have been correctly detected, indications of "\*" will appear at the left and right of the A/D value.

VR1 (OUTPUT FADE) will have an A/D value of "8000" at the center position, and "\*" will be displayed above the value.

- Hold down the [MENU] button and press the [ENTER] button.

You will exit the "Volume TEST" and return to the test mode menu screen.

Next the display will indicate "Volume TEST OK."

### 04:4M-DRAM TEST

- This test will be executed the instant you select "4M-DRAM TEST" in the test mode menu screen and press the [ENTER] button.  
If an indication of "OK" appears, the test was successful.
- Hold down the [MENU] button and press the [ENTER] button.  
You will exit the "4M-DRAM TEST" and return to the test mode menu screen.  
Next the display will indicate "4M-DRAM TEST OK."

### 05:16Kbit-EEPROM

- This test will be executed the instant you select "16Kbit-EEPROM" in the test mode menu screen and press the [ENTER] button.  
After a time, an indication of "OK" will appear if the test was successful.
- Hold down the [MENU] button and press the [ENTER] button.  
You will exit the "16Kbit-EPPOM TEST" and return to the test mode menu screen.  
Next the display will indicate "16Kbit-EEPROM TEST OK."

### 06:PREVIEW OUT

- The display will indicate "INPUT1", "INPUT2", "INPUT3", "INPUT4", and "Master," and will show the image that is being input to [INPUT1].



You must input a video signal into [INPUT1]. If nothing is being input to [INPUT1], the output image from the [PREVIEW OUT] jack will be solid black.

- Press the [▽] button to select [INPUT2].

The image being input to [INPUT2] will be displayed.



If nothing is being input to [INPUT2], the output image from the [PREVIEW OUT] jack will be solid black. If only one device (e.g., DV video camera) is inputting video to the V-4, reconnect it at this time from [INPUT1] to [INPUT2].

- Press the [▽] button to select [INPUT3].

The image being input to [INPUT3] will be displayed.



If nothing is being input to [INPUT3], the output image from the [PREVIEW OUT] jack will be solid black. If only one device (e.g., DV video camera) is inputting video to the V-4, reconnect it at this time from [INPUT2] to [INPUT3].

4. Press the [  $\downarrow$  ] button to select [INPUT4].  
The image being input to [INPUT4] will be displayed.



If nothing is being input to [INPUT4], the output image from the [PREVIEW OUT] jack will be solid black. If only one device (e.g., DV video camera) is inputting video to the V-4, reconnect it at this time from [INPUT3] to [INPUT4].

5. Press the [  $\downarrow$  ] button to select [Master].  
The color bar built into the V-4 will be displayed.
6. Hold down the [MENU] button and press the [ENTER] button.  
You will exit the "PREVIEW OUT TEST" and return to the test mode menu screen.  
Next the display will indicate "PREVIEW OUT OK."

## 07:IN-OUT TEST

1. In the IN-OUT TEST screen, "DecA-Inp1[C]" is initially selected.  
Input an image to [INPUT 1].  
The image that is being input to [INPUT 1] will appear on the TV monitor connected to OUTPUT.  
Since there are two OUTPUT jacks, reconnect the cable and verify that the image is displayed from either jack.  
Switch inputs on your TV monitor to verify the OUTPUT S-Video output as well.
2. Press the [  $\downarrow$  ] button to select "DecA-Inp2[C]."  
Input an image to [INPUT 2].  
The image that is input to [INPUT 2] will appear on the TV monitor connected to OUTPUT.  
Since there are two OUTPUT jacks, reconnect the cable and verify that the image is displayed from either jack.  
Switch inputs on your TV monitor to verify the OUTPUT S-Video output as well.
3. Press the [  $\downarrow$  ] button to select "DecA-Inp3[C]."  
Input an image to [INPUT 3].  
The image that is input to [INPUT 3] will appear on the TV monitor connected to OUTPUT.  
Since there are two OUTPUT jacks, reconnect the cable and verify that the image is displayed from either jack.  
Switch inputs on your TV monitor to verify the OUTPUT S-Video output as well.
4. Press the [  $\downarrow$  ] button to select "DecA-Inp4[C]."  
Input an image to [INPUT 4].  
The image that is input to [INPUT 4] will appear on the TV monitor connected to OUTPUT.  
Since there are two OUTPUT jacks, reconnect the cable and verify that the image is displayed from either jack.  
Switch inputs on your TV monitor to verify the OUTPUT S-Video output as well.

5. Press the [  $\downarrow$  ] button to select "DecB-Inp1[C]."  
Input an image to [INPUT 1].  
The image that is input to [INPUT 1] will appear on the TV monitor connected to OUTPUT.  
Since there are two OUTPUT jacks, reconnect the cable and verify that the image is displayed from either jack.  
Switch inputs on your TV monitor to verify the OUTPUT S-Video output as well.

6. Press the [  $\downarrow$  ] button to select "DecB-Inp2[C]."  
Input an image to [INPUT 2].  
The image that is input to [INPUT 2] will appear on the TV monitor connected to OUTPUT.  
Since there are two OUTPUT jacks, reconnect the cable and verify that the image is displayed from either jack.  
Switch inputs on your TV monitor to verify the OUTPUT S-Video output as well.

7. Press the [  $\downarrow$  ] button to select "DecB-Inp3[C]."  
Input an image to [INPUT 3].  
The image that is input to [INPUT 3] will appear on the TV monitor connected to OUTPUT.  
Since there are two OUTPUT jacks, reconnect the cable and verify that the image is displayed from either jack.  
Switch inputs on your TV monitor to verify the OUTPUT S-Video output as well.

8. Press the [  $\downarrow$  ] button to select "DecB-Inp4[C]."  
Input an image to [INPUT 4].  
The image that is input to [INPUT 4] will appear on the TV monitor connected to OUTPUT.  
Since there are two OUTPUT jacks, reconnect the cable and verify that the image is displayed from either jack.  
Switch inputs on your TV monitor to verify the OUTPUT S-Video output as well.

9. Press the [  $\downarrow$  ] button to select "DecA-Inp1[S]."  
Input an image to [INPUT S-VIDEO 1].  
The image that is input to [INPUT S-VIDEO 1] will appear on the TV monitor connected to OUTPUT.  
Since there are two OUTPUT jacks, reconnect the cable and verify that the image is displayed from either jack.  
Switch inputs on your TV monitor to verify the OUTPUT S-Video output as well.

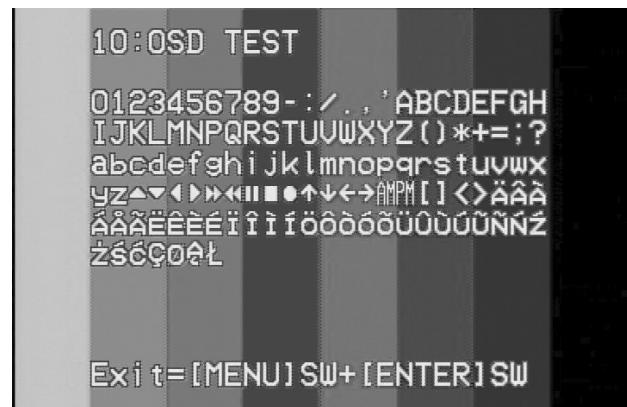
10. Press the [  $\downarrow$  ] button to select "DecA-Inp2[S]."  
Input an image to [INPUT S-VIDEO 2].  
The image that is input to [INPUT S-VIDEO 2] will appear on the TV monitor connected to OUTPUT.  
Since there are two OUTPUT jacks, reconnect the cable and verify that the image is displayed from either jack.  
Switch inputs on your TV monitor to verify the OUTPUT S-Video output as well.

11. Press the [  $\downarrow$  ] button to select "DecB-Inp1[S]."  
Input an image to [INPUT S-VIDEO 1].  
The image that is input to [INPUT S-VIDEO 1] will appear on the TV monitor connected to OUTPUT.  
Since there are two OUTPUT jacks, reconnect the cable and verify that the image is displayed from either jack.  
Switch inputs on your TV monitor to verify the OUTPUT S-Video output as well.

12. Press the [  $\downarrow$  ] button to select "DecB-Inp2[S]."  
Input an image to [INPUT S-VIDEO 2].

The image that is input to [INPUT S-VIDEO 2] will appear on the TV monitor connected to OUTPUT.  
Since there are two OUTPUT jacks, reconnect the cable and verify that the image is displayed from either jack.  
Switch inputs on your TV monitor to verify the OUTPUT S-Video output as well.

13. Hold down the [MENU] button and press the [ENTER] button.  
You will exit the "IN-OUT TEST" and return to the test mode menu screen.  
Next the display will indicate "IN-OUT TEST OK."



## 08:MIDI-In/Out

1. Use a MIDI cable to connect the MIDI-IN connector and MIDI-OUT/THRU connector.
2. This test will be executed the instant you select "Midi-In/Out" in the test mode menu screen and press the [ENTER] button.  
If the "OK" indication appears, the test was successful.
3. Hold down the [MENU] button and press the [ENTER] button.  
You will exit the "Midi-In/Out TEST" and return to the test mode menu screen.  
Next the display will indicate "Midi-In/Out OK."

## 09:FPGA LOAD

1. This test will be executed the instant you select "FPGA LOAD" in the test mode menu screen and press the [ENTER] button.



During this test, the output image from the V-4 will be solid black.

After a time, the test will be completed and the "OK" indication will appear.

2. Hold down the [MENU] button and press the [ENTER] button.  
You will exit the "FPGA LOAD TEST" and return to the test mode menu screen.  
Next the display will indicate "FPGA LOAD OK."

## 10:OSD TEST

1. The characters "OSD" will appear as shown in the illustration.  
Verify that the characters are displayed correctly.

2. Hold down the [MENU] button and press the [ENTER] button.  
You will exit the "OSD TEST" and return to the test mode menu screen.  
Next the display will indicate "OSD TEST OK."

## Changing the color system



When you turn on the power of the V-4, the color system will be indicated on the display. If NTSC is selected as the color system, the characters "ntSC" will be displayed, moving from right to left. If PAL is selected, "PAL" will be displayed. After the color system has been shown, the V-4 will start up.

1. While holding down the PREVIEW SELECT [1] and [OUTPUT] buttons, press the [POWER] switch to turn on the power.
2. If the color system had been NTSC before power-on, the display will indicate "PAL," the V-4's color system will be set to PAL, and the system will start up.  
If the color system had been PAL before power-on, the display will indicate "ntSC," the V-4's color system will be set to NTSC, and the system will start up.

## INITIALIZATION PROCEDURE



You must execute initialization after replacing a circuit board, etc.

Initialization differs from Factory Preset in the following ways.  
Initialization will initialize the Video Fader Calibrate A and Video Fader Calibrate B settings.  
Also, the color system will be set to NTSC.

1. While holding down the [1 MIX] and [BPM SYNC] buttons, press the [POWER] switch to turn on the power.  
The display will indicate "Int" for several seconds, then indicate "ntSC," and the V-4 will start up.



After initialization, the Video Fader Calibrate A and Video Fader Calibrate B settings will be initialized.

Execute the Test mode "Tbar SET" operation so that the V-4's video fader will operate correctly.

## **RESTORING THE FACTORY SETTINGS (FACTORY RESET)**

1. While holding down the EFFECTS-A [1 STROBE] and [4 MULTI] buttons, press the [POWER] switch to turn on the power of the V-4.
2. The display will indicate "FAC," and the Factory Preset operation will be executed.  
After the Factory Preset operation has been completed, the V-4 will start up.



The Video Fader Calibrate A, Video Fader Calibrate B, and color system (NTSC or PAL) settings will not be initialized.

The respective settings prior to executing Factory Preset will be preserved.

5. Play back the sequencer. Program input will begin. The display will indicate "000", and the value will increment.  
It will take approximately six minutes to update the system.  
When the update is completed, the display will indicate "CnP". Turn off the power of the V-4.



After you update the system following a circuit board replacement etc., you must execute the Initialize operation. After initializing, execute Test mode and make settings for the video fader. Initialization will set the color system to NTSC, so if you need to change this to PAL, make this change as well.



If you only updated the system, do not execute the Initialize operation; simply execute Factory Preset.

## **PROCEDURE FOR UPDATING THE SOFTWARE**

The V-4 can be updated by receiving data from an update disk containing its system program (in SMF format) via MIDI.

### **Required equipment**

- Update disk (P/No.17041250)
- Sequencer (e.g., SB-55; capable of playing back SMF)
- MIDI cable

### **Procedure**

1. Load the update disk into a sequencer that is capable of playing back SMF.



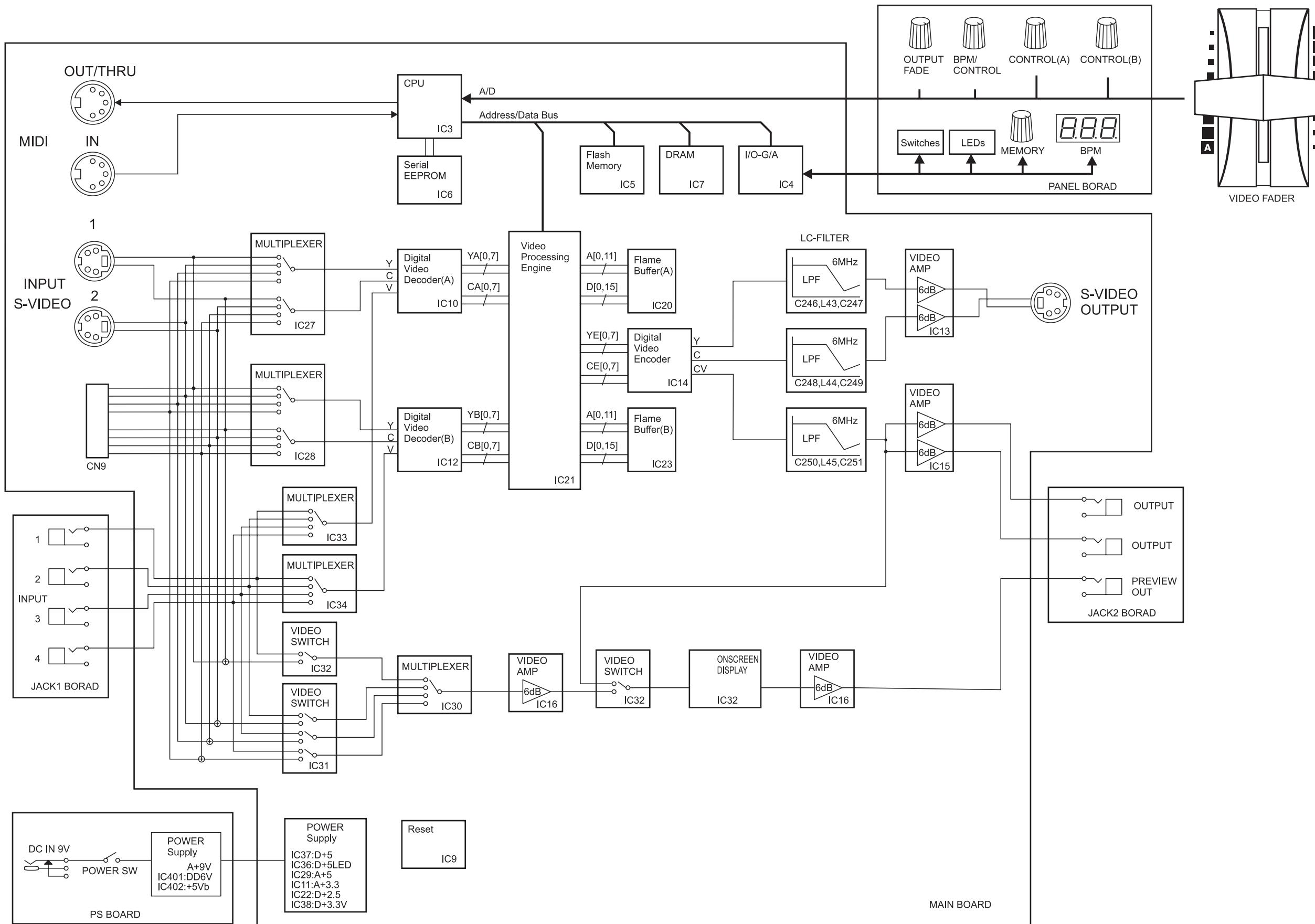
The update disk contains the following files.

V-4\_01.mid, V-4\_02.mid, V-4\_05.mid, V-4\_06.mid, V-4\_07.mid, V-4\_08.mid,  
V-4\_09.mid, V-4\_16.mid

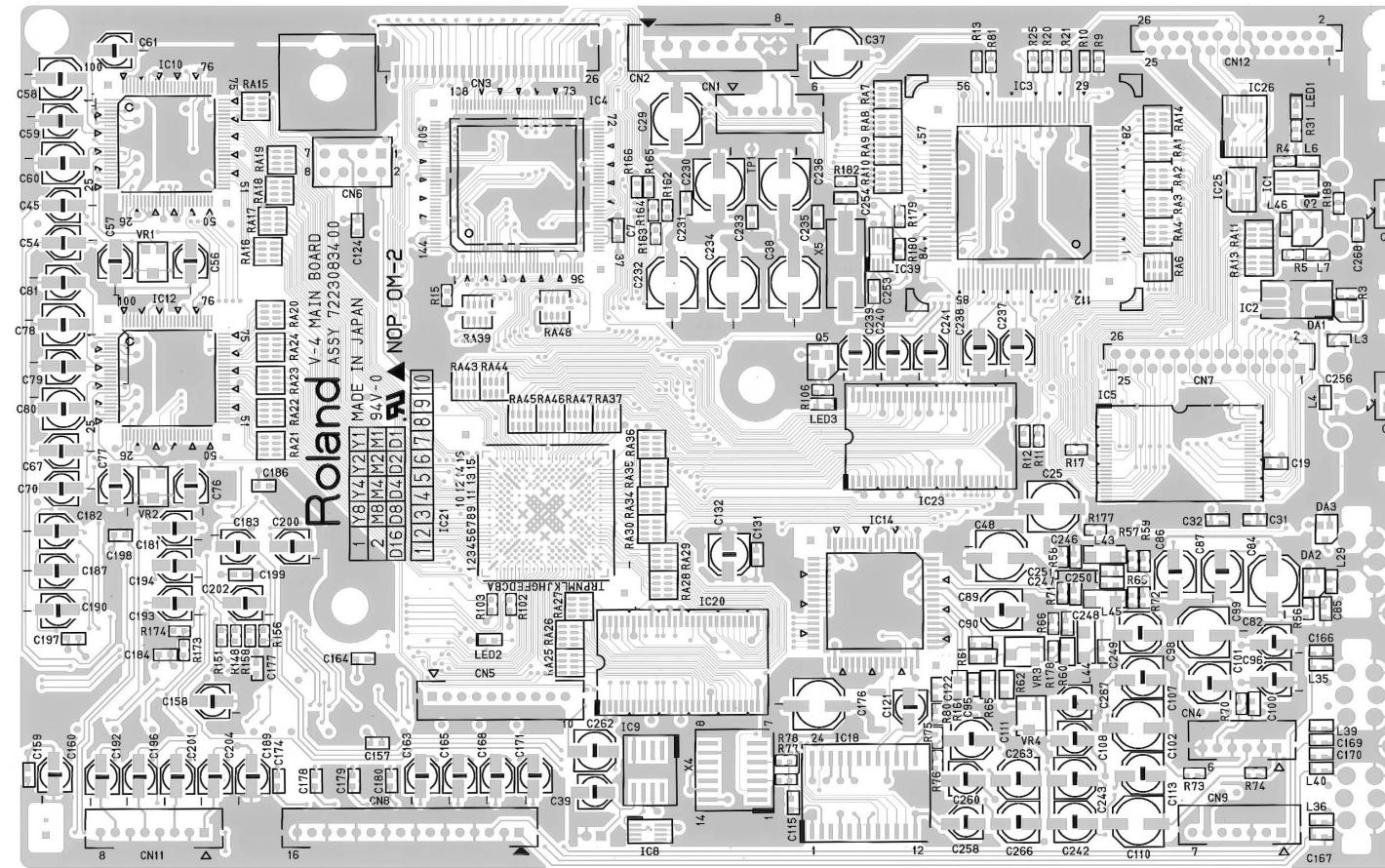
Make settings on your sequencer so that it will play the above files in numerical order (V-4\_01.mid -> V-4\_02.mid - - - > V-4\_16.mid).

2. Use a MIDI cable to connect the sequencer's MIDI OUT to the V-4's MIDI IN.
3. Set the V-4's MEMORY dial to 1. Then simultaneously hold down the [TRANSFORMER A], [1 MIX], and [TRANSFORMER B] buttons, and press the [POWER] switch to turn on the power.  
The [ENTER] button will blink, and the display will indicate "nld".
4. Press the [ENTER] button.  
The display will indicate "Ers", and after a time, the display will change to "---".

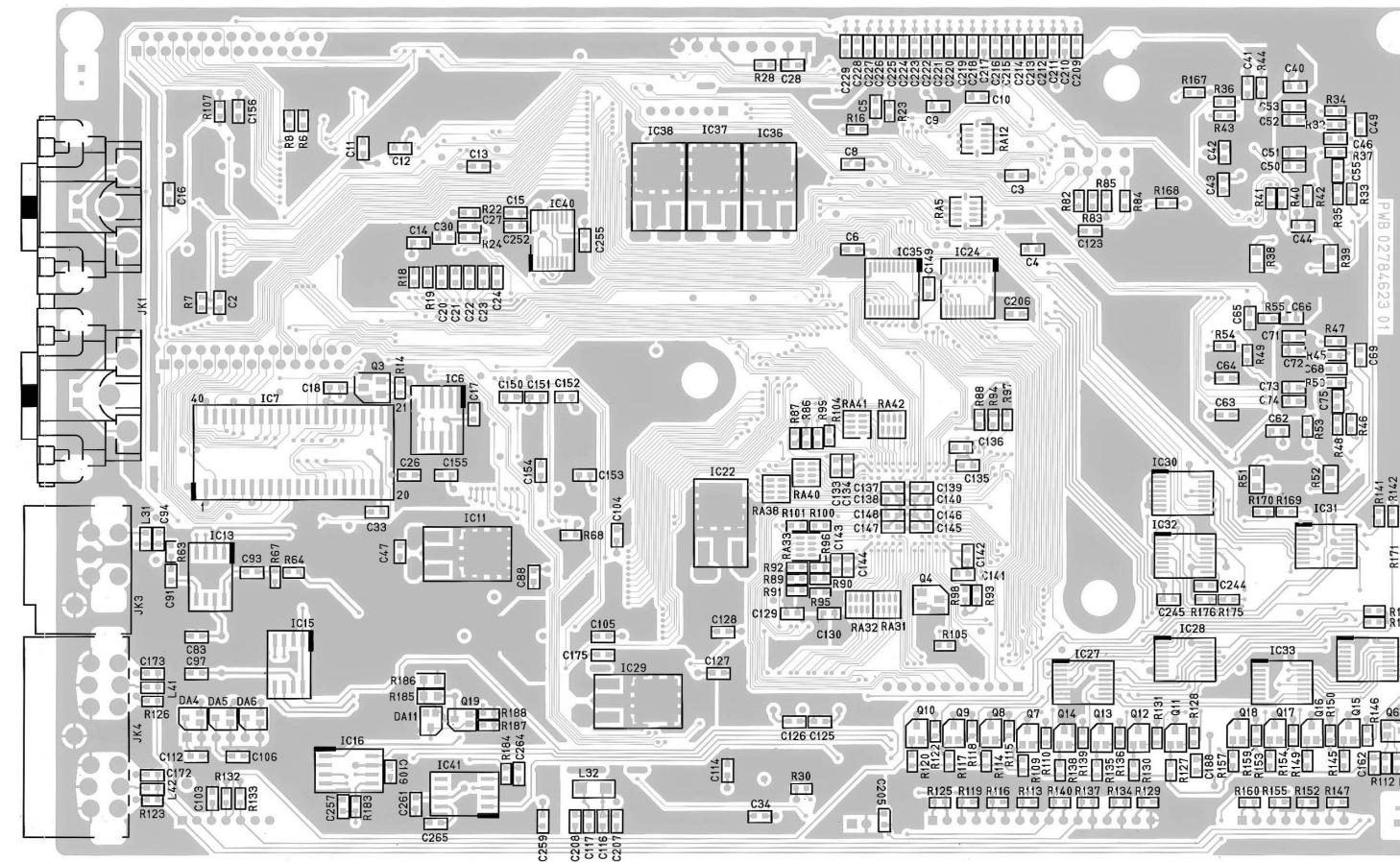


**BLOCK DIAGRAM**

# **CIRCUIT BOARD (MAIN)**

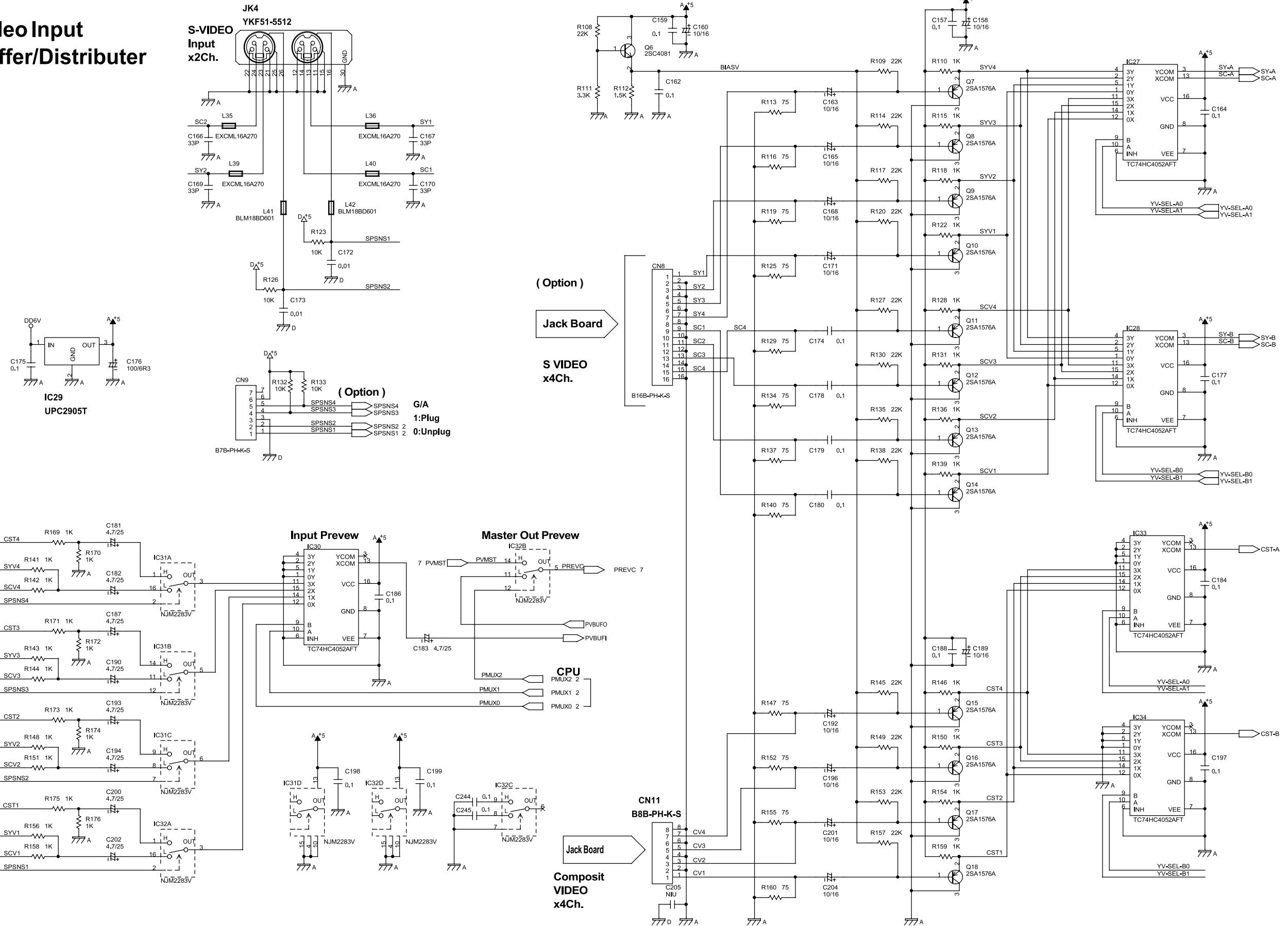


### **View from components side**

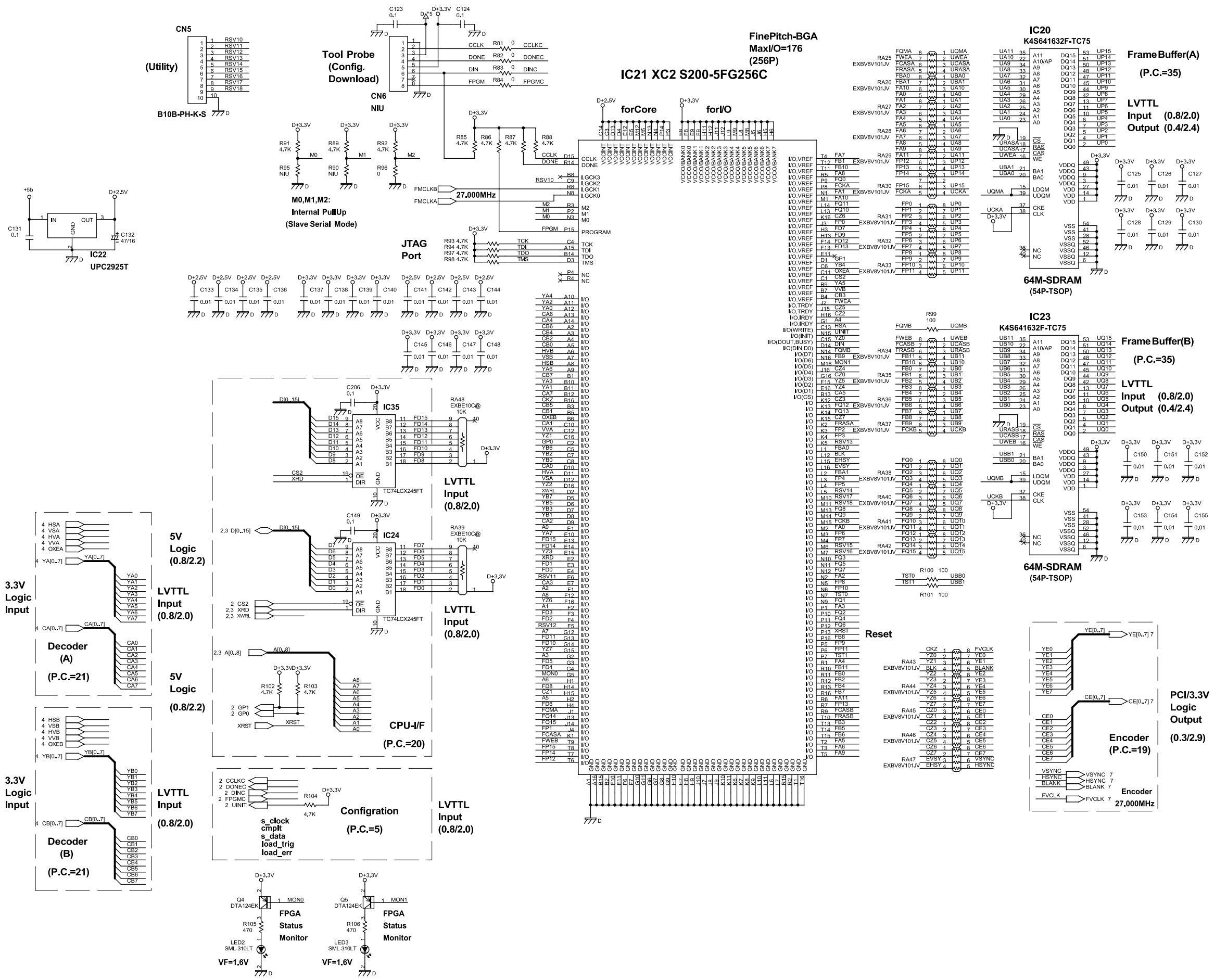
**CIRCUIT BOARD (MAIN)**

# CIRCUIT DIAGRAM (MAIN 1/6)

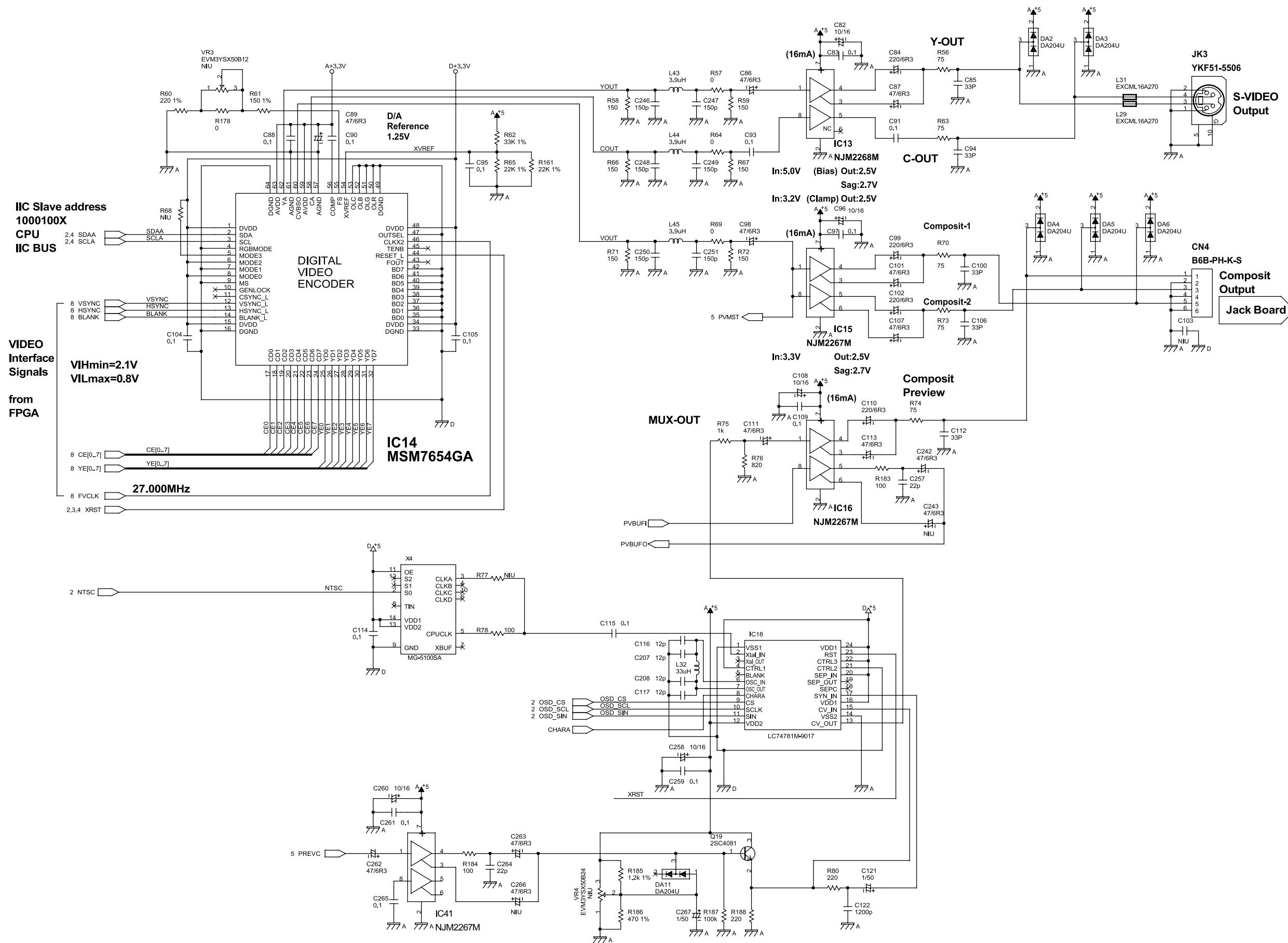
## Video Input Buffer/Distributer



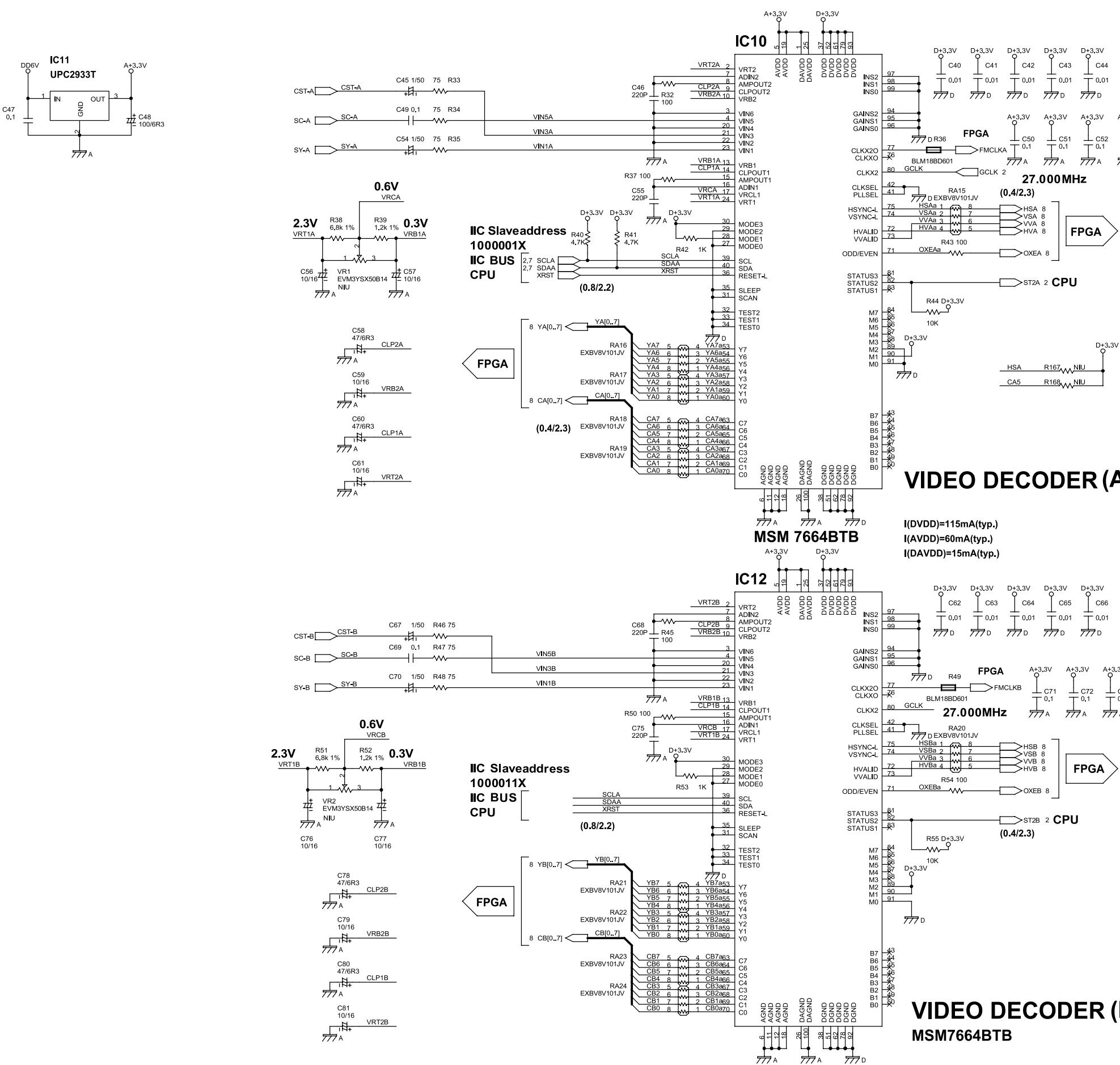
## CIRCUIT DIAGRAM (MAIN 2/6)



## CIRCUIT DIAGRAM (MAIN 3/6)



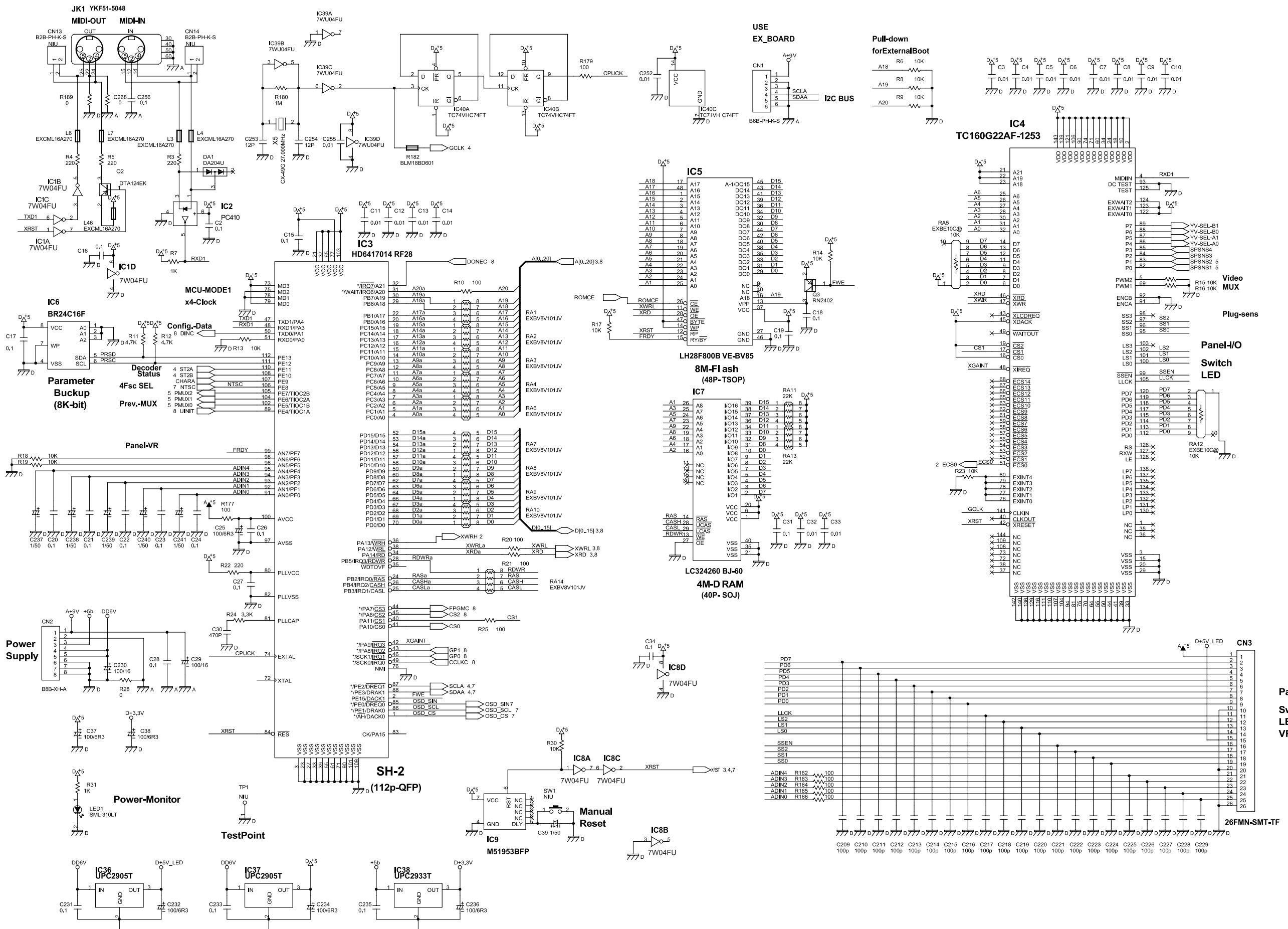
## CIRCUIT DIAGRAM (MAIN 4/6)

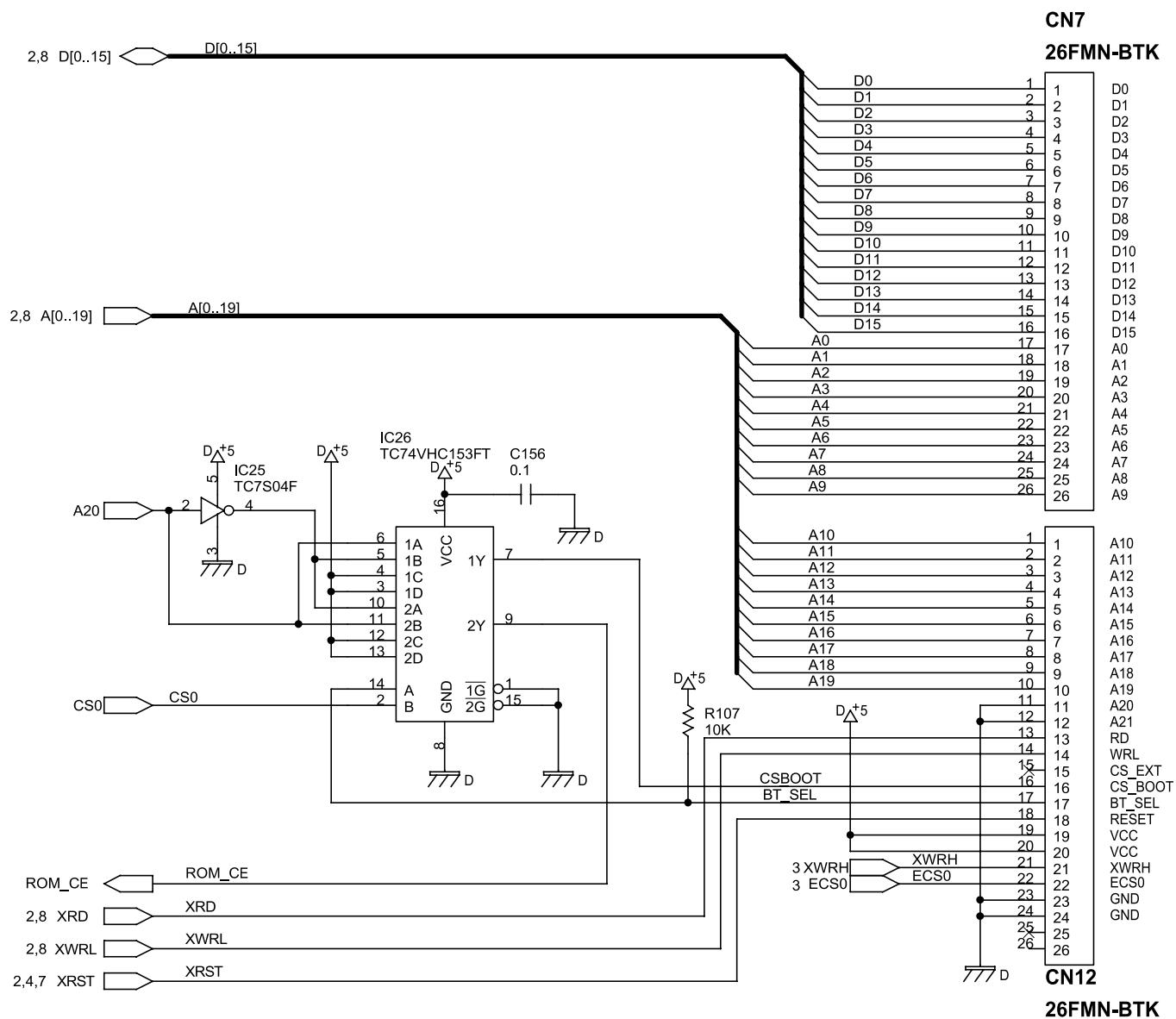


# VIDEO DECODER (B)

## MSM7664BTB

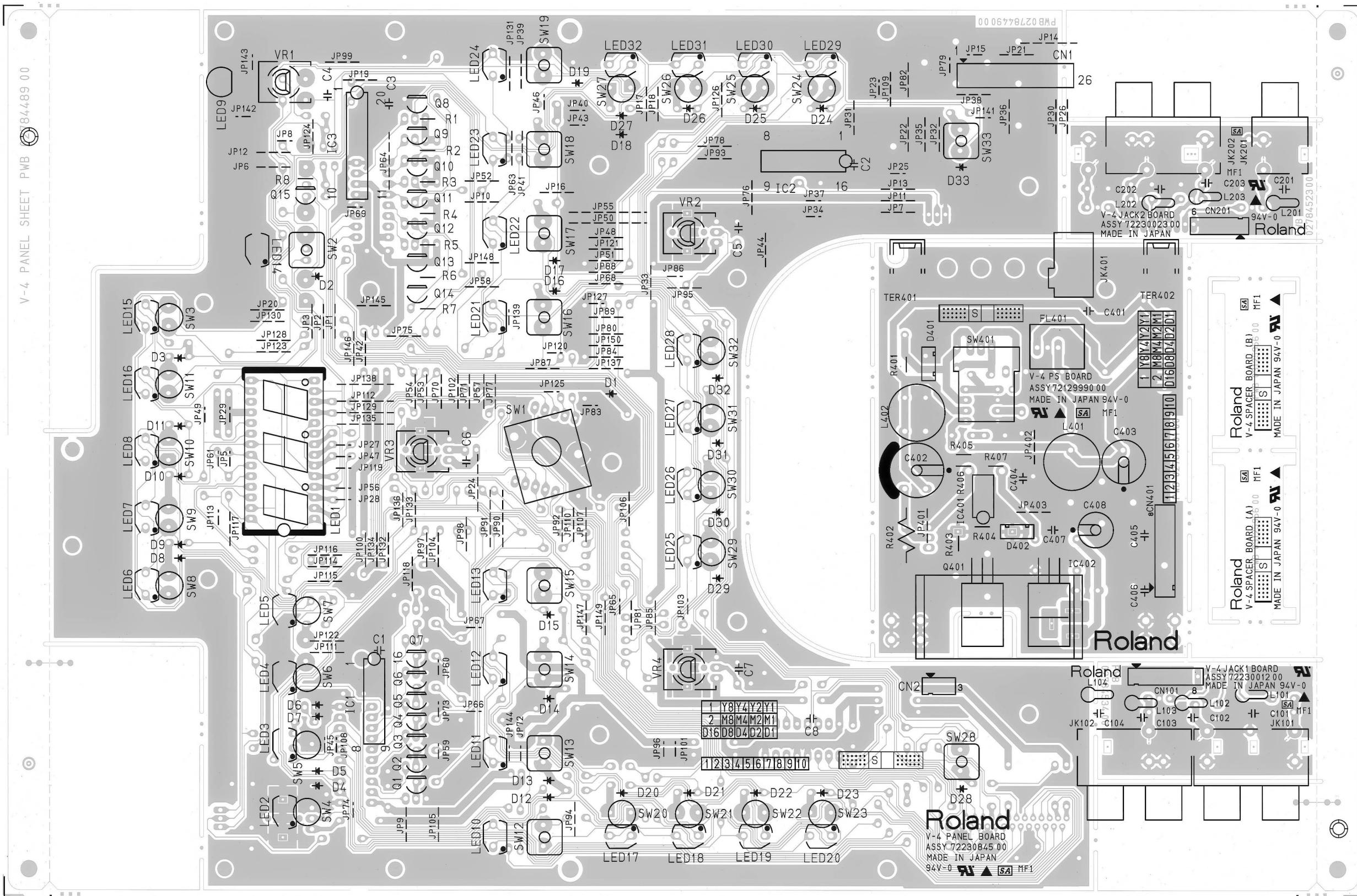
## CIRCUIT DIAGRAM (MAIN 5/6)



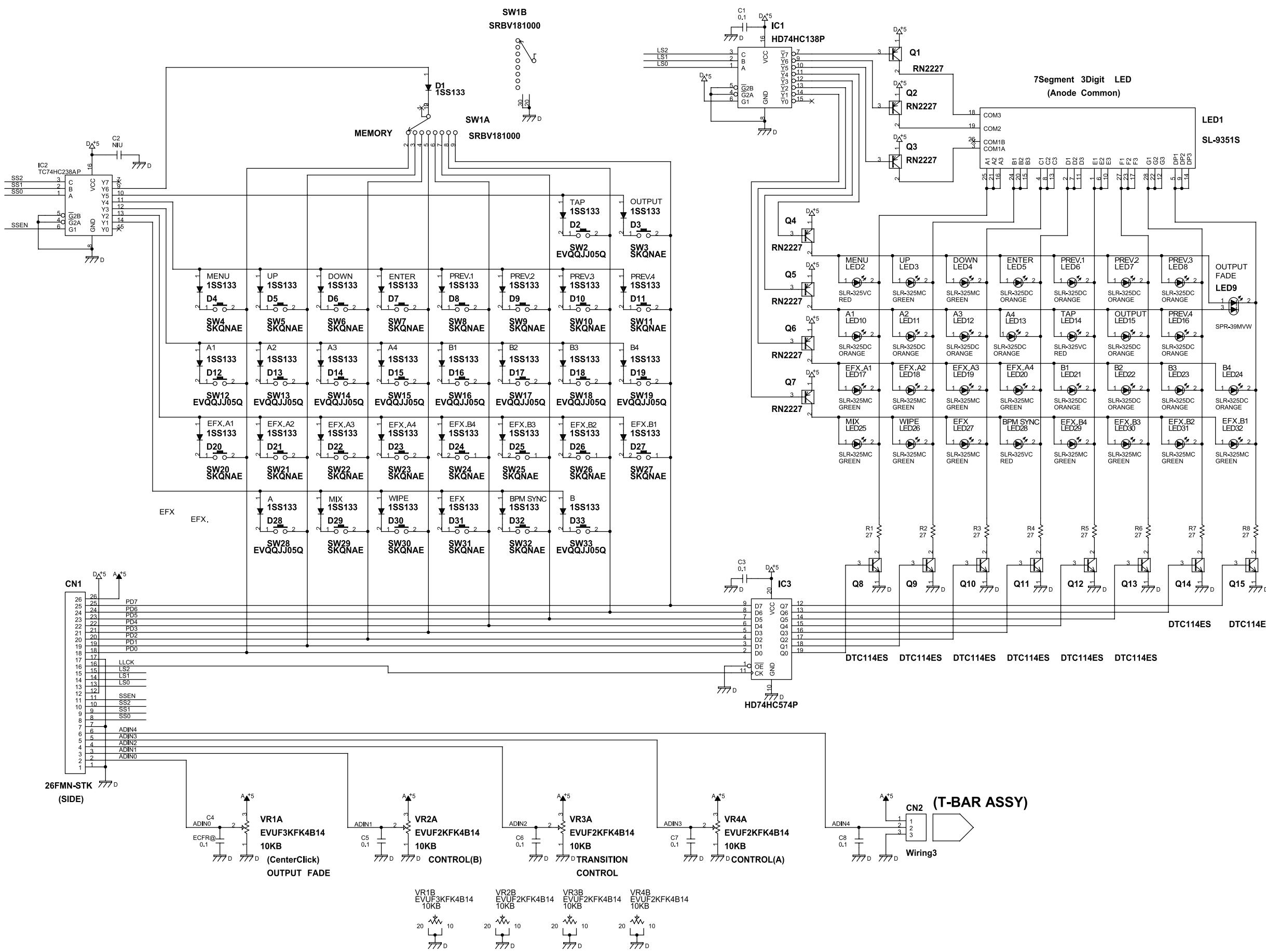
**CIRCUIT DIAGRAM (MAIN 6/6)**

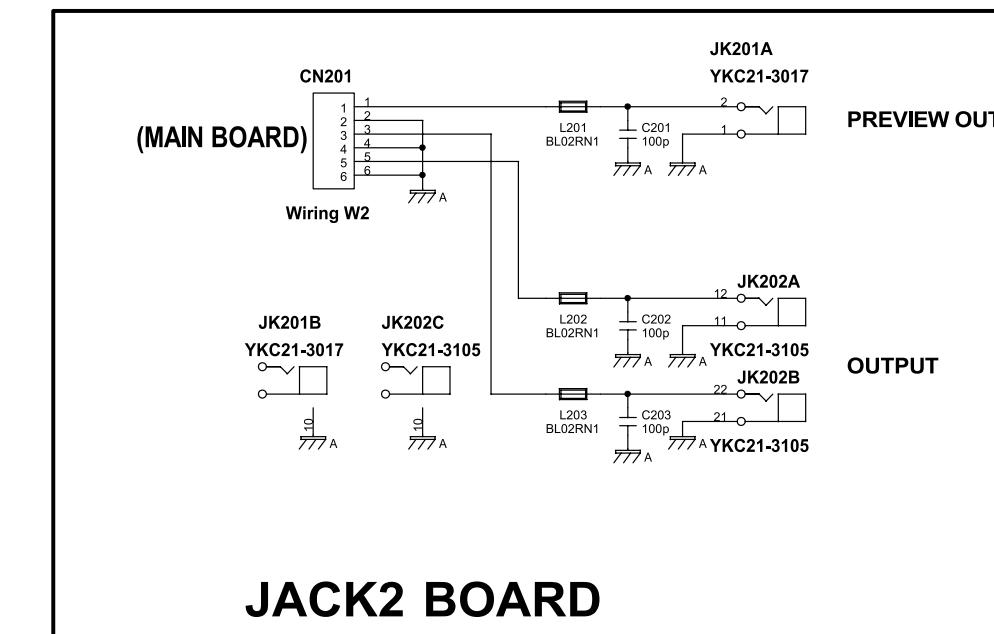
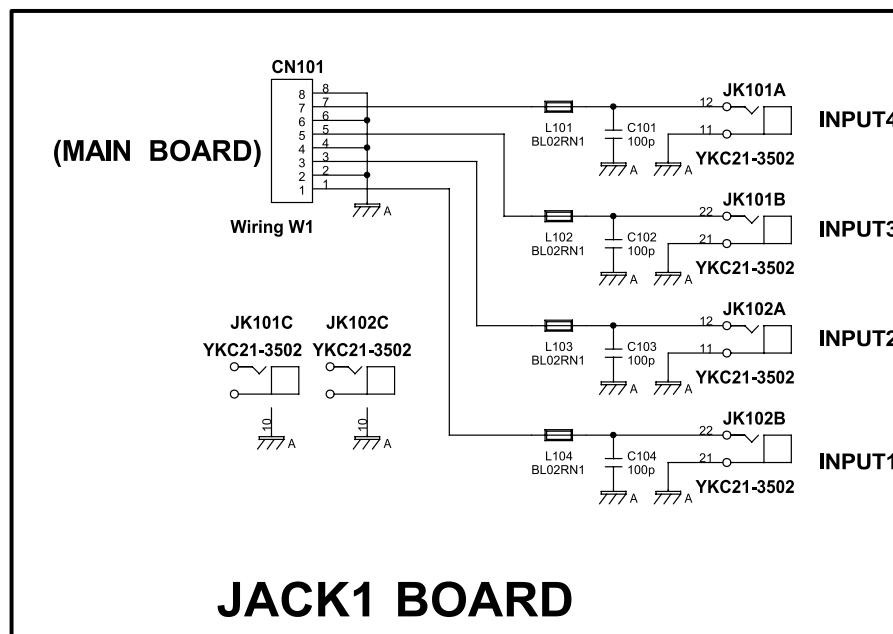
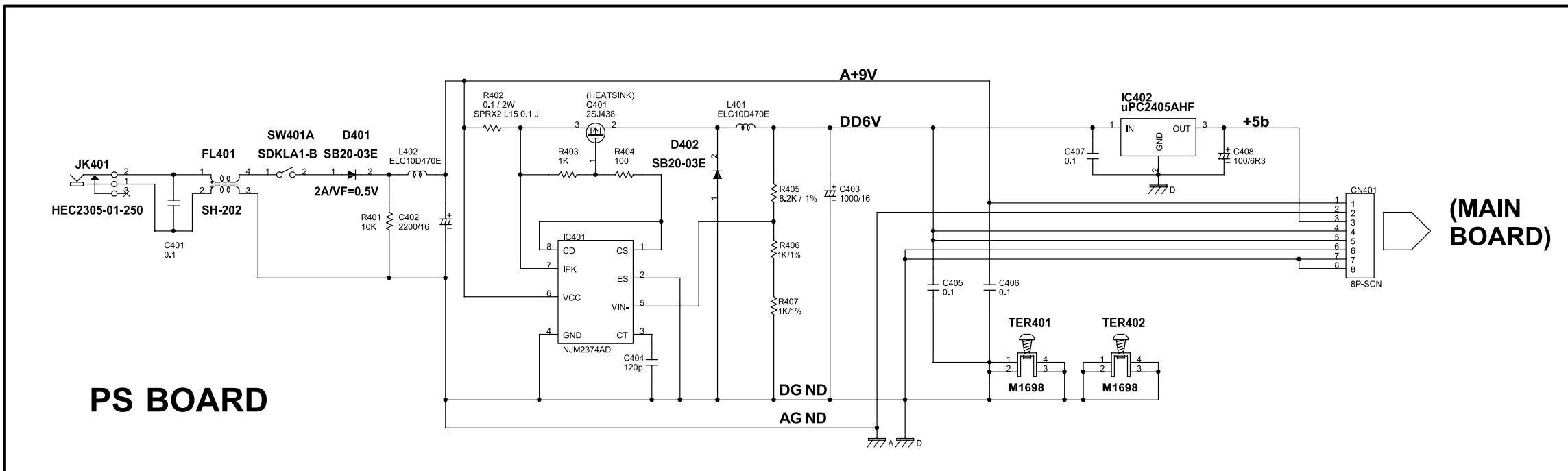


## **CIRCUIT BOARD (PANEL/JACK1/JACK2/PS)**

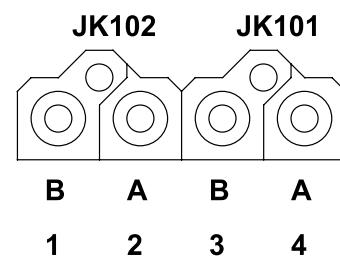


## CIRCUIT DIAGRAM (PANEL)



**CIRCUIT DIAGRAM (JACK1/JACK2/PS)**

(INPUT)



(OUTPUT)

